



A Treatise on Fundamental Principles of the Philosophy of Chiropractic and Related Topics in the Life Sciences

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ABSTRACT

Objective: To review literature from the biological sciences and study its application to the philosophy of chiropractic.

Discussion: Fundamental principles of the philosophy of chiropractic may gain wider acceptance within the scientific community with a correlation of the philosophy to literature in biology. In particular, literature that articulates the complexity of living systems and the function of the nervous system as the primary organizing system of the body would seem to facilitate this acceptance. Stephenson elucidated the fundamental purpose of the nervous system as the matter that organizes and coordinates all the functional parts of the body. He did this with the level of understanding of biology of that time period. He explained the connection by describing the 5 signs of life: adaptation, assimilation, elimination, growth and reproduction. He described a normal complete cycle of adaptation with efferent and afferent paths from the brain to the body.

Conclusion: Recent articles in the biological and life sciences support, and provide examples of, the correlation between the overall organization of the body and the role of the nervous system. (*J Chiropr Humanit* 2006;13:12-20)

Key Indexing Terms: Chiropractic; Spine; Identity

INTRODUCTION

The philosophy of chiropractic has emphasized the inborn intelligence of the body and the role of the nervous system, with less emphasis related to the signs of life and adaptation as described by Stephenson.¹ There is current evidence in the biological literature that is consistent with the derivation of the philosophical tenets in chiropractic with emphasis on the

complexity and organization of the body. This supports the philosophy of chiropractic. This literature helps explain and support the concept of inborn intelligence or organization, the importance of the nervous system, and various spatial levels of adaptation. The ongoing analysis and possible revision of the philosophical emphasis and terminology in chiropractic is suggested, considering the current framework, emphasis and terminology of the literature in the life sciences.

There are numerous levels of organization within the body. The principle of biological

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adaptation can be illustrated by examining various levels of organization and the range of sizes of structures in the body. From the smallest levels of organization, including sub-cellular and atomic interactions, to the organism level, and external environmental interactions, many authors have undertaken the task of understanding the makeup and function of the body. Physiology and biology journals contain numerous articles that have a clear emphasis on the adaptability and self-organizing attributes of the body.

The “33 principles” are a deductive derivation of the answer to the question, why is vertebral subluxation worth correcting?¹ Vertebral subluxation interferes with the nervous system. The nervous system provides communication for the body; it connects the brain with the body. The body has certain characteristics that are examples of the expression of intelligence including adaptation, assimilation, elimination, growth, and reproduction. There is matter and energy used by the body for constructive purposes. The intelligence supplies forces that create and maintain the body in a living and organized state. Senzon² has articulated the issue regarding the 3 primary approaches to the derivation of the philosophy: science, psycho-spiritual growth, and philosophy (the metaphysical biological doctrine proposed by the Palmers and Stephenson). He suggests that there can be a reconciliation of differences based on relating to the fundamentals of Palmer’s model: the body is self-healing and self-organized.

The step of the deductive derivation considered here is the connection between the organization of the body and the nervous system. Why is the nervous system so important? What happens to adaptation when there is interference to the nervous

system? What do we mean by adaptation and how is it expressed on several levels of spatial organization? Can we see examples of the interaction between the body and the environment, ie universal forces and matter (more fundamentally the innate-universal dynamic)?³

Before we investigate examples of the above, it may be helpful to slightly alter one aspect of the philosophy of chiropractic from Stephenson – the aspect of adaptability. Adaptability implies primarily survival and not necessarily an inherent need to thrive, and includes self-awareness, self-regulation and self-healing. The language in this paper will refer to adaptability and creativity. Creativity is considered by some to be an essential part of the expression of innate intelligence and a part of the definition of human adaptability. I agree and will use the term synonymously with self-expression.

It is intended that the following examples demonstrate the depth and progressive nature of adaptation as an integral step in the derivation of the philosophy of chiropractic. There is no attempt to place a hierarchy of importance in the order of presentation.

Organ Level Organization

It is understood that the nervous system demonstrates its importance because of the intricacy and self-regulatory nature of this system at the organ level. Kunze and Furness⁴ have shown that there are 650 intrinsic primary afferent neurons (IPANs) per millimeter in the guinea pig intestine. These IPANs:⁴

... communicate with each other through slow excitatory transmission to form self-reinforcing assemblies.

“There is a delicate, inseparable relationship between the organized action of innate intelligence and non-innately controlled universal forces and matter.”

High proportions of these neurons respond to chemicals in the lumen or to tension in the muscle; physiological stimuli activate assemblies of hundreds or thousands of IPANs. The IPANs make direct connections with muscle motor neurons and with ascending and descending interneurons. The smooth muscle cells form an electrical syncytium that is innervated by about 300 excitatory and 400 inhibitory motor neurons per mm length.

Would it be reasonable to suggest that human physiology might be as intricate and complex and just as dependant on the nervous system?

Another study by Falk et al⁵ examined the intestinal environment:

Areas discussed include the generation of simplified ecosystems by using genetically manipulated microbes and hosts to determine whether components of the microbiota actively regulate epithelial differentiation to create niches for themselves and for other organisms; the ways in which gnotobiology can help reveal collaborative interactions among the microbiota, epithelium, and mucosal immune system; and the ways in which gnotobiology is and will be useful for identifying host and microbial factors that define the continuum between nonpathogenic and pathogenic.

This study provides not only an example of the complexity of adaptation and the importance of the coordinated action of the internal and external environment, but also the consistency between the frame of reference of those inclined to study physiology with the principle of holism in chiropractic. There is a delicate, inseparable relationship between the organized action of innate intelligence and non-innately controlled universal forces and matter (or the “external” environment).

Researchers in other disciplines are embracing and examining the self-regulatory and self-awareness aspects of the adaptability of the body at the organ level. The current research related to the digestive and absorptive systems provide examples of the adaptability of the body. They also show the importance of the nervous system to adaptation. Given that there can be nerve interference at the vertebral level that affects these systems, these studies serve as an explanation for the philosophy of chiropractic. They also provide examples of the progressive nature of the tenet that the body is self-aware, self-regulatory and self-healing. Adaptability and creativity as the connection between intelligence and the significance of the nervous system are elucidated by the current frame of reference of those who study organ level physiology.

Cellular Level Organization

Ingber⁶ suggests that tensegrity is valid. Gravity, hemodynamic forces and movement play a critical role in tissue

development.⁶ The mechanism of how this happens is studied by examining such factors as stretch-sensitive ion channels, signaling molecules, cytoskeleton, and integrins.^{6,7} Ingber states:⁶

Mechanical signals, therefore, may be integrated with other environmental signals and transduced into a biochemical response through force-dependent changes in scaffold geometry or molecular mechanics. Tensegrity also provides a mechanism to focus mechanical energy on molecular transducers and to orchestrate and tune the cellular response.

Another experiment by Laing, Atakilit, and Gardner⁸ specifically looked at cell matrix interactions in the myocardium. The mechanical changes in the cells were related to the genetic code. The brain natriuretic peptide gene is shown to be dependent on the cell matrix in vitro.⁸

Subcellular Organization

Cell death and replacement are examples of self-awareness. The body must replace parts as they become damaged or functionally sub-optimal due to universal force interactions. Cell death is an efficient method of self-regulation when there is awareness that replacement is constructive to organization. Kroemer et al⁹ have isolated key aspects of apoptosis and necrosis. They state,⁹ “Mitochondrial permeability transition (PT) involves a dynamic multiprotein complex formed in the contact site between the inner and outer mitochondrial membranes. The PT complex can function as a sensor for stress and damage, as well as for certain signals connected to receptors.”

Another study examined the sub-cellular scale. These authors looked at repair of the retina in rats. These authors state:¹⁰

Focal mechanical injury to the retina has been shown to slow or prevent photoreceptor degeneration near the lesion site in 2 animal models of retinal degeneration, inherited retinal dystrophy in light damage in albino rats. These authors identified injury responsive factors and cells by examining mRNA response factors and some of their receptors. The response was fast, great in amplitude and sustained. Thus, when injured, the rat retina activates a self-protective mechanism to minimize damage.

Recent developments in sub-cellular neurology have also demonstrated self-organizing behavior. High voltage electron microscopy has demonstrated microtubules at the end of embryonic chick embryo neurons. Microtubules were abundant and organized into loops that are connected at locations on the neuron. The inside of the loop contained large membranous organelles and the outside of the loop contained small vesicles. These loops contained filaments and were abundant in the spinal cord neurons, and nonexistent in sympathetic ganglion. This organization is significant in the control of neurite growth and bi-directional transport, which has become important in the continuing understanding of the functional capacity of the nervous system.¹¹

Molecular and Atomic Level Organization

An example of the self-aware and self-regulatory qualities of living matter are the forces between molecules. There have been

recent developments that challenge the traditional notions of a set of consistent unchanging forces in biological systems. Rau and Parsegian have shown that:¹²

Rather than acting by modifying van der Waals or electrostatic double layer interactions or by directly bridging neighboring molecules, polyvalent ligands bound to DNA double helices appear to act by reconfiguring the water between macromolecular surfaces to create attractive long range hydration forces. It fits remarkably well with the idea, developed and tested here, that multivalent counter-ion adsorption reorganizes the water at discrete sites complementary to unabsorbed sites on the opposing surface. The measured strength and range of these attractive forces together with their apparent specificity suggest the presence of a previously unexpected force in molecular organization.

These authors have shown on a molecular level that the forces and matter have in a very sophisticated and intricate way, self-organized for the needs of the system.

There are areas of proteins that are now recognized as widely distributed input domains for internal and external stimuli. These areas sense oxygen, red-ox potential, light, and other stimuli. These areas have also been shown to be very specific and can operate, by detecting changes in the electron transport system to determine energy changes in the cell. They have also been shown as integral components of circadian clocks. These functions have long been considered functions of cells and now there is supportive evidence that demonstrates where and how this takes place.¹³ This is clearly an example of the self-awareness

capability on an atomic molecular level of organization.

There can be no more powerful example of the effects of self-regulation than those shown to take place in the genome. Osawa et al¹⁴ have reviewed the literature and developed a theoretical framework for change in the genome. They state:¹⁴

We propose that the changes are typically preceded by loss of a codon from all coding sequences in an organism or organelle, often as a result of directional mutation pressure, accompanied by loss of the tRNA that translates the codon. The codon reappears later by conversion of another codon and emergence of a tRNA that translates the reappeared codon with a different assignment.

These authors also discuss other mechanisms such as changes in release factors. Other authors have concluded similar concepts in genetics.^{15,16}

Environmental Level Organization

The body also must be considered relative to its external environment. This will help in considering the larger adaptive and creative expressions of the body. An organism interacts with the “outside”, non-innately controlled universe (ie, the environment). One of the current schemes to describe this interaction is with the term ‘meme’. A meme is a unit of transfer of information that has usually been studied from a cultural perspective, however recently has taken on any type of interaction between any 2 entities, usually a particular individual and their environment. Langrish¹⁷ has explored the theory of various types of mechanisms and general philosophical frameworks for

consideration of the use of meme theory to describe events. Meme theory usually takes a long-term view and discusses the evolution and progress of an entity. Langrish¹⁸ describes the current understanding and use of meme theory:

The 3 lines of advance stem from a 'biological' view of the world as opposed to a 'physics' view. This 'biological' view (abbreviated to **B**) is based on Darwinian evolution but has roots going back to Aristotle's tendency to develop typologies i.e. accounts of different types of things. The 'physics' view (abbreviated to **P**) is based on Newtonian mechanics but has roots going back to Plato's concentration on the essence of things rather than their differences. The big difference between the **B** and **P** views is that **B** welcomes diversity and **P** hopes for 1 theory of everything ('Real' Physics and Biology are not quite the same as **P** and **B**. Fundamental particles begin to look like botany and reductionism biologists seem to think like physicists).

Scientific thinking is so imbued with the **P** view that it sometimes seems that the existence of an alternative scientific way of looking at things has been kept a carefully guarded secret. One of the few people to attempt an account of **B** is Ernst Mayr whose *The Growth of Biological Thought*¹⁹ is recommended to economists, sociologists and anyone interested in evolving systems. Does the meme represent a unit of information from the intelligence as described by Stephenson? Could the connection between intelligence and matter be described more effectively by considering the concepts of meme units?

Nervous system Organization

The nervous system demonstrates self-renewal and awareness. Shihabuddin²⁰ et al have shown that progenitor cells of the rat spinal cord can become neural, astrocytes or oligodendrocytes depending on where they are inserted into the nervous system. The intelligence of the body of the rat is able to take the matter, the stem cell, and convert it for useful purposes in the organism.

Samsonovich and McNaughton²¹ have shown the intricate connection between self-awareness and regulation. They describe how the brain and nervous system can use sophisticated mathematical formulas to perform complex functions such as doubling input, vanishing, reshaping in distorted environments, acquiring directionality in a 2 goal shuttling task, rapid formation in a new environment, and slow rotation after disorientation.

Linkenkaer-Hansen et al have proposed the following:²²

We propose that the large variability, the long-range correlations, and the power-law scaling behavior of spontaneous oscillations find a unifying explanation within the theory of *self-organized* criticality, which offers a general mechanism for the emergence of correlations and complex dynamics in stochastic multiunit systems. The demonstrated scaling laws pose novel quantitative constraints on computational models of network oscillations. We argue that critical-state dynamics of spontaneous oscillations may lend neural networks capable of quick *reorganization* during processing demands.

This is fascinating but what does it mean? Their fundamental argument is that the brain

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functions the way it does to optimize long-term adaptation by using some short term functional characteristics. There is much less known about the long term activity of the nervous system, however what is known can be described as self-organized, or the product of innate intelligence expressing optimum adaptation. The nervous system is a form of matter that provides communication and is used to construct and complete the cycle of self-awareness, self-regulation and self-healing, allowing for adaptability and ultimately creativity, or self-expression.

Discussion

This review is not exhaustive of the examples that can be used to demonstrate the current levels of understanding in the biological or life sciences as they relate to the derivation of the philosophy of chiropractic. The focus of the derivation related to the philosophy of chiropractic is between the assertion of an organization and intelligence and the specific application that the nervous system connects the brain to the body. The body is organized to be adaptable and creative. We have defined adaptability to mean self-awareness, self-regulation and self-healing. Creativity means self-expression. The examples we have elucidated primarily support the concept of self-awareness and self-regulation of the body. The language and assumptions from most of the articles explicitly acknowledges the existence of a very self-aware, self-regulatory, self-healing, self-expressive body.

The emphasis of the philosophy of chiropractic has been with innate intelligence and the nervous system. The reason the nervous system is so vital to the organization and coordination and expression of intelligence is due to a fundamental concept – adaptation and creativity. Should the emphasis in chiropractic shift to the detrimental effects of vertebral subluxation as it relates to adaptation, which decreases the expression of intelligence in the body, this may cause the philosophy to become more coherent and increase the scientific, logical support of the value of chiropractic.

The traditional language of the philosophy of chiropractic might be revised to more closely coincide with the current language in the biological and life sciences without loss of appropriate philosophical meaning. The terms efferent and afferent have been used to describe part of the ‘normal complete cycle’ of adaptation in the body.¹ While these terms are considered scientific and specific to the nervous system they are not fully expressive of the meaning of the interaction of the intelligence and the matter and energy of the body as Stephenson intended; they do not draw a clear connection between the intelligence and nervous system interference. The terms “self-awareness” and “self-regulation” are more descriptive for this and are clearly the terms of choice in the current literature of biology and physiology. The connection between intelligence and the nervous system and the importance of correcting interference to the nervous system might be

communicated within and out of the profession of chiropractic more effectively with the use of these terms.

The terms “self-organization” and “self-expression” might also contribute more to the communication and understanding of the principle in chiropractic that the human body is valuable for more than adaptation. Creativity is another essential attribute of life that can be disrupted by the interference of impulses between brain and other parts of the body. The term self-expression could be used in a philosophical description.

The “above-down, inside-out” concept of health is useful to describe the importance of the inborn intelligence and the organization of the nervous system to control the body. However, cells, tissues, organs, systems, and the organism itself are also designed from an environment-receptive orientation. The cell has receptors on the outside of the membrane to interact, adapt, and create. The organs of the body receive chemical, electrical, and mechanical stimuli upon which to act. The whole body itself has extremely specific and sensitive ways to interact with the environment as described above at every level of organization. These include physical, chemical, and mechanical receptors, and may also include emotional, mental and social receptors. The normal complete cycle that Stephenson articulated helps us understand how innate intelligence drives the adaptation, healing, and creativity of the body. It can also be used to show the driving forces of universal intelligence or the environment on the organism (closing the ‘loop’ of interaction between body and environment, a reciprocal ‘outside-in’ viewpoint where universal forces affect the matter and energy that is operating under the influence of innate intelligence).

The complex interaction of the internal and external environment is shown in the current scientific exploration of biology and physiology. Metaphysics provides useful fundamental principles that, when combined with the science, help guide and drive the exploration. This exploration is far from over as evidenced by the examples above. The philosophy of chiropractic might need to be revised to account for the current level of understanding in biology that includes the influence of matter/energy outside of the control of the inborn (innate) intelligence and its affect on the body.²³

The study of various adaptations in the body can provide means of analysis of the detrimental changes from subluxation and the beneficial effects of chiropractic care. There are many changes, including clinical, sub-clinical and non-clinical, that will help demonstrate the potential benefit of chiropractic care. There are obvious implications for research, vertebral subluxation model development, and practical applications for chiropractic that can be deduced from the current level of understanding in the life sciences.

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