



The Mechanistic/Vitalistic Dualism of Chiropractic and General Systems Theory: Daniel D. Palmer and Ludwig von Bertalanffy

Alana K. Callender, MSLS^a

ABSTRACT

Objective: The purpose of this paper is to investigate similarities and differences between the mechanistic/vitalistic dualism of chiropractic and general systems theory.

Discussion: Early chiropractic philosophy is compared with the progression of general systems theory from its roots in vitalistic thinking to quantum theory. The writings of D.D. Palmer predate those of Ludwig von Bertalanffy (1901-1972), the acknowledged founder of general systems theory. The mechanistic/vitalistic dualism of chiropractic is explored against theories.

Conclusion: Early and contemporary general systems theories parallel some of the writings of chiropractic authors and share some common vitalistic ground.

Key Indexing Terms: General Systems Theory; Chiropractic; Philosophy; Vitalism; Spiritualism; Holism; Quantum Theory. (J Chiropr Humanit 2007;14:1-21)

INTRODUCTION

Newtonian-Cartesian Mechanism

Philosophy was born when the early Greeks learned to view the world as a *kosmos*, which was intelligible, and hence controllable, in thought and rational action. One formulation of this cosmic order was the Aristotelian worldview with its holistic and teleological notions. Aristotle's idea that "the whole is more than the sum of its parts" is a definition of the basic system idea. But the holistic worldview was replaced in the

16th and 17th centuries by the Scientific Revolution, beginning with Copernicus who overthrew the geocentric view of Ptolemy and the Bible and was guided by the analytic method employed by Galileo.^{1,2} Galileo postulated that scientists should restrict themselves to studying the essential properties of material bodies – shapes, numbers, and movement – which could be measured and quantified. Other properties, like color, sound, taste, or smell, were merely subjective mental projections that should be excluded from the domain of science.¹ As stated by Prigogine and Stengers,^{3 (p. 51)} "Classical science was born in a culture dominated by the alliance between man, situated midway between the divine order and the natural order, and God,

a. Palmer Foundation for Chiropractic History, 1000 Brady Street, Davenport, IA 52803.
E-mail: callender_a@palmer.edu
Source of support: none declared
Paper submitted May 24, 2006, in revised form September 14, 2007, accepted October 1, 2007.

the rational and intelligent legislator, the sovereign architect we have conceived in our own image.”

The discovery by Isaac Newton (1643-1727) (along with others such as Galileo and Bacon) that the physical world operated according to repeating and identifiable patterns - "natural laws" - was a momentous insight that signaled a major paradigm shift from superstition to mechanics. In a world subject to the vagaries of gods and superstitions, natural reality was not predictable. With Newton's discovery the world and reality suddenly looked quite different and lost much of its mysterious qualities. It was viewed as a giant machine whose discreet, independent parts fit together into a coherent and operational whole. French philosopher-mathematician Rene Descartes (1596-1650) applied this mechanistic insight to the specifically human realm.

The distinction between theoretical thinking and technological activity was established from Aristotle onward. The Newtonian synthesis expresses a systematic alliance between manipulation and theoretical understanding, which is one of the essential elements of modern science.³ The triumph of Newtonian science is the discovery that a single force, gravity, determines both the motion of planets and comets in the sky and the motions of bodies falling toward the earth.³ The mechanistic world view was born of classical physics of the 19th century, the aimless play of atoms governed by the inexorable laws of causality, produced all phenomena in the world, inanimate, living, and mental. No room was left for any directiveness, or order. The only goal of science appeared to be analytical, the splitting up of reality into ever smaller units and the isolation of individual causal trains.⁴ Organization also was alien to the

mechanistic world.⁴ Phenomena that are not dealt with in ordinary physics often appear as metaphysical or vitalistic.⁴

Descartes' theories separated mind from body and made each able to be influenced by the other. He said,¹ (p. 59) "All of nature was just matter in motion according to mathematical laws, and every organism was a mechanical beast." Descartes employed the analytical method of reasoning – breaking up thoughts and problems into pieces and arranging them in their logical order – to geometry. Capra¹ believes that this method of reasoning is Descartes' greatest contribution to science. Descartes and Galileo were contemporaries and when Galileo was turned in to the Inquisition for confirming Copernicus' findings, Descartes delayed publishing similar material.

Descartes attempted to reconcile his science with his Catholic faith by declaring that all these machines of nature were created by God and that God had made the human machine unique by giving it a soul.² Cartesian philosophy, the separation of mind from body, encourages Western individuals to equate their identity with their rational minds rather than with their whole organism.¹

Machines with many moving parts, such as clockworks, became the rage as they were developed and served to illustrate the complexity of the human body. Davidson² (p. 75) reminds us that:

Biological mechanism became dominant along with the development of modern science. Beginning with the early 17th century discovery by William Harvey that the heart functions as a blood-circulating pump, one

biological phenomenon after another appeared to yield to mechanical explanations.”

Adherence to the Cartesian model of the human body as a clockwork has prevented doctors from understanding many of today’s major illnesses.¹

For many years, the debate between mechanism and holism was framed as one between mechanism and vitalism. Vitalists and organismic biologists are both opposed to the reduction of biology to physics and chemistry; however, they differ in their answers to the question, “In what sense exactly is the whole more than the sum of its parts?” Vitalists assert that some nonphysical entity, force, or field must be added to the laws of physics and chemistry to understand life. Organismic biologists maintain that the additional ingredient is the understanding of “organization,” or “organizing relations”.¹

Vitalists did not really go beyond the Cartesian paradigm. Their language was limited by the same images and metaphors; they merely added a nonphysical entity as the designer or director of the organizing processes that defy mechanistic explanations. Thus the Cartesian split of mind and body led to both mechanism and vitalism. Arthur Koestler’s “ghost in the machine” soon reappeared in vitalist theories. Hans Driesch’s 1905 theory of vitalism postulated “entelechy” – a separate entity acting on the physical system without being part of it.¹

Claude Bernard (1813-1878) insisted on the close and intimate relation between an organism and its environment and was the first to point out that each organism also has an internal environment in which its organs and tissues live. His concept of the constancy of the internal environment

"Progressivism was rooted in the belief... that man was capable of improving the lot of all within society"

foreshadowed the notion of homeostasis, developed by Walter Cannon in the 1920s.¹

The period of 1880-1899 was one of intense industrialization.⁵ The same time was an era of standardization in engineering, in machine parts and tools. In 1908, there was also a call for standardization into the mechanism of business – the human element.⁵ Mechanical engineering methods were first applied to the administrative restructuring of firms during this time. Organizations were mentally constructed as machines.⁵ This marks the origin of management as a distinct phenomenon.

The ideology of systems, composed of a series of maxims rather than one coherent theory, became more widespread, particularly in large firms. Production knowledge, formerly guild secrets, was transferred to the planning department which was staffed by professional engineers. Engineers created niches for themselves and enhanced their status by reconstructing industrial bureaucracy.⁵

The Progressive Movement covers the approximate period from 1887 to the end of federal Prohibition. Part of the Progressive movement was equality for most men, including a redistribution of wealth by means of welfare legislation, and limiting economic power through antitrust laws and unionism.⁵ Progressivism was rooted in the belief, certainly not shared by everyone, that man was capable of improving the lot of all within society. Progressivism also was imbued with strong political overtones and

rejected the church as the driving force for change. Specific goals included the removal of corruption from government, the inclusion of more people in the political process, and the conviction that government had a role in social justice.

The success of Progressivism owed much to publicity generated by the newspaper writers who detailed the horrors of poverty, urban slums, dangerous factory conditions and child labor. The Interstate Commerce Act (1887) and the Sherman Antitrust Act (1890) were results of the Progressive Movement. “The Progressive spirit also was evident in amendments added to the Constitution, which provided for a new means to elect senators, to protect society through prohibition of the sale of alcoholic beverages, and to extend suffrage to women,” it has been reported.⁶

One Progressive was Frederick W. Taylor, active from approximately 1865 to 1910, and the inventor of matrix management. He set up constructive conflict management ground rules. “He advocated four modes of discipline: lowering wages, temporary layoff, fines, and bad marks leading to other remedies,” states Weisbord.⁷ (p. 34) As Shenhav suggests,⁵ (p. 564) “The Taylor system promised to bring opportunity, progress, order and community through which all men would enjoy a fair chance for success and was promoted as a solution to labor unrest.” Shenhav⁵ (p. 564) further quoted from the 1904 *American Machinist*, “There is not a man, machine, operation or system in the shop that stands entirely alone. Each one, to be valued rightly, must be viewed as part of a whole.” His pioneering concepts of organization and management were light years ahead of his time.

The Roaring 20s was the era of the highest level of worker unrest in the U.S. Management used labor unrest to justify the

introduction of systems. The mechanical model was expected to replace the old set of rules and to establish the principle that order is the first law of the universe.⁵ Rational rhetoric of the systems paradigm, including accountancy, production control, and organizational structure, as well as scientific management, initially emerged and intensified during periods of labor unrest and, according to Shenhav, the rise of the systems paradigm cannot be understood except in this context.⁵

An organizations as a system is an idea with strong roots in organizational theory. They resemble many physical, mechanical and biological entities. Shenhav states,⁵ (p.579) “One of the most commonly used applications of general systems theory to organizations was the machine analogy; a perfect bureaucracy is stable, efficient, precise, orderly, and hierarchical.” Shenhav⁵ examined general systems thinking rather than only scientific management and claims to provide the first quantitative evidence that the volume of labor unrest stimulated the adoption of the systems paradigm in the US.

Systems Thinking

The main characteristics of systems thinking emerged simultaneously in several disciplines during the first half of the century, especially during the 1920s and 1930s.¹

Biology was involved in the mechanism-vitalism controversy. Von Bertalanffy⁴ (p. 89) pondered:

The problems of organization of the parts in the service of maintenance of the organism, of regulation after disturbance and the like were either by-passed, or

according to the theory known as vitalism, explainable only by the action of soul-like factors hovering in the cell or the organism, which obviously was nothing less than a declaration of the bankruptcy of science. In this situation, I and others were led to the so-called organismic viewpoint. It means that organisms are organized things and, as biologists, we have to find out about it.

Kurt Lewin wed scientific thinking to democratic values and gave birth to participative management. Lewin showed that all problems, even technical and economic, have social consequences that include people's feeling, perceptions of reality, sense of self-worth, motivation, and commitment.⁷ Lewin aspired to make psychology a science based on formal principles that account for human behavior.⁷ In 1919, Lewin wrote a paper that contained the seeds of open-systems thinking and the first glimmers of what would be called action research.⁷ In 1939, he coined the term 'group dynamics'.⁷ Lewin's major contribution to management was his way of thinking: every change requires a new participative experiment.⁷

Ludwig von Bertalanffy pioneered the view that the whole of life on Earth can be regarded in some ways as a single organism. He inspired today's image of Earth as a single biosphere.² Von Bertalanffy was concerned that the mechanistic image of man would encourage people in all walks of life to treat their fellow human being as an assembly-line object to be manipulated rather than as a unique individual to be treated with respect.²

The term "general system(s) theory" was introduced by von Bertalanffy in 1937 in a lecture at the University of Chicago. His first publication relating to this theory appeared after World War II. The Society for General Systems Research was organized in 1954 to further the development of theoretical systems which are applicable to more than one of the traditional departments of knowledge.⁴ This was a radical departure from the silo mentality of the physical sciences. Summarized by Taschdjian:^{8 (p. 122)}

The goal of general system theory is clearly circumscribed. It aims at a general theory of wholeness, of entire systems in which many variables interact and in which their organization produces strong interactions. It does not deal with isolated processes, with relations between two or a few variables, or with linear causal relations...Cybernetics is a special case of a general system.

Cybernetics is concerned with those aspects of systems that are determinate – that follow regular and reproducible courses.⁹ Norbert Wiener, the acknowledged founder of cybernetics, wrote,^{10 (p. 10)} "This revolution (led by J. Willard Gibbs) has had the effect that physics now no longer claims to deal with what will always happen, but rather with what will happen with an overwhelming probability." His book on cybernetics, wrote Wiener,^{10 (p. 11)} "... is devoted to the impact of the Gibbsian point of view on modern life, both through the changes it has made in working science and the changes it has made indirectly in our

attitude to life in general.” Wiener¹⁰ (p. 11) continued, “Gibbs’ innovation was to consider not one world, but all the worlds which are possible answers to a limited set of questions concerning our environment.” His was a deviation from linear thinking. It is with this point of view at its core that Wiener placed the beginning of the development of the new science of cybernetics.

At its founding, in 1956, the Society for General Systems Research (today’s International Society for the Systems Sciences) stated its goals:¹¹

- to encourage the development of theoretical systems which are applicable to more than one of the traditional departments of knowledge leading to the principal aims
- to investigate the isomorphy of concepts, laws, and models in various fields, and to help in useful transfers from one field to another;
- to encourage the development of adequate theoretical models in areas which lack them;
- to eliminate the duplication of theoretical efforts in different fields; and
- to promote the unity of science through improving the communication among specialists.

Weisbord credits Fred Emery with introducing the open systems thinking of von Bertalanffy to sociotechnical systems in 1958.⁷ Von Bertalanffy¹⁰ (p. 38) states the major aims of general system theory:

1. There is a general tendency towards integration in the various sciences, natural and social.

2. Such integration seems to be centered in a general theory of systems.
3. Such theory may be an important means for aiming at exact theory in the nonphysical fields of science.
4. Developing unifying principles running vertically through the universe of individual sciences, this theory brings us nearer to the goal of the unity of science.
5. This can lead to a much-needed integration in scientific education.

Berman¹² (p. 34) summarized:

Systemic thinking may seem to constitute an improvement over linear-causal, or mechanistic, approaches. In general, the systems paradigm argues that the whole is greater than the sum of its parts; that all situations possess a patterned or interrelated reality that is nonlocatable, or intangible, which cannot be captured by atomistic analysis but is no less real for that fact.

Von Bertalanffy spent a lifetime denouncing mechanism as a doctrine that was scientifically unjustified and morally degrading. He warned that mechanistic attitudes had seeped into virtually every area of social behavior, encouraging doctors to view patients as cases, employers to regard workers as units.² (p. 73) In the 1960s, Edward Lorenz introduced chaos theory into meteorological instead of mathematical

literature. “Chaos equals infinite complexity, always staying within certain bounds, never running off the page but never repeating itself, either,” quotes Gleick.^{13 (p. 30)} Thomas Kuhn deflated the view of science as an orderly process of asking questions and finding their answers when he wrote the *Structure of Scientific Revolutions* in 1962. Kuhn sees normal science largely as mopping-up operations. In the *Structure of Scientific Revolutions*, he defined the term “paradigm shift.” It has become such a popular term that it would be hard to write a paper today without using it at least once. Gleick^{13 (p. 52)} postulates that between 1960 and 1968, mathematics and physics began an integration process and Lorenz and Kuhn would have been part of this process. More and more researchers felt the compartmentalization of science as an impediment to their work. “More and more felt the futility of studying parts in isolation from the whole. For them, chaos was the end of the reductionist program in science,” writes Gleick.^{13 (p. 304)}

Benoit Mandelbrot’s study of fractals and complexity was influenced by the politics of science. According to Gleick,^{13 (p. 113)} “It had a philosophical and removed attitude which I felt was necessary to get it accepted. The politics was that, if I said I was proposing a radical departure, that would have been the end of the readers’ interest.” Briggs and Peat^{14 (p. 91)} wrote, “Contemporary physics, now dominated by quantum theory, relativity, and the pursuit of grand unification, is in a paradigm crisis.” A paradigm crisis leads to a paradigm shift. “Journal articles are used to display a new application of the paradigm or to increase the precision of an application that has already been made, said Kuhn.^{15 (p. 30)} He continued,^{15 (p. 34)} “To desert the paradigm is to cease practicing the science it defines.”

On the state of physics, Erich Jantsch^{16 (p. 38)} wrote, “Modern physics is currently looking for hidden variables in atoms which transcend randomness and probability and come close to inferring what, in human beings, we would call intelligence.” Briggs & Peat^{14 (p. 79)} weigh in with, “Though modern physics declared the end of the great Newtonian machine, grand unification physics seems to be trying to erect a quantum machine in its place.” In 1979, Jantsch attempted to synthesize Prigogine’s theory with von Bertalanffy’s systems theory, along with physics, neurophysiology, urban planning, and a host of other disciplines.^{14 (p. 193)} Briggs and Peat^{14 (p. 193)} said:

If the meaning of evolution was in adaptation and increasing the chances for survival, the development of more complex organisms would have been meaningless or even a mistake.... The development of structures in what is called microevolution mirrors the development of structures in macroevolution and vice versa. Microstructures and macrostructures evolve together as a whole.

Kuhn^{15 (p. 164)} elaborates on the need for the integration of natural and social sciences:

The insulation of the scientific community from society permits the individual scientist to concentrate his attention upon problems that he has good reason to believe he will be able to solve...Natural scientists do research for research’s sake.

Social scientists often tend to defend their choice of a research problem chiefly in terms of the social importance of achieving a solution.

Systems Thinking In Applied Sciences

Ludwig von Bertalanffy (1901-1972) is generally credited for articulating the basics of general system theory.^{2,17} Von Bertalanffy said,¹⁷ “It seems that a general theory of systems would be a useful tool providing models that can be used in, and transferred to, different fields, and safeguarding from vague analogies which often have marred the progress in these fields” Well-known thinkers have applied a systems approach to areas as diverse as physics,¹⁸ organizational development,¹⁹ and cybernetics.⁹ General systems theorists observe the relationships among objects and seek to identify various influences within which actions occur.²⁰

Von Bertalanffy⁴ (p. 196) pontificated on the application of systems theory:

The practical application of systems theory demonstrates that the approach works and leads to both understanding and prediction. Systems approach is not limited to material entities in physics, biology and other natural sciences, but is applicable to entities which are partly immaterial and highly heterogeneous, including international politics, the social sciences, business, and government.

Jantsch¹⁶ (p. 94) further offered, “General system theory attempts to generalize the principles of quantum mechanics for adaptive systems, extending the scope of systems inquiry from the physical to the biological and the social domain.”

The System of Chiropractic

While reviewing the papers submitted as part of the coursework for Palmer’s graduate chiropractic philosophy program, I was struck by the number of writers who used concepts from systems thinking to explicate their chiropractic philosophies.²⁰⁻²⁴ The philosophical writings of DD Palmer and Ralph Stephenson and much of the work of BJ Palmer predate that of von Bertalanffy by half a century and yet foreshadow the “new” approach to viewing how individuals and their environments interact.

Chiropractic was founded in 1895 by Daniel David Palmer, a magnetic healer practicing in Davenport, Iowa. DD had taught school in small towns in Iowa before becoming a magnetic healer. He was a self-educated man who was active in the spiritualist movement sweeping the Midwest at that time. DD died in 1913 of typhoid fever, but during his eighteen years as the Founder or Fountainhead of chiropractic, he assembled his philosophy of this new healing art in two books, one published in 1910 and the second published posthumously. According to Donahue,²⁵ (p. 31) “It apparently took about 10 years from germination of the idea [Innate Intelligence] until its culmination in his 1910 book.”

His son, Bartlett Joshua (BJ) Palmer, bought Palmer School of Chiropractic from him in 1904. Theirs was a tumultuous relationship, but throughout, it was clear that BJ held his father’s place as the founder of chiropractic in high esteem. BJ wrote extensively,

eventually publishing over thirty books, most of them about chiropractic and its philosophy. For the purposes of this paper, I will consider DD's and BJ's philosophy up to the time of the publication of Stephenson's *Chiropractic Textbook* in 1927. Although other writings may offer insight, it is Stephenson's that brings together BJ's thinking at that time. To me, Stephenson, the philosophy teacher at Palmer, was a better writer than BJ and thus easier to interpret.

DD Palmer's philosophy underwent a change in nature as he synthesized his scientific and metaphysical belief systems. Before 1906, it seems to have been a subject for classroom discussion, but not for publication. The first usage of innate is, according to Donahue,²⁶ (p. 25) "...similar to what today would be termed involuntary or autonomic nerves. It is apparent then that between 1904 and 1906, Innate philosophy matured." Donahue continued,²⁶ (p. 25) "D.D.'s philosophy appears to have been complete between 1908 and the publication of his book in 1910. At this point, innate had become a spiritual intelligence that ran the complicated functioning of the body." In 1910, D.D. Palmer distanced chiropractic from a mechanistic explanation.²⁷ (p. 15-16)

Another prognostic sign is in the attempt to explain how vital energy is conveyed by the nerves, instead of it being claimed to be similar to the manner in which sap circulates in a tree, or water passing thru a hose, or steam operating an engine, or man a machine shop filled with machines, or the electric current traveling over a wire. They are beginning to comprehend that inorganic

objects and inanimate power do not illustrate or explain intellectual organic vital forces."

In mechanistic science, concepts such as entity, organization, and teleology (purposeful behavior), appeared to be unscientific, metaphysical, or anthropomorphic; they were considered to be remnants of primitive animistic thinking. Today we conceive of these problems as legitimate scientific questions.⁸

Chiropractic's Vitalistic and Spiritualistic Roots

D.D. Palmer revolted against the kind of thinking that epitomized orthodox medicine of the day -- that diseases had outside causes. He adopted a more vitalistic, naturalistic viewpoint. He believed that there is 'something' in nature and man that heals if properly expressed. Man's intervention should be minimal. If man is to intervene, he should look for the cause of the problem, and not just treat the symptoms. He possessed a cognizance of the homeostatic tendencies of the body, and acknowledged nature as the true healer.²⁸ DD said:²⁷ (p. 493)

I chose the name Innate. Innate – born with. And so far would not change it except to replace it with the name of that individualized entity which really is part or portion of that All Wise, Almighty Universal Intelligence, the Great Spirit, the Greek's Theos, the Christian's God, the Hebrew's Helohim, the Manometan's Allah, Hahnemann's Vital Force, new thot's [sic] Divine

Spark, the Indian's Great Spirit, Hudson's Subconscious Mind, the Christian Scientist's All Goodness, the Allopath's Vis Medicatrix Naturae—the healing power of Nature.”

He continued,²⁷ (p. 552)

The Chiropractor looks upon the body as more than a machine; a union of consciousness and unconsciousness; Innate's ability to transfer impulses to all parts of the body – the coordination of sensation and volition; a personified immaterial spirit and body linked together by the soul – a life directed by intelligence uniting the immaterial with the material.

Aristotle identified the vitalizing force as an entity called an *entelechy*, meaning “that which bears the end in itself”. Subsequent vitalist philosophers called it *anima*, *monad*, and *psychoïd*. The term *entelechy* was reintroduced by the most recent major exponent of vitalism, German embryologist Hans Driesch (1908). With this concept, it was thought that something in an organism's behavior showed that the living organism is greater than the sum or an aggregate of its parts.² Driesch, in *The History and Theory of Vitalism*, referred to the ‘dynamic teleology of vitalism.’ He said,²⁹ (p. 20) “There is a ‘real concept of harmony in nature, both organic and inorganic. *Nature is nature for a certain purpose.*’ Substances have an Aristotelian *entelechy* or essential nature that works itself out.” Von Bertalanffy believed it was equifinality or embryonic differentiation that led Driesch to

embrace that vital phenomena are inexplicable in terms of natural science.³⁰ Neither Driesch nor any other vitalist was able to say anything more definite about their invisible agent of animation. Vitalists simply said it had to exist, because they could not imagine any other explanation for the fact that some forms of matter exhibit inner-directed behavior and others do not.²

Old, Aristotelian vitalism depended on the introduction from the outside of an *entelechy*, a sprite, an imp. It has the quality of magic about it and was described by biochemist and research news editor of *Science*, Roger Lewin, as the object of disdain:³¹ (p. 24) “Vitalism [was] a once popular but now discredited notion that much of the wonder of the natural world is the consequence of an *élan vital*, or vital spirit. Nature wasn't so much explained as explained away by this notion, and it is anathema to modern science.” Sunetra Gupta, writing in *Nature* eight years later had a different idea:³⁰

The implications that [organic compounds] were imbued with a vital force gave birth to an idea that eventually came to occupy a very tricky position between materialism and idealism by endorsing the viewpoint that, although organic material might obey the same physical and chemical laws as inorganic material, life could not be governed by these laws alone. Vitalism's singular place in history rests on its attempt to reconcile two opposing needs – the need for analytical reasoning and the need to celebrate the

mystery of human experience.”

According to Joseph Donahue, DC, a Palmer biographer, DD was a vitalist, in that he,²⁵ “... found it incomprehensible to view the inherent recuperative power of the body as nothing but ‘nature,’ instinct or intuitive force. He saw behind that power a larger spiritual force that needed to be understood and explained for the benefit of the sick.” Palmer, himself, said:²⁷ (p. 768)

Spirit, soul, mind, and body – four different entities. The first three are imponderable; the last ponderable. The first three cannot be weighed on scales, the latter can be... Spirit, soul and mind are distinct from matter. Spirit can exist without matter. Mind depends on individualized spirit – innate for its existence. Soul is that which unites the immaterial spirit with the physical body.

The two most important belief systems relative to the development of innate philosophy were vitalism and spiritualism. There were underlying similarities in the two, particularly the themes of evolution and the invisible spiritual essence giving life to inanimate matter. Vitalism was a strong philosophical school of thought at the turn of the century, probably as much as anything in response to the strong mechanistic leanings of much of pure science. Spiritualism cut across religious lines, and many intellectuals were involved in practicing and researching it. Spiritualism can be briefly described as a belief in a continued spiritual life after death, and the ability for the living to communicate with those spirits through the use of a medium or

trance state. It was common at the end of the 19th century to not only believe in the spirits, but also in varying levels of spiritual advancement among them.²⁵ Donahue notes,²⁵ “The prominent vitalistic philosopher Henri Bergson was convinced of medium Eusapio Pallidino’s authenticity and in 1913 became president of the well-regarded Society for Psychical Research. D.D., although equally interested in spiritualism, was skeptical of many of the so-called mediums and was not averse to writing an article to expose them.” Donahue further postulated:²⁵

[Palmer’s] magnetic healing days left him with the belief that living tissue contained a vital energy that was corrected by his ministrations... With the advent of his discovery of chiropractic, he saw the connection between the nervous system and the disease process. He still thought vital energy resided in living tissue, but now it was controlled by the nervous system.

Coupling the philosophical side of vitalism with spiritualism, and his personal experience as a magnetic healer, DD Palmer slowly formed his very intricate philosophy over the course of his lifetime concluding by 1900 that a supernatural intelligence existed.^{25,32} Palmer biographer Vern Gielow³² quoted DD as saying, “To attempt to demonstrate the vital acts of the human body by the working of machinery is futile.” However, von Bertalanffy regarded vitalism as a theory that led to an intellectual dead-end:² (p. 160)

Vitalism must be rejected as far as scientific theory is

concerned. According to it, structure and function in the organization are governed, as it were, by a host of goblins, who invent and design the organism, control its processes, and patch the machine up after injury. This gives us no deeper insight; but we merely shift what at present seems inexplicable to a yet more mysterious principle and assemble it into an “X” that is inaccessible to research.

Rodney Sparks, DC²⁴ gives examples from Einstein, Heisenberg, Crick, and Pasteur, all taken from Capra’s writings, of the role that vitalism has played in fields such as biology and physics; Sparks states,^{24 (p. 67)} “Most would think that these two areas are untouched by vitalistic philosophy but the contributions have shaped the contemplations of many great scientists.”

As vitalistic philosophy evolved, vitalists began to contend that it was an organism’s functioning, rather than its constituent substances, that lay outside the boundaries of human comprehension. The idea that living beings could not be explained continued on, still labeled as vitalism, but a new, improved, and more sophisticated vitalism. Von Bertalanffy wrote,^{8 (p. 45)}

Every healing process, every dynamic restitution following a disturbance, every return to the normal state after a clinical intervention is the reestablishment of an equifinal steady state. What was called natural healing power by the old physicians, the ‘vix medicatrix naturae’

is essentially nothing but the equifinal self-preservation of the organization.

Stephenson ordered the basic chiropractic principles in the *Chiropractic Textbook*. The thirty-three principles, as they are known, became the basis for explaining DD and BJ’s comprehension of Universal Intelligence, Innate Intelligence and the other tenets. Some of von Bertalanffy’s statements read like restatements of the chiropractic principles first published in 1927. For example, chiropractic principle number 25 reads,³³ “The forces of Innate Intelligence never injure or destroy the structures in which they work.” Interestingly, von Bertalanffy wrote,⁸ “The processes in a living organism are generally ordered so as to contribute to its maintenance.” Chiropractic principle number 26 reads,³³ “In order to carry on the universal cycle of life, Universal forces are destructive [entropic], and Innate forces constructive, as regards structural matter.” Principle number 24 states, “Innate Intelligence adapts forces and matter for the body as long as it can do so without breaking a universal law, or Innate Intelligence is limited by the limitations of matter.” Von Bertalanffy had this to offer:⁸

The purposefulness in the living world means only that many or most events are arranged so as to guarantee the maintenance of the organism, i.e., of the whole or the system. This is not an anthropomorphic interpretation of happenings in the living world, but a simple observation of an apparent and essential characteristic of living things.

Chiropractic principle number 21 states,³³ “The mission of Innate Intelligence is to maintain the material of the body of a ‘living thing’ in active organization.” Theoretical biologist Brian Goodwin wrote:^{31 (p. 181)}

I completely reject true vitalism. But by taking the organism seriously in biology, by saying that there is some kind of organization that is distinctive to the living thing, we can move to a closer appreciation of the quality of the organism. . . . I don't deny there's a sense of mystery to life. There always will be. But you have to get rid of the idea that there's something added from the outside that is responsible for life. That's the old vitalism. There's nothing added from the outside, it all flows from the inside, from the organism itself, the biological attractor. In my kind of vitalism there's no room for any external mystical ‘something’ being the cause of it all. This would be described as a holistic view. People don't like the word because it sounds too much like vitalism of the old kind, but I always come back to holism.

Enter Holism

I felt from the beginning that holism was the right word to describe first DD's and then BJ's philosophy. Joseph Janse, DC³⁴ and Edward Brown, DC³⁵ describe DD's philosophy as essentially holistic, but I needed to tie holism into systems thinking. I felt intuitively that there was an

equivalency, but holism is a slippery concept. The missing link was found in an abstract from a psychology dissertation by Nelson,³⁶ “...chaos theory in mathematics, the theory of dissipative structures in thermodynamics, and the concept of autopoiesis in biology. These models fall within the purview of an evolving holistic scientific world view, which this study reviewed in its historical context of paradigm shifts from vitalism to mechanism, and recently to holism.” Lewin³¹ adds, “...People who are studying complex systems are rediscovering the properties the vitalists intuited. The vitalists saw an outside force directing life while we see internal, self-organizing principle. So, no, we're not looking for the meaning of life, more the meaning in life, the generation of order, the generation of pattern, the quality of the organism. Energy replaces the entelechy and we have holism. “The [old] vitalists are going to be disappointed if they look at this kind of pattern as supporting their position, because, take away the energy, and the whole thing collapses,” states Lewin.³¹

Organicism

Von Bertalanffy⁴ rejects mechanism and the old vitalism but offers instead an organismic viewpoint:

The problems of organization of the parts in the service of maintenance of the organism, of regulation after disturbance and the like were either by-passed, or according to the theory known as vitalism, explainable only by the action of soul-like factors hovering in the cell or the organism, which obviously was nothing less than a declaration of the

bankruptcy of science. In this situation, I and others were led to the so-called organismic viewpoint. It means that organisms are organized things and, as biologists, we have to find out about it.

According to Taschdjian:⁸

With the introduction of the organismic conception, much of the struggle between mechanism and vitalism had become irrelevant and obsolete. Both are unsatisfactory, for mechanism does not offer an acceptable explanation for the order of organic processes, and vitalism, even though it was first to recognize the wholeness of an organism, renounces a scientific explanation. In fact, vitalism had not overcome the summative and mechanistic concept of life phenomena. It also regarded the organism as a sum of independent processes and of mechanical components, with the only difference being that this conglomerate was to be constructed, controlled, or restored with the help of a soul-like engineer or mechanic. Vitalism did not realize the existence and importance of a dynamic order within the whole system. Phenomena that were regarded as the main evidence for vitalism have become accessible to exact

research in organismic or system theory and it is now possible to explain them even by mathematically formulated laws.

Thus, now we have vitalism, holism and organicism – all ways of saying that we do not understand “life” but at least we recognize its existence.

Von Bertalanffy created a new concept explaining organisms:⁸ “The only legitimate explanation that vitalists could offer in opposition to the mechanists was that a sort of ghost had to be at work in these fundamental life phenomena, constructing the organic machines, directing it and, if necessary, repairing it. But this would mean placing the specific problems of animate nature outside the realm of science.” Cited in Taschdjian,⁸ von Bertalanffy is credited with saying, “In contrast to this vitalistic explanation, I, and others advocated a so-called organismic conception which was essentially based on our understanding organisms as organized things. This sounds trivial but is, in fact, a new and extremely difficult problem.” In his own work von Bertalanffy also said,⁴ (p. 187) “The Organismic Revolution’s core is the notion of system, a pale abstract which nevertheless is full of hidden meaning, ferment and explosive potentialities.” Davidson writes of organicism as explaining life’s organized complexity, superlative complexity and the relationships of the organism.²

Biological mechanism explained organic goal-directedness as analogous to the orientation of a machine developed by chance. Vitalism emphasized that only rational beings build machines. M. Mitchell Waldrop, of the Sante Fe Institute, used a computer analogy to describe organization:³⁷ (p. 278) “This abstraction is what allows you to

take a piece of software from one computer and run it on another computer: the ‘machineness’ of the machine is in the software, not the hardware. The ‘aliveness’ of an organism is also in the software – in the organizations of the molecules, not the molecules themselves.” Perhaps there is common ground between Waldrop and contemporary chiropractic authors. Sparks states:²⁴ (p. 66)

So few healthcare systems approach their application of care from a vitalistic viewpoint. Without a [vitalistic] philosophy to ground them, many have abdicated their position to adopt the mechanistic approach since the Rationalistic evidence from scientific studies seems so reasonable to them. However, chiropractic philosophy found... a link between material and immaterial and developed a whole profession around these Universal laws. In chiropractic philosophy, we see force as our missing link between mind and matter. In fact, we can say that since all phenomena are the result of force in matter, and since the Major Premise of Chiropractic maintains that this force proceeds from intelligence, the link is force.

Simon Senzon, DC³⁸ (p. 43) reports that a consensus exists in chiropractic around the self-healing and self-organizing properties of the living organism.

According to B. J. Palmer (1950), even though “matter and immaterialities

comprising recognizable essentialities of the universe are regarded as being subject to division,” they are not. He expounds,³⁹ (p. 314) “Man is a material unit and can see like attributes, yet he is not a unit for he is but a part of everything which surrounds him.” Matter and immaterialities, according to BJ,³⁹ (p. 314) “...are one and are inseparable; but educationally and for reasons of comprehensive study, we divide matter and intelligence.”

Quantum Theory

The next paradigm to shape chiropractic philosophy is quantum thinking. According to Larry Dossey, MD,²² “The quantum paradigm puts to rest the view of the universe as a machine that is made up of a multitude of separate and distinct parts. Rather, this paradigm views the universe as a harmonious indivisible whole ... as an unbroken web of dynamic relationships.” Talbot further states,²² (p. 16) “All entities of the universe are in a state of nonlocal interconnectedness. Everything in the universe is part of a continuum. Everything is a seamless extension of everything else. The human being is an integral part of this system.” Stephenson parallels this cosmic dynamic of self-organizing activity, in his explanation of organized matter and the mission and function of Innate Intelligence, when he states,³³ “The mission of innate intelligence is to maintain the material of the body of a living thing in active organization.” Further, Ralph Waldo Emerson’s take on what would become systems thinking was quoted in the preface to *The Philosophy of Chiropractic*:⁴⁰ (p. 8) “And this because the heart in thee is the heart of all; not a valve, not a wall, not an intersection is there anywhere in nature, but one blood rolls uninterruptedly an endless circulation through all men, as the water of

the globe is all one sea, and truly seen, its tide is one.”

Even in 1910, DD was thinking along quantum lines, as shown by his comment:²⁷
(p. 15) “Today...messages are sent thousands of miles over land and sea without the need of posts or wire. Is it too much to expect a similar development, along chiropractic lines, to be awaiting our beck and call?”

Dockery contributed many thoughts to the field. He explained:⁴¹ (p. 6)

Living in the late 20th and early 21st centuries is proving to be quite exciting. Between Einstein’s theories of relativity and the discovery of a *quantum reality*, what once was considered metaphysical is now becoming the physical. Modern physics has exposed how viewing our world simply via our rudimentary perceptions denies awareness of the layers of reality lying just beneath the surface of our everyday world. As philosophers of chiropractic we can rest assured that advances in physics only strengthen our inductive conclusion that ‘there is a Universal Intelligence in all matter...’ Yes, there certainly is order in this universe, with recent discoveries showing it to be more impressive every day.

To summarize, we must acknowledge that we are in a magnificent era when the old is fading and the new has not

been fully disclosed. But we can say with assurance that a human being cannot be likened to a gigantic clock with everything predetermined by mechanistic wheels. The reality of the world lies in fields which interact with other fields of energy in dynamic chaos patterns that are always evolving to higher levels of complexity. This is an open system in which reality is tremendously complex. What we know as truth, intuition and consciousness all operate interdependently with matter. Furthermore, they transform matter as they are transformed by it.

Similarly, Von Bertalanffy states,² (p. 116) “If we could see each other as complex systems rather than as embodiments of one or more traits, the world might be able to achieve a revolution of harmony.” Interestingly, Cai⁴² says that mechanism/reductionism is a product of European culture:

The holistic view and inner, mental or regressive observation are emphasized in the East, while the analytic view and outer, physical or deductive natural observation are emphasized in the West. Lacking the concept of the absolute, holistic, and unified noumenon [thing in itself], the problem of mind-body/mind-material, and/or the problems of Vitalism, Organicism and Mechanism or Reductionism, arise in Western biophilosophical

since Aristotle and Democritus to the present time. In the East, these problems cannot arise because their theories unify the subjective mind and the objective material or physical world.

In healthcare, the mechanistic paradigm is evidenced by increased specialization – treating the human body in smaller and smaller parts. The role of general practitioner has almost disappeared from the medical profession and is being played by osteopaths and nurse practitioners, lesser beings who can deal with the whole person and all its annoying complexities. Every patient should be diagnosed and treated as a psychophysical whole rather than as a fever, fracture, or phobia. Von Bertalanffy took notice of the lip-service eventually paid to holistic medicine, but he observed that truly holistic care is a rare practice in an age of assembly-line treatment, increasing medical specialization, and the near-extinction of the old-fashioned, house-calling family doctor. He referred to the phenomenon as the ‘dehumanization of medicine’.²

Von Bertalanffy spent a lifetime denouncing mechanism as a doctrine that was scientifically unjustified and morally degrading. He warned that mechanistic attitude had seeped into virtually every area of social behavior, encouraging doctors to view patients as cases, employers to regard workers as units.²

Today, chiropractic is battling within itself to hold onto its original holistic, vitalistic viewpoint. Sparks contends:^{24 (p. 73)}

A vitalism more clearly defined would place chiropractic in harmony with

“In healthcare, the mechanistic paradigm is evidenced by increased specialization – treating the human body in smaller and smaller parts.”

its own philosophy and break away from mechanistic thought. The movement back to our original principles would allow chiropractic to lead a revolution in current healthcare systems. We would be the only system that truly followed the natural law of living things. The public is already moving away from mechanistic healthcare to so-called ‘alternative’ healthcare procedures in record numbers. . . . This perception [of chiropractic] as an ‘alternative’ will continue as long as chiropractic conceded to the hand we are dealt by a bottom-dealing hustler from the casino of mechanism.

Throughout most of its history, the chiropractic profession has been split into two camps, known internally as the straights and the mixers. This dichotomy is evinced in two competing national associations waging battles over scope of practice, school curricula, etc. Most states have at least two state associations; Michigan has at least five. I have always interpreted the split to be along scope of practice lines: straights have a narrow definition of practice and shy away from adjunctive therapies, such as diathermy or traction; mixers have a broad scope definition and in the extreme embrace anything acceptable under the broadest interpretation of the law, such as

acupuncture or obstetrics. Now, I see that the split is also philosophical, between the mechanists and the vitalist, holistic organicists. Many chiropractors of today work under the mechanistic paradigm. The chiropractic profession may distance itself from its philosophical roots in order to benefit from increased revenue from the federal government and other members of the health industry.³⁸ Matthew Hart gave his explanation of the difference between the two paradigms in his submission to the Palmer Philosophy Colloquium.⁴³ (p. 56)

In the man the machine [mechanistic] model, man is injured causing joint malfunction which causes nerve system interference (Mechanistic Subluxation), which causes body malfunction leading to symptoms and, if present long enough, eventually disease and death. The purpose of the spinal adjustment is to return motion to an abnormally locked (fixed) spinal joint that causes biomechanical disturbance (i.e., pain and symptoms). Therefore, chiropractic is only needed if there is a biomechanical disturbance.

In the vitalistic model, man is injured, causing joint malfunction, which causes nerve system interference, which interferes with the normal transmission of mental impulse causing a mal-expression of Innate Intelligence, leading to diminished life expression

observable by the diminished signs of life. The adjustment then is given to restore the full flow of Mental Impulse in the body, allowing a fuller expression of Innate Intelligence to occur. Increasing life expression in the body is observable as increased adaptability, assimilation, excretion, reproduction, and growth...Chiropractic care improved not only range of motion, muscle tone, and muscle strength, it also improved immune system's function, stress hormone levels, and even increased beta-endorphin levels, improving resistance and adaptability."

Cafferty²¹ (p. 13) asserts that DD Palmer could not foresee a time in the future of the chiropractic profession when a sizeable number of the members of the profession would abandon their tenets and vitalistic philosophy in order to be accepted and integrated with the mechanistic concepts of allopathic medicine.

Davidson² wrote, "Scientists get research grants for thinking mechanistically, so they do." In the early 1980's, when the first federal grants were made available for chiropractic research, mechanistic thinking gained a stronger foothold in the minds of the research-oriented chiropractors. Double blind studies, which are impossible in a private hands-on practice, were held up as the standard for acceptable "proof" of the efficacy of chiropractic. Seventy-five years of successful care of millions of patients was disregarded because it was "unscientific". There is an awareness today of the need for

a more holistic approach to healthcare. The last revolution was at the end of the 19th century, when homeopathy, eclecticism, osteopathy, chiropractic, and other “alternative” systems became popular due to the deplorable state of regular medicine. The competition forced regular medicine to clean up its own house while absorbing, containing or eliminating the competitors. (The phrase “to contain and then eliminate” was used by the AMA’s Committee on Quackery to describe their plan to deal with chiropractic.) The mechanistic/vitalistic argument is not just in medicine or chiropractic. Davidson states,² (p. 75) “Today’s prevailing biological viewpoint is the reductionist position that all biological phenomena can be reduced in explanation to phenomena that are strictly mechanical.” And DeGregori²⁹ (p. 23) feels that, “Advocates of holistic and vitalistic biology ... are finding a new sort of political and scientific life ... in the agendas of the ecologically oriented groups like the Green Party.”

CONCLUSION

Writing a hundred year ago, Bergson⁴⁴ observed, “The ‘vital principle’ may indeed not explain much, but it is at least a sort of label affixed to our ignorance so as to remind us of this occasionally, while mechanism invites us to ignore that ignorance.” I see mechanism as an arrogant approach – “we don’t know what life is but we’re sure we can figure it out” – and vitalism as a more humble one – “we don’t know what life is and maybe we can’t figure it out.” In the face of life and the universe, I’m more comfortable with some humility.

Davidson² reminds us that we, “need to view the human being as a system, with all that such a concept implies for mind-body unity and holistic medicine.” I believe that

chiropractors, at least those in touch with chiropractic philosophy, have done a good job of that, and have always cared for their patients as whole persons who are part of a greater whole.

ACKNOWLEDGMENTS

I thank Kathryn Swerdlick, DC, and Bart Green, DC for their editorial assistance with this paper.

REFERENCES

1. Capra F. The turning point. New York: Bantam Books; 1988. p. 54.
2. Davidson M. Uncommon sense. The life and thought of Ludwig von Bertalanffy. Los Angeles: J.P. Tarcher; 1983.
3. Prigogine I, Stengers I. Order out of chaos. New York: Bantam Books; 1984.
4. Bertalanffy L von. General system theory. New York: George Braziller; 1968.
5. Shenhav Y. From chaos to systems: the engineering foundations of organization theory, 1879-1932. *Administrative Sci Q* 1995; 40:557-585.
6. Eagleton Institute of Politics. Eagleton Digital Archive of American Politics. Progressive era. Rutgers [NJ]; 2007 [cited 2007 Dec 13]. Available from: <http://www.eagleton.rutgers.edu/e-gov/e-politicalarchive-Progressive.htm>.
7. Weisbord MR. Productive workplaces. San Francisco: Jossey-Bass; 1987.
8. Taschdjian E. Perspectives on general systems theory. New York: Braziller; 1975.
9. Ashby WR. An introduction to cybernetics. New York: John Wiley & Sons; 1963.
10. Wiener N. The human use of human beings. Boston: Houghton Mifflin; 1954.
11. International Society for the Systems Sciences. Origin and Purpose of the ISSS

- [homepage on the Internet]. York, UK; 2006 [cited 2007 Aug 25. Available from: <http://www.isss.org/world/en/about-the-isss>
12. Berman M. The shadow side of systems theory. *J Humanistic Psychol* 1996; 36(1):28-54.
 13. Gleick J. *Chaos*. New York: Viking Penguin; 1987.
 14. Briggs JP, Peat FD. *Looking glass universe*. New York: Simon & Schuster/Cornerstone; 1984.
 15. Kuhn, T. *The structure of scientific revolution*. Chicago: Chicago University Press; 1970.
 16. Jantsch, E. *Design for evolution*. New York: George Braziller, Inc.; 1975.
 17. Lundberg CC. On organization development interventions; a general systems-cybernetic approach. In: Cummings TG, editor. *Systems theory for organization development*. New York: John Wiley & Sons; 1980. p. 247-271.
 18. Peat FD. *Infinite potential: the life and times of David Bohm*. Reading, MA: Helix Books; 1996.
 19. Argyris C. *Reasoning, learning, and action. Individual and organizational*. San Francisco: Jossey-Bass; 1982.
 20. Daloz LA. *Mentor: Guiding the journey of adult learners*. San Francisco: Jossey-Bass; 1999.
 21. Cafferty JF. Chiropractic; applied vitalism. In: Barge F, Callender A, editors. *Philosophical Contemplations*, v. 3, Davenport, IA: Palmer Chiropractic University Foundation; 2003. p. 7-15.
 22. Cauty A. From the big bang to a lasting purpose: the role of chiropractic in the destiny of the cosmos. In: Barge F, Callender A, editors. *Philosophical Contemplations*, v. 3. Davenport, IA: Palmer Chiropractic University Foundation; 2003. p. 15-24.
 23. Hughes, J. Chiropractic comes of age: a reflection on the thirty-three principles. *Journal of Vertebral Subluxation Research* 2002; 4(4):109-113.
 24. Sparks R. Innate intelligence: Vitalism's missing link found in chiropractic philosophy. In Callender A, Sinnott R, editors. *Philosophical Contemplations*, v. 4. Davenport, IA: Palmer Chiropractic University Foundation; 2004. p. 65-74.
 25. Donahue J. D.D. Palmer and innate intelligence: Development, division and derision. *Chiropr Hist* 1986;6:31-6.
 26. Donahue JH. D.D. Palmer and the metaphysical movement in the 19th century. *Chiropr Hist* 1987;7(1):23-7.
 27. Palmer DD. *The chiropractor's adjuster: Text-book of the science, art and philosophy of chiropractic for students and practitioners*. Portland: Portland Printing House; 1910.
 28. Jacelone P. The ancient philosophic root of chiropractic in literature. *Chiropr Hist* 1989;9(2):45-49.
 29. DeGregori TR. Muck and magic or change and progress: Vitalism versus Hamiltonian matter-of-fact knowledge. *J Economic Issues* 2003;37(1):17-33.
 30. Gupta S. A victim of truth. *Nature* 2000;407:677.
 31. Lewin R. *Complexity: Life at the edge of chaos*. New York: Macmillan; 1992.
 32. Gielow V. *Old Dad Chiro*. Davenport, IA: Bawden Bros., Inc.; 1981.
 33. Stephenson RW. *Chiropractic textbook*. Davenport, IA: Palmer School of Chiropractic; 1927.
 34. Janse J. History of the development of chiropractic concepts; chiropractic terminology. In: Goldstein M, editor. *Research Status of Spinal Manipulative Therapy*. DHEW Publication no. (NIH) 76-998; 1976. p. 26.
 35. Brown, E. Chiropractic antecedents of holistic health. *J Vert Subluxation Res* 2000 4(4):119-22.
 36. Nelson A. The application of chaos theory to the understanding of psychological

transformation. Abstract. PsyD dissertation. Los Angeles: Pepperdine University; 1991.

37. Waldrop MM. Complexity: the emerging science at the edge of order and chaos. New York: Touchstone; 1992.

38. Senzon, SA. An integral approach to unifying the philosophy of chiropractic. *J Vert Subluxation Res* 2000;4(1):43-50.

39. Palmer BJ. Up from below the bottom. Davenport [IA]: Palmer School of Chiropractic; 1950.

40. Palmer BJ. The philosophy of chiropractic, 6th ed. Davenport, IA: Palmer School of Chiropractic; 1920.

41. Dockery J. Metaphysics. *The Philosopher's Quill*. 2005;3(1):6.

42. Cai NY. Comparisons and syntheses of Eastern and Western biophilosophical theories. Ph.D. dissertation. NY: City University of New York; 1993.

43. Hart M. The chiropractic adjustment: mechanistic treatment or vitalistic life enhancement? In: Callender A, Sinnott R, editors. *Philosophical Contemplations*, v. 5. Davenport, IA: Palmer Chiropractic University Foundation; 2005. p. 49-58.

44. Bergson H. *Creative evolution*. Lanham [MD]: University Press of America, Inc; 1983.