



Foundations of Acupuncture

Chaotic Wave Theory of Fractal Continuum

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To ancient Chinese acupuncturists for their insights and inspirations

*...The **meridian** corresponds to neurovascular bundle and can be characterized by its impedances...The current of injury derived from the insertion of the needle will reduce the capacitive...inductive impedances of neurovascular bundles...The **mechanism of acupuncture** is then explained by the concepts of impedance matching and traveling waves via control input at specific sites of such a network...*

Shyang Chang: *Chin J. Physiol* (2010)

PREACE

Acupuncture is an important and integral part of traditional Chinese medicine (TCM) . It has proved itself to be clinically effective for more than three thousand years and is still very energetic and vibrant till the present day. It is fair to say that its widespread use in the East and West has helped thousands and thousands of patients. Yet, it is not short of critiques and controversies. The critiques have appeared in professional journals as well as publications for the general public. The arguments for this hostile attitude are that (1) the statistical results of research studies are not subject to “blind” or “double blind” procedures, (2) the effects of acupuncture are not verifiable via modern instruments, and (3) the theory behind it has not been translated into mathematical terms. Hence, the critics conclude that acupuncture is not “*scientific*”.

If the word “science” in its broad or classical sense is meant to be the organized and systematized knowledge, then acupuncture and the complete system of TCM are definitely and unequivocally “*scientific*”. Notice that acupuncture and the TCM were established more than three thousand years ago primarily to save lives and promote health care; it was not geared towards meeting the more research-oriented criteria set by the modern critics. Hence, it is imperative right now to examine if it is possible to verify acupuncture is indeed “*scientific*” in the modern sense. That is, if we can (1) perform the acupuncture experiments according to the “blind” procedures, (2) record and analyze their effects via modern equipments and statistical software, and (3) lay down the foundations of acupuncture via mathematical theories, and then we can give an affirmative answer to the aforementioned question. This is the main purpose of this book.

Another important viewpoint to be emphasized here is that all medical systems have been and will continue to be culture-bound. There are scholars who believe that medical “science” should free itself from connections with particular cultures and have to minister universally. However, medicine as mentioned in the previous paragraphs is both science and art. It is called an art because it is so delicate and it is practiced on the *complex* body of human beings. During the medical treatment, moral principles that apply values and judgments to the practice of medicine will have to be involved. As we all know, the medical ethics and philosophy toward life and death are culture-bound and they are intertwined with the medical “science” and cannot be separated. Consequently, I will devote Chapter I of the book to the traditional Chinese philosophy and its manifestation in TCM and Chinese culture at the outset. This book is then followed by nine more

chapters. The second chapter begins with the mathematization of the foundations of TCM. The main theme of this chapter is to propose a dynamical view of TCM. This dynamical view will lead us to the *chaotic* wave theory of *fractal* continuum as an alternative theory in explaining the complex behavior of human bodies. I will start out, then, with the physiology of TCM in Chapter 3. Then, I will proceed to the characteristic essence of meridians in Chapter 4. The reticular network model of acupuncture meridians will be covered in Chapter 5 as can be seen from the Table of Contents. The mechanism of acupuncture will be proposed in Chapter 6. Starting from Chapter 7, the etiology and diagnosis of Traditional Chinese Medicine will be covered. The treatment with acupuncture will be dealt with in Chapter 9. Finally, the conclusion will be covered in Chapter 10. It is believed that if TCM becomes the guidelines of medicine in the future, not only the health care cost can be dramatically reduced but also the human welfare can be greatly improved.

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