

SIMILARITY AND EQUIVALENCE: *Modeling in Medicine*

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Modeling is an important way to consolidate the observations made at the laboratory. Observation in science proceeds to modeling and later to prediction. If our model is correct, then the prediction could yield results that are reliable and consistent; otherwise, we need to restudy our data, perhaps conduct more experiments and remodel the system we study. If we know (now, of course, we know) that electrical impulses travel along the nervous system and model the nerves as electrical conductors then we can predict that an external electrical pulse could activate a muscle when we stimulate the concerned nerve. This is exactly the procedure adapted for electrical stimulation for cardiac pacemakers and for many orthopedic support devices. But then, nerves are very different in structure and function in comparison to electrical wires. The conduction in a nerve fiber is characterized by saltatory conduction, from *saltare* meaning to jump. While the similarity between the nerve and wire transmission of electrical signals is striking, the difference in methods of conduction between the two is profound. In spite of this difference, we can model the nerve fiber as a simple electrical conductor. However, exact modeling could give precise prediction and control capabilities.

The history of modeling in medicine is long and complex; sometimes totally misplaced but always amusing. For example, we had “vital spirit” coursing through the body; then the theory of four humors with the belief that disease was caused by “isonomia,” an imbalance in the four humors consisting of yellow bile, blood, phlegm, and black bile. Presently a disturbed flow of Qi or prana flowing through muscle or nerve network is thought to cause disorders

in the body. The nature of Qi or prana is not known. How the subtle Qi or prana is able to flow through the gross body is itself a physical and philosophical question. Further, Qi and prana have different functional units sustaining the body and hence a direct comparison between the two is not possible.

In complementary medicine, modeling is complex since we look at the entire organism; however, under many clinical conditions, we try to understand the working at a particular level. The level of modeling may be at the gross, subtle or simply at a philosophical level. This poses many problems to the researcher and to the readers of this journal. Very often, the tendency is to equate similar responses to exactly the same cause. Since electromagnetic (EM) fields are the most understood out of all the fundamental forces in physics, we tend to look for an EM component in all interactions. In distant healing, hands-on-healing, prayer, Qi and in many other healing modalities, we invoke EM generation or interaction. Further, it is tempting to look for a “New Physics” that could explain these effects. However, at this stage of the game, it is wise to be cautious in such attempts.

The current issue is of interest to care providers who may be concerned with the chronically and terminally ill patients. The first paper by Phillip Shinnick and Simon Freed titled, *A Case Study of the Synchronization of Human Energy in an Acute Condition of Chronic Heart Disease Through Complementary Treatment* is a unique one: the terminally ill patient and his care giver work together to mitigate the distress of the patient. The patient is used to practicing Qigong and meditation. He was also administered the recommended medication and acupuncture. Both the provider and the patient were aware of the seriousness of the patient's condition; thus, all therapies that could give relief to the patient were incorporated. The author mentions that the episodes of breathlessness and wild fluctuations in blood pressure and related symptoms were mitigated through the above integrated procedure. This seems to decrease the symptoms and “synchronize” the human energy and improve the quality of life for the patient. This paper is a remarkable report on the self help strategies available to the terminally ill (read, all of us at some point) to improve quality of life even during episodes of intense stress.

In the second paper, *Manipulation of the Electromagnetic Spectrum via Fields Projected from Human Hands: A Qi Energy Connection?* by Randall Waechter and Lauren Sergio, a relation between Qi energy and bioelectromagnetic energy

is sought. Experiments are conducted to measure the electromagnetic energy in three specially designed copper coils while four practitioners of Qigong projected this energy. The results indicate that in the frequency range zero to 120 Hz, the electromagnetic wave induced in the coils changed—increasing at some frequencies and decreasing at others. These experiments suggest that the electromagnetic environment of the Qi practitioner changes; however, it is too early to say that Qi is indeed bioelectromagnetism. If so, we can easily build an electromagnetic generator and use it as a healing machine. However, such attempts are not entirely successful. The paper is still important since it shows the directional and frequency sensitive aspects of Qi in modulating the electromagnetic environment.

The third paper in this issue is by Norman Shealy, Vera Borgmeyer and Paul Thomlinson and is titled *Reduction of Free Radicals by Electrical Stimulation of Specific Acupuncture Points*. Thirty subjects with free radical excretion in urine were administered two to four days of stimulation at thirteen specific acupuncture points termed the Ring of Crystal. The free radical excretion was significantly reduced after this treatment. This is an important finding since the prevalence of free radicals is suspected in a wide variety of disorders ranging from cancer to many neurodegenerative disorders such as Alzheimer's and Parkinson's disease. The procedure is simple and a specially designed TENS type device is used for the stimulation which is inexpensive and convenient.

The last paper in this issue, *Are There Electrical Devices that Can Measure the Body's Energy State Change to an Acupuncture Treatment? Part I, The Meridian Stress Assessment (MSA-21) Device* is by Nancy Roberts, Norman Shealy and William Tiller. The need for a reliable instrument in detecting changes in subtle energy in the body due to acupuncture treatment cannot be overstressed. The authors have tested two instruments for this purpose; the results with one such instrument are reported here. The instrument applies a small voltage (around 2 volts) with a handheld electrode to select acupuncture points. The resultant current is measured and displayed in a meter as impedance measure for the applied voltage. This instrument is a modified version of the well-known Voll Dermatron. It is concluded that this instrument is able to distinguish between needling an authentic acupuncture point from a sham point. A body asymmetry in response is also detected, perhaps related to how the Qi

was flowing through the body at that time. This work will hopefully lead to finding a reliable instrument in this area.

The cover art is one of a series by artist Diana Kan. As the new-born child opens its eyes and looks around at the wondrous nature (after spending nine months in safety and gloom), *Day One* is stirring with its numinous and mystical light. This painting sets a mood in us to think, if only momentarily, of those who have gone before us to rediscover this beauty. Let us thank all those who are partaking in the endeavor to make life peaceful to us all.

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