

ESSAY REVIEW

Unorthodox Concepts of Force and Psychic Phenomena

Les Radiations Humaines: Introduction à la Démonstration Expérimentale de l'Existence des Corps Subtils de l'Homme [Human Radiations: Introduction to the Experimental Demonstration of the Subtle Bodies of Man] by Raoul Montandon. Paris: Félix Alcan, 1927. 407 pp.

Laboratory Investigations into Psychic Phenomena by Hereward Carrington. Philadelphia: McKay, ca 1939. 255 pp. Reprinted by Kessinger, 2006, \$28.95 (paperback).

Le Magnétisme Animal: Étudié sous le Nom de Force Neurique Rayonnante et Circulante dans ses Propriétés Physiques, Physiologiques, et Thérapeutiques [Animal Magnetism: Studied Under the Name of Radiant and Circulating Neuric Force in Its Physical, Physiological, and Therapeutic Properties] by Alexandre Baréty. Paris: Octave Doin, 1887. 662 pp. Available free at <http://books.google.com/>

L'Extériorisation de la Sensibilité: Étude Expérimentale & Historique [The Exteriorisation of Sensibility: Experimental & Historical Study] (5th updated edition) by Albert de Rochas. Paris: Chamuel, 1899. 300 pp. Available free at <http://www.archive.org/details/lextriorisation00rochgoog>

L'Ame Humaine: Ses Mouvements, ses Lumières, et l'Iconographie de l'Invisible Fluidique [The Human Soul: Its Movements, Its Lights, and the Iconography of the Fluidic Invisible] by Hippolyte Baraduc. Paris: Georges Carré, 1896. 299 pp. Available free at <http://books.google.com/>

L'Evolution Animique: Essais de Psychologie Suivant le Spiritisme [Animic Evolution: Essays on Psychology According to Spiritism] by Gabriel Delanne. Paris: Chamuel, 1897. 368 pp. Available free at <http://www.archive.org/details/lvolutionanimiq00delagoog>

There is a long history of unorthodox concepts of force related to the human body, an idea coming from antiquity (Amadou, 1953). The books reviewed here are relatively late examples of such a conceptual tradition used to explain psychic phenomena. I am referring to the idea that there were “vital,”

“magnetic,” or psychic forces, emanating from and surrounding human beings, that could serve as carriers of information and as the means to produce healing and other physical actions when projected from the human body.

As I have discussed in recent years (Alvarado, 2006, 2009), such concepts were used in the mesmeric, spiritualistic, and psychical research literatures to explain a variety of phenomena. Following Franz Anton Mesmer (1734–1815), the so-called mesmerists postulated that “animal magnetism” was the means by which trances and healings could be induced, and the media for transmissions of thoughts and feelings at a distance. One of them, Baron Jean du Potet de Sennevoy (1796–1881), argued that:

The nervous, active atmosphere of the magnetizer, no doubt augmented by the impulse of his will . . . enters into rapport with the passive nervous atmosphere of the magnetized person, and augments the latter to the point that, in some cases, it seems that there is a real saturation of the nervous system. (Du Potet, 1868:316; [this and other translations are mine]).

The idea was extended later to account for the phenomena of spiritualism. For example, many individuals writing since the nineteenth century discussed the phenomena of physical mediums as being caused by the exteriorization of some sort of biophysical force coming out from the body of the medium.

In his book *Les Radiations Humaines*, Swiss scholar Raoul Montandon (1877–1950) presented an overview of phenomena believed to be caused by these emanations. The topic of “human radiations” was related to that of subtle bodies in the Introduction. Montandon had chapters about Reichenbach’s Od, auras, luminous phenomena, and a variety of other phenomena he believed were manifestations of this force. Some of these phenomena included photographic effects, acceleration in the growth of plants, and movement of objects. The latter included effects on a variety of instruments, many of which had moving needles believed to react to these forces. Such effects, the author wrote, could be caused by “an intra-organic radiation, a human fluid” (Montandon:373–374).

Montandon concluded that the information presented in the book showed the reality of human radiations, something that supported a vitalistic outlook of existence. He saw human beings as “a detector, an energy transformer and generator . . .” (Montandon:403).

Regardless of the validity of this belief in a radiation with physical properties, there is no question that Montandon’s work is still a valuable resource to modern readers for its review of a literature that has been forgotten by many. Contemporary readers will find many bibliographical references and summaries of the work of well-known figures (e.g., de Rochas, Joire, Kilner, Ochorowicz, Reichenbach) as well as those who are less-known today (e.g., Baréty, Bertholet, Bourg de Bozas, Léger, Tromelin).

British-born Hereward Carrington (1880–1958), who lived most of his life in the United States, was well-known as a researcher and a popularizer of psychic phenomena. He covered some of Montandon’s topic in his *Laboratory Investigations into Psychic Phenomena*, but in a briefer way. The value of Carrington’s book lies mainly in his report of empirical tests of various devices believed by some to detect unorthodox forces. This work was conducted at the American Psychical Institute directed by himself.



Hereward Carrington

Carrington reported the results of tests with a variety of devices used to detect forces related to the human body via the movement of needles and other parts of the instrument. These instruments have been referred to as “magnetometers,” even though they were non-magnetic devices. The results did not support the existence of an unknown force. Carrington stated:

We have experimented with . . . more than fifty different varieties of magnetometers. . . . In every case we have been enabled to determine the cause or causes responsible for the movement of the magnetometer needle. (Carrington:113)

However, Carrington discussed more than unorthodox forces in his book. His book included much information about the use of instruments in psychical research. The first chapter was an overview of this work. In addition there was a useful list of researchers (9–14), of instruments used to study “vital radiations” (49–54), and a chronology of relevant research work (36–41).

While Montandon’s and Carrington’s works covered a wide ground, the rest of the books reviewed here were more specific. One such work was Alexandre Baréty’s (1844–1918). He was a physician convinced that there was a “neuric” force similar to animal magnetism. In *Le Magnétisme Animal*, probably the most systematic and detailed research monograph of the late neo-mesmeric movement, he defined this force as a dynamic agent

. . . probably from the nervous system, which circulates along the nerves or *radiates* out of them . . . and is susceptible to producing certain sensitive, motor, and psychic modifications on other human bodies. (Baréty:xii)

Baréty divided the book in two sections. In the first one he reported tests conducted with a lady he referred to as Mlle C., while in the second he reported work with other individuals. In Baréty's view the neuric force was projected from the body through passes, as well as through rays coming from the fingers, from eyesight, and from breath. Inside the body the force had properties such as heat and electricity, and once projected from the body and directed toward another person the force produced effects such as trance, anesthesia, hyperesthesia, and the induction or dissipation of contractions. Baréty believed the neuric force propagated through space through the ether and that the force could be transmitted through other objects and could be stored in water and in other things.

Baréty gave many examples of the physiological effects of the force. For example, he treated Mlle C.'s stomach pains by pointing her fingers at her, which he said caused her pain to disappear in seconds. Baréty also claimed to be successful with Mlle C. in other ways. He was able to "anesthetise and hyperesthesise the integuments of different regions . . . abolish or exalt one or another sense" (Baréty:326). While Mlle C. was in another room separated from him by a brick wall, Baréty said he was able to induce muscular contractions in one of his subject's wrists and hands by pointing his fingers to the wall.

In Baréty's view the existence and therapeutic value of the neuric force was beyond doubt. Furthermore, he believed that hysteria was related to the force. In his view it was due to a "modification in the direction, the force, and the distribution of nervous or *neuric* currents" (Baréty:627).

Another representative of French neo-mesmerism was Lieutenant Colonel Albert de Rochas (1837–1914), well-known in his day for his numerous publications about hypnosis and psychic phenomena. One of his best-known works was *L'Extériorisation de la Sensibilité*, first published in 1895 but reviewed here in its fifth revised edition.

The opening chapter of de Rochas followed in the tradition of some of the old mesmerists, among them A. A. Tardy de Montravel (1785), who reported that mesmerized subjects saw luminous phenomena, and more particularly the magnetic force emanating from the mesmerizer. De Rochas wrote that his previous studies of the stages of hypnosis led him to conclude that in some hypnotic conditions "some subjects acquire a momentary hyperexcitability of sight that allows them to see effluvia in full light. . . ." (de Rochas:6). This included observations of luminous emanations from magnets that, according to de Rochas, were not very consistent. In his words, "the same subject even varies sometimes in the affirmations from one moment to another" (de Rochas:8).

The author conducted much research with sensitive individuals hoping to determine that such perceptions were objective and not the effect of suggestion.

Observations made with a subject named Albert L. suggested to de Rochas that the perceptions were objective. For example, in some tests the subject reported lights from the poles of an electromagnet. When the poles were reversed without his knowledge

. . . not only the descriptions of the effluvia corresponded perfectly with the operations during the twenty-two tests conducted but the subject even noticed the passage of the current at a time when the operator believed he had removed it. (de Rochas:22)



Lieutenant Colonel Albert de Rochas

The second chapter was devoted to the phenomenon of exteriorization of sensibility in which the tactile sensations of the hypnotized or mesmerized subject were projected at a distance from their physical body. In one test, de Rochas used two participants, a sensitive observer (A) and a person who was hypnotized (B). The observer reported seeing what looked like layers positioned a few centimeters from B's skin. The author wrote:



de Rochas' exteriorization sensitivity layers

If I, as magnetizer, act on this layer in any way, B feels the same [sensation] as if I acted on his skin, and he does not sense anything or almost anything if I act in any other place than on the layer; he does not feel much if he is acted upon by a person who is not in rapport with the magnetizer.

If I continue magnetization, A sees forming around B a series of equidistant layers separated by a space from 6 to 7 centimeters [of width] . . . and B does not feel touches, [or] prickings, . . . the sensibility diminishes proportionally to its distance from the body. (de Rochas:56)

In the rest of the book, de Rochas discussed spells and other ancient practices and beliefs that may be related to the above-mentioned phenomena of

sensibility, including aspects of sympathetic magic. In some of his tests he had projected the sensibility of a person to a photograph and found she felt pain when the photo was pricked. The topic of forces was further discussed in several appendices, one of which was a reprint of an excerpt written by German philosopher Carl du Prel (1839–1899) on the topic of Reichenbach's Od.

Another French student of the subject, and one who received much publicity during his lifetime, was French physician Hippolyte Baraduc (1850–1902). In *L'Ame Humaine* he reported work to detect instrumentally what he believed were manifestations of the soul. While the material, he wrote, manifests “thanks to a solar or artificial exterior solar light, the fluidic invisible manifests by its *own intimate and intrinsic luminous force*” (Baraduc:4). Baraduc described in the book what he believed were ways to show the reality of the “fluidic invisible.”

The author started with what he called “biometry,” a topic he explored in a previous book (Baraduc, 1893). This referred to the movements of a needle suspended from a thread believed to define certain patterns reflecting the action of the soul on the physical world. He claimed to have found that the “movements of life” showed seventeen different “formulas.” The latter refers to numerical readings of the instrument corresponding to the right and left hands, which showed attraction and repulsion of the force, respectively. Baraduc claimed he had more than one thousand observations showing that while the right side of the body attracted “cosmic life,” the left one did the opposite, pushed it back. Normal states reflected balance between right attraction and left repulsion. But some “formulas” could indicate particular health problems, including mental conditions.

Baraduc believed that his measures were not due to artifacts coming from environmental or body influences. Instead, he wrote, they were due to “our own animic movements, those of the *Soul* in its physical and psychical manifestations” (Baraduc:26).

Other parts of the book were about the photography of invisible forces. With the exception of some electrophotography, this was mainly achieved using conventional photographic equipment taking photos in darkness, hoping that the plaque was affected “by the effluvia, the emanations, the intimate vibrations” (Baraduc:34) of the target object. The soul, usually invisible to the human eye, was believed by Baraduc to be able to impress a photographic plate. He postulated the existence of seven different emanations.



Dr. Hippolyte Baraduc

The first photo presented was that of a boy feeling sorry for a dead pheasant. Baraduc claimed that some patterns seen in the photo, similar to marks made by a brush, were a photographic record of the vital force of the child reflecting his animic state. These and many other anomalous photos were seen by the author as proof of the existence of these forces. In addition to Od, which he described as the threads of the cosmic life, he referred to other forces or subtle bodies, among them the ones he called Somod, Psych-icon, and Ob.

In the Conclusion Baraduc hoped that his readers believed that there was a soul. Unfortunately, his language and assumptions were unclear at best. No empirical evidence was presented for countless affirmations about the nature of these forces and their interactions and functions. An example was the assertion that: "The physical soul is the product of the vital instinct of the inferior cosmos" (Baraduc:288). It is actually very difficult to follow the author's way of thinking, and his theoretical assumptions seem to take on a life of their own. Perhaps this is why a reviewer of the book stated: "Currently, the role of the researcher is not to explain, but to accumulate facts" (Battandier, 1896:556). To complicate matters, in the last pages of the book Baraduc related some of his ideas to religious teachings and to concepts of universal life and its essence.

A similar problem appears in the ideas presented by Gabriel Delanne (1857–1926) in *L'Evolution Animique*. Delanne was an influential French leader in the movement of spiritism. He came into prominence in the movement after the death of the influential French educator Allan Kardec (pseudonym of Hippolyte-Léon Denizard Rivail, 1804–1869). In the book, Delanne discussed aspects of the action of the spirit during its life on Earth. This involved ideas obtained through mediumistic communications that he believed offered a solution to the explanation of many mental and physiological phenomena.

In addition to the physical body and to the spirit, Delanne discussed the "perispirit," which was (and still is) a key explanatory concept in spiritism. He wrote: "All Spirits . . . are covered with an invisible envelope, intangible and imponderable. This fluidic body is called perispirit" (Delanne:12). Such subtle body or force allowed the spirit to interact with the body and was the instrument through which physical phenomena were produced (e.g., table turning).

Delanne argued that the perispirit was the principle behind memory, and behind what others considered to be the subconscious mind. Instead of postulating brain mechanisms or a psychological subconscious, he believed that recollection and dissociation was a function of this vital principle, one that could act abnormally on occasion. During such abnormal states as epilepsy, or through the use of drugs or hypnosis, the rhythm of the perispirit varied, causing anomalies in the recollection process. The new memories produced in the secondary state were in a different "vibratory plane" (Delanne:226) than the older memories. When the "vital aura" returned to its usual activity, Delanne

stated, older recollections came back. In this view it was possible to have more than two memory records, which he believed explained the phenomenon of multiple personalities. These ideas were applied by the author to explain observations about dissociative phenomena, such as the already classic case of Félicité X. (b. 1843), and some of the observations reported by Pierre Janet (1859–1947), which were very influential at the time.

But Delanne also believed that the perispirit had morphological functions. He postulated that it served as a blueprint by which the formation of the body was guided in its development from the embryo. The nervous system, Delanne affirmed, was the “material reproduction of the perispirit” (Delanne:175). The perispirit “possesses the organigenic laws that keep the fixity of the organism in the milieu of the unceasing mutations of material molecules” (Delanne:47). Borrowing from the influential French philosopher of physiology and medicine Claude Bernard (1813–1878), Delanne referred to the directing or guiding influence of the perispirit. In his discussion of life, Bernard had mentioned the existence of currently unknown processes different from physico–chemical ones that contained a guiding or directing idea. “In every vital germ,” wrote Bernard (1865:162), “there is a creative idea that is developed and that manifests by means of organization.” Associating spiritism with Bernard probably served many functions, among which was an attempt to normalize the ideas presented in the book.

The author also affirmed that the fluids described by the spirits would help us to understand matter. Evolution, he also wrote, involved the progress of the spirit over centuries of reincarnations. In its early development

. . . the envelope of the soul is crude . . . ; its vibratory movement is of the most inferior form. The work of the soul consists of purifying this envelope, getting rid of its fluidic scoria. . . . (Delanne:358)

The ideas of force and subtle bodies expressed in the above-mentioned books were to a great extent the result of concepts borrowed from a variety of occult-related traditions (Amadou, 1953), as well as from scientific fields of previous times. The latter includes past ideas from neurophysiology and its concepts of nervous fluids (Brazier, 1984) and the explorations of electricity and magnetism of physics (Harman, 1982). In eras where electricity was wondrous and the telegraph extended our reach of communications, it made sense to many to conceptualize psychic phenomena in physicalistic ways involving forces. A late example, among many, was the statement that “psychic waves, like hertzian waves in wireless telegraphy, propagate at a distance. . . .” (Denis, 1900:291). Interestingly, many of these ideas of force were not purely physicalistic. Both Baraduc and Delanne referred to the soul in their writings as a higher guiding principle.

These works presented a mix of empirical observations and speculation. The assurances about the existence of certain principles we see in the works of Baréty, Delanne, and de Rochas were not always supported by the observations. In fact, what we see are speculations based on some observations, but growing much beyond the available evidence.

The ideas discussed in this review survive to this day in the New Age, occult, and spiritistic literature and in other movements. But they are not favored in most academic circles, including some of those open to the reality of parapsychological phenomena. A portion of the latter today emphasizes a view of consciousness that is nonphysical and nonlocal, a perspective that considers ideas such as the ones discussed in the books reviewed here as superseded concepts that are not supported by the facts. As I have pointed out before (Alvarado, 2006), with the rise of the influence of the new experimental parapsychology of J. B. Rhine and others, phenomena such as extrasensory perception and psychokinesis were seen by some as nonphysical processes supporting the existence of the mind. Such an emphasis came from the apparent independence these phenomena showed from distance, obstacles, and time.

Regardless of the validity of the ideas discussed in these books, it is important to recognize the existence of this conceptual tradition of unorthodox concepts of force. These were and still are powerful ideas that have been influential over time and that can teach us much about past theoretical thinking to account for psychic phenomena.

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ESSAY REVIEW

Extreme Phenomena and Human Capacity

The Physical Phenomena of Mysticism by Herbert Thurston, edited by J. H. Crehan. London: Burns Oates, 1952. 419 pp. ASIN B0000CI8RW.

William James once remarked that the best way to understand the nature of a psychological phenomenon is to focus on its most extreme manifestations. Attention on the bland and the commonplace won't get us very far. James was writing about religion when he said this, explaining why he planned to discuss saints and mystics in *Varieties of Religious Experience*, and not the stale and unprofitable institutional features of religious belief. By analogy, I want to focus on some extreme manifestations of paranormality. The chapters in *The Physical Phenomena of Mysticism*, first published in 1952, were written by the Jesuit scholar Herbert Thurston, and focused on phenomena related to mystical experience: phenomena, often extravagant and outrageous, but well-attested and critically examined by Thurston. Thurston professes to offer no explanation of the phenomena, only to sift good from bad evidence. So we are led back to the people James said should most concern us in religious studies: the saints and mystics who apparently are also the agents of big paranormal physical effects.

Before we review these effects, and consider what they might imply for human capacity in general, and, incidentally, for parapsychology, we should say something about Thurston's sources and his critical methods. This is important because apart from the general animus toward "paranormal" phenomena from many otherwise intelligent scholars, such phenomena, when linked to "religious" sources, are additionally likely to become suspect and aggravate irrational resistance. The present reviewer has no apologetic agenda, but is curious about the phenomena for what they may imply about the scope of human capacity.

The editor of this volume, J. H. Crehan, says in the Preface that Thurston's chapters were culled from publications first appearing between 1919 and 1938 in *The Month*, *The Catholic Medical Guardian*, and *Studies*. Closely related to the material in the present book are two other books by Thurston,¹ whose content we will try to ignore. A glance through the pages of our review book will show the variety of sources the author relied upon: historical documents, the *Acta Sanctorum* of the scholarly Bollandists (reference for readers), the biographies of saints, assessments of medical authorities, depositions of

eyewitness evidence given under oath from the beatification and canonization processes, and written sanctions and animadversions of the Promoter of the Faith (also known as the Devil's Advocate). If evidence of this type be suspect or deemed inferior, then the same must be true for the whole of historical study, for legal or medical adjudications, and for the business of everyday life whenever doubts and questions arise as they constantly do, and we are forced to make an inference to the best explanation, based on the available evidence. Thurston acknowledges that there are grounds for concern with "imperfectly proved miracles," noting that witnesses who depose evidence, however well-meaning about their sworn testimony, may nonetheless be detected "straining toward edification" more than exact truth. Moreover, the processes themselves may be defective, failing to give dates or any indication of the character or reliability of specific witnesses.

The marvelous event deposed to by a single witness in extreme old age who had heard the story in his youth from some third person unnamed, is set down as a fact with the same trustful confidence with which the biographer records the details attested independently by a dozen different contemporaries who had lived in daily intercourse with the Saint and had been the spectator of all his actions. (p. 2)

Thurston is aware of the mixed value of the materials he is working with and throughout his accounts keeps calling attention to weaknesses and whatever else strikes him as questionable. Despite qualifications about the mixed status of the evidence, Thurston took the evidence of psychical research seriously, but seems to rank it as a form of "natural . . . magic," and claims that the evidence he has collected of saintly psi sometimes surpasses in quality that which has been garnered by psychical researchers (p. 2); no doubt there are instances in which a spontaneous case is treated with less acumen or thoroughness than Thurston managed in his best cases. But this seems about all he is justified in claiming.

He also makes an empirical statement he defends but does not emphasize. "Throughout Holy Writ, from the days of Pharaoh to those of Simon Magus, the position seems to be taken up that while true believers do not possess any monopoly of signs and wonders, the mighty works which they perform by the power of the Most High are in every way more stupendous than the prodigies of natural or diabolical magic with which they are placed as it were in competition" (p. 1). It seems from this phrasing that the "natural magic" phenomena (of psychical research) are guilty by association with the "diabolical," and perhaps for that reason alone one must suppose of dubious quality. Thurston takes a politely adversarial stance toward Spiritualism and psychical research, and occasionally takes a mild poke at Frederic Myers, but never really loses

his objectivity or critical imagination, even if it tends (as I think it does) to weaken his own point of view. This objectivity is evident in his treatment of the phenomena of Mollie Fancher, which causes Thurston to hesitate about his conception of the supernatural.

What should we make of the assertion that saintly psi is “in every way more stupendous” than the “natural” psi studied by secular investigators? At first glance, Thurston has a point: The case for saintly levitation (the subject of the first chapter of the book) is indeed “more stupendous” than the case for levitation by “natural magic” of the anomalous upliftings of D. D. Home. Home famously levitated out of a window several stories above ground and then back in another window in the presence of several highly articulate English lords. Thurston draws on a critique of Home’s levitation by the skeptical Frank Podmore, who felt that the stagy way the levitation was produced, along with the dim light and heightened expectations of the witnesses, meant the incident could reasonably be explained as some kind of involuntary group hallucination. This is probably psychological research’s best levitation case; Thurston’s evidence is indeed much more robust; numerous cases (not merely one) of levitations of the human body took place in broad daylight (not in the dim light of a moonlit room); were seen by numerous and various witnesses repeatedly; happened suddenly and unexpectedly (were not part of any staged event); and caused unbearable embarrassment to the saints, who were horrified by all the attention. On the face of it, this is a slam-dunk for Thurston’s thesis.

But that thesis may be an artifact of the limited scope of our evidence and of our understanding of the phenomenon. Thurston’s “competitors” may not have the levitation cases that he can draw upon, but they do have some, and different forms of, levitational behavior. There is good evidence for table tilting, and for full levitation of objects by mediums such as Eusapia Palladino, as well as reports of poltergeist phenomena that involve various telekinetic (ergo levitational) happenings.² There are the group experiments of Kenneth Batchelder that reportedly have produced complete levitation of physical objects. Finally, Podmore’s critique of the Home case is not definitive. The point: Our data are primitive and incomplete; we know nothing of the extent, which may be considerable, of levitation among Hindu saints and mystics or ecstatic Sufis or in contexts of shamanic ecstasy or diabolical possession (around which swirl tales of levitation).

The concentrated number of ecstasies who have reportedly levitated in Christian Europe, and which seemed to peak during the Baroque period, were the product of a peculiar culture, psychology, physiology, and of a uniquely evolved belief-system, which seems to have elicited that particular form of paranormal manifestation in such abundance. The force, power, or agency that underlies the successful dice-throwing experiments of Rhine, the biasing

of quantum processes with Schmidt machines, the surly and blackly comical shenanigans of poltergeists, and the ecstatic levitations of the saints may well be rooted in some unknown hyper-system of human capacities; we should not be surprised that this feebly understood system takes on a variety of forms, and for all we know will assume new forms in the future we cannot even imagine now. The rare, culture-specific explosion of ecstatic levitations discussed by Thurston deserves our interest and careful study; however astonishing, it does not prove intervention by the “Most High” unless by “Most High” we choose to stipulate a modest hypothesis of *a mind at large*.

One other introductory comment: It should be said that the Catholic Church is not in the business of marvel-mongering, which is why the Devil’s Advocate, the trials or *processi*, and indeed other inquisitorial procedures have always played a role in the Church’s cautious, bureaucratic procedures for miracle-and-saint ratification. As the most skillful exposers of weaknesses (or outright fraud) of evidence for the paranormal are psychical researchers and parapsychologists, so have church officials and investigators been no less skillful in exposing fraudulent or weak claims to saintly marvels, and Thurston doesn’t hesitate to deflate major figures. For example, some later writings on Francis of Assisi talk of his levitations, but Thurston shows there is no evidence for this most popular of Catholic saints being ecstatically uplifted into space. He may have done it, but the evidence isn’t there. Thurston tracks the likely reason for the legend arising that Francis did levitate in the ambiguity of a word used to describe his behavior, *suspendebatur*, indicating his entranced state, *not* that he was suspended in space (p. 7). As I will attempt to show, Thurston’s scrupulous sense of evidence keeps pushing him toward qualifying one of his basic religious premises.

Now let’s turn to what will seem a very strange catalogue of inexplicable physical phenomena. We cannot present much detail, the wealth of eyewitness narratives, or the full historical breadth of cases. At best we can provide a few samples and perhaps some short comments. Let’s begin with a remark of Thurston about acquiring good evidence for levitation: i.e. any unexplained uplifting of a human body—usually, in the cases that interest us—of a person in some ecstatic, enraptured state of consciousness. And yet, to acquire evidence for levitation should be a simple matter. One needs technical knowledge to interpret (say) an apparent miraculous (or paranormal) healing; it’s different with levitation. Anybody with a functioning sensory system, normal intelligence, and speech capacity can observe and accurately report a person’s body rise off the ground, float or fly or remain suspended, whether inches or yards away, or whether for a few seconds or many minutes or hours. Note the circumstances in which saintly levitation occurs: in broad daylight, many times in many places, and suddenly. The phenomena are like seizures, and occur during ecstatic states.

The forms of levitation we are discussing are related to, and in part caused by, a peculiar state of mind. A state of mind can thus directly alter (however transiently) the geometry of space–time, which must be so if we think of gravity in terms of Einstein’s general theory of relativity. If certain states of mind can affect (and indeed suspend) a property of physical reality so fundamental as gravity, it says something about the status of mind and consciousness in nature. What it says contradicts mainstream views that reduce mind to a causally vacuous byproduct of brain processes. Levitation implies something fundamental about the power of mind directly to suspend fundamental physical processes.

The levitators are the ecstasies. Consider the case of a Sieneſe Capuchin nun Passitea who died in 1615. Thurston reminds us that the biographer was an Arabic scholar with a keen sense of evidence who wrote:

According to the violence of the ecstasy she was lifted more or less from the ground. Sister Felice deposed that she had seen her raised three *braccia*. Sister Maria Francesca more than four *braccia* and at the same time she was completely surrounded with an immense effulgence of light. This lasted for two or three hours. On one occasion at Santa Fiori in the house of the Duchess Sforza, when she was present with a crowd of other people, Passitea was surprised by a rapture, under the influence of which she remained raised from the ground at the height of a man. The Duchess, who was a witness of the occurrence, caused an attestation of the fact to be drawn up, which was signed by all present. (p. 29)

As solid eyewitness testimony, we see the phenomenon from the external perspective of a third person. Fortunately, we also have good first-person accounts of what it feels like to be levitated in Chapter XX of Teresa of Avila’s autobiography.³ The rapture phase of the ecstatic experience once it commences is irresistible.

. . . often it comes like a strong, swift impulse before your thought can forewarn you of it or you can do anything to help yourself; you see and feel this cloud, or this powerful eagle, rising and bearing you up with it on its wings. . . . When I tried to resist these raptures, it seemed that I was being lifted up by a force beneath my feet so powerful that I know nothing to which I can compare it, for it came with a much greater vehemence than any other spiritual experience and I felt as if I were being ground to powder. (p. 191)

Although she admits at first feeling fear and trying (without success) to resist these extraordinary feelings, she notes one of the interesting aftereffects: “The favour also leaves a strange detachment,” hard to describe except to say that not just her spirit but her body feels “a new estrangement from things of

earth.” This in turn results in a kind of distress also hard to describe. It should be noted that Thurston cites independent witnesses who deposed testimony confirming Teresa’s strange upliftings. Thurston provides other examples of well-evidenced levitation; the case of Joseph of Copertino (1603–1663) is the strongest for testimony from multiple witnesses, and going on pretty steadily for thirty-five years.⁴

We can conceptually arrange Thurston’s phenomena according to the feature of nature that they impinge upon. For example, in levitation gravity is impinged upon; it is bracketed; suspended. Or consider accounts of strange “luminous phenomena”; the target domain now is light, like gravity, a fundamental feature of physical nature. In the chapter dealing with inedia, the impacted domain are the normal mechanisms of nutrition, a basic feature of biological nature. And so on—until we observe the physical mechanisms that normally operate when an organism dies also suspended and impinged upon.

So the chapter on levitation is about *gravity*; in a related way, so is Chapter IV, titled *Telekinesis*. Thurston notes that levitation is a form of telekinesis (or to use the more recent term *psychokinesis*). The general idea is direct mental agency causing physical change outside one’s own body. Whereas parapsychology is familiar with dice experiments that illustrate paranormal movements, a different form of telekinesis is discussed in this chapter, “the alleged transference of the Host through the air by some unexplained agency from the altar or the hands of the officiating priest to the lips of the expectant communicant” (p. 141). Thurston begins by quoting a Promoter of the Faith from 1755 (p. 142) to the effect that such telekinetic movements of the Host have no moral significance in themselves, and may be produced by good or bad individuals (presumably diabolically influenced). Thurston then details the cases of several nuns and pseudo-mystics who were caught faking these flights of the Host. The faked performances are motivated by the fact that genuine cases were sufficiently familiar to serve as convincing indicators of sanctity. It would make no sense to fake a phenomenon that nobody believed was authentic; nobody would forge a check unless there were checks that people accepted and cashed as genuine.

There is time for one example of the telekinetic Host. The agent is the mystic Catherine of Genoa; the witness, a priest, her confessor and biographer, Raymond of Capua. As we keep finding, the alleged telekinetic events with the Host occur when the communicant is *ecstatic*—in exit from their normal minds. Raymond tells of a time when he and Catherine arrived in Siena fatigued from a long journey and Catherine had the intense desire to receive Communion; so the priest donned his vestments and consecrated the Host, which lay on the corporal before him. He glanced at Catherine whose face was radiant with expectation. Remarking to himself with pious wonder on this sight, he wrote later (as part of an elaborately conscientious report): “I know and am certain

that I saw the Sacred Host move of Itself without the intervention of anyone and come towards me” (p. 146). Presumably, this was movement meant to hasten Catherine’s Communion.

Others witnessed the phenomenon. As reported in Mother Francis Raphael’s *Life of St. Catherine*,

Fr. Bartholomew Dominic tells us in his deposition that he frequently gave her Holy Communion, and that often at the moment of doing so he felt the Sacred Host agitated, as it were, in his fingers, and escape from them of Itself. “This at first troubled me,” he says, “for I feared lest the Sacred Host should fall to the ground; but It seemed to fly into her mouth. Several persons have told me that the like happened to them when giving her Holy Communion.” (p. 145)

One more piece of testimony about Catherine’s animated Host, from Francesco Malevolti, a witness in the process:

I often saw her communicate, and always in ecstasy; and I beheld when the priest was about to give her the Body of our Lord, before he had drawn more than a palm’s length near her, the Sacred Host would depart out of his hands and like an arrow shoot into the mouth of the holy virgin. (p. 145)

One major difference from other types of psychokinesis described by parapsychologists is the enormous concentration of meaningfulness that the telekinetic Host is endowed with. Thurston puts it like this:

Certainly if telekinesis exists at all upon this earth—and levitation itself is sometimes reckoned as a particular development of it—it is difficult to imagine any conditions under which the power of spirit over matter is more likely to be displayed than in relation to those consecrated species which already in some way belong simultaneously to the two realms of soul and of sense. (pp.149–150)

Stigmata and Tokens of Espousal—Chapters II and III have in common puzzling and truly striking dermal phenomena. The chapter on the stigmata is very long (pp. 44–129) and complicated, and we can only touch on a few points. To begin with, the stigmata—the seeming reproduction of the wounds of Christ’s crucifixion—is a phenomenon with a history. When first reported of St. Francis it made an immense impact on contemporaries. In a letter to the Provincial of France, an eyewitness, Brother Elias, wrote: “I announce to you great joy, even a new miracle. From the beginning of ages there has not been heard so great a wonder . . .” (p. 44). Although Thurston is deeply interested in the stigmata, and says that fifty or sixty truly anomalous cases have been well-documented, many of them in the 19th and 20th centuries, he has misgivings

about whether they can be explained by natural psychology—if not explained, closely allied to *parapsychology*. He also wonders about the relationship of stigmata to sanctity.⁵ Could they be symptoms of hysteria?

The majority of experiencers of the stigmata have been women—even though the phenomenon began with a man in the 12th century and has returned with a vengeance with Padre Pio's marathon fifty-year performance as stigmatist.⁶ In Victorian times when hysteria was a fashionable concept, stigmatics tended to be hysterical. This old concept has been broken up into different components, and today and we look for somatization or attention-seeking disorders.

For Myers hysteria was a “dissolutive” form of dissociation, which may apply to some pseudo mystics, for example, pretenders that the Sacred Host appears on their tongues. Authentic saints shun publicity, whether the attention of admirers or the ill will of opponents. The daily struggle is to gain control over what is judged to be the lower self, which would seem to be contrary to the spirit of hysteria, which revels in the descent. The saintly quest is to crush normal human nature; to cease reacting, to detach oneself from everything, and be open to the one great thing however one conceives it, often designated God.

There is however perhaps one feature of hysteria—profound affective capacity—that may come into play during the rare and very strange dynamics of stigmata. The heightened feeling-capacity is directed toward the universal archetype of suffering, represented in the figure of Christ. Given the all-consuming desire to unite with Christ, combined with the hysterical propensity to somatize, something like stigmata, which reproduce the wounds of Christ, seems like a possible course. However rare, the human sometimes rises to the passion of wanting to unite with the divine even if it costs the complete crucifixion of the human. This may sound slightly mad or dangerous or it may be read as an image being projected from some very deep region of the subliminal mind. One might be content to say that stigmata and other esoterica make a group of phenomena that in a broadly enticing way support some form of basic idealism, which I define as a philosophy anxious not to underrate the creative power of *ideas*.

In the early stages of his career, Padre Pio was accused of faking his stigmata, wearing perfume, and trysting with the ladies. Stories like this are amusing in Boccaccio's fictions, but the rumors about (the now) Saint Pio were refuted early on, although they still circulate on the Web and appear in books that don't like the Padre for one reason or another. Here, however, is a short list of some of the relevant facts concerning his stigmata. Essentially, they bled continuously for fifty years. Shortly before he died in 1968, the wounds gradually ceased bleeding and began to heal and disappear until the moment he died and the last scale fell away—

On September 22, 1968, while Padre Pio was celebrating his last Mass, two almost perfectly white scales fell from his hands. On the morning of the 23rd, while Dr. Sala and I were preparing his lifeless body, the last scale fell from his left hand.⁷

The wounds on his side and feet (after fifty years) had also disappeared and left no scar or any trace. “Every deep and lasting injury resulting in lesions of the tissues leaves an easily seen scar,” we are reminded. In all the years of their unexplained existence, Pio’s wounds were never infected, enflamed, or suppurated, and in fact were known to emanate, as covered in Thurston’s book, anomalous and inexplicable fragrances. Nor are Pio’s stigmata associated with hysteria, typically found in female stigmatics. The chapter by Cruchon, who was Pio’s physician, puts to rest the absurd claim that the wounds were self-inflicted. In this instance, later research confirmed that Thurston was on the right track in his early assessment of the stigmata of Padre Pio, as being authentic, unexplained, and rare but perhaps not (according to Thurston’s understanding) *miraculous* (pp. 100–101). Whatever the use of miraculous language in a community of believers, from the present standpoint, stigmata are important because they exhibit a high degree of mental influence over physiological processes. Stigmata are evidence for a theoretically important type of psychophysical process that is probably latent in all human beings.

A related anomalous skin behavior is behind what Thurston calls (in Chapter III) “tokens of espousal.” Books on hagiography are full of stories of miraculous rings that appear on the fingers of god-intoxicated women. This is how Thurston puts it: “In nearly all such cases the outward manifestation is preceded by an ecstasy in which the soul thus favored believes herself to have gone through some form of mystic espousal with Christ. . . .” (p. 131). Many deeply religious women have espoused their souls to Christ, but few return with rings on their fingers, or other tangible tokens of their espousal. There is the intermediate case of St. Catherine of Siena, who received a ring of espousal visible *only to her*. There were no physical signs of the ring, but the experience points to a novel possibility: a capacity for *selective permanent hallucination*. By means of this capacity she convinced herself that she was indeed spiritually espoused to Christ, whom she is free to imagine in some form, perhaps mediated by a local artist whose work impressed her imagination.

In other cases, the hallucination begins to materialize. The dream becomes visible in one’s own body through ringlike growths and colorations that appear on the skin of the ecstatic’s fingers. Dr. Imbert-Gourbeyre studied the case of Marie-Julie Jahenny, a stigmatic who was espoused in a vision. In 1894, he described what he observed: “Marie-Julie’s ring remains to the present day. I saw it again in October, 1891, still a ring made in the fleshy tissues, like a hoop of red coral which had sunk into the skin” (p. 133). So the vision of espousal

can prompt a permanent hallucination or lead to the manipulation of the shape of skin cells and the flow of blood in conformity with a ring-idea, imagined with special intensity by certain young women. All this seems to take place apart from any known genetic or normal physiological function. Perhaps we could say that in line with recent changes in understanding the plasticity of the brain and the pleiotropic nature of genes,⁸ our understanding of psychophysical relations is also being challenged. This entire discussion of the physical phenomena of mysticism and its empirical findings fly in the face of mainline assumptions about how mind and consciousness work.

Luminous Phenomena—One is tempted to stand this phenomenon side by side with levitation; the paranormal target once again is a basic physical reality: light. Light, the key to the discovery of the quantum domain, is also a fertile source of symbolic meanings, and figures in religious art in haloes, nimbuses, and aureoles. This is a short chapter packed with critical qualifications. Hagiography often speaks of supernatural luminosities that emanate from the bodies of spiritually favored persons,⁹ but Thurston does his usual thing and tries to sift out the evidence for truly unexplained luminosities, though not before reviewing a case of a “luminous woman” of Pirano in 1934. Her phenomena were filmed and physicians from the University of Padua studied her; the physician there had a naturalistic explanation in terms of the physiology of excessive fasting and the religious ideas she was fixated on. Thurston also notes that Prosper Lambertini thought there were good naturalistic explanations for many unusual luminous phenomena; however, both Lambertini (the future Pope Benedict XIV) and Thurston conclude there is a residuum of cases much more difficult to explain away.

A laybrother, Jerome da Silva, had to deliver a message to Father Francis Suarez, the great Spanish theologian. As he approached Suarez’s room he called but received no answer. “As the curtain which shut off his working room was drawn,” Jerome writes, “I saw through the space left between the curtain and the jambs of the door a very great brightness. I pushed aside the curtain and entered the inner apartment. Then I perceived that a blinding light was coming from the crucifix, so intense that it was like the reflection of the sun from glass windows, and I felt that I could not remain looking at it without being completely dazzled. This light streamed from the crucifix upon the face and breast of Father Suarez, and in the brightness I saw him in a kneeling position in front of the crucifix, his head uncovered, his hands joined and his body in the air lifted five palms above the floor on a level with the table on which the crucifix stood” (p. 166). Agitated by the sight of all this, Brother Jerome left the scene. When Father Suarez discovered he had been observed in his curious state, he exacted a written promise from Jerome to record what he saw in writing but keep it unknown until after his death. Jerome was forced to consult with his confessor,

Father de Morales, about what had happened, thus adding a second person in a joint promise to thus keep the secret of what he observed. Thurston comments: "As both the laybrother da Silva and Father de Morales were themselves held in deep veneration for their well-known holiness of life, it seems to me that this is a piece of evidence which cannot lightly be rejected" (p. 166). One can see how witnesses of such events, and those who believe the reports of them, might be swept up into powerful states of religious belief. Experiences such as da Silva's call attention to what seems a good explanation of the origin of certain core religious beliefs and religious worldviews. As we secure a more accurate picture of the true powers of human consciousness, it should enable us to gain an altogether new perspective on the origins of religious belief. The new hermeneutics would neither preserve intact nor destroy traditional religious beliefs; it would, I believe, lay the groundwork for some novel re-imaginings of the nature of "religion" and "spirituality." But on to the next set of physical phenomena.

Marvels of Heat and Fire—Chapter VI is called "Human Salamanders." A salamander is a newtlike amphibian of the Order Urodela, but the term also refers to a mythical lizard or elemental that lives in or can withstand the effect of fire. This chapter then veers us back to the world of elementals, and tells of people who demonstrate immunity to fire. This involves several things: immunity to the pain inflicted and the injury of human flesh normally accomplished by fire. Even highly combustible materials like clothing are caught up in this immunity.

The chapter begins with the story of St. Polycarp of Smyrna who was condemned to die at the stake in 155 A.D, but around whom the flames, when ignited, perversely formed a harmless circle, driving his executioner to dispatch the saint with a lance through his breast. The author provides more recent examples of saints who qualify as "human salamanders," but Thurston runs into a difficulty. It appears that immunity to fire is well-attested in cases of mediumship and Spiritualism, D. D. Home having performed the marvel before credible witnesses. In addition, there is very good testimony to fire-walking ceremonies that involve different faiths. Finally, Thurston reviews fascinating cases of biologically endowed immunity to fire, illustrated by a professional fire-eater named Richardson and a black blacksmith from Maryland who could hold fiery molten iron in hand and drink boiling water. How would the neo-Darwinians explain the blacksmith's mutant talent? Thurston confesses puzzlement; if one can have this capacity naturally (without any spiritual connection), and if people of other faiths obtain the same astonishing effect, we do not seem to be dealing with something that only Our Biblical Deity could produce as a favor to his saints. It seems rather to be a capacity of people in any culture, as long as certain psychological states and attitudes are in play. We should study this because we might learn more deeply how fear limits what we can do or become.

As indicated, immunity to fire extends beyond immediate effects on flesh. One's hair and clothing and other personal appurtenances also escape destruction. This suggests that something is happening to entire volumes of space, in which all the objects within are shielded from the process of combustion. I also want to mention the social dimension of these occurrences; the immunity can be imparted from one who has it to one who does not. Home was quite good at handing over immunity, and had to be, as Thurston points out, as he often handed burning coals to his upper-class English lady admirers; it would have ruined his career if he set one of them on fire. If gifted people can infuse their gifts into other people directly, it might be of use to learn how it's done; it could be the basis of some new principle that we might apply to the art of teaching. Finally, an eyewitness report by a Catholic Bishop: A fire ceremony is conducted by a Muslim with an Indian population, during which hundreds are encouraged or held back from the walk. At the end of the ceremony, the Muslim collapses, a paranormal group process extraordinaire.

Thurston's saints and mystics have a gift for escaping the effects of fire; they can also generate fire from within themselves. They generate, according to Father Thurston, *Incendium Amoris*, the Fire of Love. As certain mystical women, already noted, experienced espousal with Christ, producing hallucinatory or psychosomatic rings on their fingers, in this chapter we find accounts of individuals, men and women, who are so ablaze with mystical love for their Image of the Divine that their bodies become physically burned, enflamed, wracked, desiccated, boiled, and all-round fired up. These ardors are often triggered by actual images of art, as was the case with Joseph of Copertino who was regularly jolted into ecstatic rapture by the sight of a mere painting, the *Madonna of the Grottella*, which he first saw in a small church in Copertino. These men and women are more than metaphorically on fire with mystical love. For when doctors took Padre Pio's temperature, the mercury would expand to the limit and the thermometer would shatter. Filippo Neri's heart pounded with such fury during his flights of adoration that he broke his own ribcage, whose bulge became visible to his confrères, and was publicly dissected during his autopsy. Magdalena de Pazzi could be seen on a winter's night frantically ripping her clothing off, consumed by real fires of mystical rapture.

Thurston seems to relish giving us the details of these strange ravagings of the spirit, but fails to ask how all this may relate to human sexuality. This not being the place to discuss this question, I recommend two books, one by George Bataille that discusses the erotic mysticism of Teresa of Avila, and the other by Jeffrey Kripal, which studies the homoerotic dimensions of Ramakrishna's mystical life.¹⁰ One brief comment I cannot resist making: the *incendium amoris* is testimony to the extraordinary physical power of the imagination. There is no physical object of love there, at most a symbol, an idea, or a painted image; it

is the mental object—the mental process—that sets the body on fire and makes the blood boil, literally.

Suspension of Effects of Bodily Death—To sketch a typology of these charisms, we are thinking in terms of what piece of natural machinery has been stopped, diverted, or suspended. Four chapters are about phenomena that in different ways *delay, alter, or suspend the normal effects of bodily death*. One thinks of John Donne ending a famous sonnet with the apostrophe: “Death thou shalt die!” In each case, we observe some interference with events that normally supervene upon bodily death. They are called “The Odour of Sanctity,” “Incorruption,” “The Absence of Cadaveric Rigidity,” and “Blood Prodiges.”

The Odor of Sanctity—The chapter on “The Odour of Sanctity” begins with St. Polycarp, whom we met in the context of immunity to fire. Thurston writes “that already in the second century the idea was familiar throughout the Christian world that high virtue was in some cases miraculously associated with fragrance of body” (p. 223). In a well-authenticated letter, a witness to Polycarp’s death wrote: “We perceived such a fragrant smell, as if it were the wafted odour of frankincense or some other precious spice” (p. 222). Since then much testimony on anomalous fragrance has been collected. Thurston associates it with death and tombs of saints but, based on his own examples, the living seem to produce unexplained fragrances as often as do the dead. Thurston is quick to note that the effect is found among spiritualists and mediums, for example, Stainton Moses, much admired by Frederic Myers. Thurston thinks the mediumistic effects minor by comparison with their saintly counterparts. The former involve an exaggeration or extension of actual scents of known sources, according to Thurston, whereas the odor of sanctity is typically of unknown origin and ineffable identity, with the effect being unambiguous and overwhelming.

As with all the charisms discussed in this book, they manifest in different ways and to different degrees. For example, the point of origin of Stainton Moses’s fragrance could be traced to a particular moist spot on the top of his head (p. 225), and was associated with a pain he suffered, while Sister Maria della Croce’s fragrance emanated from one of her fingers, following her mystic espousal to Jesus. The saintly odors, like the waxing and waning of stigmata, are more likely to manifest on holy days and during especially meaningful, that is, sacred times. Thus, after Communion, according to della Croce’s biographer, Weber, an “indescribable sweetness . . . exuded not only from her body but also from her clothes long after she had ceased to wear them, from her straw mattress and from the objects in her room. It spread through the whole house and betrayed her comings and her goings and her every movement. . . . This phenomenon, which lasted for many years, was the more remarkable because naturally she could not endure any scent” (p. 229). Another variation to further

confound us is that these mysterious fragrances, powerfully evident to most percipients, were sometimes imperceptible to some. A detailed account of anomalous fragrance is discussed at length in Domenico Bernini's biography of Joseph of Copertino, where it is said that his cell was filled with unexplained fragrances years after his death, as well as were all manner of objects he had touched in life.

So what is going on here? Are the unearthly fragrances (as often dubbed) structured hallucinations involuntarily produced and perceived, or do they involve the materialization of physical particles that produce public olfactory impressions? The fact, repeatedly deposed by witnesses, that objects used or touched by the saints would continue to emanate odors, sometimes for years, speaks for a physical interpretation of the phenomenon. On the other hand, Padre Pio is said to have communicated his presence by projecting his fragrance to people across the Atlantic and Pacific oceans. This suggests partial bilocation or olfactory apparition or some mental form of communication, but I suppose the atoms could be teleported across the ocean!

We can only speculate as to what is going on at (say) the quantum level of the olfactory universe. What seems clear: The odor of sanctity is a highly symbolic and expressive way to convey a message, a heart-wrenching meaning and *cri de coeur*. In its various guises, this phenomenon—as I read it—wants to communicate a very important, very dramatic message. The symbolism of fragrance and incorruption suggest a definite idea. Suppose these phenomena are part of a language, and suppose the speaker is Some Higher Mind trying to communicate with us. The big message seems to be about death: instead of the stench of putrefaction, we get the fragrance of unearthliness; instead of the conqueror worm, we are given an icon of eternal life. “You see,” the incorrupt body of a saint seems to say, “look at me! I performed the great experiment—look at my incorrupt body! What you see is a symbol, an earnest of things to come, not yet resurrection, but enough to *feel* the next dimension of reality.”

Christian mystics assume survival of death, so Thurston's book is not concerned with survival evidence. However, in suspending the effects of bodily death, the afterlife question is posed indirectly. Stopping the entropy, staving off the rot of death, is more than a symbol; it is acting out on earth a power that would dare to take the sting out of death as conceived by rational, sensate man. The meaning—the image of triumph—of these death-dodging and death-delaying displays is clear enough. Bergson once remarked that the moment consciousness stumbled on the idea of death it instinctively reaffirmed the idea of immortality, for it had to maintain the forward trajectory of the life “impetus.”¹¹ The phenomena that Thurston describes seem like data (“good news”) that point toward bodily resurrection; this is data different from psychical research, which is about the interior life's survival. No conflict here.

The evidence of psychical research and the evidence for supernormal bodies converge; they form a basis for an expanded vision of the possible range and life potential of a human being.¹² The incorrupt saints offer a demonstration, not of consciousness surviving death, but of an unknown force that can demonstrably suspend the natural course of bodily death. Incorruption is an earnest¹³ and sign of an unknown “resurrection” power.

Absence of — Thurston’s chapter with the curious title “Absence of Cadaveric Rigidity” (or *rigor mortis*) continues with phenomena that actively and perversely deconstruct our most ingrained conception of bodily death. *Rigor mortis*, the iron rigidity that grips dead bodies, is checked, it is halted and kept at bay: And the moisture, and the suppleness, and the warmth of a living body are *retained*. Rebelliously and shockingly retained. Unnaturally and therefore it might appear supernaturally. It is as if these saintly figures were merely in a profound trance, or striking a pose, they looked poised for a great awakening. Undoubtedly uncanny, this is a phenomenon about as dramatic as can be, and as charged with the operatic heights of meaning. *Absence of rigor mortis* must be seen as an aspect of incorruption; if a dead body does not decompose, it should not surprise us if its limbs retain their suppleness. Thurston locates the earliest eyewitness report of cadaveric suppleness in 1260 (p. 272); a half-century later we have exact testimony of St. Francis’s preternaturally limber cadaver. According to Brother Elias, he saw Francis lay dying, covered with the five wounds of Christ, bent over and unable to raise his head. His limbs

were rigid as are wont to be the limbs of a dead man. But after his death, his countenance was most beautiful, gleaming with a wondrous brightness and making glad them that saw it; and the limbs which before were rigid had been made exceeding supple, allowing them to be turned hither and thither according to his position like the limbs of a tender boy. (p. 271)

What certainly sounds odd here is that the corpse of the saint *re-acquired* the suppleness of limb it had lost in life. The strength lies in the numerous cases, more spectacular and more thoroughly witnessed even until present times. The cases cited by Thurston confront us with a medical anomaly that has rarely been discussed or even acknowledged to exist. I mean cases in which dead bodies (after death) *gain* in freshness, brightness, fragrance, suppleness, and general aliveness. Thurston reminds us that, as with levitation, it should be easy to detect the absence of *rigor mortis*. A child, he avers, could be a good witness as to whether a limb is loose or stiff, a neck supple or rigid.

On a hot July day in 1912, a nun of Southern Italy, a Sister Maria della Passione died and was laid out to be viewed by the public.

. . . the body remained throughout perfectly flexible, and although it was pulled about by the constant handling of those who stood close to it, to the astonish-

ment of all, it remained without a trace of corruption and without giving off the least unpleasant odor; on the contrary it was remarked that the face became more and more beautiful and the features more clear-cut. (p. 273)

The latter observation is much too subjective to be taken seriously, but some cases discussed by Thurston seem harder to dismiss as mere illusion or imagination. We are told, for example, of a Carmelite nun of Tours who died in 1848 that “her limbs, though they had been stiff and immovable during her illness, became after death, as supple and flexible as those of a child” and of a laybrother from Viterbo who died at Rome in 1750 of gangrenous necrosis. The description of the biographer is very puzzling:

Hardly had the corpse been laid out, when, as all could see for themselves, an incredibly surprising change took place in every part of the body. The blotches, the wounds, the unhealthy pallor and the other signs of the gangrene all disappeared at once; the flesh of the limbs became healthy, supple and white like that of a child; the knees unbent to their full extent, the hands and feet which were before contracted and knotted, straightened out and became pliable like those of a man in health. In fact, the body was completely transformed, and as all present perceived, it was not only changed in appearance, but also flexible and comely in a degree which excited general attention and astonishment. (p. 275)

There are yet more complex and richer cases discussed by Thurston, but let us proceed to our next phenomenon.

Blood Prodigies—Another chapter about dead people; to be sure, they are dead, but they do things that give the appearance of *being alive*. Thurston admits to not being at all sure how this phenomenon relates to mysticism, or whether it can be naturally explained, or what its spiritual significance may be; the last passage he quotes is one from a medical expert he hopes will put his doubts to rest (pp. 292–293). He felt driven to include a brief chapter because of the abundance of well-observed cases. When moved from one resting-place to another, or disinterred and medically examined, or surreptitiously attacked by relic hunters and had their toes, fingers, or whole limbs cut off, the often long-dead bodies of these mutilated saints have been observed to bleed—months or even years after death—warm, fresh, full-bodied crimson blood.

All in all, there is much toying here with the mechanics of bodily death. So we are bound to ask ourselves: What is one to make of these incorrupt, fragrant, warm, supple, bleeding, shiny-eyed, radiant *corpses*? If we allow ourselves to dwell on the effect of the overall image, it does seem as if our imagination of bodily death is being revised by images of eternal life triumphant over putrid death. There is no logical argument here; there is simply a visible manifestation of a power that presumes by its action a certain power to transcend death.

Chapter VII is about “Bodily Elongation.” It also discusses stigmata and

inedia, and continues playing devil's advocate against the author's beliefs, by confronting the consequences of hypnosis being used to induce stigmata. About the observed phenomenon of the limbs of ecstasies becoming elongated, Thurston writes: "This is a prodigy which no devout client would be likely to invent in order to demonstrate the sanctity of the particular object of his veneration" (p. 193). The fact that mediums and hysterics were also known to display a knack for bodily elongation (as well as bodily shrinkage) led Thurston to doubt it should be thought of as anything supernatural. Thurston suspects that the physical phenomena may be preternatural or paranormal and worthy of wonder, but still an expression of the natural world and not a sign of divine intervention.

Thurston provides as usual a feast of highly particular, highly bizarre scenes in which hysterical ecstasies claiming to relive the crucifixion of Jesus display their bodies in wildly dramatic contortions in which limbs are elongated *and measured on the spot* and then shrunk back to their normal size. These are scenes from Lewis Carroll's "Wonderland," or scenes from the local madhouse, for, according to Thurston, the stigmatics are, however pious in their intentions, also hidebound in neuroticism.¹⁴

A revealing example is the case of a pious neurotic, Elizabeth, who had been in several *Kliniks* until she came under the care of Dr. Lechler. On Good Friday in 1932 she went to a movie that showed a scene of the crucifixion of Jesus in realistic detail. This disturbed her and when she went home felt pains in her hands and feet and called Dr. Lechler who hypnotized her, a procedure they sometimes found useful. The doctor suggested to the hypnotized woman that she was experiencing the wounds of Christ crucified; she responded to the suggestion, including a suggestion that her eyes bleed; the experiments were written up and published.

If Dr. Lechler could re-produce by mental suggestion the wounds of Christ in a pious neurotic, the whole phenomenon, however real and scientifically inexplicable, could not be classified as divinely wrought. So this chapter, while reviewing much provocative evidence of things possibly paranormal, contributes to the naturalization of the phenomena under discussion. Instead of making the case for the superior "stupendous" status of saintly phenomena, the very status of the phenomena *as saintly* seems in doubt.

Suspension of nutritional needs—If anything suggests a revolutionary break from the known order of biological nature, it is the phenomenon of living without eating, drinking, or eliminating. Thurston has three interrelated chapters on this topic of supernormal nutrition, XV ("The Mystic as Hunger-Striker"), XVI ("Living Without Eating"), and XVII ("Multiplication of Food"). As usual, Thurston presents concrete examples, weeding out the best cases for prolonged inedia, and considering counter-explanations.

Thurston is forced by the data to a qualified conclusion: There is good evidence that people other than Catholic saints are long-standing inediacs. For example, there are cases of physically handicapped subjects who live without eating or drinking or eliminating; but, if it can be naturally achieved, it is not a miracle. Like Prosper Lambertini, Thurston does not grant supernatural significance to inedia as such while at the same time he gives detailed lists and accounts of highly functional saints and their super-prolonged fasts.

Related to transcendence of terrestrial nutrition, Thurston has a short chapter on “the multiplication of food”—one of the more famous miracles in the *New Testament*. The strange thing about the multiplication of food stories is that the miracle likes to hide; no one ever sees a loaf of bread or glass of wine materialize out of nothing. There is always a small supply of wine, a small basket with a few fish or a few pieces of bread; but somehow everybody ends up eating enough so that they can share with others and still have leftovers.

The ability to live without normal nutrition seems a latent, albeit rarely witnessed, human capacity. It can emerge in a subject in perfect health or in someone grossly impaired, physically or emotionally. Or it can be accomplished willfully, as part of a yogic discipline. Transcending the need for nutrition from the sublunary world, we may imagine combining the ecstatic power over gravity that produces levitation. A picture begins to emerge of a self-nourishing and self-propelling being, as if we were glimpsing the outline of a super-physical organism, pre-adapted to wider environments of being, a world of inner spaces with their own various geometries. It is almost as if the subliminal intelligence orchestrating our transcendent talents wants to help us imagine what it feels like to be ready to embark on some great adventure.

Chapters XIII and XIV contain material that cause Thurston to doubt if the boundaries between natural and supernatural can be sharply drawn. Inedia can occur with a paralyzed sick person, a mere abnormality; but it can also occur in an otherwise fully functional organism as that of Theresa Neumann. Is inedia proof of untapped human potential or of divine intervention? This was an important question for Thurston who was a priest in the Catholic Church. Inedia seems to occur in a variety of contexts, some we might call diseased, others religious, and others a mixture of spirituality and pathology. The data suggest something about latent resources for certain life functions, perhaps a kind of biological force that the physicist William Crookes was convinced he had discovered in his experiments with D. D. Home.¹⁵

Chapter XIII, which covers “The Case of Mollie Fancher,” is long, and problematic for Thurston. After two crippling accidents, Mollie Fancher, born in 1848, acquired extraordinary paranormal powers. The problem for Thurston was that Mollie, highly intelligent and articulate, in no way qualified as a Christian believer; her remarkable capacities, comparable to charisms of

great saints, could not be explained by Thurston's theology; once again the phenomena of the saints were turning up in outside contexts. This seemed to cast doubt on the entire belief system he was using to assess the miraculous status of his phenomena. Mollie seems to have been able to live without eating for years, see through parts of her body other than her blind eyes, enjoy a wide range of clairvoyant awareness of her environment, and converse regularly with the ghosts of her deceased relatives. She did all these things in a private, discreet, and religiously neutral manner. At times during her career, alternate personalities, four of them in fact, emerged, took over, and displayed distinctive traits. Her extraordinary behaviors were observable, they were tested, and they were attested to: by select friends, by family, by several doctors, and by her chosen spiritual companions. She lived bedridden for thirty years in her aunt's house in Brooklyn, New York. The eyewitness testimonies are collected in a volume (1893), *Mollie Fancher, the Brooklyn Enigma*, by Judge Abram H. Dailey.

After Mollie Fancher, there is a followup chapter, "More Seeing Without Eyes": three more cases involving the transposition of senses. Mrs. Croad, an English contemporary of Mollie, after a bad spinal injury became totally blind, deaf, and speechless; cut off from the world around her, she lived with limited sensation and restricted mobility of limbs. In this behaviorally near-death state, Dr. Davey reports that Mrs. Croad was able to "see" through her fingertips; Davey concluded: "The various tests . . . were witnessed by Drs. Andrews and Elliot in my presence, with the effect of assuring us that she (Mrs. Croad) was and is able to perceive, through the aid only of touch, the various objects, both large and small, on any given card or photograph" (p. 328). Mrs. Croad, like Mollie, also acted as if she were in direct clairvoyant rapport with familiar incarnates. Mrs. Croad was not a Catholic saint, and neither were the two Italian girls discussed by Lombroso; nor were the many other victims of trauma who were left with unexplained supernormal cognitive and fasting powers. We seem to be discussing a natural phenomenon, which may appear both in pathological or deeply mystical contexts of human behavior.

Thurston concludes by underscoring the difficulty he found in trying to separate the "abnormal" from the "miraculous or supernatural." Using a less question-begging taxonomy, Myers distinguished "evolutive" and "dissolutive" types of phenomena. Some things bear fruit for the future; other sow seeds of decay or ruin. The contrast has no absolute sanction or meaning. There must be an infinity of ways events can be "evolutive" and "dissolutive" for each of us. Moreover, the way we understand *evolutive* and *dissolutive* is not at all clear or obvious. The most that we can say is that what one makes of an encounter with something shockingly transcendent is always in some sense a creative act. On Thurston's own weighing of evidences, it is hard to sharply separate phenomena

of saints from phenomena of mediums and some hysterics. In all cases we are talking about experiences mediated by a fallible human consciousness.

Conclusions

Taking a tip from William James, we have looked at some of the more extreme psychophysical phenomena reported in Thurston's book—phenomena connected with mystical practice. As to Thurston's belief that the saintly marvels he describes are more "stupendous" than comparable phenomena of spiritualism and psychical research, a case could be made using levitation as a possible example. Also to their credit, the mystics introduce new forms of "miracle," such as stigmata, the telekinetic Host, "rings" of divine espousal, and some baffling antics on the *rigor mortis* front. On the other hand, Thurston argues that many of the phenomena he covers may just be paranormal or abnormal in a purely naturalistic sense and are not therefore signs of divine favor. Thurston provides good reasons to take a more catholic than strictly Catholic view of the miracles recorded in the annals of sainthood.

The Church takes a legalistic view of its various ratification processes, of deposing and assessing testimony, thus leaving for public study evidence for miracle claims in the course of centuries. I would think that if a tradition of deposing eyewitness testimony were part of all the world's systems of religious salvation, we would have a vast database of enormous interest to researchers curious about the paranormal origins of religion and the outer edges of human consciousness and capacity. One thing is at least clear: some form of ascetic self-mastery is valued in all the spiritual traditions. The extreme fasting found among Catholic mystics is also found among native North American Indians, and for the same reason, as a way to prepare for receiving grace, a gift of psychical power, or a Myers-like "subliminal uprush." Whatever the differences in conception, language, or mythology, we find technologies of transcendence based on ascetic self-mastery. The general aim of ascetic practice is to stop the mechanical, self-obscuring flow of routine sensori-motor life. In effect, this isolates and magnifies the power of consciousness by deflecting it from its routine service to the brain and making itself radically available to the subliminal self.

The Catholic ecstatic tradition is rich in wisdom lore and paranormal phenomena. It looks like saintly manifestors of these phenomena are acting out their belief-systems, transforming their beliefs into sensory signs and active self-manifestation. The ecstatic so identifies with the Christ figure that she reproduces the archetypal wounds in her own body, making her identity with the divine figure tangible and brutally self-evident. These gestures might be thought of as new forms of rhetorical *epideixus*. Or, along the same lines, the saint apes the creator God by multiplying food or defying the law of gravity or

transcending the physiology of nutrition. All this may be seen as acting out the Biblical statement in the *Book of Genesis* that man is made in the image of God; in other words, by underscoring our likeness to the divine we learn to perform divine acts. Piecing the different phenomena together, looking at them in terms of what they enable us to do, a picture begins to emerge of a possible (call it) hyper-human, an emergent new form of life; if you like, a theoretical image of a resurrected, evolved, transformed specimen of humanity. (An evolutionary idea long ago intuited by mystics and prophets.) The data, in short, seem to want us to believe that we are part of a great metaphysical drama of transformation and liberation, a real adventure ahead, both futuristic and evolutionary.

But this undoubtedly weird data of Father Thurston's might also be useful as a tool of interpretive power with regard to the past. The material covered in Thurston's book should interest academics curious about the origins of religion; for one thing, it's loaded with curious facts absolutely central to discussing the ontology (nasty word) of certain religious claims. The overwhelming trend of modern science and all the rest has been to deflate the ontological status of spirituality; to think of it as hand-waving, self-deception, a hang-over from the childhood of the race, or, thanks to Freud, inspired by neurotic wish-fulfilling. Obviously, this is not my approach. On the contrary, in light of the physical phenomena of mysticism, I feel rationally bound to affirm some broadly conceived transcendent factor at work in nature.

I find myself reflecting on something else about Thurston's data: a point that at least for me opens up new avenues of exploration. The particular historical shape these effects assume are bound by time (heightened in the 16th and 17th centuries), by place (Latin European), and by culture (Catholic). Some effects described are reported nowhere else; the type, range, and extent of paranormal effects, in this case, are tied to particular cultures, historical epochs, specific symbols, and belief-systems. This seems true, for example, of Baroque Europe, which produced so many extreme and interesting ecstasies (Joseph Copertino and Teresa Avila) and their mystical and physical phenomena. What was happening in the Baroque Catholic Reformation that contributed to the development of these singular results? It was a period of high anxiety, and the medieval psychic mold was breaking up. Much of this turbulence was reflected in Baroque art, and one line of inquiry might be the influence of baroque art on psychic phenomena, the role of images, the psychic power of divine figures floating, plunging, or ascending in recessed, fantastic spaces, along with Loyola's injunction to breathe extravagant sensory life into metaphysical abstractions, illustrated perhaps by Bernini's statue of Saint Teresa in ecstasy.

In the field of psychical research, much work has been done on psi-conducive personalities, and psi-conducive personal variables such as belief, lability, and spontaneity. Thurston's book suggests that we might explore

psi-conducive epochs, psi-conducive cultures, art-styles, religions, diets, and indeed a whole range of variables that may retard or liberate the expression of higher orders of conscious experience.

Notes

- ¹ *Surprising Mystics*, Chicago: Henry Regnery Company, 1955, and *Ghosts and Poltergeists*, Fort Collins, CO: Roman Catholic Books, 1953.
- ² See C. Flammarion, *Mysterious Psychic Forces*, Cambridge, MA: The University Press, 1907.
- ³ E. A. Peers, *The Autobiography of St. Teresa of Avila*, Garden City, NY: Image Books, 1960 (translation).
- ⁴ Pastrovicchi, A., *Saint Joseph of Copertino*, Rockford, IL: Tan Books, 1980.
- ⁵ He notes that Prosper Lambertini virtually ignores the phenomenon in his major work on beatification and canonization.
- ⁶ Ruffin, B., *Padre Pio: The True Story*, Huntington, Indiana: Our Sunday Visitor, 1982.
- ⁷ Cruchon, G., "Padre Pio's stigmata," *Padre Pio of Pietrelcina: Spirituality Series I*, San Giovanni Rotondo, 1972, pp. 110–141.
- ⁸ See Fodor, J., & Piattelli-Palmarini, M., *What Darwin Got Wrong*, New York: Farrar, Straus and Giroux, 2010, pp. 44–46.
- ⁹ See James, W., *Varieties of Religious Experience*, New York: The Modern Library:

There is one form of sensory automatism which possibly deserves special notice on account of its frequency. I refer to hallucinatory or pseudo-hallucinatory luminous phenomena, photisms Saint Paul's blinding heavenly vision seems to have been a phenomenon of this sort; so does Constantine's cross in the sky. (p. 276)

- ¹⁰ Bataille, G., *Eroticism: Death & Sensuality*, City Lights Books: San Francisco, 1986; Kripal, J., *Kali's Child: The Mystical and the Erotic in the Life and Teachings of Ramakrishna*, Chicago: University of Chicago Press, 1995.
- ¹¹ Bergson, H., *The Two Sources of Morality and Religion*, New York: Random House, 1932.
- ¹² Michael Murphy's *Future of the Body* (1992) contains a detailed discussion of all the phenomena in Thurston's book, and sees them as part of a vast story of the evolutionary future of the body.
- ¹³ See Patrick Sherry, *Spirit, Saints, & Immortality*, Albany: State University of New York Press, 1984. This book explores the connection between the charismatic phenomena of the saints and life after death, i.e. "immortality."
- ¹⁴ "I have not yet met with a single case of stigmatization in a subject who was previously free from neurotic symptoms" (p. 203).
- ¹⁵ For a useful examination of Home's physical mediumship, see Braude, S., *The Limits of Influence*, New York: Routledge & Kegan Paul, 1986, pp. 70–108.

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BOOK REVIEWS

Evidence of the Afterlife: The Science of Near-Death Experiences by Jeffrey Long with Paul Perry. HarperOne, 2011. 224 pp. \$14.99. ISBN 9780061452574.

All of us who have longed to answer the question “What happens when we die?” will be enlightened by reading the new book by Jeffrey Long, M.D., with Mr. Paul Perry, *Evidence of The Afterlife: The Science of Near-Death Experiences*. This book is one of a few which answers this question from more than an anecdotal basis, but from the perspective of a scientific investigation by those trained in the scientific method.

As a resident in medical training, Dr. Long was guided toward learning about NDE in the prestigious medical journal the *Journal of the American Medical Association* while looking for an article on cancer. Several years later, a friend’s wife recounted her NDE, spurring his interest. A decade passed until The Near Death Experience Research Foundation was organized by Dr. Long, with a dedicated website, <http://www.NDERF.org>, to scientifically investigate the phenomenon of NDE. By means of a painstakingly designed questionnaire, reports of NDE were collected from more than 1,300 respondents who answered more than 100 carefully designed questions. Dr. Long was satisfyingly amazed to see that more than 95% of respondents felt their experience to be “definitely real.” What also came through, as seen in the work of researchers Moody, van Lommel, and others, was that descriptions of “loving grace” and “truth of love” were the messages that NDErs came back to tell us.

Dr. Long, born into a family of science, sticks to the scientific principle that “what is real, is consistently seen among many different observations.” By doing so, and as a result of his compilation and analysis, he concludes that NDEs are “a spiritual thread that binds us together.” It is this common thread of NDE, Long believes, that allows us to understand what happens after the death of the physical body, and that the NINE LINES OF EVIDENCE, as developed in his book, confirm the persistence of consciousness.

What does it mean to be “near death”? Long and Perry, I believe, have it right when they opine that “Individuals are near-death when so physically compromised that they would die if their condition did not improve.” This is simple, concise, and cannot be disagreed with. His study deals with cases of unconsciousness, often in those thought to be “clinically dead” with the absence of spontaneous cardiac activity or respiratory efforts. The accounts studied are lucid, rather than fragmentary. In this book, more than 1,300 respondents,

613 sequential NDErs who completed the most recent version of his survey, and who responded to 16 especially designed SCALE QUESTIONS—which differentiate between valid and invalid NDE reports—are presented.

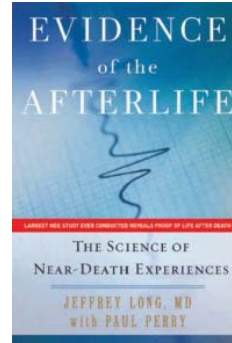
The experiences that NDErs have in common, report many, but not all, the following essential NDE components:

- 1) Consciousness separating from the physical body—reported by 75.4%.
- 2) Heightened senses—reported by 74.4% and often described as “crystal clarity,” and perhaps feeling of being one with all, and a feeling of a much greater than normal alertness.
- 3) Generally Positive Emotions/Feelings—reported by 76.2% and described as incredible peace or pleasantness. 52.5% called it a feeling of incredible joy.
- 4) Travel through a tunnel—33.8% reported this experience. It is interesting, that a tyro in the field of NDE research will often cite the tunnel as a main feature of NDE, but the tunnel appears to be cultural in nature. In America, the incidence is felt to be higher because of our exposure to Western architecture, which often involves tubes, tunnels, and the like.
- 5) Mystical or Brilliant Light—64.5% of Dr. Long’s study respondents experienced “the Light.” This was described as pure, brilliant, but not causing discomfort.
- 6) Other Beings (mainly deceased relatives)—57.3% described the feeling of being part of a “soul family,” often seen but for the most part sensed as being present. The deceased encountered favored family members over friends. The meetings were associated with feelings of love, joy, and being back in touch again.
- 7) Alteration of Time/Space was described by 60.5% with 33.9% describing time somehow speeding up. Often, strange dream-like alterations of space and time were described, a verification of Einstein’s statement that the past, present, and future, coexist.
- 8) Panoramic Life Review—reported by 22.2% For me, this has always been an interesting aspect of the NDE when it occurs, and, as described by Dr. Raymond Moody and others, often experienced by those in attendance (Shared Death Experience) as well. It consists of a 3D panoramic display of one’s life events in which one feels the pain inflicted and the emotional turmoil as a result of one’s actions.
- 9) Unworldly or Heavenly Realms—40.6% were able to say that they visited such distinctive locations such as bright cities, beautiful landscapes, and so forth along with the sound of a music that just cannot be described in words.
- 10) Learning Special Knowledge—reported by 56% who seemed to understand a special purpose or universal order. 31.5% understood everything, during the moment, about the universe, and 31.3% understood everything about themselves and others.
- 11) Boundary or Barrier—31% reached a limiting physical structure. They could go no further, not being allowed to cross the boundary.
- 12) Return to the Body—100% returned, sometimes voluntary, sometimes forced to return. Dr. Long and Mr. Perry state that the best evidence for under-

standing what happens when we die would come from people who experienced what we call clinical death, and returned to tell us of their travels.

The book is full of exciting stories and accounts of those who have peeked beyond the veil.

I urge all who desire to answer the question of persistence of consciousness beyond the death of the physical body, to add this book to his or her bookshelf. Prior to your first reading, take the test of your belief in an afterlife, by going to <http://www.nderf.org/afterlife>. Compare the results to repeating the test after reading the book. You will be amazed to see how far you have come to an understanding of the process we refer to as death, and the belief in what many call The Afterlife.



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Evidence of the Afterlife: The Science of Near-Death Experiences by Jeffrey Long with Paul Perry. HarperOne, 2010, 224 pp., \$25.99 (hardcover), ISBN 9780061452550; HarperOne, 2011, 256 pp., \$14.99 (paperback), 9780061452574.

Evidence of the Afterlife: The Science of Near-Death Experiences, authored by Jeffrey Long with Paul Perry, seems to be an attempt to present “proof” of near-death experiences (NDEs) as a result of research data collected over several years via Dr. Long’s website, the Near Death Experience Research Foundation. Dr. Long’s website included a detailed questionnaire that aimed to collect data from near-death experiencers (NDErs) in which they were encouraged to answer several questions about their NDEs, as well as complete the NDE Scale (Greyson, 1983), an instrument designed to determine if a respondent’s reported experience could be defined as an NDE. Dr. Long is quite adamant in his assertion that this book presents the results of a scientifically rigorous and seemingly bullet-proof study. In principle, I agree with Dr. Long: Research involving transpersonal experiences, such as NDEs, demands methodological rigor and integrity (Foster, James, & Holden, 2009).

And thus begins the major problem with this book: The cover claims that the book contains research data that “reveals proof of life after death.” This

claim is followed up in the Introduction with overblown assertions by the authors that this study followed “basic scientific principle[s]” (p. 3). I consider these to be overblown assertions because the authors appeared to overlook the most basic scientific principle: Scientific research will never produce “proof” of any phenomena. Yet, Dr. Long reports that his study’s findings supported nine different “proofs” of an afterlife. Based on my careful consideration of the results in this book, the most that can be said about these categories of evidence is that NDErs in Dr. Long’s study consistently reported nine major themes or features of their NDEs. These results are far from “groundbreaking” (p. 52) as the authors argued. These features of NDEs have been presented in many other reviews of the topic (see Holden, Greyson, & James, 2009).

As a whole, the authors did not seem to have a concrete grasp of who they wanted as their audience. The content of the book contained some academic language, particularly when Dr. Long described the methodology he used for his data collection procedures. However, the style of writing also seemed to drift into language directed toward a general, non-academic reader.

Because the book was largely a report of a research study, I expected Dr. Long to detail his methodology and statistical results to a greater degree than what he included in the book. He did report some details of his methodology, but few details of the actual statistical findings. It is a major problem to report results of a study without presenting the actual quantitative data.

Despite this book’s numerous flaws, however, I found the many narrative reports from NDErs included to have great value. Dr. Long did collect an enormous amount of data; I believe the most valuable contribution his study has is simply some of the narrative responses NDErs reported on his website. Dr. Long accurately notes that such a large amount of published anecdotal and case study evidence regarding NDErs’ reported experiences is difficult to locate. This book, and I imagine the NDEr reports that Dr. Long did not have enough room to publish within this text, include an important collection of narratives.

If the readers of *JSE* decide to purchase and read this book, I recommend doing so with a good dose of healthy skepticism toward the authors’ claims of the overall significance of their text. For scholars, better resources exist that present a more balanced view of research on NDEs. For a general audience, this book was a quick read and, although it did not present anything new regarding NDEs, included some interesting reports by the people who matter most in the field of NDEs: near-death experiencers themselves.

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The Murder of Nikolai Vavilov: The Story of Stalin’s Persecution of One of the Great Scientists of the Twentieth Century by Peter Pringle. New York: Simon and Schuster, 2008. xii + 370 pp. \$26 (hardcover). ISBN 9780743264983.

This book by Peter Pringle—the former Moscow bureau chief for the British newspaper *The Independent* during the collapse of the USSR—is an original, important, and compelling account of the life of Nikolai Vavilov (1887–1943), one of the most innovative geneticists in history. Pringle’s excellent book is the first full-length biography of Vavilov published in English, and is exceedingly well-researched; Pringle’s sources included government records, family papers, first-person interviews, and Vavilov’s remaining files and correspondence. However, *The Murder of Nikolai Vavilov* is more than an excellent scholarly book; it’s also a moving book about science, politics, love, and war that you will not forget.

Vavilov was born into a wealthy family, and became interested in Mendelian genetics soon after he enrolled in 1906 in the progressive Petrovskaya Agricultural Academy. While at the academy, Vavilov began using genetic selection as a way of improving crops as part of his commitment to “work for the benefit of the poor” and the “enslaved class of my country.” During a subsequent visit to Britain, Vavilov met William Bateson, who coined the term *genetics* and wrote the first genetics book (*Mendel’s Principles of Heredity*, which was published in 1909). Vavilov was convinced that Mendel’s work was the foundation for improving crops. By the time Vavilov produced his *Law of Homologous Series in Variation* (1920), which claimed that traits occur similarly in the various evolutionary stages of related species, his work was being recognized with awards such as the Order of Lenin. However, by 1930, Vavilov was mired in administrative work (“these layers of rubbish on all sides”), at one point holding 18 different positions (e.g., Director of the Institute of Genetics of the USSR Academy of Science).

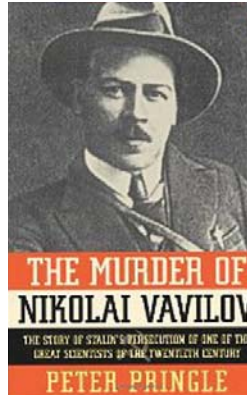
Vavilov understood that genetic variability is important for improving

crop production, and he correctly concluded that the greatest amounts of variability would be found in a crop's "center of origin"—that is, where the crop was originally domesticated. To find and document this variability, Vavilov organized more than 100 expeditions through more than 60 countries to collect seeds of progenitor species and undomesticated strains unavailable in Russia. His first plant-hunting trip to find the genetic birthplace of the foods we eat—in 1916 to the Pamir Mountains—convinced Vavilov that he was on the right track. During this and subsequent trips, Vavilov endured much hardship, but he was successful—his "World Collection" of more than 250,000 seeds of cultivated plants and their varieties (from five continents) was the most extensive collection in the world. In the 1930s, Vavilov's institute distributed millions of packages of seeds and helped begin the production of more than 250 new varieties of plants. Vavilov's *The Centers of Origin of Cultivated Plants* (1926) remains a classic.

There was a clear urgency to Vavilov's work—"Life is short, we must hurry" was a favorite, if not prophetic, phrase. Vavilov had been Theodosius Dobzhansky's mentor, and Vavilov pleaded for Dobzhansky to return to Russia from California (where Dobzhansky was working with Thomas Hunt Morgan) to help him "lift the country" in a "mission for all humanity." Dobzhansky stayed in California.

The Murder of Nikolai Vavilov is an important reminder of the high costs incurred by individuals and society when leaders allow science to be perverted by politics and ideology. The bourgeois, well-dressed Vavilov had been supported by Lenin, but he began to fall out of favor when Stalin became leader. Stalin favored Trofim Lysenko, who used neo-Lamarckism as an ideologic basis for promises of immediate improvements in crop yields. Lysenko—whom *Pravda* described as a "barefoot scientist"—claimed that he could direct heredity and denounced Mendel's work as "rubbish and falsehood," telling Vavilov "I do not recognize Mendelism."

Not surprisingly, Lysenko's use of Lamarckism to improve crop-yields failed, and the USSR soon needed a scapegoat for its food shortages. Vavilov, unable to meet Stalin's demands for immediate results, was arrested in August, 1940, while collecting plants in the Ukraine and was taken by the Soviet secret police to Moscow. He was prosecuted on trumped-up charges for sabotage and spying (e.g., "Treason to the Motherland," "wreckage" of the economy). Following more than 1,700 hours of interrogation over 11 months, Vavilov was sentenced to death by firing squad, but that sentence was later commuted to 20



years in prison. Sadly, this commutation remained a death sentence, for while in a Saratov prison, Vavilov—the man who had hoped to use genetics to feed the world—was starved to death.

The Murder of Nikolai Vavilov is fascinating, thoughtful, and at times horribly sad. You'll pause when you read that Yelena Barulina—Vavilov's lover, companion, and former student—unknowingly took up residence only a few miles from where Vavilov was imprisoned; you'll be angered when you read that Vavilov succeeded in bringing Georgy Karpechenko and other colleagues back to the USSR, after which they were arrested and executed; and you'll be moved when you read about how workers at Vavilov's Leningrad Institute protected their precious seeds during the German siege, despite the fact that they were starving.

In 1955, a branch of the USSR Supreme Court overturned Vavilov's conviction, and in 1968 the Research Institute of Plant Industry (which Vavilov headed from 1921–1940) was renamed the N. I. Vavilov Institute of Plant Industry. Vavilov's World Collection in St. Petersburg, Russia, remains an important resource for conservation biologists.

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The Discovery of the Sasquatch: Reconciling Culture, History, and Science in the Discovery Process by John A. Bindernagel. Beachcomber Books, 2010. 325 pp. \$49 (paperback). ISBN 97800668288719.

As anyone with more than a passing interest in the subject knows, of the many books addressing the sasquatch phenomenon, few have been written by Ph.D.s, much less Ph.D.s who accept the possibility of a species of great ape inhabiting North America. So it was with great anticipation that I looked forward to the release of one of those rare tomes, written in this case by wildlife biologist John Bindernagel, a man of unimpeachable character and exemplary qualifications. Bindernagel, who received his doctorate from the University of Wisconsin–Madison, conducted wildlife research for the United Nations for twenty years, and currently lives in British Columbia.

The first thing I noticed was the back of the book featuring testimonials from noted primatologists Jane Goodall, Vernon Reynolds, and George Schaller, along with sasquatch research mainstays Jeff Meldrum and John

Green. The names of some of the other individuals cited elsewhere in the book for involvement as reviewers, contributors, etc., caught me off guard, knowing their preference for anonymity regarding an interest in sasquatch research. Perhaps this willingness to be identified with *Discovery* reflects the admiration many have for the author.

The six-page Foreword, written by Leila Hadj-Chikh, Ph.D., was a pleasant surprise; I thought she did a commendable job. Notably, Hadj-Chikh candidly aligns herself with the small number of scientists who “regard [the sasquatch] as a biological reality.” I have to wonder what effect, if any, Bindernagel’s book had on her decision to identify herself in this way—if it helped her to see herself from a historical perspective as a player in the often-sluggish process of shifting paradigms (if I may employ an overused expression). In any event, it seems likely, from reading the Acknowledgements, that Hadj-Chikh, who earned her doctorate in Ecology and Evolutionary Biology at Princeton, worked closely with Bindernagel and contributed to the development of his ideas.

The book is laid out in six parts. Titles of the twenty-one chapters and comprehensive outlines of content, along with chapter summaries, are available online and need not be repeated here. I have intentionally avoided reading the chapter summaries so as not to influence my comments. <http://www.beachcomberbooks.com/discovery/contents.html>

Part I, in two very brief chapters, summarizes the conventional perspectives long employed by historians and scientists from various fields regarding references to sasquatch-like creatures. The second chapter, one of my favorites, concisely describes the “discovery” quandary in a way every scientist should appreciate. While I would have preferred the inclusion at this point of some examples from the history of science pertaining to the difficulties produced by new discoveries (Hadj-Chikh discusses one example in the Foreword, and other examples are touched on in later chapters), I believe the decision not to do so was probably calculated, based on his intended readership, members of the scientific community, who we can safely presume are familiar with pertinent examples from their own fields of study.

As indicated by Dr. Bindernagel in prior correspondence, from the outset *Discovery* sets a decidedly academic tone, as opposed to something geared to the general public. His clear objective is to set forth and contrast the often-conflicting ideals and mores influencing the scientific community, specifically as regards the tension created between philosophical perspectives versus societal conventions upon the presentation or consideration of ideas that lie outside of accepted views. I think it is important to keep these distinctions in mind as one considers the book’s content and the author’s approach to the subject.

In Part II categories of evidence are presented. Bindernagel does not attempt a comprehensive review of every conceivable aspect of sasquatch lore,

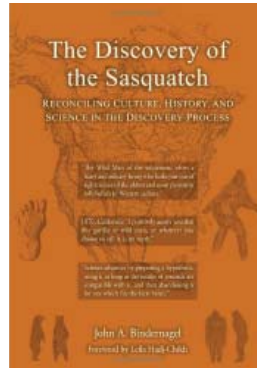
sightings, biology, etc. Rather, he puts forth specific classic arguments employed by scientists to dismiss the possible existence of a North American ape, and then marshals sets of particulars, examples of significant evidence, or even single examples, to counter the objections. Anyone marginally familiar with the wealth of sasquatch-related information available online and in numerous books on the subject will realize that Bindernagel could have been written volumes regarding categories of evidence, but that was not his purpose. This is not to suggest that *Discovery* is merely a thinly redirected rehash of currently available lore. I think it likely that interesting and delightful nuggets of new (or at least unfamiliar) evidence, compelling ideas and arguments, and little-known information await discovery by the reader, scientist, and jaded sasquatch investigator alike.

There are, however, a few hitches as well.

In Chapter 5 of Part II, Bindernagel briefly delves into the evidentiary category of recent accounts. Surprisingly, this chapter was a disappointment to me. A handful of Canadian reports, deemed by Bindernagel to be credible and representing detailed extended observations, are presented, along with a description of Canadian journalist John Green's database. Unfortunately, the whole of North American sightings is displayed in a political map indicating, by means of shading, the general distribution of sightings (for Canada and the U.S.). It is dreadfully outdated and misleading.

The distribution of reports figure caption states that "2002 data" were used; presumably this means sighting reports were used from the years preceding and including 2002. Certainly more recent data are available from sources every bit as reliable as those compiled by John Green. Updating the data, which I hope to see in the next edition of the book, is a definite need. As it is, one would have to conclude that more sasquatch reports originate from, say, Oklahoma, where I live, than Texas, which is definitely not the case, or the figure could be interpreted as indicating that Ohio is comparable to British Columbia and the Pacific Coast states in terms of habitat quality or sasquatch distribution.

Ideally, I would also hope to see a more physiognomic approach to mapping sighting distributions in the next edition. This would better serve to illustrate the strong correlations that exist between sasquatch sightings and ecological factors. While Bindernagel does discuss such relationships, the use of a political map to indicate distribution produces the erroneous impression that sasquatch sightings are evenly distributed across Texas and Oklahoma, to use a familiar example, when in fact something like 90% or more of the



sightings originate in the far eastern margins of those states where rainfall and forest cover is greatest (and human populations are low). See the Texas Bigfoot Research Conservancy's "Report Explorer" for an excellent presentation of the non-random distribution of sasquatch sightings. Similar relationships exist for many other states. <http://www.texasbigfoot.org/explorer/>

In discussing the reports distribution map (Figure 5.5), Bindernagel makes an odd statement: "Western states and provinces are recognized as supporting large populations of certain large mammals, especially grizzly bears, but also ungulates such as elk. . . ." Perhaps this is a typographical error that can be corrected in the next edition. Certainly black bears are common and widespread, but the same cannot be said for grizzly bears, whose range is a tiny fraction of what it was a century ago, and whose disjunct population in the forty-eight conterminous states numbers in the hundreds.

In Chapter 6 the author discusses tracks and other physical evidence. I thought the track-related material was very good, but the rest of the material in the chapter contributed little of value, in my opinion, with regard to the objective of convincing skeptical or even open-minded scientists that evidence worthy of consideration exists or has been documented.

The tree twist evidence, for example, illustrated with six photos in Chapter 6, is disputable at best, and may only serve to further encourage amateur investigators to focus on this supposed sign of activity. Curiously, the most compelling artifact that I know of indicating a sapling possibly twisted by a sasquatch was only described in the Notes section at the end of the book. I've seen this piece of evidence, which is in the possession of zoologist Wolf-Henrich (Henner) Fahrenbach, Ph.D., and you can clearly see what appear to be compression marks or bruises (for lack of a better term) in the bark where large hands appear to have grabbed the sapling above and below the twisted section. On a positive note, Bindernagel did not address the issue of limb markers, teepees made from limbs or trees, etc.

Bindernagel acknowledges that a certain degree of resistance to new concepts is understandable and justifiable. His efforts are focused on arguing the theoretical reasonableness of what sightings and track evidence, in particular, suggest. That which can be tenably deduced regarding sasquatch biology, as summarized more thoroughly in Bindernagel's first book, supports the existence of a North American ape; there are no philosophical or scientific impediments sufficient to disqualify discussion and evaluation of the empirical evidence.

An interesting approach employed by the author for (hopefully) generating progress in scientific involvement is his contention that one can circumvent the reluctance of scientists to even discuss probative arguments, in the absence of or in advance of indisputable physical evidence, by considering that the sasquatch has already been discovered, this idea forming the basis for the title of the book. For starters, one could argue that the sasquatch has been repeatedly discovered,

based on eyewitness testimony and even claims that the creatures have been killed and examined (though not collected). The other aspect to this approach is that the sasquatch is representative of a previously documented animal, perhaps the giant Asian ape *Gigantopithecus*, illustrating a case of rediscovery. Bindernagel maintains that the “Great Ape Hypothesis” is testable and superior to alternative hypotheses put forth to explain the sasquatch phenomenon, and presents his case in the remaining chapters.

John Bindernagel’s *The Discovery of the Sasquatch: Reconciling Culture, History, and Science in the Discovery Process* is a well-written book, copiously illustrated. It contains a few typographical errors, but so does every textbook I’ve seen in twenty-five years of teaching. I recommend it for the insight it provides into the world of science, where knowledge is tentative, but change is often slow and difficult. Some of the insights from the perspective of this scientist, who is supportive of the existence of a North American ape, regarding the activities of amateur self-styled investigators may not be pleasant for those individuals to read, but they are worth considering to help in understanding why mainstream scientists often appraise sasquatch-related “research” and related pursuits so unfavorably. As for the target audience, I hope *Discovery* (and future editions of it) is positively received. Only time will tell.

Finally, some thoughts regarding cost may be in order. I’ve seen and heard some disapproving and disparaging remarks about the \$49 list price for *The Discovery of the Sasquatch*. It may be of interest to readers to know that the expense concerned the author as much, if not more, as anyone else, as can be seen when he wrote, “I apologize in advance for the high price.” As stated earlier, this follow-up to his first book developed into an academic treatise, written for the purpose of “engaging philosophers, historians, psychologists, sociologists as well as other scientists in zoology, primatology, etc.” As such, it is the product of extensive, thoroughly documented, research, seven years in the making. That is a long time, and it was an expensive process.

However, I realized as I initially flipped through the book, surveyed its contents, and began to study the arguments, that what I held represented much more than a seven-year investment of time and money; it was a lifetime of scholarship and experience. The value of a book is not a function of the cost or quality of paper any more than a painting is assessed in terms of the amount of paint it contains. Notwithstanding impertinent assessments of what *The Discovery of the Sasquatch* should or might be worth, it is not possible to compensate for the true “cost” involved with its creation, and it behooves us to simply be grateful that we can share in the life and consider the thoughts of such a man. I look forward to revisiting its pages again.

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Teen 2.0: Saving our Children and Families from the Torment of Adolescence by Robert Epstein. Fresno, CA: Quill Driver Books, Linden Publishing, 2010. 500 pp. \$18.95. ISBN 9781884995590.

Robert Epstein's argument can be stated simply: American teens have high rates of depression, suicide, crime, substance abuse, pregnancy, and other serious problems. The cause of this has little or nothing to do with something called "adolescence"; it is because teens are not allowed to progress to adulthood—they are infantilized. Adults assume that teens lack the capability to make sensible decisions. In fact, argues Epstein in a succession of chapters, they "are capable thinkers," they "can love," they "are tough," they "are creative," and they "can handle responsibility." There should be tests of competencies for adulthood; once passed, however young you are, you should be able to proceed to full adulthood, with its rights, but also its responsibilities. All this is argued in clear, jargon-free prose, addressed more to the anxious parent than to the academic community, though always backed up by reference to academic research and sometimes taking issue with some of that research, for example on teen brains.

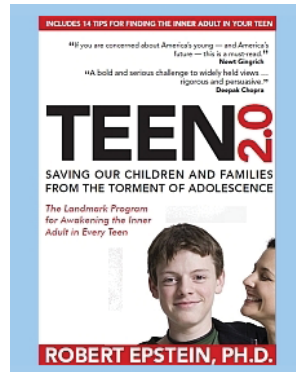
Historically, Epstein traces the present crisis back to the time, starting roughly in the mid-nineteenth century, when often well-intentioned people such as Jane Addams started campaigns to protect children from aspects of the adult world where they seemed to be exploited and where it was hard to have anything like a "childhood." Children were, slowly, removed from the labor market; if they were in trouble with the police they began to be taken to special children's courts. Coinciding with this was the enormous impact of G. Stanley Hall's work on adolescence, presenting it as a time of storm and stress. Before this, Epstein argues, for centuries children had progressed easily and naturally into the adult world, working alongside adults according to their growing capabilities, and learning from them. Historians might well counter that Epstein has failed to take account of much evidence that youths in earlier centuries often formed age-related groups to distinguish themselves from both children and adults, and were often thought to be at the root of much social disorder, but his general point of a change in the experience of young people in the late nineteenth and early twentieth centuries stands. Fundamentally, it was down to the successive raising of the school-leaving age and the much later entry into the labour force. It was accompanied by two other trends. First, there was a reversal in the flow of cash between generations. Roughly until the mid-twentieth century, the majority of young people, when they started work, handed over their wages to their mothers—they were working primarily for their families, not for themselves. Then, in a process we don't fully understand, they began to keep their earnings to spend on themselves, and looked to their parents to supplement those earnings. Second, legal restrictions on what young

people could do escalated, especially from the 1970s. The outcome was a situation where teens had more access to cash than in the past but were restricted by law from spending it in ways they might want to. That, of course, did not stop the development of a massive market aimed at teenage expenditure.

There are three reasons why readers might pause before embracing in its entirety Epstein's analysis and argument. First, in making his case that teens are in trouble in the United States he seizes unerringly on the most negative data.

True, he has uplifting stories of teen achievements, but the book would have no point if he couldn't depict a crisis of the teen years. Take, for example, one of many statistics, that in 2007 38.9 per cent of teens received treatment for a major depressive episode. We might immediately begin to ask who has defined what constitutes "a major depressive episode," or indeed "treatment." Does the raw statistic, repeated by Epstein several times, for it is on the face of it shocking, tell us quite what it seems to? More important, is it even accurate? I was unable to access the source Epstein quoted, but the same database (*National Survey on Drug Use and Health: Major Depressive Episode among Youths Age 12 to 17 in the United States: 2004 to 2006*, <http://www.oas.samhsa.gov/>) states clearly that for 2004–2006 only 8.5 per cent of youth 12–17 reported experiencing a major depressive episode in any one year. 38.9 per cent or 8.5 per cent? It's quite a difference. I found myself wondering as I read the book what a teen would make of it. In the United Kingdom, one of the things teens complain of is the constantly negative depiction of themselves—they don't recognize themselves in the chorus of complaints from adults. The same, I suspect, would be true of the United States.

Second, if Epstein is keen to do away with "adolescence," he seems content to keep unexamined two equally slippery terms, "childhood" and "adulthood." Childhood for Epstein is pre-puberty, and he doesn't have much to say about it. And yet it is the background from which the troubled teens emerge. Many scholars distinguish between an Anglo-Saxon and a Scandinavian approach to childrearing, the first based on the assumption of the child's incompetence, the second on its competence. If Scandinavian teens are less troubled than American ones, it may be in part because they have been encouraged almost from birth to become competent. Epstein seems to want to leave the goal of competence to the teen years—it may be then be too late. As for adulthood, Epstein is fully aware that adults often fail to behave as adults should, but that may be because we have a totally unrealistic set of assumptions about adulthood, equating it



often with the goal of “maturity” set before us by psychologists. If we’re going to do away with adolescence, why not also do away with other age indicators, and just treat all people as “persons”?

Third, if the teenage years present more problems in the United States than elsewhere, it may be that Epstein has missed a crucial reason for that. In the 2007 UNICEF survey of children’s well-being in 21 industrialized countries, the bottom two countries, and by quite a margin, were the United States (20th) and the United Kingdom (21st). The survey in fact focused primarily, not on pre-puberty children, but on teenagers. What characterizes and distinguishes these two countries is the extent of inequality in them. There is mounting and compelling evidence that on a wide range of indices, inequality is associated with negative outcomes and social problems—see, e.g., Richard Wilkinson and Kate Pickett, *The Spirit Level: Why More Equal Societies Almost Always Do Better* (London: Allen Lane, 2009). By and large Epstein treats the teens of the USA as if they were all the same, making some distinctions by gender, but few by ethnicity or social class. Inequality is bad for everyone, wherever they are on the social scale, but it is worst for those on the bottom. It is undeniable that Epstein has pointed valuably to ways forward in attitudes to and policies toward teenagers in the United States, but he may have ducked the root problem, inequality.

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Science as a Spiritual Practice by Imants Barušs. Imprint Academic, 2007. 155 pp. \$29.90. ISBN 9781845400743.

Imants Barušs’ book has a promising title, *Science as a Spiritual Practice*. From the onset he suggests that because we are so steeped in materialism, spirituality for the orthodox scientist is “forbidden research.” Barušs then presents two sets of arguments as to why this form of materialism is dead and proposes that we can open ourselves to new forms of knowing

The first argument comes from quantum theory where he gives the examples of non-locality, as demonstrated by such experimental physicists as Alain Aspect, and the double slit experiment (where a single electron appears to travel through both slits in a screen and then interferes with itself). Of course such arguments are already well-accepted by even the most hardnosed scientists. But while this indicates that materialism in the strict Newtonian sense is limited, it would not necessarily persuade such scientists that there is something other to the world than matter itself. It would still allow them to argue, for example, that consciousness is not some radically new realm but no more than an epiphe-

nomenon of matter, i.e. something secreted by the physical brain, just as bile is secreted by the liver, but not necessarily acting back on that physical brain to affect our actions.

And so we come to Barušs' second set of arguments against reductionist materialism. Here he explores such areas as the paranormal, near-death experiences, hypnosis with regression to past lives, and the changes in our comprehension of the world brought about through psychedelic drugs. He also refers to dream incubation where it is possible to give a person a question that will be solved during the dream. He places particular emphasis on Random Event Generators and indeed begins his first chapter with an account of an incident in which a group of his colleagues watched a sunset over Lake Huron. During this moving experience the Random Event Generator showed significant deviations from pure randomness. Barušs' conclusions were that "there was synchrony that was not mediated by any known physical mechanisms between the entranced activity of the group of people watching the sunset and a random functioning mechanical device."

The problem with such arguments is that they will simply not convince the army of "hardnosed scientists" that we should open our minds to new ways of experiencing the world. Witness the considerable controversy during 2010 when it was suggested that certain physicists, who also had an interest in the paranormal, should not be invited to participate in a scientific conference concerning the foundations of quantum theory.

But leaving aside attempts to convince the reader, what does Barušs propose? That the normal physical world is a mirror reflection of the unmanifest and that we have the ability to constantly flicker between the two realms. Here he suggests that an electron can manifest itself in New York, unmanifest, and then manifest in Toronto, and he relates this to teleportation. But if this is the case then why are we not more aware of our connection to the unmanifest? Barušs suggests that we are held in our normal waking state by a type of hyperactivity that is related to the fear of death, and that this acts to shut down our connection to the transcendental.

Finally the author introduces the work of Franklin Wolff who proposed what he termed "mathematical yoga" as a spiritual practice for reaching transcendental states of consciousness. As a metaphor, the series $1 + 1/2 + 1/4 + 1/8 + \dots$ would correspond to the operation of formal consciousness, whereas its sum "2" can only be reached by the transcendental. According to Wolff, "mathematical yoga" could be a powerful approach for people of the West.



After all, he suggests, mathematics itself is something that has descended from the transcendental domain and can therefore lift the mind closer to the divine. Mathematics itself approaches transcendental knowledge when it becomes so abstract that nothing is left for the senses to grasp. But does this mean that this is the exclusive path for mathematicians alone? Barušs suggests it can be used more generally for those who have “a scientific perspective.”

I must confess that on completing the book I was not at all clear how mathematical yoga was supposed to work, nor was I convinced by Barušs’ various arguments as to why ordinary working scientists would feel compelled to reject their present metaphysics. Likewise that the physics community as a whole can be characterized as clinging to the sort of naïve materialism he describes. The spectrum of opinions and belief systems within physics seems to me much more wide and varied.

As to materialism, Isaac Newton, for example, wrote more on the hermeneutics of the *Bible* than he did on physics. In addition, it was his intention that his alchemical work toward discovering the “one catholick matter” should be included in his *Principia Mathematica* in order to provide a more complete picture of the physical world. Likewise Faraday’s conviction that God’s laws are reflected in the unity of the physical universe caused him to seek to unify the phenomena of electricity and magnetism. Pasteur, for his part, was looking through a microscope when he was asked if he ever prayed. “I’m praying now,” was his reply.

Wolfgang Pauli argued that while the spirit in matter had been denied with Descartes, the time had now arrived for “the resurrection of the spirit in matter.” He also sought a dimension of Soul in the modern scientific conception of the world.

And as to Einstein:

To know what is impenetrable to us really exists, manifesting itself to us as the highest wisdom and the most radiant beauty, which our dull faculties can comprehend only in their most primitive forms—this knowledge, this feeling, is at the center of all true religiousness. In this sense, and in this sense only, I belong to the ranks of devoutly religious men. (Einstein, 1990)

For the giants at least, science has always been a spiritual practice.

And of the rest, thanks to Templeton Foundation funding, the Metanexus Institute promoted a series of “local society initiatives” whereby scientists at different universities and centers could come together to discuss the links between science and religion. Even a meeting of atheists and agnostics at King’s College, London, in 2001, agreed that, while rejecting religion, for each of them there was something that could be said to be sacred in the world.

So there is certainly a long history of connection between science and religion, or the sacred. On the other hand there is also the issue of what proper

place each should occupy in this debate. Georges Lemaître, for example, discovered that Einstein's field equations could point to the universe having an origin in time (later nicknamed by Fred Hoyle as the "Big Bang"). For this, the Belgian priest was praised by Pope John XXIII as endorsing the *Genesis* story. But this phrase was not well-received by Lemaître who felt science and religion had no business supporting each other's domains, an argument that has been repeated by the former Papal Astronomer George Coyne, SJ, when he refers to science and religion as "the two Sacred Cows." Thus while there is evidence to suggest that science can, for some, indeed be a spiritual practice, it is an area that should be entered with great delicacy and intelligence.

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Reference

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The Ego Tunnel: The Science of the Mind and the Myth of the Self by Thomas Metzinger. Basic Books, 2010. 288 pp. \$16.95 (paperback). ISBN 978-0465020690.

In *The Ego Tunnel*, Thomas Metzinger does a lively, readable, and competent job of dismantling an important bit of philosophical confusion. Unfortunately, he seems to do so only to replace it with a similar confusion.

Metzinger's goal in the book is to respond to a venerable philosophical position called realism. The idea, roughly, is that the world has in it existing objects and that these objects stand in various objective relationships to each other. These arrangements of objects are facts, and it is these facts that make our beliefs about objects either true or false. If a sentence asserts a relationship holding between objects, and if it is a fact that these objects do indeed exist and have that relationship, then the sentence is true. The sentence otherwise is false. Realism thus splits the world neatly between observers and things observed.

This view is such transparent common sense that it is difficult to phrase it in any interesting way. It also is confused.

To see why, ask how it is that we, in our minds, come to know about the world. The obvious answer would be that our senses serve as some sort of intermediary, importing structure from the world and recreating it within our thoughts about the world. That is, our senses have the job of shaping our thoughts about the world into something structurally like the world itself, into a picture that looks like the world. But if our thoughts are some sort of picture,

then it seems that we must think of ourselves as some sort of inner being looking at that picture. The problem then has to do with the nature of that inner being. Are its thoughts about our thoughts further pictures of our pictures? Who is looking at those pictures? Are we to believe that there are voyeuristic turtles all the way down?

Metzinger is not the first to present this line against realism; still, he presents it crisply and engagingly. In doing so, he also highlights a far more novel problem with traditional, naïve realism. To say that our senses are the medium through which our thoughts become shaped like the world privileges the human sensorium in a highly implausible way. As it happens, we are built to exploit some of the world's information. Certain wavelengths of light will register on our optic nerves; our eardrums will register certain variations in air pressure, etc. But the world is *bursting* with information, and only a very, very narrow range of it is present to human senses. This is the tunnel part of the book's central metaphor: A tunnel is a narrow access route carved through a vaster landscape. In just that way, our senses recover a narrow band of information extracted through a vaster array of causal interactions.

Still, though, we might ask about what lies on either end of this tunnel. The risk is that the tunnel metaphor invites us to recreate just the dualistic scheme it was meant to correct. What Metzinger clearly does not want to say is that our senses tunnel through myriad channels of information available, and so create a route from the world to a mind. That just would be another realism: less naïve than traditional, perhaps, but no less problematic logically. He avoids this by dispensing one endpoint. Minds are not things at one end of the tunnel; they are a feature of the tunnel itself.

It works this way: Fundamentally, our minds have the job of representing the world. There are many things abroad in the world. Some of them are represented to us, while most are not. One of the things we each do need to represent, though, is our own body. There is obvious and ongoing need to think about the things of the world not just in the abstract but also in their particular relationship to ourselves.

This, then, is the self: a representation (one among many) of a thing in the world (a person's body). Consciousness, then, is nothing more than the *content* of that representation. To be conscious is to represent your self. That is the other half of the book's central metaphor. An ego tunnel is not a tunnel running from the world to an ego; it is a tunnel that has an ego as one element of its own construction. In this way, Metzinger neatly avoids the problem of the inner audience.

That solution comes at a cost, though. The notion of representation he employs is as troublesome as the notion of the internal audience it is introduced to eliminate. The problem is that whether a signal is a representation—let alone a particular one—seems to be a matter of interpretation, and this would imme-

diately reintroduce just the sort of inner interpreter Metzinger dismissed earlier.

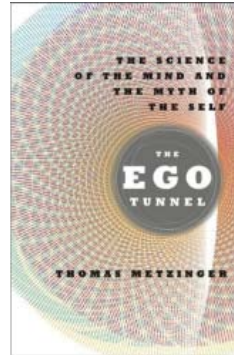
Metzinger, for example, takes the somewhat heroic stance that computer learning is not only a principled possibility but a current reality. His example involves starfish-shaped robots that model their own bodies. When the body is altered, the internal model changes, rewriting the previous description with a current one.

Is this truly learning? A block of wood being whittled into the shape of a horse also undergoes a change of state. Surely we don't want to say that it is learning to be more horselike. So it seems that some images undergoing changes of state are representations, while others are not. Which are which?

An old answer, with a vast literature, is that images count as representations in light of their history, their previous associations. (A dollar bill is currency, whereas an atom-for-atom duplicate is a forgery, in light of the *historical* fact that the legitimate bill was authorized in the right way.) This view would be a disaster for Metzinger, though. Since he is defining the self as a representation, he cannot define representations in terms of relations to the self on pain of circularity. Nor does he do so, dismissing instead the entire tradition in an airy page.

Instead, he has it that representation is some sort of *intrinsic* property. (He does not use the word intrinsic, but he does assert that any claims that origins are relevant to meaning are instances of the genetic fallacy.) But this intrinsic representation is no less odd, metaphysically, than the self it replaces. Suppose, for instance, that I wanted to describe to you a baseball play I saw. Lacking adequate vocabulary, I take up a few bits and pieces from the table in front of us. ("Okay, so the salt shaker is the shortstop, and this fork is the second baseman . . ."). If I did not *assign* a representational role to the salt shaker, then it must have had it all along. When, and in virtue of what, did this become a shortstop-indicating saltshaker? With what powers of foresight did the manufacturers make it so?

Possibly Metzinger has answers to questions of this sort. The book is not a technical one, and Metzinger systematically refuses to engage the material at that level of detail. While this can make reading *The Ego Tunnel* frustrating, it also keeps the text energetic and clear. This stylistic choice is appropriate for a book whose audience is interested generalists rather than academic philosophers. It may be fitting for a book on metaphysics that its most serious shortcoming lies in what is not in it rather than in what is.



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Experimental Investigation of the Spirit Manifestations: Demonstrating the Existence of Spirits and Their Communion with Mortals by Robert Hare. New York: Partridge & Brittan, 1855. 460 pp. 1963 reproduction from The Sycamore Press, Elm Grove, Wisconsin. \$20 (hardcover). Free PDF of original 1855 version at <http://www.archive.org/details/experimentalin00hare>

Author Robert Hare (1785–1858) was a renowned inventor and an esteemed professor of chemistry at the University of Pennsylvania before becoming one of the first psychical researchers. Only John W. Edmonds, a New York Supreme Court judge, seems to have preceded Hare as a serious and dedicated psychical researcher following the mediumship outbreak in 1848 in the U.S.

Hare was called to the chair of chemistry and natural philosophy at William and Mary in 1818 and that same year was appointed as professor of chemistry in the department of medicine at the University of Pennsylvania, where he would remain until his retirement in 1847. He was awarded honorary M.D. degrees from Yale in 1806 and Harvard in 1816. In 1839, he was the first recipient of the Rumford Award for his invention of the oxy-hydrogen blow-pipe, a forerunner of the acetylene torch, and for his improvements in galvanic methods. He was a member of the American Academy of Arts and Sciences, the American Philosophical Society, and an honorary life member of the Smithsonian Institute. In addition to frequently writing on scientific subjects, Hare also wrote, using the pen name Eldred Grayson, articles on political, economic, and philosophical issues. In an 1810 article, “Brief View of the Policy and Resources of the United States,” Hare advanced the idea that credit is money. He also wrote frequently in opposition to slavery.

This book details Hare’s introduction to mediumship in 1853 and his 14 months of investigation of various mediums, leading to his conversion to Spiritualism and the development of his own ability as a medium. While the book leaves much to be desired in organization and flow, it more than makes up for it in mind-boggling content. It no doubt exceeded the boggle threshold of most readers in Hare’s day, and, considering that not much progress has been made in understanding and accepting such phenomena, it will undoubtedly exceed the boggle threshold of most of today’s readers.

“It is a well-known saying that there is ‘but one step between the sublime and the ridiculous,’” Hare states in the Preface. “This idea was never verified more fully than in the position I find myself” (p. 14). He goes on say that most readers will have a difficult time accepting his report, but that there was a “method to his madness” and that “if I am a victim to an intellectual epidemic, my mental constitution did not yield at once to the miasma” (p. 15).

Hare explains that he began investigating mediums in 1853 after writing

a letter to the *Philadelphia Inquirer* denouncing the “popular madness” being called Spiritualism by the American press. When one of the readers wrote a letter to Hare and suggested he investigate before jumping to conclusions, Hare agreed that it was the proper thing to do.

After his first few sittings with mediums, in which the communication came primarily by table tilting or raps, Hare, inventor that he was, immediately went to work contriving an apparatus which would facilitate and expedite communication, as the process he had observed was very slow. He devised a machine, called a spiritoscope, with a circular disc, the letters of the alphabet around the circumference of the disc, and with weights, pulleys, and cords attaching it to the tilting table. (Drawings of several versions of the apparatus are presented in the book.) The medium would sit behind the table in order to supply the “psychic force” through which the spirits caused the table to tilt, but the medium could not see the wheel and had no idea what was being spelled out.

Put to the test, the contraption worked, and the first spirit to communicate was Hare’s deceased father, Robert Sr., a prosperous Philadelphia brewery owner when incarnate. A number of evidential messages were given, but Hare remained skeptical. “Oh, my son, listen to reason!” the senior Hare finally admonished his son (p. 41). At a second sitting, the father again communicated, saying that his mother and sister were also there but not his brother. Personal information was given to Hare, information which Hare was certain the medium could not have researched.

In his third sitting, when the message was spelled out that his sister was there, Hare asked her for the name of their father’s early business partner and for the name of their English grandfather’s partner who had died in London more than 70 years earlier. Both names were correctly given. “The medium and all present were strangers to my family, and I had never heard either name mentioned, except by my father,” Hare recorded. “Even my younger brother did not remember that of my father’s partner” (p. 45).

With another medium, Hare asked his father for the name of an English cousin who had married an admiral. The father spelled out the name. Hare also asked his father for the maiden name of an English brother’s wife. The spiritoscope spelled out “Clargess,” which was correct. A number of other interesting bits of evidential information were provided. In one reading, Hare heard from the son of a cousin who lived in Canada. The young man told of his recent death, a fact which Hare was unaware of until then but was confirmed when he contacted the cousin. Although not yet called “telepathy,” Hare was aware of the possibility of “mind reading,” and this communication was clearly outside the scope of normal telepathy. The young man also answered questions about family matters, which Hare judged correct.

Hare reported that he witnessed tables being levitated by spirits. In some

cases, no human was in contact with the table, but in others the hands of the medium were placed gently on the table. "On one occasion I saw a large circular table, supported by three massive claws on castors, overset several times by the influence of three ladies, who were media," he wrote, adding that he positioned himself in such a way that he could see everything and was certain there was no trickery (p. 46). He asked his deceased sister the purpose of putting the medium's hands on the table and was told that the presence of hands enabled the spirit to act in opposition to them. Hare recorded:

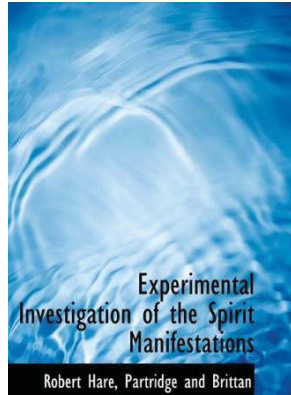
Within the last fourteen months I have seen twenty-two or three different mediums—all but four of them private ones—taking no pecuniary compensation; and more than half of them are our own citizens, several of them who are now present in this assembly. I have spent many hours in their presence. Have seen them at their homes—at my own home—and in the parlours of neighbors and friends. I have met and watched them in the broadest sunlight and at evening. Every desirable opportunity has been furnished me for detecting machinery, jugglery, or imposture, and I have faithfully, but in vain, strove to find something mundane, a sufficient cause for all these wonders. That trick or humbug is sometimes attempted by pretenders to uncommon susceptibilities; no one will have a wish to deny. But very many of the mediums, private ones, are as much above these things as are the very best persons among the witnesses. (p. 59)

Hare put many questions to the communicating spirits. He asked them what the various mediumship phenomena were all about and was told that they were "a deliberate effort, on the part of the inhabitants of the higher spheres, to break through the partition which has interfered with the attainment, by mortals, of a correct idea of their destiny after death" (p. 85). To carry out this intention, he was told, a delegation of advanced spirits had been appointed. "Referring to this statement, I inquired how it happened that low spirits were allowed to interfere in the undertaking," Hare penned. "The answer was that the spirits of the lower spheres being more competent to make mechanical movements and loud rappings, their assistance was requisite" (p. 85).

It was explained to Hare by his father that the spirits direct currents of vitalized electricity on the particular muscles of the medium which they desire to control. Moreover, the father said that it is not necessary that the medium be a person of good moral character or have a balanced mind, but an advanced spirit would not be able to control the organs or mind of a medium unless in affinity with the medium. When spirits wish to impress the mind, the spirits can dispose and arrange the magnetic currents of the brain so as to form or fashion them into ideas of their own. "We can instantly determine the sphere of a spirit, in or out of the body, by the particular brilliancy and character of the light in which he is enveloped, as well as by the peculiar sensation which his presence creates" (p. 94).

Hare asked why it all started at the home of the Fox family in Hydesville, New York. The response was that the delegation felt that the spirit of a mur-

dered man would excite more interest, “and that a neighborhood was chosen where spiritual agency would be more readily credited than in more learned or fashionable and conspicuous circles, where the prejudice against supernatural agencies is extremely strong” (p. 85). It was further communicated that the results fell far short of the expectations, and although Hare does not clearly state it, one might infer from his comments that physical phenomena came about because the delegation concluded that simple communication was not having the desired effect in convincing humans of the existence of a spirit world.



Hare corresponded with a number of people concerning the phenomena and offers some of the more interesting letters in the book, two of them involving the famous D. D. Home, referred to by Hare as “Mr. Hume.” One Rufus Elmer, Esq., of Springfield told of witnessing amazing physical phenomena, including levitations and floating objects, when Home spent two days with him.

After satisfying himself of the reality of the spirit world Hare began asking more questions about the nature of that world. The spirits explained to Hare that there are degrees of gradation between the lowest degrees of vice, ignorance, and folly and those of virtue, learning, and wisdom. One’s initial place in the afterlife environment, he was told, was based on a sort of “moral specific gravity.” He was further told that the spirit world is divided into seven concentric regions called spheres, the first one called the rudimental sphere and the remaining six spiritual spheres. “The first sphere is the abode of all the most degraded spirits, and that their advancement, however, slow it may be, is nevertheless sure, since ‘onward and upward’ is the motto emblazoned on the spiritual banner” (p. 96).

The seventh sphere, he was informed, is the entrance into the supernal heaven. “With regard to the social constitution of the ‘spheres,’ each is divided into six circles, or societies, in which kindred and congenial spirits are united and subsist together, agreeably with the law of affinity” (p. 89).

Communicating through the mediumship of Mrs. M. B. Gourlay, a spirit named Maria communicated with her father, a friend of Hare’s, and gave a detailed account of her entrance into the spirit life. She told of being given a guided tour of the first and second spheres. “All are seeking to minister to their perverted tastes,” she observed of these lower realms.

Some are holding forth in loud tones, and painting in false and gaudy colours the joy of their home; others, who occupied high stations on earth, hang their heads in confusion, and would fain hide themselves from view; but

they are taunted with rude jests, and told that their 'pride of position will avail them nothing here.' One heart-sickening feature of this place is the absence of children. . . . (p. 105)

On the third sphere, Maria communicated, comparative order reigns and the beauty of it transcends that of earth. "The inhabitants of this sphere are anxious for instruction. The teachers from the higher degrees are listened to with profound respect and attention" (p. 105).

Maria found her home on the fourth sphere, where, she said, the beauty far exceeds any scene on earth. The boundaries between spheres, she further explained, are not marked by any visible partition. Rather, the spirits have a "peculiar sense" which allows them to feel when they are passing from one sphere to another.

Although he mentions that he acquired mediumistic ability, Hare does not go into detail about it. "But having latterly acquired the powers of a medium in a sufficient degree to interchange ideas with my spirit friends, I am no longer under the necessity of defending media from the charge of falsehood and deception," he wrote. "It is now my own character only that can be in question" (p. 54).

On July 3, 1855, Hare was staying at the Atlantic Hotel on Cape May Island, and at 1 a.m., when he knew that his friend Mrs. Gourlay was conducting a séance in Philadelphia, he asked his deceased sister to go to Mrs. Gourlay and request her to induce Dr. Gourlay, her husband, to go to the Philadelphia Bank to ascertain at what time a note would be due and that he would sit at his instrument at 3:30 that day to receive the answer.

Accordingly, at that time, my [sister] manifested herself and gave me the result of the inquiry. On my return to the city, I learned from Mrs. Gourlay that my angelic messenger had interrupted a communication, which was taking place through the spiri-toscope, in order to communicate my message, and, in consequence, her husband and brother went to the bank, and made the inquiry, of which the result was that communicated to me at half-past three o'clock by my spirit friend. (p. 33)

As the time given him by Dr. Gourlay was not what he had remembered, Hare concluded that mind reading was not a factor in this experiment.

Hare seems to have discussed every possible subject with the communicating spirits, including God, Christ, the nature of time, the nature of matter, gravitation, the soul, celestial marriage, the fate of infants who die at birth, auras, the teachings of organized religion, deathbed visions, odic force, etc., etc. As indicated earlier, however, the book is not well-organized. Hare will discuss a particular subject early in the book, return to it in the middle of the book, and again in the end without making mention of the earlier references. Moreover, the book has no index. There are 2,070 numbered paragraphs, not including a fairly long Appendix. It is sometimes difficult to tell whether a spirit

is being quoted or Hare is stating a fact he has learned from spirit. It is, nevertheless, a very intriguing read and offers much food for thought. Considering the wealth of information set forth in this book and the earlier 1853 book titled *Spiritualism* by Judge Edmonds and Dr. George T. Dexter, one might surmise that the advanced delegation of spirits referred to by Hare simply threw up their arms in frustration and went away, leaving the work to less-advanced spirits.

After Hare gave a talk to the American Association for the Advancement of Science in which he spoke of his interest in spirit communication, some members called for his expulsion from the organization. However, this apparently resulted in Hare becoming even more entrenched in his belief and he went to his grave certain that there was something beyond death.

No evidence of any important truth in science can be shown to be more unexceptionable than that which I have received of this glorious fact that heaven is really "at hand," and that our relatives, friends, and acquaintances who are worthy of happiness while describing themselves as ineffably happy, are still progressing to higher felicity; and while hovering aloft in our midst, are taking interest in our welfare with an augmented zeal or affection, so that, by these means, they may be a solace to us, in despite of death. (p. 428)

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The Night-Side of Nature. Or, Ghosts and Ghost-Seers by Catherine Crowe. London: T. C. Newby, 1848, 2 vols. Free at <http://www.archive.org/details/nightsideofnatur01crowiala> (vol. 1) and <http://www.archive.org/details/nightsideofnatur02crowiala> (vol. 2).

Catherine Crowe (née Stevens) was born in Borough Green, Kent, in 1790 (or 1795 according to some sources) and educated privately. Nothing is known of her parents, yet we can assume that they were either well-educated or merely determined that their only known child should be, as she certainly was, for Catherine acquired a wide knowledge of French and especially German literature in addition to the classics and history of science. She married Major John Crowe and had a son in 1823, of whom we also know nothing, but seems to have abandoned her husband in 1838 and moved to Edinburgh where, unusually for women of the time, she set up house on her own and embarked on her career as a novelist.

Her first novel, *The Adventures of Susan Hopley*, was published anonymously in 1841 and was an immediate success, being followed two years later by *Men and Women, or Manorial Rights*. Then came a change of direc-

tion with her translation (1845) of Justinus Kerner's *Die Seherin von Prevorst* (The Seeress of Prevorst) (1829), which is still in print today and apparently remains the only English translation of this classic study of the mediumship of Friederike Hauffe.

It was evidently this book, and others by such prominent German explorers of the psychic field as Joseph Ennemoser, J. H. Jung-Stilling, and J. C. Passavant, then virtually unknown to the general reading public in England, that prompted Crowe to embark on the work for which she is best known and which is the subject of this review. Once again, she had a massive best-seller to her credit, the book going through no less than sixteen editions in six years and several subsequent ones. It is also still in print in a number of editions.

Crowe's admiration for the German authors mentioned above is matched by her contempt for such British skeptics of her day as John Ferriar (*An Essay Toward a Theory of Apparitions*, 1813) and Samuel Hibbert-Ware (*Sketches of the Philosophy of Apparitions*, 1825). The first chapter of *The Night-Side of Nature* is a vigorous counterblast against "The pharisaical scepticism which denies without investigation" and which ". . . is quite as perilous, and much more contemptible, than the blind credulity which accepts all that it is taught without inquiry; it is, indeed, but another form of ignorance assuming to be knowledge" (p. 9).¹ By investigation, she added:

I do not mean the hasty, captious, angry notice of an unwelcome fact, that too frequently claims the right of pronouncing on a question; but the slow, modest, pains-taking [sic] examination, that is content to wait upon Nature, and humbly follow out her disclosures, however opposed to preconceived theories or mortifying to human pride. . . . If scientific men could but comprehend how they discredit the science they really profess, by their despotic arrogance and exclusive scepticism, they would surely, for the sake of that very science they love, affect more liberality and candor.

Then as now! The above extracts give some idea of the author's lively polemic style, and one is tempted to quote from almost every page of this exhilarating book, which is as compulsive a page-turner as any popular Victorian novel. Crowe makes her intentions clear in her Preface (p. 4):

My object is to suggest inquiry and stimulate observation, in order that we may endeavor, if possible, to discover something regarding our psychical nature, as it exists here in the flesh; and as it is to exist hereafter, out of it.

She particularly laments the fact that "any discovery [such as mesmerism] tending to throw light on *what most deeply concerns us*, namely, our own being, must be prepared to encounter a storm of angry persecution" (p. 12). Her words make an interesting comparison to those of Myers (1903, vol. ii:1) when he laments the fact that "man has never yet applied to the problems *which most*

profoundly concern him those methods of inquiry which in attacking all other problems he has found the most efficacious,” the outstanding question being “whether or no his personality involves any element which can survive bodily death” (emphasis added).

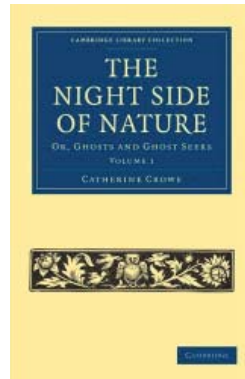
The name of Crowe does not appear in the index to Myers’ *Human Personality*, and she is dismissed in a somewhat patronizing footnote (vol. ii:570) where Myers mentions in passing “an English translation [of Kerner’s book], greatly abridged, by Mrs. Crowe.” He makes no mention of the fact that more than fifty years previously she had been embarking on a mission very similar to his, amassing a huge amount of evidence, much of it obtained at first hand from her own friends and acquaintances, for many of the areas he and his colleagues are often credited as the first to explore.

Near-death and out-of-body experiences, phantasms of both living and dead, doppelgängers, wraiths, ghosts, poltergeists, precognitive and shared dreams, stigmata, dowzers, twin telepathy—they are all here, often described in considerable detail, some such as poltergeists for the first time in English. (She is generally credited as the first British author to refer to “the Poltergeist of the Germans,” as her Chapter 16 is entitled). As Colin Wilson (1986:xii) points out, “the Society for Psychical Research paid a kind of posthumous tribute to Mrs Crowe by tacitly adopting her aims and methods; but they took care not to mention her name.”

True, she can be faulted for being somewhat imprecise as to her sources, naming them, for example, as “Miss D— of G—” or “Captain S—” and referring to a case “the authenticity of which I can vouch for,” and although she frequently cites Ennemoser, Jung-Stilling, and other German writers as sources, she does not name specific works such as the former’s *Der Magnetismus im Verhältnisse zur Natur und Religion* (1842), the latter’s *Theorie der Geisterkunde* (1808), and Johann Passavant’s *Untersuchung über den Lebensmagnetismus und das Hellsehen* (1837), which would seem to have been some of her most likely primary sources.

The editor of a collection of “Half-Forgotten Books,” Ernest A. Baker, describes her somewhat sniffily as “a rather miscellaneous writer” who “took herself rather seriously as a thinker.” Yet he does give her credit for “an enthralling book for those who revel in the mysterious and the terrible,” and also makes the pertinent point that her book is “no less elevated and serious than that of the late F. W. H. Myers,” though he does castigate her for her inadequate sourcing compared to Myers (Baker, 1904).

However, in a more recent reissue, the Editor of the journal *Folklore*,



Gillian Bennett, springs to her defense (Bennett, 2000):

For folklorists and cultural historians, Mrs. Crowe's lack of system is actually a bonus. Because everything is jumbled up together—legends, personal experience, dîtes, and rumours—each validates the other to present a picture of the sorts of things that were reported, transmitted and thought believable at one particular point in time.

Sadly, Mrs. Crowe's private life also appeared somewhat lacking in system by 1854, when a bizarre incident was widely reported that suggested that she was having mental health problems. According to no less an authority than Charles Dickens (1854), in a letter to a friend:

Mrs Crowe has gone stark mad—and stark naked. She was found t'other day in the street, clothed only in her chastity, a pocket-handkerchief and a visiting card. . . . She is now in a mad-house, and I fear, hopelessly insane.

Although there is evidence from her Edinburgh neighbour Robert Chambers (1854) that there was some truth in reports of this incident, Dickens seems to have been mistaken with regard to her mental state, for a few weeks later Crowe (1854) wrote a wholly lucid letter to a newspaper explaining that she had merely suffered a severe attack of "chronic gastric inflammation" (perhaps an ulcer?), was now convalescing, and was certainly not in a mad-house. She cannot have gone completely off her head since she published a further four books between 1854 and 1862, though she remained silent from then until her death in 1875, and her later years, like so many of her earlier ones, remain undocumented. There are even disagreements as to the date of her death as well as birth, some sources giving 1872. Indeed, little of her private life seems to be known for certain.

Although her reputation as a novelist has faded, unlike those of her near-contemporaries Jane Austen and the Brontë sisters, Catherine Crowe's place in the history of psychical research looks set to endure, as the lasting popularity of *The Night-Side of Nature* indicates. Books do not remain in print for more than 160 years without good reason, and it is clear why this one has. It is written by a skilled author who knows how to grab the attention of her readers and hold it, and who has something she considers important to say, which is that large areas of human experience are being ignored, "either denied as ridiculous or impossible, or received as evidences of supernatural interference" (p. 4). She was a pioneer explorer of those areas, a diligent field researcher, and an avid collector of reports of anomalous and inexplicable events. She was also one of the first, and still one of the best, at giving skeptics a good hammering.

The modern reader will rightly regret the absence of an index or list of references, and the author's somewhat casual attitude to her sources. Yet these shortcomings are more than compensated for by the mass of case-history mate-

rial, much of it obtained from the original source, that she was able to present in a compellingly readable form. For all its shortcomings, *The Night-Side of Nature* should be “half-forgotten” no longer, but remembered as the book that broke the ground so expertly cultivated several decades later, without acknowledgment to the ground-breaker, by the founders of the Society for Psychological Research.

Note

¹ All page numbers of quoted material from *The Night-Side of Nature* are from the 1986 edition.

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Supernatural Hawaii by Judi Thompson. Schiffer Publishing, 2009. 224 pp. \$16.99 (paperback). ISBN 9780764331862.

Everybody loves a ghost story, science be damned. Turn on your television and you can shiver along with a half-dozen hit series—*Ghost Hunters* and *Ghost Hunters International* (SciFi); *Ghost Adventures* (Travel Channel); *Ghost Lab* and *A Haunting* (Discovery Channel); and *Paranormal State* (A&E). Today’s investigators descend on a house or graveyard and chase ghosts with a truckload of 21st-century toys—hi-def videocams, digital taperecorders, EMF detectors, infrared thermal scanners, thermometers, and walkie-talkies.

Judi Thompson’s book features tales from a quainter era when folklorists chased ghosts with a simple notebook and pen. Thompson started collecting her oral histories in 1984 while working as executive editor at the Institute

for Polynesian Studies. Her decades-old stories and accompanying black-and-white photos give off a musty, bygone-era scent, but her scholarship is spiced up by a rich, cultural chop suey of ethnic storytellers.

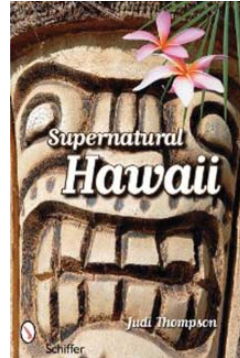
Native Hawaiians justifiably command center stage in this collection, surprised on a dark road by the volcano goddess Pele and her phantom dog Pōki; avoiding danger with the help of *'aumakua* (ancestral spirits) manifesting in the form of a *pueo* (owl) or *mano* (shark); averting their eyes as the legendary Night Marchers, ghostly spirits of Hawaiian warriors, tramp their torchlit, chanting way down the mountains to the ocean along traditional trails—through bedrooms and kitchens of modern buildings unluckily blocking their path. Auntie Harriet Ne of Moloka'i shares with Judi a lifetime of “chicken skin” (pidgin for goose bumps) experiences, including pre-World War II encounters with *menehune*, survivors of the legendary race of small, elfish stonemasons Polynesian voyagers found working fishponds when they first arrived in Hawaii in 500 AD. Kalaupapa leper colony survivors speak cautiously of Moloka'i *kahuna* (priests) who enjoyed a particular reputation as sorcerers of *ana'ana* (black magic), able to tell the future or kill people with evil spells. Both animist Hawaiians as well as Buddhist-believing Japanese immigrants working on the sugar plantations recount witnessing mysterious, floating orbs of light playing in the cane fields—fireballs each group regarded as spirits of the dead (the Nisei called them *sinotama*; the Hawaiians *akualele*). Back in modern Honolulu, Chinese and Portuguese firefighters in the Nu'uano and Kaka'ako stations reluctantly admit to being attacked by Chokeneck, an evil spirit who yanks off bedsheets, tosses men bodily out of their bunks, and sits on their chest trying to suffocate them while they sleep. To protect themselves, they stuff *ti* leaves under their mattresses (*ti* leaves protect against evil spirits; watch a televised Hawaii football game and you'll see Hawaii fans waving them to ward off touchdowns by their opponents).

Thompson's Hawaii stories echo universally reported paranormal experiences—ghosts, orbs, poltergeists, guardian spirits. Chokeneck matches the Old Hag syndrome. Native Hawaiian scholar Rubelite Johnson, professor of Indo-Pacific languages at the University of Hawaii, shares a family story involving her great-grandmother Ekikela who suffered a classic near-death experience right out of Raymond Moody's *Life After Life*. The old Hawaiians don't bury the body right away; they keep it around for several days since they believe the spirit of the deceased can sometimes be persuaded by offerings or incantations to return to the body. Grandma did just that. She described how she felt ill while working in the garden; collapsed and rose out of her body, traveling upward toward the sunrise (light); came to a partially opened door (barrier); looked inside to see a beautiful, heavenly place; tried to enter but was stopped by a firm hand and a stern voice which told her: “You are not ready

yet. You have to go back to your body”; reluctantly returned to her corpse; wiggled back in through the big toe, then blacked out and re-awoke surrounded by her overjoyed family.

For some unexplained reason, Thompson took 25 years to publish her supernatural stories. During that period, two Hawaii writers beat her to market. Journalist and travel writer Rick Carroll put together his breezy, popular, six-book *Spooky Tales* series. The late American Studies professor and Honolulu Ghost Walks tour operator Dr. Glen Grant tapped a darker vein with his *Obake Files* series (*obake* is Japanese for “ghost”). I admit I got so scared reading one particularly graphic murder/spirit possession case that I threw the book unfinished into the garbage.

Thompson’s stories don’t deliver the fright of Grant’s best, or the easy reads featured in Carroll’s collection, but you’ll learn a lot about a hidden Hawaii infinitely more entertaining than Don Ho and hokey hulas.



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Further Books of Note

A Zeptospace Odyssey: A Journey into the Physics of the LHC by Gian Francesco Giudice. Oxford University Press, 2010. 256 pp. \$45 (hardcover). ISBN 9780199581917.

Theoretical physics thrives on the correlations between the simplicity and elegance of a theory on the one hand and its predictive power on the other. These guiding frameworks are strongly imprinted on physicists from their earliest navigations of Newton’s calculus through his laws of mechanics, to Maxwell’s electrodynamics, and modern physics. Relativity, quantum mechanics, quantum field theory, and the Standard Model, have anchored themselves on relatively simple and elegant basic principles. Not only have these principles reduced and transformed the plethora of data from accelerators (ranging in size from table top to that of rural counties), into well-defined subunits of knowledge, but

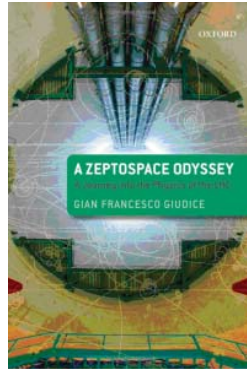
they have also connected these units (e.g., molecular physics, atomic physics, nuclear physics, particle physics) by the various facets of the formalism of quantum mechanics, whether applied to particle systems with a small number of degrees of freedom or fields with an infinite number of degrees of freedom. Gian Francesco Giudice's new book, *A Zeptospace Odyssey: A Journey into the Physics of the LHC*, gives an excellent, enjoyable, and highly readable phenomenological and historical account of all these aspects of physics, in particular as they relate to the promise of the world's largest particle accelerator—The Large Hadron Collider (LHC).

Zeptospace refers to the size of the particle structures that this machine is capable of examining, about 100 zeptometers. A zeptometer is equal to a billionth of a billionth of a millimeter. If we compare the size of an atom (on the order of a tenth of a billionth of a meter) to a football field and then enlarge the atom to the size of that same football field, then a zeptometer would, relatively speaking, be on the order of the size of that atom. Overall, zeptospace is much smaller in size, in a manner of speaking, than an atom's atom. Physicists hope to use this supermicroscope to test how far the guiding principles of elegance and simplicity can be extended.

The reader will find each of the three parts of this book enlightening. The first part deals with the various layers of atomic and nuclear structure, paralleling those discussions with the roles of those famous "onion peelers," with names such as Rutherford, Bohr, Pauli, and Dirac, among others. This part also includes a discussion of the four forces of nature, that is, the gravitational, the electromagnetic, and the weak and strong nuclear forces, as well as the famous zoo of elementary particles and their interactions via the last three forces. Then, the author discusses the quantum frameworks that tie these particles and forces together with such names as quantum electrodynamics, the electroweak theory, quantum chromodynamics, and the Standard Model. He uses the biblical story of Jacob's ladder as a metaphor for the study of nature. As we search for ever smaller elementary units of matter (atoms, nuclei, protons and neutrons, electrons and quarks), we see that the apparent complexity of the macroscopic world melts into the simplicity of the hidden fundamental laws. Furthermore, there is an interesting phenomenon associated with the ladder in that each step can be described by a coherent scientific theory with no need of the full knowledge of the other steps. Chemists, for example, do just fine without using the details of quantum chromodynamics. The LHC will take us up one more step beyond the Standard Model of matter as we know it now. As with the other steps, very likely a new revolution in knowledge will result.

The second part of this book deals with the LHC itself, giving us a vivid sense not only of the scale of the machine but also the layers of physics it relies upon. Because of the size and complexity of the accelerator (27 kilometers

around) and the high magnetic fields involved that are needed to produce and tame the energies necessary to probe the next step up the ladder, and the amount of data generated, the frontiers of the corresponding technologies related to superconductivity, detectors, and computer science will go well beyond their old borders. Not since the Apollo Project has a scientific endeavor involved such a burst of new technological marvels. This section of the book goes well beyond expectations in giving the reader a sense of what this next step up the ladder depends upon.



Finally, the third part of the book describes the terrain of the expected new physics and the hope of the solidification of the recently modern physics. With respect to the latter we are taught how the Standard Model accounts for the existence of mass and what famous, so-far-undiscovered particles (mainly the Higgs boson) are expected to be unearthed. The Higgs boson is associated with a fundamental scalar field that produces a medium in which all matter resides. As a result of that medium, the particles take on the well-known properties of inertial mass. But it is the promise of expected new physics, associated with theories that display intrinsic formal attractiveness and simplicity such as supersymmetry, a theory that unites fermions and bosons into one family, that has particle physicists most excited. Related questions are: Why is gravity so incredibly weak compared with the other forces? What is the nature of supersymmetry? Are there higher dimensional spaces, including large extra dimensions, not just the diminutive ones associated with superstrings? And those questions have generated a plethora of theories just begging or daring to be proved wrong.

Supersymmetry involves in one form or another much of the energies of the particle physics community, some would say too much. In the almost 40 years since its birth, there has been no experimental evidence of pairs of particles related by supersymmetry transformations. Will the LHC end this drought and renew the confidence physicists have in their guiding principles of simplicity and elegance? Or will these principles themselves be tested? Of all the concepts tested by the LHC, the one virtually accepted on faith and whose ultimate outcome would cause either great anxiety or enthusiasm is the assumed guide of simplicity and elegance in the theoretical descriptions of new physics as we go up Jacob's ladder.

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The Goddess and the Bull—Çatalhöyük: An Archaeological Journey to the Dawn of Civilization by Michael Balter. New York: Free Press, 2005. 400 pp., illus., refs., index. \$27.00 (hardcover). ISBN 0743243609.

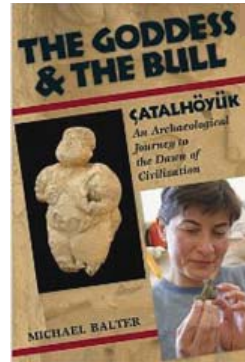
Science writer Michael Balter's book describes the scientific findings, the stormy history, and the stories of the personnel at Çatal Höyük. Although younger by a millennium or two than Palestine's Jericho or Syria's Abu Hureya, Çatal Höyük (pronounced "*Chahtahl Hæyuke*"), a seventh-to-sixth-millennium-B.C. tell (accretionary-mound) site in Konya Province, Central Turkey, has both revolutionized our understanding of the Near East's Neolithic period and generated much controversy owing to actions and alleged actions on the part of its initial excavator, the British culture/history-oriented James Melaart of London's Institute of Archaeology, as well as to questioned interpretations.

Melaart was convinced that the roots of agriculture-based Western civilization were to be found in Anatolia (Asian Turkey) rather than in Iraqi Mesopotamia, and during his excavations during the 1950s and 1960s Çatal Höyük seemed to give testimony of the potential correctness of this view. At least the site provided unprecedented evidence of early cultic activity. In what Melaart saw as an incipient city, there were ruined shrine rooms whose walls displayed sculpted horned bulls' heads, leopards, and breast-like projections, as well as frescos depicting vultures and other objects. At a slightly later Anatolian site, Hacilar (pronounced "*Hahjeelar*"), Melaart had found a plethora of figurines, and he unearthed more at Çatal Höyük. Because of the lack of manifest genitalia on the part of the bulk of these statuettes, he concluded that they depicted females and that they signaled womanly control of religion as well as a matriarchal society. These figurines and Melaart's ideas about them captured public attention as well as the academic eye; some scholars—especially UCLA archaeologist Marija Gimbutas—elaborated the concept of a peaceful, pre-patriarchal, goddess-oriented matriarchy—which fit cozily with then-emergent feminist and New Age notions (as Balter's book describes, Çatal Höyük became *the* Mecca for New Age goddess-worshippers).

Remains at Çatal Höyük indicated use of a variety of wild and cultivated plants as well as wild and presumed domesticated cattle. The town seemed likely to have prospered, too, from trade in obsidian obtained at a not-too-distant volcanic mountain, and the settlement boasted a population of between 3,000 and 8,000.

During his time in Turkey, Melaart published on fabulous Bronze Age antiquities that he said he had seen in a private collection in the town of Dorak. Government authorities—perhaps motivated in part by envy of the fame that the archaeologist had garnered from his work in their country—alleged that he was complicit in the illegal export of antiquities, allegations for which

there was no credible evidence but which led to his being banned from directing further archaeological activity in the country. Too, late in his career Melaart published scientific illustrations purported to represent Çatal Höyük frescos depicting kilims (flat-woven rugs/hangings). Weavers, rug experts, and many archaeologists expressed extreme skepticism, and later work at the site has failed to confirm that such frescoes really existed there. Melaart could produce no photographs of the murals, stating that they had all perished in a fire.



In 1993, a British team under the University of Cambridge archaeologist Ian Hodder was permitted to resume excavations at Çatal Höyük and to apply contemporary scientific techniques. Hodder had been intellectually raised during the ascendancy of the “new,” “processual,” anti-culture/history brand of archaeology in vogue during the 1960s and 1970s, which considered all cultural content to be adaptive to environment and to be susceptible to explanation via the formulating and testing of scientifically expressed hypotheses. Hodder finally came to realize (what had been well-recognized long prior to Processualism but which had subsequently been shoved under the rug) that human culture was not merely environmentally adaptive but was a partially independent phenomenon in its own right that included beliefs and values that had little or nothing to do with adaptation and could not be accounted for by any utilitarian theory. In 1982, Hodder launched “post-Processual archaeology,” which 1) eschewed the logical positivism of New Archaeology, 2) attempted to blend historical particularism with overarching theory, and 3) promoted a somewhat postmodernist “multivocality” (accommodation of a variety of archaeological orientations) as well as continuous self-criticism.

As an aside, the New Archaeologists were sometimes quite aggressive when their premises were questioned. The University of Chicago Processualist guru Lewis Binford said to one Hodder student who had raised questions concerning Binford’s Processualist ideas, “You’ll find out what natural selection means when you try to get a job, buddy boy!” (p. 80).

During the ongoing dig at Çatal Höyük, with the help of a variety of specialists Hodder generated great quantities of new data and drew upon these to reassess Melaart’s ideas. Hodder’s team, which from 1997 included prominent UC Berkeley archaeologist Ruth Tringham, found indications that the settlement had been a large and elaborate village rather than a functionally differentiated city and that Melaart’s “shrine” rooms had begun as dwelling rooms but had later become shrines following one or more subfloor burials.

The archaeologists came to question that the “female” figurines reflected goddess-oriented worship and matriarchy: Most figurines were of ambiguous sex and had not been deposited in special places or with discernable reverence. Domesticated sheep and goat bones proved to outnumber (wild) cattle bones five-and-a-quarter to one, contradicting the earlier conclusion of dependence on domestic cattle.

Although sedentism in permanent villages had once been thought to have developed hand in hand with the emergence of agriculture, sedentism and a variety of other cultural developments pre-date farming at this site, as they are now known to do widely in the Near East. This pre-farming cultural elaboration has recently been underlined by the recognition and excavation of tenth-millennium–B.C. Gölbekli Tepe in southeastern Turkey, an amazing presumed ceremonial site featuring impressive sculpted T-shaped megaliths erected by a seemingly nomadic, pre-agricultural people (Schmidt, 2006, Scham, 2008, Chandler & Çagatay, 2009).

The transition from the pre-farming but sedentary Natufian culture to an agricultural Neolithic lifeway took place in the region about 11,000 years ago, during a cool, dry period known as the Younger Dryas. This subsistence transition, possibly commencing as an effort to maintain food supply under the relatively harsh new climatic conditions, saw the inception of the raising of wheat, barley, and legumes, supplemented by the continued gathering of edible wild plants. There also occurred a change (for debated reasons) from round to rectangular dwellings, with aurochs (wild cattle) heads, horns, and other parts embedded in house walls and floors at Çatal Höyük, perhaps reflecting a symbolic transformation of fearsome wild bulls into an aspect of a secure domestic setting.

At this time, a revolution in symbols, not tools, took place, reflecting a change in beliefs rather than in most technology; “goddess” and bull iconography flourished, and ritual became increasingly important and complex. Çatal Höyük’s location on a marshy floodplain, at a minimum of 11 kilometers (7 miles) from farmable land and from timber for roofing, is explicable, thinks Hodder, on the basis of local availability of fine clay for repeated painted-wall plasterings and for figurine manufacture—another instance of culture, especially religion and ritual, being more determinative than are adaptive subsistence economics.¹

Note

¹ This review also appears in the 2008–2010 issue of *Pre-Columbiana: A Journal of Long-Distance Contacts*, 4(3&4)/5(1).

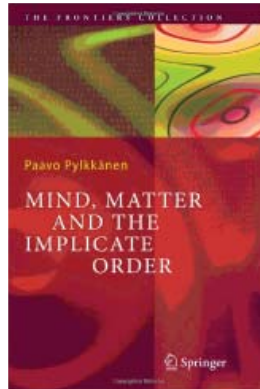
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Mind, Matter, and the Implicate Order by Paavo T. I. Pylkkänen. Springer, 2010. 271 pp. \$99 (hardcover). ISBN 978-3642062865.

A new and welcome addition to Springer's Frontiers Collection of physics monographs is Paavo Pylkkänen's *Mind, Matter, and the Implicate Order*. This treatise, an extension of Pylkkänen's 1992 doctoral dissertation, explores "the nature of mind and its relationship to matter; the nature of time, both physical and mental," as illuminated by David Bohm's interpretation of quantum mechanics, and in particular, through his notion of implicate order, by which "the whole universe is in some way enfolded in everything and that each thing is enfolded in the whole." In other words, "there is a sense in which each region or 'part' of the universe enfolds information about the whole universe." As counterintuitive as this holistic viewpoint might first appear, it echoes the notion of global entanglement, which seems to be intrinsic to orthodox quantum mechanics itself. Pylkkänen approaches the mind-matter problem—which has bedeviled Western philosophy and been virtually ignored by Western science for centuries—through this Bohmian lens. The discussion, more philosophy than physics, and virtually devoid of mathematics, is compelling and should be accessible both to laymen and specialists. The mind-matter problem is certainly not settled in this monograph—after all, Bohm's is but one of more than a dozen legitimate interpretations of quantum mechanics—however, it is a clear, cogent exposition that should be of interest to philosophers of science, scientists, and anyone interested in the nature of reality and our relationship to it.



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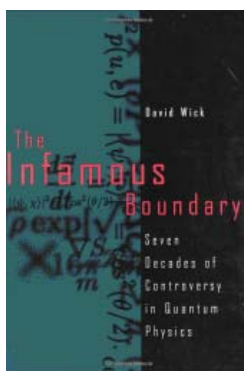
The Infamous Boundary: Seven Decades of Controversy in Quantum Physics by David Wick. Birkhäuser, 1995. 332 pp. \$79.95 (hardcover). \$19 (paperback). \$16.25 (Kindle). ISBN 978-0817637859.

Does quantum mechanics mean that sub-atomic events are uncertain until a wave function collapses? Is a consciousness required to collapse the wave function? How to interpret such a conversion of probability to certainty: Does it mean that every wave-function collapse is also a splitting off of a new universe in which the other possibility occurred?

The Infamous Boundary discusses those and related questions. The book's title refers to the fact that macroscopic events can be understood in commonsense ways whereas sub-atomic events have to be handled mathematically via quantum mechanics and the associated mind-boggling questions. Where is the boundary between those two domains? How does probabilistic uncertainty become macroscopic determinism, and at what scale?

A second boundary is that between the discreteness of quantum mechanics and non-discrete relativity theory. The decades-long quest for a theory to unify those remains without success.

David Wick intended this book to be accessible to non-specialists interested in these matters. I think he succeeded, though one does need to think hard in some places. However, I gained from this reading not some great insight into the technicalities but, much more satisfying, the realization that the specialists themselves are at sea in these deep waters, and that there has never emerged a consensus about how to interpret wave-function collapses or whether a deterministic hidden-variable theory remains to be discovered. Quantum mechanics is extremely successful as a means of calculating what happens, but there is no associated meaning—no agreed meaning—in physical terms. It is a relief to be told that when I don't understand how consciousness could collapse wave functions—Was there a world before people? Is there a universal consciousness? If so, how does our consciousness relate to it?—or how there could be an infinite infinity of universes, and so on, that I am in the company of Bell, Bohr, Bohm, Einstein, Feynman, Heisenberg, Wigner, etc., who didn't understand those things either and didn't agree about them among their expert selves.



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Article of Interest

New Evidence for a 67,000-Year-Old Human Presence at Callao Cave, Luzon, Philippines, by Armand Salvador Mijares, Florent Détroit, Phillip Piper, Rainer Grün, Peter Bellwood, Maxime Aubert, Guillaume Champion, Nida Cuevas, Alexandra De Leon, and Eusabio Dizon. *Journal of Human Evolution*, 58(1) (2010):123–132.

In 2007, a small third metatarsal from a human was found in a cave in northern Luzon, dated to some 67,000 years ago. Despite some differences, the bone most resembles those of recent short, gracile Negritos (some of whom still live nearby), although in size it also overlaps those of Flores Island's *Homo floresiensis* (the "Hobbit"). This footbone may, then, be the oldest remains of *H. sapiens* found to the east of Wallace's Line (the farthest-eastward limit of the Asian continent at lowest Pleistocene sea levels). If a proto-Negrito is represented by the metatarsal, this would be compatible with the hypothesis, based on geographical distribution and simplicity of culture, that pygmy-like proto-Negritos were the original anatomically modern humans to spread, probably coastally, from Africa into Asia and on into Australia. Since Luzon was never attached to the Asian mainland, the bone "further demonstrates the abilities of humans to make open ocean crossings in the Late Pleistocene" (p. 123). Human remains from Lake Mungo, Australia, date to 40,000 ± 2,000 years ago. Indonesia's island of Flores has not only 18,000–38,000-year-old *H. floresiensis* remains but also stone tools dating to more than 800,000 years ago—which would be very much older than the emergence of *H. sapiens*; only pre-*sapiens* *Homo erectus* would seem to be a candidate as the Flores tool-maker. Not many years ago, it was thought that humans had not been able to cross wide water gaps until quite late in their history, but the last few decades have seen a revolution in the evidence, which now suggests that people were, in many areas, quite mobile, reaching even some quite distant islands tens of thousands of years ago.

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