

Some Tiller Working Hypotheses

A. Where Does Electric Matter Come From?

Paul Dirac, a great British theoretical physicist of the 20th Century (Nobel Prize for the theoretical prediction of anti-matter in the 1920s) was the first to ask the question “*where does an electron come from?*” The mental picture he started from is illustrated in Figure 1.

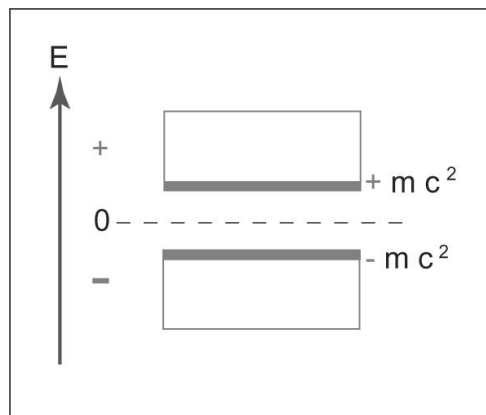


Figure 1. Schematic energy spectrum associated with the Dirac analysis. A band gap of forbidden energies exists between $E=\pm mc^2$ for particle-antiparticle creation of mass $2m$.

Here, in Figure 1, the lower region framework is called the **physical vacuum**, defined as being completely devoid of physical substance (electromagnetic or EM substance) but allowed to contain some type of invisible substance relative to EM-sensors. Just above this vacuum region was **postulated** to be a region of **disallowed** energy states while, above this band gap, there exists a zone of allowed **positive** energy states where electrons and other members of the experimentally discovered positive energy particles-community could stable exist.

Assuming a zero energy origin in the middle of this band gap and the quantitative mathematical formalism of relativistic quantum mechanics (RQM) for his calculations, for electric charge neutrality during the electron creation process, he found it necessary to **assume** that all the possible EM-invisible “stuff” existing in the physical vacuum, had a mathematically **negative** value. He also assumed that **all** of these vacuum energy levels were initially completely occupied!

For the actual electron creation process, Dirac postulated that a **cosmic ray**, an extremely high energy particle of normal, massless light (photon), from very distant stars traveling through the vacuum of space could **somehow interact** with this EM-invisible physical stuff to eject an electron and have it settle into one of the positive energy states of Figure 1. However, to also satisfy nature’s **conservation of energy** requirement, he had to also take into account the “hole” left behind in the plenum of the

physical vacuum. Thus, the minimum cosmic ray photon energy for this particular electron/hole **pair creation** event had to be **equal** to the Figure 1 **width** of the band gap zone of disallowed energy states.

As an additional technical requirement, since this “hole” constituted a **loss** in a plenum of electrically neutral, negative energy states (the lower region framework of Figure 1) and the electron, itself, was experimentally known to be a negatively **charged**, electric particle, for charge conservation reasons, this hole was **required** to have both (1) a **positive** energy and (2) a **positive** electric charge.

In the early 1930s, from cosmic ray shower experiments, this “hole” entity was discovered and labeled “the positron” (an anti-matter particle). Over the following decades, a positive energy, anti-matter particle was discovered for **every** positive energy particle of physical substance found in nature by physicists.

However, although the Nobel Prize was awarded to Dirac for his great theoretical concept of anti-matter, orthodox science **hated** the idea of a **negative energy** plenum for the physical vacuum in his theoretical model because they couldn’t conceive of what a negative energy might look like. Thus, orthodox science has not pursued further serious study of Dirac’s concept!

B. Why the Plenum of the Physical Vacuum Should be Thought of as EM-Superluminal Stuff from a Spacetime Perspective?

The “big bang” creation model of today’s orthodox science for our physical cosmos grew out of the assumption that the physical vacuum was completely empty. This assumption is fully consistent with the experimental observations that (a) the physical vacuum is transparent to electromagnetic (EM) light and (b) EM photons of **all frequencies** travel with constant velocity, c , through physical vacuum of any length. From this, one can deduce that the physical vacuum is a **non-dispersive medium** for EM-waves which, in turn, means that EM-light is not interacting with **any** kind of “stuff” that might exist in the physical vacuum. The big bang modelers **assumed** that this meant the physical vacuum was “empty”. However, an equally **plausible assumption** is that the EM-sensor “invisible” stuff of the physical vacuum all travels at velocities much **faster** than the EM-light velocity, c , so that this “stuff” can easily get out of the way of EM photons traveling at v smaller than or equal to c .

Interestingly, about 50 years ago, astrophysicist John Wheeler predicted⁽¹⁾ that, for quantum mechanics (QM) and relativistic mechanics (RM) to be internally self-consistent, the physical vacuum must contain a latent energy density of ten to the power of ninety-four (10^{+94}) grams per cubic centimeter of equivalent EM energy ($E=mc^2$, where $m=1$ gram, from Einstein). This would mean that the calculated energy stored within the physical vacuum volume of a **single** hydrogen atom (about 10^{-23} cubic centimeters) contains about a trillion times that of **all** the EM energy stored in all the stars, planets and cosmic dust of our entire physical cosmos (an almost sphere of radius about 15 billion light-years). This is **totally inconsistent** with the “empty physical vacuum” assumption of the big bang.

Also, about 50 years ago, physicist Eisberg⁽²⁾ showed that, for a non-dispersive medium like the physical vacuum, if one considers the DeBroglie particle/pilot wave concept of the 1920s (for which he won a Nobel Prize) and also uses an RM particle energy, one theoretically calculates that (1) the group wave velocity equals the particle velocity and (2) the pilot wave velocity times the particle velocity equals c^2 (see Figure 1).

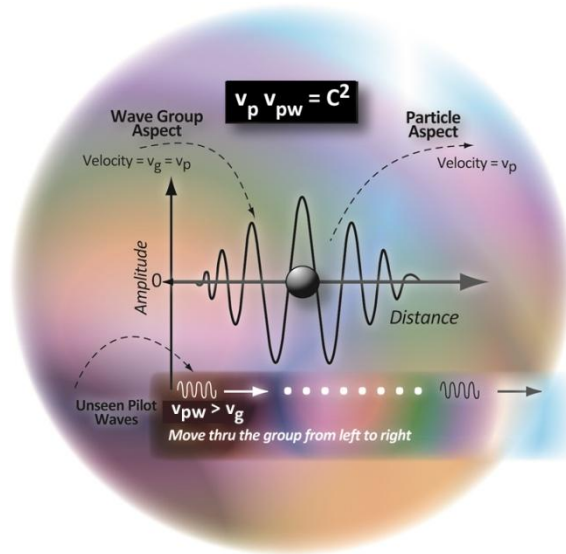


Figure 1. Schematic of true pilot waves.

Thus, since the spacetime mass particle velocity is **always** less than c , the pilot wave velocity is always greater than c (it is superluminal in the EM-sense from a distance-time reference frame (RF) perspective).

The orthodox science community don't seem to like superluminal pilot waves and prefer to assume that the medium through which DeBroglie's pilot wave travels is a dispersive medium wherein an anomalous absorption process operates. However, it is almost impossible that such an anomalous process could operate in the physical vacuum because an EM-wave travels at velocity, c , **independent** of frequency, so, at best, an absorption process could work well at only one frequency, not at all frequencies.

To close this discussion, let us consider the Higg's Boson predicted to give mass to all the fundamental particles in today's orthodox physics particle menagerie. It is thought to have been discovered in June, 2012 at Cern in Geneva with a formation energy of about 125 billion electron volts. For me, I assume that this forms a key type of **closure** for today's orthodox physics which has created all the EM-instruments whose EM-signals travel at velocity less than $v=c$. Thus, with all the foregoing discussion, it appears as if the "standard model" and the "big bang theory", both dealing with v smaller than c phenomena, are complete – a great orthodox science achievement! **However, it also means that, although natural phenomena in the v greater than c domain are open to legitimate scientific investigation, our orthodox scientific community presently has no tools available for such studies!**

References

1. C. Misner, K. Thorne, and J. Wheeler, Gravitation (W.H. Freeman and Co, San Francisco, 1970) chs 43, 44.
2. R.M. Eisberg, Fundamentals of Modern Physics (John Wiley and Sons Inc, New York, NY) pp 140-146.

C. What are “Subtle Energies”?

To date, the last almost 500 years of our orthodox science and orthodox medicine adventures has discovered, and completely verified, the existence of **four fundamental forces** acting in nature. These four are: gravity, electromagnetism (EM), the long range or weak nuclear force (radioactivity) and the short range or strong nuclear force (nuclear energy, atomic bomb). These all function in the reference frame (RF) originally called **distance-time** and now called “spacetime”. Unfortunately, these worthy scientists actually think of this as a **distance-time-only** RF wherein human consciousness is **not** a significant experimental variable!

Present day quantum mechanics (QM) shows us all that, even at absolute zero of temperature ($T=0^\circ$ Kelvin), electric atoms and molecules still exhibit **modes of vibration** so that photon energies can be exchanged (back and forth) between the positive energy states of Figure 1 (Dirac’s diagram – discussed in working hypothesis A) by definition, since the 1930s this energetic state has been labeled by physicists as the zero-point energy (**zpe**) state.

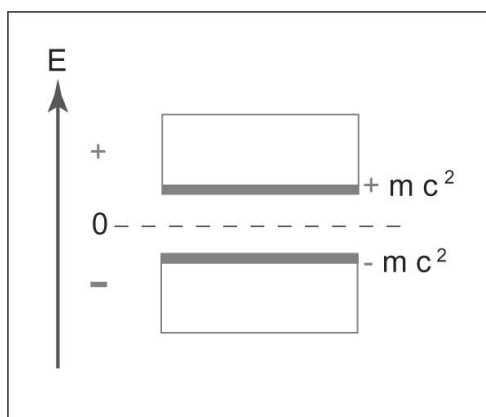


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This particular zpe state is **quite different** than the physical vacuum energy state discussed in working hypothesis A.

About 1970, **in parallel** with my orthodox science as a full professor with tenure at Stanford University in the Department of Materials Science and Engineering, I decided to help create a **bridge of scientific understanding**, that seamlessly joined orthodox science at one end, progressed through the domains of (1) the human psyche, (2) the domain of emotion, (3) the domains of mind and (4) becomes firmly implanted in the bedrock of spirit at the other end. This was performed **outside** of the university because such a topic was significantly frowned upon by all university communities in today's world.

Such a part time project required the proposal of a type of structural picture to represent these various new types of (1) substances, (2) energies and (3) informations. To date, two types of visualization have been found to be useful and are represented in Figures 2 and 3.

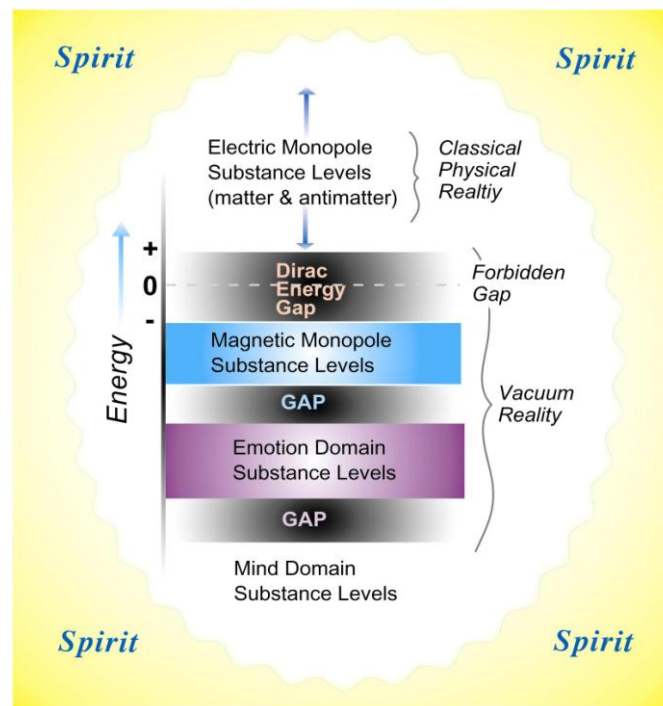


Figure 2. An energy level diagram embracing both classical physical substances and “unseen” vacuum substances.



Figure 3. A metaphorical description of “the ladder of understanding”.

Figure 2 provides an **energy** perspective as an expansion of Figure 1 with all of these new energies functioning in our currently **unexplored** physical vacuum. Many years ago, I defined them as **subtle energies** (all those energies functioning in nature beyond those connected to the four fundamental forces discovered by orthodox science)⁽¹⁾.

Figure 3 provides a different perspective and has been labeled as “the ladder of understanding”. I like to think of nature as radiating to us on many, many different bands of information and for the last, almost 500 years, we have quantitatively learned about only one group of those that our present level of average consciousness can meaningfully access via the RF “distance-time. Thus, this forms the bottom rung of our Figure 3 ladder and our orthodox science knows it quite well! This author’s extracurricular research of the past almost 45 years has focused largely on the second rung of Figure 3. As such, it focuses on adding **human consciousness** and **human intention** as significant experimental variables in our future studies of natural processes.

References

1. W.A. Tiller,
 - (a) “What are Subtle Energies?”, *J. Scientific Exploration* 7 (1993) 293.
 - (b) Science and Human Transformation: Subtle Energies, Intentionality and Consciousness (1997) Chapter 1.
 - (c) Psychoenergetic Science: A Second Copernican Scale Revolution (2007).

D. The Whole Person's Three Selves

First and foremost, we are all **souls** and we **require** a physical body to fully experience the distance-time domain of nature (much like, in former times, a deep water diver needed a metal diving bell to sustain the high pressures encountered there plus built-in instrumentation that allows us to maneuver in that difficult environment). As souls, we appear to be indestructible and relatively eternal. On the other hand, our biobodysuit which grows around us when we are born into this particular experimental classroom, wear for the relatively short time of about 50 to 100 years (in spacetime units) and then it appears to die when we leave this particular playpen of consciousness and return to higher dimensional domains of reality.

Our experience in this particular playpen allows us to (1) grow in **coherence**, (2) develop our gifts of **intentionality** and (3) eventually, after many biobodysuit lifetimes, become what it was always intended that we become – loving **co-creators** with our spiritual parents!

As a working hypothesis, I like to picture our **soul-self**, our **personality-self** and our **source-self** as illustrated in Figure 1.

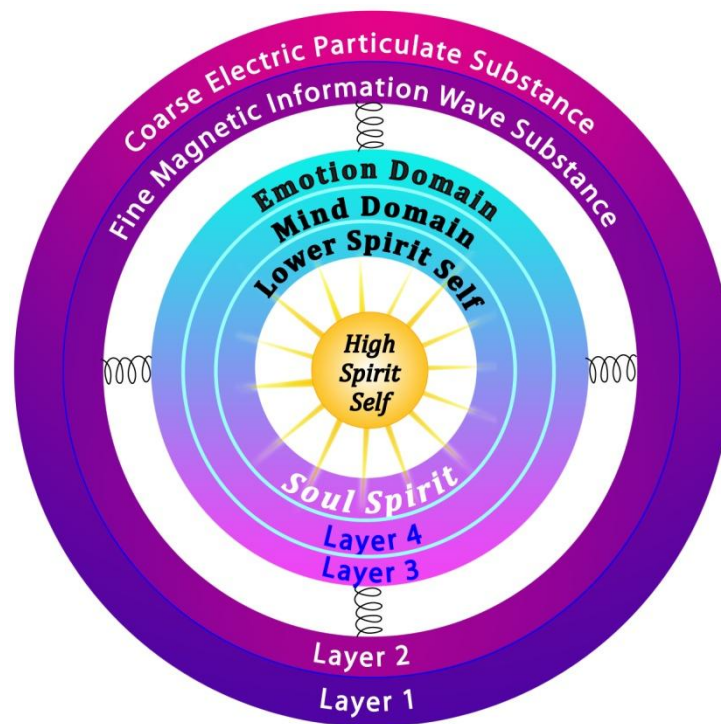


Figure 1. A metaphor for the whole person. I like to visualize a sphere comprised of three concentric zones that are at least weakly coupled to each other. The outermost two layers is the personality self. The middle three layers is the soul self. The core region is the high spirit self (or the God Self).

This spherical construct consists of three zones of substances of varying density and nature with layers of highest substance density on the outside and lowest density in the core region.

Although, at present, our global society thinks of **physical reality** (the biobodysuit and personality self) as consisting of only one layer of substance, the coarse electric atom/molecule layer of Figure 1, I prefer to define physical reality as consisting of the two layers of (1) the coarse, electric substance layer plus (2) the fine, magnetic substance layer.

The second, inner layer of the personality-self is where the acupuncture meridian system is thought to function. As many have experimentally discovered, there is no **histological** (unique cells) evidence of the acupuncture meridian system and its many acupuncture points. At present, the only serious evidence of this very important structural system is of an electrodermal nature – a significantly enhanced electrical conductivity of the skin immediately adjacent to the Asian-predicted locations of the acupuncture meridians and points.

When our soul-self is “born” into this spacetime domain, the EM-invisible, innermost, magnetic substance layer of our personality-self is thought to form first and become the template upon/around which the coarse, electric atom/molecule layer forms. All electric charge movement occurring in this outermost layer **induces** circulating magnetic fields around the electric current paths. These induced magnetic signatures are always of a dipolar nature (north and south poles closely bound together) rather than of a monopolar nature (single north or south poles).

The **soul-self** consisting of the still higher dimensional domains of emotion, mind and an aspect of spirit, is thought to be the entity that is importantly **evolving** in this overall process. Besides being much more durable than the personality-self, it is the repository of all the key experiences from a long succession of personality-selves. When the various outer world classrooms have little more to teach the soul, it graduates to the high spirit domain and is thought to transfer all of its essential information to the source-self. In this way, the source-self is thought to keep growing!