

Dark Matter (Part 1): A Materialistic Medium for the Paranormal

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Introduction:

For some years my intuition has been that religious, psychic and paranormal phenomena have a materialistic basis, including God by whatever definition you choose, and may some day be amenable to scientific analysis. That is, everything in the universe, both physical and spiritual, is monistic and materialistic, rather than philosophically dualistic. Physics has discovered a host of physical dualisms such as wave-particle duality and the various dualistic theories of superstring theory. But they are all part of monistic, materialistic science. True, waves (or fields, the same thing) are invisible and particles are visible, but both are physical.

What seemingly blocks a scientific analysis of the spiritual is that the waves/particles associated with the paranormal realm are undetectable by our present scientific equipment, except perhaps when entities in the spiritual realm excite or absorb particles from the physical realm, such as in the manifestation of ghosts. Human consciousness, however, may detect the paranormal, as explained below. The British Delawarr camera and Russian aurometer may be exceptions (also below), but mainstream science does not yet accept their data as valid. So for these years I have followed the advances in physics and astronomy hoping to find materialistic validation of religion and the paranormal. I now believe that the answer lies in the physics of Dark Matter, and perhaps Dark Energy as well.

Dark matter has been detected (indirectly) by astronomers using several different types of star observations. Analysis using Newton's gravitational theory of the motion of stars, galaxies and galactic clusters, and analysis using Einstein's theory of the bending of light around these collections of stars, all indicate that the amount of dark matter (matter that is invisible for our telescopes) is at least 10 times the mass of the visible (starlike) matter in the universe. The candidate constituents of dark matter are: axions, wimps, neutrinos, black holes, brown dwarfs and large planets. It seems that all have been ruled out except axions and wimps, neither of which have been as yet detected; whereas the other candidates are known to exist. Wimps are theoretically predicted in the supersymmetric theories; and axions are predicted in the Grand Unification Theory (GUT) and are thought to be the reason why neutron electric dipole moments are zero.

Cosmic axions differ from all other candidates in that they were (presumably) created in primordial symmetry breaking processes whereas all the other candidates were created in thermal processes and have thermal velocities. (We exclude thermal axions presently being created in the sun from this discussion). Cosmic axions are then unique in that they essentially are fixed in space. They have no inherent motion or momentum. As discussed

below that makes them especially suitable to be the medium of religious, psychic and paranormal phenomena. They are therefore referred to as cold dark matter and are often called the cosmic axion field, a coherent Bose-Einstein Condensate (BEC) that surrounds and permeates galaxies. Superconductors and superfluids like Helium at near absolute zero are also BECs. You might say that the axions are at absolute zero as they are motionless. And they are extremely numerous. If they are a major constituent of dark matter, there must be more than a 10 trillion axions for every proton and neutron in the universe.

If the symmetry breaking process produced axions before matter and anti-matter recombined, then the number of axions is comparable to the number of photons in the universe, a fantastically large number, and we cannot detect them.

Dark energy is even more indirectly detected from supernovae observations. Certain supernovas that exploded some 10-12 billions of years ago are dimmer than expected, indicating that the universal expansion is accelerating. Coupled with Einstein's theory, the data indicates (using the matter/energy equivalence) that there is twice as much dark energy as dark matter in the universe. This is further verified as the combined amounts of dark matter and energy makes the universe flat; and a number of other measurements also indicate that the universe is flat. This is a 3 dimensional flatness, such as to make plane (Euclidean) geometry correct for the universe. Otherwise the universe would be geometrically either spherical or hyperbolic.

Physicists essentially have no clue what constitutes dark energy. One thought is that its source are the virtual particles of vacuum. Another is a rudimentary theory of quintessence. The state of our knowledge of dark energy (as well as dark matter with an emphasis on axions) is the subject of the book *Quintessence: the mystery of missing mass in the universe* by Lawrence Maxwell Krauss. I will not discuss dark energy further here except to suggest that it may be a yet more spiritual realm than dark matter.

What I do discuss here is a conceptual model of how the cosmic axion field could be a medium of the paranormal. First a brief review of the relevant on-line paranormal literature is presented, including a Russian hypothetical theory that seemingly explains everything on the basis of axion-like particles. Experimental verification is also claimed.

The western literature associated with a hypothetical quantum model of human consciousness is also discussed, since any paranormal medium must be able to support consciousness. And finally I extend this model to the cosmic axion field and discuss possible coupling mechanisms between it and physical particles.

Please note that I am referring to the ordinary world of electrons and protons as the physical world. So I differentiate physical consciousness from axion consciousness.

However, this is just a matter of convenience as axions, if they exist, are really physical particles that experience the same wave/particle duality as physical particles like electrons and photons. I also use the most common interpretation of quantum mechanical

wave/particle duality: that waves (or fields-same thing) are invisible; and that waves collapse into visible particles when detected; so that energy and information can be wavelike or particle like, but not both at the same time

Paranormal Theory on the Internet:

Before discussing this literature, I feel compelled to mention that the word ‘theory’ is misused here. A scientific theory is a full mathematical description of processes based on postulates, equations expressing its laws and solutions of the equations that can be verified experimentally. Nothing in the paranormal literature comes even close to being a theory except the work from Russia discussed below, which is based on mathematical physics and has predictions that might be verified experimentally.

A recent scientific conference to discuss “rational perspectives on the paranormal” is summarized on the site <http://physicsweb.org/article/world/13/05/8>. It sorts paranormal phenomena into three categories: non-paranormal phenomena that have physical explanations; mind-based phenomena (such as out-of-body(OBE) and near-death experiences(NDE), hypnosis and apparitions); and direct interaction (PSI) phenomena (such as clairvoyance(i.e., local and remote viewing), telepathy, and psychokinesis). I think the category ‘mind-based’ is misnamed as the included phenomena require a paranormal medium, whereas the direct interaction category contains mind-based phenomena. The intent of this article is to understand the medium in which apparitions exist, but it is the medium of other aspects of the paranormal, as well.

An alternative monistic approach is discussed by Peter Lloyd on the site <http://easyweb.easynet.co.uk/~ursa/philosophy/psi1.html>. The claim is that everything is mental rather than physical. However, saying that everything is one or the other does not make much difference in detail. It suggests that there exists a paradigm inadequacy and lists possible paradigms: the holographic paradigm; the cyberspace or infospace paradigm; the non-linear or multi-continual time paradigm; and the multi-dimensional reality paradigm. It refers to these paradigms as vague metaphors. Actually I do not recognize them to be paradigms at all. In fact I see evidence that each of these alternative ‘mathematical’ approaches to the paranormal may have a place in a final theory.

The multi-dimensional approach has been summarized by Simon Harvey-Wilson on the site http://members.iinet.net.au/~steveb/aspr/SHW_lecture_1.html, and related to string theory, consciousness and various paranormal perspectives (poltergeist activity; the spiritual; the Shamanistic; UFOs, as well as virtual reality-the cyberspace approach). The claim is that all paranormal phenomena comes from other dimensions. But since the mechanisms by which other dimensions become involved is not described, this is still more metaphor than model. My hypothetical model includes the possibility of higher compactified dimensions, as possible sources of the axions and their coupling to physical particles; but it is decidedly three dimensional and no extraordinary concepts are invoked except for the particles that are thought to exist in dark matter.

A discussion of the paranormal assuming a materialistic universe amenable to scientific understanding may be found at www.fortunecity.com/roswell/leehigh/71/paraff.html, including: clairvoyance, telepathy; psychokinesis, precognition, reincarnation; and spiritualism(channeling, i.e., communication with disembodied spirits). The claim is that quantum theory provides “a mechanism in which nonphysical entities as spirit (or indeed God) could exert their Will upon the physical universe by slightly shifting the probability distributions associated with individual quantum events”. However, there is no discussion of how that is accomplished. In this context, my hypothetical model does not offer an ‘active’ mechanism by which spiritual entities could alter the physical. What is offered is strong evidence of a medium in which they could exist and ‘passive’ coupling mechanisms between the two realms. The Russian theory also does not provide an active coupling mechanism. But the existence of apparitions that are detectable indicates that such an active coupling mechanism must exist.

Sonny Ayran on the site <http://members.tripod.com/spaweb/theories.html> presents a rather comprehensive description of the various manifestations of ghosts. The claim is that ghosts are natural, physical and normal; and furthermore, that quantum field theory supports the existence of ghosts within its uncertainty principle. This ‘uncertainty principle’ mechanism may allow active coupling between the paranormal and the physical world, but it is an unlikely medium for ghosts. Rather, the axion superfluid provides a straightforward, understandable medium for their existence. On the other hand, Ayran’s descriptions of ghost manifestations as basically orbs (one inch diameter spheres containing a central matrix and two outer layers)- with less frequent appearances as vortices, mists, apparitions, audio ghost recordings, odors, cold chills and touching- is quite instructive. He correctly points out that ghosts must absorb physical energy (or my view, at least excite physical particles) requiring active coupling mechanisms to be detectable in the physical realm. He also refers to the existence of ghosts in a subspace which lies between the physical and a higher spiritual realm. That certainly reminded me of the three-fold universal categories of the physical, dark matter and dark energy.

Despite “The sheer volume of reports of paranormal phenomena provide strong evidence for the existence of a reality beyond the physical realm” (<http://www.fortunecity.com/roswell/leehigh/71/paraff.html>), my view is that the best evidence in support of a nonphysical realm is found in experimental investigations of mind-based remote viewing (also called remote perception and anomalous cognition). The experiments conducted at Stanford Research Institute (see Putoff and Targ, Proc IEEE 64,1976) and later at SAIC, were funded by the CIA and DIA in response to similar work in the USSR. Rigorous scientific protocol was used and the results were positive, leading to medals of honor for a few well trained experts. Reportedly almost anyone could be trained to accomplish remote viewing. But expertise was needed to recognize objects from their internal structure, which is what is viewed with this technique.

A model to explain remote viewing is presented by former astronaut, Dr. Edgar Mitchell on <http://www.nidsci.org/articles/naturesmind~qh.html> based on the quantum hologram. Holograms can create 3 dimensional images for 2 dimensional data. This model is also used to explain Delawarr camera data by Mitchell, etal. on

www.homestead.com/newvistas/CASYS~ns4.html. This camera obtains 3-D images from 2-D pictures of live and inert bodies. No external source of energy is required. In fact, all must be removed, except for the intention of the photographer, which implies the propagation of information in an undetectable medium from the photographer to the object, the inverse of remote viewing. The results are similar to MRI data. This experimental data suggests that all objects radiate detectable quantum fields. However, the detection 'frequency' must be selected like a radio station, and even more fantastically, the experimenters attention or intention must be focussed on the object. Double-blind or even blind experiments fail, and so the scientific validity is questionable.

The data is explained by a 'quantum hologram model' of the object and a 'phase conjugate adaptive resonance(pear)' associated with the photographer. This is reminiscent of the adaptive optics field I used to work in. In fact, Mitchell claims that "the history of the object is carried in its quantum hologram" which implies that it is a space-time effect. This model should also apply to local viewing (touching, etc.) as used in dowsing and police investigations.

A theory of the above effects has been proposed by Russian researchers and is discussed on <http://www.spiritweb.org/Spirit/religion-eq-science.html>. Boris Iskatov derived a mathematical quantum theory (from transformations of the Dirac and Schroedinger equations) of an information-energy field residing in a "global gas of microleptons" having several levels of particle masses between 10^{-40} and 10^{-30} grams. Axions predicted by GUT are about 10^{-5} eV or 2×10^{-38} grams, so that it is likely that the microleptons are actually the axions of dark matter. The equations of this theory can be solved to obtain the quantum hologram. Rather far reaching conclusions have also been obtained. Signals in this medium travel at the speed of light; but there are also weak pre- and post-signals that can travel much faster than the speed of light. There are also so-called (very weak) anti-signals that allow for the investigation of the past. I am not aware of a peer reviewed publication of this theory. So skepticism may be appropriate.

The experimental work of Russian Anatloy Ohatim is also reviewed on the above site. He claims to confirm the existence of the microlepton gas experimentally; and suggests that all information produced by the material world is embedded in the microlepton gas. This includes human thoughts, which are said to be propagated by the lightest particles. This information exists in the form of holograms and comes in units called "eidoses". Ohatim discusses such effects as the half-life of eidoses (holograms) based on particle mass. Particles with less mass have longer lifetimes, in agreement with Penrose's gravitational wave collapse hypothesis. Ohatim also discusses how humans influence the cosmos using good or bad eidoses. God and the soul are mentioned, as well as an instrument, the aurometer, for measuring these effects.

The Existence of a Paranormal Medium:

The investigations of remote viewing imply the existence of a supernatural medium in; the Russians claim to have detected it; and Russian theory indicates that it is an axion

superfluid. But I believe the most relevant data for such a medium comes from out-of-body experience (OBE) and near-death experience (NDE), and after-death-experience (ADE)- religious phenomena. Unfortunately, there is little or no scientific data on ADE, NDE or OBE (formerly called 'astral projection' and more recently referred to as 'consciousness projection'). OBE is not the same as remote viewing (RV). In RV the subject remains awake and very attentive to some remote object. The images obtained are shadowy and not easily recognized, being reflective of an internal structure. And anyone can be trained to perform RV.

Rather, OBE is an altered state of consciousness in which the subject appears to be unconscious (asleep), but the subject himself or herself feels awake, separated from his or her own body, and able to travel elsewhere. In this state, the environment appears distinct and reflective of external surfaces rather than internal structure. A very small percentage of the population, less than 1%, seem to have this ability, except perhaps in the state of dreaming. One claim is that we all have OBEs in the dream state.

(see <http://mailbox.univie.ac.at/Alfred.Ballabene/english/lepak1.htm>)

A small amount of rather inconclusive OBE data is discussed by Charles Tart on the site <http://www.paradigm-sys.com/cttart/sci-docs/ctt97-ssooo.html>. But it contains an extensive bibliography of OBE literature. A significant omission in this bibliography is the work of Brazilian physician Waldo Vieira at the International Institute of Projectology. This work is reviewed on www.spiritweb.org/Spirit/obe-iipc.html. The site discusses the origins of ghosts and how to heal them; and refers to Vieira's book, *Projection of Consciousness: a Diary of Out-of-Body Experiences*, for more details as well as descriptions of 60 OBEs. However- fair warning- the site appears to be intended to sell his programs on consciousness development.

Theories of Consciousness:

A good summary of the various quantum theories of consciousness may be found at the site <http://www.thymos.com/science/qc.html>. This summary is so extensive that I will not repeat it here except to note a typo. Froehlich's work is given as published in 1986, when it actually was published in 1968, making it the original theory of consciousness.

The summary does not consider biochemical neuroscience theories, but they are not pertinent to the present discussion; nor is psychology considered. Psychology considers consciousness to be fundamental to its science; but does not pretend to know its composition; whereas in sciences other than psychology, consciousness is at best secondary, and usually non-existent. In fact, there is still discussion regarding how consciousness should be defined. There are both quantum and classical aspects of consciousness, as well as visible and invisible components.

There is no present verification of any theory of consciousness. Yet we all know subjectively that it exists. So what is it? The inherent assumption in all the work

described on this site is that quantum consciousness is required on the physical plane.

For example, Froehlich(1968) and later Marshall(1989) hypothesized that consciousness resides in the dipoles of membranes that when excited metabolically and electrically act collectively as a macroscopic BEC possessing quantum coherence. As summarized on the above site, Penrose and others have extended the same ideas to microtubules within neurons. In *THE EMPEROR'S NEW MIND* (Oxford Univ Press, 1989) and *SHADOWS OF THE MIND* (Oxford University Press, 1994), Penrose suggests that BECs exist in living organisms and that consciousness may be related to quantum wave function reduction (collapse) due to gravitational effects, or may even be related to Goedel's Incompleteness Theorem. The supposition of course is that consciousness resides in the BEC. My view is that 'self-consciousness' requires a threshold of complexity as does Goedel's theorem.

The Achilles Heel of all these hypotheses is that quantum consciousness on the physical plane requires a room temperature BEC. But BECs are only found in mediums at or near absolute zero. The field of quantum consciousness has not overcome this profound obstacle of requiring a room temperature Bose-Einstein Condensate (BEC). I offer an alternate hypothesis below.

An Alternate Model of Quantum Consciousness:

A model of consciousness may be based on the supposition that an axionic superfluid is the major component of Dark Matter. We assume that consciousness requires, as one of its components, a macroscopic quantum coherent medium, namely a Bose-Einstein Condensate (BEC). We also presume that BECs cannot exist at room temperature in the physical world of electrons and protons. So perhaps Dark Matter contains a BEC as one of its constituents. As stated above, the cosmic axionic field, if it exists, is both a local and cosmic BEC.

Astronomical observations of other spiral galaxies indicate that dark matter permeates and extends well beyond the visible galaxy. The mass of the axion, thought to be 10^{-5} eV or about 2×10^{-38} grams, is about one trillionth the mass of a proton; but about 10 trillion axions exist for every proton and neutron. So axions are expected to be a major component of dark matter; and the huge number of them indicates that the superfluid is local as well as cosmic. However, there is still a serious problem.

Human consciousness is physical. For sure the visible component of human consciousness is physical and not a quantum consciousness. (The dreamstate could be otherwise). If quantum consciousness exists in the axion superfluid, it must be invisible. So we are faced with the problem of how the invisible axion consciousness couples with the visible physical consciousness.

This is an unsolved problem. But it reminds us of the fundamental wave/particle duality of quantum theory. In one interpretation, both waves and particles exist, but at different

times, with the invisible waves collapsing or reducing into visible particles, so that particles of different kinds can exchange energy and information. For example, eyesight involves the reduction of electromagnetic fields into photons that can interact with electrons on the Planck scale (where all particles are alike).

The hypothesis is then that axion waves couple into physical processes when they collapse into axion particles. Penrose has already suggested that as a basis of consciousness in a slightly different context, and the Penrose hypothesis is consistent with Ohatim's measurements of microlepton half-life. Penrose and others have also suggested several physical processes that might be BEC capable at room temperature. We now presume that none are, but that some or one of these physical processes might be capable of coupling with axion particles. The Froehlich/Marshall hypothesis, where metabolic or electrical stimulation of membrane dipoles is required for physical consciousness, is preferred here, as it correlates with the human experience of going asleep and waking up.

But is there any reason to think that a non-physical world exists, other than it being a possible source of quantum consciousness. Our answer appeals to paranormal data.

Discussion:

The best available experimental data verifying the existence of a non-physical world with strong non-local effects that "couples" into the physical world comes from Stanford Research Institute and SAIC research of Remote Viewing sponsored by the CIA and other government agencies. It has been reported that anyone can be trained to perform Remote Viewing, but that expertise is required to recognize objects from their internal structure. Considerable (but much more subjective) data that requires the existence of coupled non-physical world and physical worlds is available from out-of-body experience (OBE), near-death experience(NDE) and after-death experience(ADE), e.g., religion.

Another source of such data that perhaps has been neglected is the experience of apparitions. Photographic evidence exists in this case where light is reflected from the apparition or the apparition is a source of light. This means that the apparition can couple energy into the physical, or at least guide energy already available in the physical world into its own being. For our purposes this is good evidence of an active coupling mechanism. Furthermore, from the evidence of Remote Viewing, it would seem the all physical processes couple into the axion medium, which then is like a shadow world of all physical processes that can also sustain quantum consciousness on microscopic, macroscopic and perhaps macrocosmic scales.

The key to my understanding of physical consciousness came from the requirement that Frohlich's dipoles must be excited. That is, physical energy is needed for physical consciousness. Turn off the energy and you become unconsciousness- you fall asleep. Yet physical consciousness is probably not quantum consciousness. In the dream-state you still have some form of consciousness. I assume that the evidence of dreaming

implies another state of consciousness, one that does not reside in arrays of dipoles. The axion gas or superfluid of dark matter is an obvious candidate. Moreover, axions satisfy the zero-point temperature requirement for a BEC. So my hypothesis is that your mind- your invisible quantum conscious mind resides in the axion medium- not in the physical medium. So the physical brain is a classical computer and the axion brain is a quantum computer. It would appear that the Russian work discussed above, which is not known to me in detail, has pre-empted this hypothesis.

Take your imagination for example. You can will yourself to visualize forms and objects. What I think is happening is that your 'will' collapses invisible quantum waves in your brain into axion particles that are visible but rather shadowy for most of us. Think the word triangle and you see a triangle in your mind's eye. Words are the way your program the invisible quantum computer, and words also are the means of the audible(sublimated) classical computer reasoning of your imagination.

But occasionally you encounter a problem that you cannot solve. So you forget about it. But later on the solution comes to you in a flash. So the invisible quantum computer of your brain has been, as we say, unconsciously solving that problem; and the final solution is dumped into your visible (or audible) consciousness by collapse of the axion waves into axion particles that excite physical particles. This is my understanding of quantum consciousness as it relates to physical consciousness. In psychology, quantum consciousness is the unconscious state.

Conclusion:

Briefly, if the BEC axion medium exists, it is the likely site of quantum consciousness. The fundamental postulate is that consciousness is of a quantum nature. Since room temperature BECs are not likely, our physical consciousness is not of a quantum nature, but is driven by the axion quantum consciousness. Words and will are used to collapse the invisible axion waves into visible arrays of axion particles that we perhaps see directly in the dream or OBE state; and which in turn can excite energized physical membrane dipoles in the awake state.

If so, the frictionless axion BEC permeates the galaxy, according to astronomical data, so that quantum conscious beings must possess considerable permanence and freedom in ADE (after death experience). Some unfortunate beings in ADE, commonly called ghosts or apparitions experience the permanence but not the freedom. I would view that problem as a form of mental illness, for example, based on attachment to materialism. So ghost healing should be possible. The fact that we can sometimes see and even photograph apparitions is very important to our understanding of the medium of the paranormal, for it is evidence of both active and passive coupling between the physical world and the paranormal medium. However, the nature of the coupling requires experimental research.