

# **Physiotherapy and Life Physics: an Introduction**

**Prof. Dr. Changlin Zhang**

College of Life Science, Zhejiang University, China; Advisor, Center for Frontier Science, Temple University, USA; Visiting Professor, Siegen University, Germany  
zhang.biophysik@musik.uni-siegen.de

Editor-in-Chief, *International Journal of Physiotherapy and Life Physics*

We are already at the crucial turning points in several important areas, including medicine and physics. What are the problems which we are facing? What has happened in the past for us to learn from? And what are the new ways for us to advance at the present time and into future?

## **End of reductionism and material thinking in medicine**

### ***1. End of reductionism and material thinking in medicine***

In the Eurasia continent since ancient times, or at least since Classical Times, there have already been three different ways of thinking in medicine, or three different perspectives into human body and its relationship with the universe. We may also call them three different models of medicine, the Greek model, the Indian model and the Chinese model.

The Greek model is very concerned with materials and visibility. In the viewpoint of Greek model, the human body is composed of skin, muscle and solid organs which we can find easily with the help of a scalpel and we are able to see the solid structure with the naked eye or with the help of microscope of some description. In such a viewpoint, a medical doctor is regarded as a mechanical engineer who knows every part of the machine. When the machine is out of order, the doctor looks for which part of the machine is damaged, and repairs it. If every part is working as it should, then the person is as fit as a fiddle.

Within the viewpoint of the Indian model, the human body is encircled with seven levels of auras, which are usually invisible. More precisely, a human has seven levels of bodies, and the one visible one on which the Greek model concentrates is only the first level. From the Indian model point of view, there are also seven chakras along the middle axe of a human body. The chakras mean “light rings” with various colours and different directions of rotation. The colours and rotation directions vary in the various physiological, pathological and psychological states.

The Chinese model of medicine sees fourteen meridians around a human body, in

which there is some mysterious “Qi” circulating, corresponding to the movements of celestial bodies, the weather and the geographical surroundings. When the corresponding relationship is working, the person is in harmony and perfect health in body and in mind. Therefore, harmony is a very important concept in Chinese model of medicine. What is more, the mind plays a key role in healthcare. Principally, all disharmony and the various diseases, including infectious diseases and accidents, originally come from disorder in the mind.

Obviously, the Greek model is the simplest of the three and the easiest one to practice. Among these three models of medicine, anatomy was well developed only in Greece. Actually, anatomy is not only the basis of Greek medicine, but also the basis of Greek art. Because of the refined knowledge of anatomy, beautiful and highly realistic sculptures were developed in Greece more than two thousand years ago. Then, in the Renaissance, beautiful and highly realistic paintings and many famous sculptures were created based on the tradition of ancient Greece.

In some way, modern science, which was developed after the Renaissance, is deeply influenced by Greek thinking, including the realistic, practical and reductionist thinking in anatomy.

In fact, anatomy underlies not only the basic teaching of the western school of medicine, but also its basic way of thinking. In other words, the whole western school of medicine is the expansion of anatomy. For instance, histology is the direct development and the second level of anatomy. Cytology is the further development and the third level of anatomy.

The discovery of the helix structure of DNA in 1953 by James D. Watson and Francis Crick announced the beginning of the fourth level of anatomy, which is called the genomic era of biology and medicine. This was, of course, a fruitful time when many chemists ventured into the area of biology and medicine to develop biochemistry and molecular biology, based on the reductionist thinking.

## ***2. Beginning of delocalized and holistic thinking in medicine***

The climax of reductionism is in 1970s, when scientists could see that we would soon understand almost every molecule in a living organism, but we still didn't know what life is and the answers of many other basic questions in biology.

At the same time, many new theories and concepts came from physics and mathematics, ideas such as those of “open systems”, “dissipative structures”, “chaos theory”, “nonlinear problems”, “synergistic theory”, “bifurcation theory”, “butterfly effect” , “fractal theory”, “fuss theory” etc., which greatly impact on conventional thinking in many areas of science, including biology and medicine.

Since the World War II, there has been no major war. In peaceful times, surgery becomes no longer so important as before. And since the development of hygiene systems, less and less people suffer from infectious and acute diseases. On the other hand, more and more people are suffering from chronic diseases, functional disorders. Chronic diseases and functional disorders are not the strong point of western school of medicine, which is based on Greek model and reductionism thinking. In such a situation, many patients in the west are looking for something new in the “mysterious” Chinese medicine and Indian medicine.

Meanwhile, the development of detection technology in the past few decades proves that all human bodies are constantly emitting electromagnetic waves, in the range from ultra-low frequency to ultraviolet. This means that everyone, even every living creature, has an aura, something once regarded as some superstitious religion concept. In such a case, we have to reconsider the justification of the Indian model of medicine in the viewpoint of modern science, in particular from the viewpoint of modern physics.

Moreover, based on the scientific research into acupuncture system, an invisible dissipative structure of electromagnetic field in living systems is revealed. In other words, besides the solid chemical body which had been thoroughly studied in the western school of medicine, that is, in the Greek model of medicine through anatomy, histology, cytology and molecule biology, there is an electromagnetic body which is invisible, very dynamic and closely connected to the surroundings. In the viewpoint of the Indian model of medicine, we may perhaps regard the solid chemical body as the first level of the seven-level body, and regard the dynamic and invisible electromagnetic body as the second level of the seven-level body.

In the beginning of 1990s in the United States, the government initiated an ambitious project called the “brain decade”. At the beginning, people thought that brain was only some kind of computer; therefore, it was not difficult to find the secret of brain with our knowledge of computers. However, in only a couple of years, scientists found that no computer has “consciousness”, which every living person has. Since then, the word “consciousness”, which was once a forbidden word in scientific community, mushroomed everywhere.

Meanwhile, psychology is also facing a significant challenge in that an increasing number of psychologists have found that it is impossible to find explanations for many spiritual phenomena and mental disorders purely by means of neurophysiology or neurobiochemistry. It seems that some information which comes from “another world” influences the mental state of a patient.

### ***3. Supporting force from physics***

Now, we are already at the end of genomic era in biology, and more and more

scientists have found that we are unable to find the answers of many questions in medicines and in biology merely in terms of DNA or other molecules.

In such a situation, physics can provide many supports to understand much of the mysterious phenomena in the models of Indian medicine, Chinese medicine and many other natural medicines, even within our present knowledge of electrodynamics. For instance, most of the auras in the Indian model of medicine could easily be detected by modern technology. The concept of chakras in the Indian model of medicine could easily be understood as some focus centers of electromagnetic waves. Meanwhile, if we regard human body as a resonance cavity of electromagnetic waves, the invisible acupuncture meridians and the mysterious “Qi” moving inside meridians are simply just some description of an interference pattern of electromagnetic standing waves inside the body. Even the big question in psychology that some information coming from “another world” which influences the mental state of a patient could be at least a part of it, regarded as some electromagnetic waves received by the patient through resonance effect.

### **Life physics: the fifth branch of modern physics**

Since Isaac Newton (1642-1727), there have been four branches of physics developed in the last three centuries. They are classic mechanics, electrodynamics, statistical physics, and quantum physics.

Classic mechanics is a description of macro world. Electrodynamics describes the invisible electromagnetic waves. Statistical physics is a bridge between micro world and macro world, and the quantum physics is a description of micro world.

What we are facing now in physics is a world of life. Life has been a main topic in biology and medicine, particularly natural medicine, but not in physics. However and in fact, it was impossible to study life under the Greek model of thinking, the reductionism thinking. The Dutch physicist Niels Bohr (1885-1962), one of the founders of quantum physics, has clearly pointed out that the more we understand the details of a living organism, the less we have the possibility of understanding the life in it.

Meanwhile, the Austrian physicist Erwin Schrödinger (1887-1961), another founder of quantum physics, wrote a book “*What Is Life?*” in 1944 to start to consider how to study life by introducing the concept of “negative entropy”, which is one of holistic concept in physics.

As a matter of fact, the German physicist Rudolf Clausius (1822-1888) was the first one to study a complex system in a holistic way by means of introducing the concept of “entropy”, which evaluates the degree of “disorder” in the complex system.

As already mentioned, since the 1970s, many new theories and concepts with holistic thinking have come from physics and mathematics, such as the concepts of “coherence”, “open systems”, “dissipative structures”, “chaos theory”, “non-linear problems”, “synergistic theory”, “bifurcation theory”, “butterfly effect”, “fractal theory”, “fuss theory ” etc.

Now it is the time for physicists to work together with the practitioners of natural medicine to establish a new branch of physics, the fifth branch of physics, “life physics” to study the life in a holistic, scientific and quantitative way.

As a means of exploring these developments, encouraging research, disseminating information and learning from each other's work, we have started work on developing a new journal, the *International Journal of Physiotherapy and Life Physics* ([www.inderscience.com/ijplp](http://www.inderscience.com/ijplp)). The journal aims to not only further the development of natural medicines, including many ancient medicines, and to promote research in this area in according to the rigorous criteria of modern science, but also to contribute to the development of modern physics. The journal aims to start publication in 2011.