

ARE WE HYBRIDS?

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Presented to the Philosophical Club of Cleveland on March 10, 2009

Normal science is predicated on the assumption that the scientific community knows what the world is like. Scientists take great pains to defend that assumption and to this end often suppress fundamental novelties because they may be seen as subversive to the existing set of beliefs. One existing paradigm in contemporary medicine is that we are primarily biochemical beings. There is, however rapidly accumulating evidence that we have also sophisticated high speed communications systems mediating a complex information flow within our bodies. The research in physics for almost a century, has seen an emerging new vision of energetic interactions within matter by invoking strange concepts such as quantum mechanics, soliton waves, particle entanglement, non-locality and many others, much of which I confess to be beyond my knowledge of that discipline. By reading the book by James Oschman I was able to learn that this new physics describes a world that is increasingly confusing to our sense perceptions. Modern biological sciences and medicine use mostly the traditional ideas of Newtonian physics. It has yet to move more surely into the Einsteinian era.

The 1906 Pure Food and Drug Act declared that electrotherapy was scientifically unsupportable and this was followed by the Flexner report in 1910 that resulted in the closing of those medical schools designated as weaker, including a number of homeopathic schools. From that time on there was a growing emphasis on a surgical and drug-oriented therapeutics which effectively discouraged the use of electrical and magnetic treatment. It is of some interest that it was estimated that by 1884 there were as many as 10,000 physicians in the U.S. using electrical devices for therapeutic purposes. Some of the devices used produced many satisfied patients and were sold by American retailers such as Sears through their catalogue. Even recent history may well be a closed book to most of us when we sincerely believe in the year 2009 that we are in an advanced state in science.

In the waning years of the 20th century there was renewed interest in this field, driven in part by consumer demand. With U.S. levels of disease-care spending reaching 1.3 trillion dollars in 2000 and showing no signs of abating, this represented, at that time, \$4500 a year for every American man, woman and child, an expenditure that has increased since. Only a miniscule

percentage of this spending is for energy medicine, even though techniques that depend on it have demonstrated many beneficial effects, and it is reported that we certainly do not have a high index of success with orthodox drug based therapy, particularly in the aging population. Most of the presentations that I have made to the distinguished members of this group have been focused on the subject of chemical energy driving our functions and what happens when this energy synthesis and utilization is deflected.

Before I proceed with showing some of the evidence that has accumulated about the importance of electromagnetic energy in our physiology I am sure that many of you listening to this have already dismissed its projected benefit under the magic words “placebo effect”. In forestalling this as a stumbling block in our future discussion, let me address this issue head on. The fact is that the so-called placebo effect is an extremely potent force for healing. The problem with it is that we do not know the mechanism and we do not know how to turn it on. If we did, we would not require any medication and it would at last be realized that doctors do not heal us. It is a self-repairing mechanism involving brain and body that needs only energy to produce its effects.

Turning then to “The Body Electric: Electromagnetism and the Foundation of Life” by Robert Becker and Sheldon in 1985, I will begin to describe some of the research that supports it. First of all, it is noted that the electrocardiogram and electroencephalogram are both tools that use body electricity in diagnosis of disease. Another example of medical use of electromagnetism is the now well known MRI. The inventor, Raymond Damadian, once was considered to be “a mad scientist” Asked about how to spot a pioneer, Damadian replied “He’s the one with all the arrows in his back.”

A classic example of electricity in biology is the electric eel. This animal is able to produce a lethal electrostatic high voltage charge by an adaptation of a synaptic ending of a nerve that turns it into a sophisticated condenser. The neurotransmitter that is used to accomplish this is acetyl choline, the same chemical agent that we use in transmitting information in our brains and nervous systems. This chemical induces a positive charge on the proximal side of the distal synaptic membrane and a negative charge on the other side of that membrane. By making it convoluted, the membrane has positive and negative charges on opposite sides of these convolutions, thus creating a condenser. It is a good example of energy transduction where chemical energy gives rise to a powerful electrostatic charge. Of great importance, it has been found that the triphosphate of thiamin (vitamin B1) makes up the majority of the three different esters of this vitamin in the

electric organ of this animal. Although we still do not know the exact function of thiamine triphosphate, it suggests that it represents a vital link in the transduction of chemical to electric energy.

A conference entitled “Mechanisms of Growth Control, Clinical Applications” was held on September 26 to 28 in 1979 at the State University of New York Upstate Medical Center. The conference brochure had the cover logo of a salamander, a popular animal for research on tissue regeneration. The logo showed a diagrammatic representation of an electronic circuit superimposed over its body. This animal has the remarkable capacity to replace amputated body parts. Biologists studying regeneration, as for example in wound healing, were intrigued by the electronic properties of the salamander tissues that enabled them to do something that humans are unable to do: regenerate their limbs. Oschner, in his book on energy medicine, mentions that a colleague of his by the name of Phil Person and associates discovered that electric stimulation sometimes could induce regeneration of a leg in a mammal but the results were not consistent. It was also shown by others who reported in 1984 that at least one third of the heart of the common newt can be completely regenerated by electrical stimulation within 24 hours of excision.

Robert Becker was a leader in research on regeneration in studying the electronic properties of living matter. He did a number of experiments that confirmed the concepts of Szent-Gyorgyi, the discoverer of the role of vitamin C and its synthesis. Szent-Gyorgyi proposed the semiconductor nature of living tissues. One of the practical results of this work was the discovery that minute currents of electricity can be used to stimulate the healing of un-united fractured bones. In the winter of 2007-2008 I read a book that was suggested to me by Bill Bazik. It summarily condemned all the benefits of electrotherapy as the placebo effect and was, in my view, an example of how we sneer at innovative concepts that are “outside the box”. Indeed, it is an entirely predictable result of virtually any innovation in any field. It is interesting that a recent paper reported a double blind study performed at Duke University to test the activity of the drug Zoloft, used for depression. It was compared with St John’s Wort, a popular herbal remedy and both were compared with a placebo, the gold standard used for testing the efficacy of a pharmaceutical drug. Guess what came out on top! The drug and St John’s Wort were about even. The placebo did better than both. One revelation that opened my eyes was the fact that the study, started in 1997 and rigorously controlled, cost a mere 6 million dollars. Bill Bazik was kind enough to send me two articles on the subject of the placebo effect. One of them, entitled “Imagination Medicine”, published in Science News of

December 2008 indicates that there is an intense research interest in the mechanism. Predrag Petrovic, a psychiatrist at the Karolinska Institute in Stockholm is quoted as saying “We know now that we are actually activating systems that can either make it better or worse for the patient just by what we tell them and how we tell them”. When a physician, however kindly his motive, tells a patient that he has an incurable disease, he is formulating a potential death sentence. The other article was taken from a book entitled “13 things that don’t make sense”. The chapter is called “The placebo effect: who’s being deceived?” For example, it has been found that the well known drug marketed as Valium actually (and I quote) “doesn’t work unless you know that you’re taking it”. From 1969 to 1982 this drug was the top-selling pharmaceutical in the United States. When considered in this light, we should remember that there are at least 100,000 deaths a year in the U.S. from the appropriate dosage of prescription pharmaceuticals.

On yet another occasion, during a PC dinner meeting the subject of oxidative metabolism came up and my good friend Dick Wooley; commented that “that is Derrick’s answer to everything”. Well, perhaps it is; after all, oxygen is the major cause of entropy. An insufficiency and an excess both kill us. So I will present some of the evidence that the human body has both fuel burning and electric engines. It may well be that it is the ideal representation of the hybrid as we now have this technology in some cars. Since we now know that different forms of energy are interchangeable, it is not beyond the lights of reason to suggest that we are both chemical and electric machines. Perhaps the fuel, the catalysts and the oxygen that we take in can supply both sorts of energy, although McTaggart, in her book “The Field” gives details on the evidence that electromagnetic energy may come from external sources as well. I will return a little later to this book. I once know a lab technician that could see the energy aura surrounding a patient. She was able to tell the state of the patient’s health by the color of the aura and was even able to forecast death.

As many of you know, acupuncture is now used by some patients who desire relief of a variety of symptoms that are poorly addressed by conventional medicine. The energy flow involved has been called Chi’i by the ancients. The problem with this by scientists within the conventions of science is that nobody has been able to find the wiring that might support the concept of the meridians and acupuncture points described by the Chinese some 5000 years ago.

A chapter in Oschman’s book describes the belief of Szent-Gyorgyi that life is too rapid and subtle to be explained by relatively slow molecular and neural processes. He was looking for a faster means of body

communication and realized that electrons and protons would be likely carriers of energy and information. His leadership led to scientists, who were researching the mystery of regeneration, beginning to appreciate that their problem boiled down to locating the electronic circuitry that controls biological form. Although some progress has been made, there are still more questions than answers.

The story that Oschman says is emerging is that the various entities comprising the body and their interactions constitute an operating system like that in a computer, working silently in the background, coordinating and regulating all living processes. The evidence that he outlines is that connective tissue represents the wiring that carries the electric information called Chi'i. Connective tissue is the most abundant component of animal matter and the bulk of the body. All the major anatomical systems are ensheathed in this tissue, forming a continuously interconnected system throughout the whole body. It is what is described as a liquid crystalline material and its components are semi-conductors that give rise to many remarkable properties. For example, one of these properties is what is known as piezzo- or pressure electricity. Because of this, every movement of the body, every pressure and every tension anywhere generates a variety of oscillating bioelectric microcurrents. Because of this continuity and conductivity of connective tissue, these signals spread through the tissues and even into cells. Hence, every cell knows what every other cell is doing. Oschman compares the electronic properties of collagen and connective tissue with the electronic circuit in an FM tuner. Proteins such as collagen and the components of the cytoskeleton that make up the complex structure of the cell, are polymers and it is now known that polymer plastics can be made that are electrically conductive. As an aside, a ballroom has been constructed in London that generates its own electricity from the pressure applied by people dancing on the ballroom floor.

Of course, I cannot compress Oschmann's book of 337 pages into my brief and unsophisticated presentation. But I can continue my remarks by some discussion about electromagnetic principles in their application to the medicine of the future and even of the immediate present. Perhaps I am looking into the underlying mechanisms of the placebo effect and how we may be beginning to induce it. Oschner refers to a period between 1910 and 1950 that he refers to as "the dark ages" when even mention of energy medicine was politically incorrect in academic circles. This seems so strange when one considers that Einstein was making his genius felt and we were quite ready to accept the atomic bomb as the fruit of that genius.

There is increasing awareness in the biomedical community that electrical and magnetic fields affect cellular processes and can be used to stimulate healing in various tissues. There is also a rapidly growing popularity of complementary and alternative therapies gradually being integrated into standard medical care. Oschman lists no less than 19 different methodologies, including acupuncture, aromatherapy, cranio-sacral, healing touch, homeopathy and massage to mention some of the better known. It is true of course that even mentioning such techniques will classify me as a maverick optimist without the breadth of modern acceptable science. Martin Luther said “to reach the source, one has to swim against the current”. I am only too well aware that some of you will be mentally curling up at even the mention of some of them.

As complementary and conventional medicine come together as integrative medicine, we are discovering a clearer picture of the way the body really is and the meaning of this picture for medicine and for life in general. It has been said by a researcher by the name of Kerry Weinstein that “there is this medicine and that medicine and this method and that method, and then there is the way the body really is”.

Having peered at a very superficial level into the revelations by physicists about the reality of universal matter, I have concluded that it would hardly be surprising that medicine is beginning to deal with them. Einstein said that significant problems we have cannot be solved at the same level of thinking with which we created them. Szent-Gyorgyi looked at his own scientific progress and noted that “there is but one safe way to avoid mistakes: to do nothing or, at least, to avoid doing something new”. Winston Churchill said “I have had to eat many of my words and found the diet nourishing”.

Biomagnetism is the name given to the study of fields emitted by living systems and magnetobiology is the study of the effects of magnetic fields on the body. For example, it has been found that pulsing electromagnetic fields can “jump start” the healing process in a variety of tissues, the most widely used being the orthopedic application I mentioned earlier. Extensive research has shown that very low intensity signals (10 mW/cm²) and less, affect cell growth and proliferation, the activation of enzymes, the state of the cell genetic apparatus and the function of excitable membranes, receptors and other biological systems. In animals and humans, local exposure to these fields stimulate tissue repair and regeneration, alleviate pain and accelerate recovery from a wide range of diseases.

From the information in Oschman’s book, it seems likely that the discovery of meridians as low resistance pathways to the flow of electricity

is a hint of the vital and dynamic properties of the living meridian network. This flow of electricity is the tip of the iceberg in relation to biological electronics. They will not be fully understood until they are studied as electronic, photonic and acoustic microprocessors. Accumulating evidence indicates that the living matrix has a variety of solid-state cooperative properties that may explain phenomena previously regarded as inexplicable. We have to remember that surgery, with all due respect to the incredible skill of surgeons is, apart from trauma, an admission of medical or preventive failure. To remove an organ because it is beyond healing is less than an ideal method.

I indicated that I would return to the possibility that we are not only potential hybrids but that we may be receiving energy from outside sources as well. As I have already indicated, I was introduced to “The Field: the quest for the secret force of the universe” by Lynne McTaggart, a scientifically trained reporter who spent 8 years in its production. She traveled to Russia, Germany, France, England, South and Central America and the U.S., discovering a small but cohesive community of top-grade scientists, all doing some small aspect of the same thing. Their discoveries seemed to overthrow the current laws of biochemistry and physics, offering explanations of why, for example, homeopathy and spiritual healing might work. She mentions the names of the scientists she interviewed, including Jacques Benveniste whose work made a world news splash when he discovered that water has its own memory. The Prologue, called “The Coming Revolution” states that we are poised on the brink of a revolution as daring and profound as Einstein’s discovery of relativity. At our most elemental, she says, we are not a chemical reaction, but an energetic charge. Human beings and all living things are a coalescence of energy in a field of energy connected to every other thing to the world. This pulsating energy field is the central engine of our being and our consciousness, the alpha and the omega of our existence.

She goes on to say that the experimental work she describes has basically attacked our concepts of reality and that acknowledging these new ideas would require scrapping much of what modern science believed in and, in a sense, starting from scratch. The old guard was having none of it. It did not fit the world view and so it must be wrong. I fear that I have opened a Pandora Box in this astute and intelligent assembly and I do not have the necessary knowledge of physical science to fill in the blanks. I can only recommend reading the book that I am quoting from. I must say a few words to introduce some concepts that may well be more in the province of our physicists. The discussion may be more exciting than this presentation.

Continuing to quote from this extraordinary book, what we believe to be our stable, static universe is in fact a seething maelstrom of subatomic particles fleetingly popping in and out of existence. The uncertainty principle developed by Werner Heisenberg, one of the chief architects of quantum theory, implies that no particle ever stays completely at rest but is constantly in motion due to a ground state field of energy constantly interacting with all subatomic matter. It means that the basic substructure of the universe is a sea of quantum fields that cannot be eliminated by any known laws of physics. This subatomic tango, as McTaggart describes it, however brief it may be, when added across the universe gives rise to enormous energy, more than is contained in all the matter in all the world. Also referred to by physicists as the vacuum, the Zero Point Field was called “zero” because fluctuations in the field are still detectable, even at temperatures of absolute zero, the lowest possible energy state, where all matter has been removed and nothing is supposedly left to make any motion. It had always been discounted because it was ever present. Because it didn’t change anything, it didn’t count. Most physicists would subtract zero-point energy away from their equations, a process called “renormalization”.

To quote from *The Field*, “If it were true that the laws of quantum mechanics also apply to the world at large and not just the subatomic world and to biology and not just the world of matter, then the entire paradigm for biological science was flawed or incomplete.” Quoting again “ If quantum theory were applied to biology on a larger scale, we would be viewed more as a complex network of energy fields in some sort of dynamic interplay with our chemical cellular systems.”

What has this got to do with medicine and healing? It is not completely clear yet because there are more questions than answers. But when you consider our disease expenditure, already quoted, it is time to start thinking of how we can improve our health as cheaply as possible since it should be our birthright. We are indeed part of our world and the universe.

I must return for a moment to homeopathy. I mentioned the work of Benveniste earlier. He was studying allergy by testing aqueous solutions of allergens by their action on basophils, one of our white cell populations. They degranulate in response to the allergen. His technician found that this degranulation occurred still, even when the dilution of the solution was so great that there were no molecules of the original allergen left. This led to the concept that water has memory of its own. With more information we now have reason to believe that water is among the most mysterious of substances. According to McTaggart, water can be compared with a tape recorder, imprinting and carrying information whether the original molecule

is there or not. The shaking of the containers, as is done in homeopathy, appears to act as a method of speeding up the process observed by Benveniste. It has come to mean that water is vital to the transmission of energy and information in the body. The question remains: is that energy derived from the cosmos or is it transduced from the accepted form of chemical energy derived from the oxidation of our food, a process of slow combustion. Are we indeed, like hybrid cars?

Lastly, I am a firm believer that we require the entire periodic table of elements as our nutritional input that we emerge from the earth and return to it. Remember the burial ritual, “Dust to dust and earth to earth” For example, we know that the heavy metal lead is a required nutrient in the most minute quantity although the mechanism is unknown. A lead free diet, a very difficult diet to create, was given to animals. They did not grow until the traces of lead were restored. Why should other elements be excluded simply because we have not found them to have a place in our physiology? Until 1957 selenium was classified as a poison. When someone came up with the idea that it is an essential nutrient, he was considered to be out of his mind. We need only about 200 micrograms of this element a day. Its complete absence results in disease and is ultimately lethal just like all the essential nutrients. The only difference in terms of toxicity is the “dose window” that applies to each. It is well known that selenium, for example, is highly toxic in doses above the physiological needs. Assuming that the body has been engineered well, and we are all well aware that that does not always happen, all it requires is energy. I am suggesting here that the evidence is rapidly accruing that we have both chemical and electric engines and that a great deal of that energy may be from sources outside the body. Nutrients all fit the ancient Chinese concept of the Yin and Yang, not too little and not too much. Even oxygen excess is toxic as every diver knows. I believe that we are standing on the beach of knowledge looking at the ocean of ignorance. Perhaps we need a little more scuba diving!

References

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