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Philosophically Driven Scientific Investigation of Vertebral Subluxation

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Introduction

The profession of chiropractic has been defined in many different ways and from various perspectives throughout its 105 year history. For example the definition of straight chiropractic used at Sherman College is Aa vitalistic philosophy of life and health, and the art and science of locating and correcting vertebral subluxations in accordance with that philosophy. A

Other definitions may stress a scientific approach rather than a philosophic approach to patient care, but most descriptions concede that science, philosophy and art all play a part in the practice of chiropractic. In chiropractic research, it often seems that scientists can lose sight of the place of philosophy and art in the search for objectivity in their work. The result might be conflict between practitioners and researchers. Researchers are disenchanted because practitioners seem to care little about the results found, and practitioners show little interest because the work is not relevant to practice.

This article will develop some ideas about the relationships between art, science and philosophy in chiropractic. Of particular interest are the interfaces between the approaches, areas where conflict and interchange arise. This approach is being used at Sherman College of Straight Chiropractic in the development of a research program studying phenomena relating health to vertebral subluxation.

Philosophy in Chiropractic

Generally when you speak of philosophy in chiropractic, the works of D.D. and B.J. Palmer come to mind, especially the 33 principles as laid out by Stevenson(1). It helps, though, to view these chiropractic principles as themselves part of the larger discipline of philosophy.

Philosophy in a general sense is a very human endeavor to understand the fundamental workings of nature and the underpinnings of reality. Different aspects of our attitudes toward nature and ourselves have developed into various branches of philosophy. Three branches of philosophy in particular: Ethics, Epistemology and Metaphysics, play important roles in the development of the science of chiropractic and its practical application through the art of chiropractic.

Ethics deals with our attitudes toward ourselves and interactions with our human and nonhuman earthmates. In chiropractic, ethics helps us decide on our motivations for offering care to our patients, and sets standards of morality for relationships between doctor and patient.

Epistemology deals with our understandings of how we know what we know and, in the form of the philosophy of science, provides guidelines for the development of scientific

inquiry. Paradoxically, the notion held by many scientists that science is above philosophy and art is itself a philosophical point.

The principles of universal and innate intelligence, as named and described by the early developers of chiropractic, fit most closely in a branch of philosophy called metaphysics. In particular, the 33 chiropractic principles outline a biological doctrine concerned with a duality of nature: a vitalistic intelligence interacts with matter and force to produce the properties of reality and life as we know them. Models of dualism and vitalism were not invented by the Palmers for use in chiropractic; these notions predate chiropractic by several centuries.

Another metaphysical doctrine, materialism, is widely held in science. In contrast to vitalism, materialism is the notion that all processes and events in life can be explained by electrical, mechanical or chemical mechanisms. Life is governed solely by physical laws. Modern biology is built on this doctrine and has developed quite successful models of genetic and biochemical behavior. Life is considered to be self-creating and organizing, evolving over a long period of time through random mutation. Successful mutations persist and evolve to new levels of complexity.

Major philosophical questions remain unanswered (or even unasked) in a materialistic model of life. Such questions as the source of life's motivation to succeed and increase in complexity are skirted. Whether evolution progresses by design or through chance mutation is the source of much speculation.

Hence, at the root, conflicts between chiropractic principles and scientific materialism may be philosophical. If chiropractic research is to proceed, making use of scientific principles, without losing touch with its fundamental principles, we need to find a way around the conflict. It might be, too, that a scientific appraisal of chiropractic can be done without even going into the philosophic realm. In that case, there needs to be continued acknowledgment that some element of chiropractic can be lost by such a splintered approach.

The Art of Chiropractic

Artistic endeavors typically require practice to master and often have quite idiosyncratic results. Art, a cornerstone of chiropractic practice, involves the patient to doctor interactions, particularly in the way that doctors use their sensitivity and experience to locate and correct subluxations.

Chiropractic Science

It might be said that there really is no "science" of chiropractic, in that there is no particular discipline of science unique to the field. Rather, the knowledge developed in the basic sciences of chemistry, physics and biology apply to our understanding of nature

and life. Disciplines such as anatomy, neurology, physiology and biomechanics are applied to test hypotheses developed in relation to chiropractic principles.

The interplay between philosophy, science and art in chiropractic

If each three aspects of chiropractic could operate alone, there might be few conflicts (except in the case of philosophy, where there seem to be internal conflicts between materialism and vitalism). If chiropractors could each practice in isolation, an artistic or philosophical approach might be fine. Instead, though, all chiropractors are held to the practice standards established by state law, and all schools are held to educational standards set by one accrediting body. Education and practice are increasingly being called on to develop standards based on evidence and science. As we develop the evidence base, it is important to keep in mind the overlaps of philosophy and art with science and each other.

With three domains interacting, there are also three areas of overlap. In general, it seems that conflicts arise when two different domains seem to govern the same activities, or when one domain takes over where another should be working in concert. Some examples follow of interactions and conflict between the three domains.

Philosophy & Science

Philosophers make use of rationalism C using mental models to explain the essential nature of reality. Scientists, on the other hand, use empiricism C the scientific method, to explore aspects of the universe. There is no real conflict here because the two methods interact effectively when deduction is used to develop hypotheses that can be tested inductively.

Conflicts arise when the findings of science seem to contradict philosophic views. The findings of science should be used to modify the philosophic conclusions in such a way that progress is made in both domains. On the other hand, philosophy and science can avoid conflict by keeping to their own territory. For instance, a philosophic definition of vertebral subluxation should be general enough to avoid conflict with science, e.g. an abnormality in the spine that produces interference to the flow of information in the nervous system. A definition that contains operational factors is a scientific definition, not a philosophic one, e.g. a misalignment of adjacent vertebrae that occludes a foramen.

Problems also arise when the science is based on hypotheses that do not match philosophic models. Here lies the challenge in chiropractic research, which set of philosophic principles should research be based upon? Is it possible to develop a science based on vitalistic principles?

Science & Art

Clinical science is only put to good use when scientific findings can be translated into clinically useful methods. Practice will then progress with the help of science. Much of chiropractic=s joint assessment and adjusting technique can be enhanced with knowledge

gained from the biological application of the mechanical disciplines of kinematics and elasticity. Joint motion and position can be described in terms of translations and rotations in a coordinate system. Joint damage and repair might be understood in terms of the tissue strains that occur during movement and trauma, given knowledge of the elastic properties of the tissues and the geometry of motion.

In our current state, the traditional art of chiropractic is already well developed. Science is being called on to evaluate practice methods, rather than develop them. In many instances the doctor uses palpatory and communication skills that are crucial to the doctor-patient interaction, but are very difficult to quantify from a scientific standpoint. Hence there are often conflicts between what is scientifically known or measurable, and what is felt by the doctor and patient. An evidence base that does not allow for the inclusion of the art in chiropractic may miss a most important aspect of the practice.

Art & Philosophy

With art referring to the hands-on methods used to correct vertebral subluxation, the overlap with philosophy might be considered in the decision of when to apply that art and for what reason. The objective of chiropractic technique could be considered a philosophic point along the same lines. Clearly in chiropractic there are various practice models based on different philosophical approaches and a wide variety of techniques used. The use of chiropractic art to locate and correct vertebral subluxation in order to enhance the productivity and well being of patients is a straight chiropractic objective. Pain relief through any non-drug, non-surgical method available is another practice objective found in the field (2).

Some other descriptions of practice models and relative benefits and challenges to the various approaches were published in an article in *Topics in Clinical Chiropractic* in 2000. (2)

Linking philosophic constructs to researchable hypotheses: Information flow

At this stage of the development of the research program at Sherman College, we are particularly interested in ways to study chiropractic with some of the traditional philosophic principles intact. We acknowledge that the philosophic construct of innate intelligence is immaterial, and probably not accessible to scientific study. On the other hand the effect of innate intelligence might be thought of as generating the information that goes into organizing the structure and processes of life. In that sense, it may be possible to investigate the effects of information flow or blockage in the way the human body reacts to stress or environmental changes.

A framework for developing hypotheses related to this abstract philosophical approach was described in a publication in the *Journal of Vertebral Subluxation Research* (3). The framework is termed a hypothesis tree, because it starts at a basic abstract philosophical

level (roots), develops a general operational definition (trunk), then branches into families of more concrete, testable hypotheses.

Subluxation hypotheses developed from information distortion

The starting point is the philosophic construct described by B.J. Palmer, reported in Stephenson's (1) text as the major premise and altered slightly to reflect the more recent appreciation of Einstein's realization that matter and energy are interconvertible:

There is a universal intelligence acting through all matter/energy, continually giving it all its properties and actions, thus maintaining matter/energy in existence and giving this universal intelligence its expression.

A definition of vertebral subluxation is developed that reflects the importance of information flow in the maintenance of optimal function in living systems:

Negative mechanical influences can occur in the area of the spine and interfere with information flow or processing within the nervous system. These are called vertebral subluxations (3).

This is about as far as philosophy can carry the theory development. From here is it a scientific task to describe and measure types of mechanical influences, and either information flow itself, or some effects of it. Several families of models that represent current theories of chiropractic can be incorporated in this framework(3). These models differ in the ways that mechanical forces are created, and how the nervous system is involved. In some cases, it may not be known whether mechanical influences *cause* nerve interference, or if the inverse is true. What they have in common is the presence of both some type of measurable mechanical effect, and a measurable change in nervous system function.

Projects underway

With this framework in mind, projects have been initiated at Sherman College to investigate some of these models of chiropractic. The efforts at this point are still focused largely on developing clinical measures that evaluate patient function.

Thermographic Pattern study – Skin temperature measurement has long been used as a window on sympathetic nervous system balance. At Sherman College, a computer interfaced infrared temperature device [Titronic Research and Development, Oxford, Iowa] is being used both in the health center and in research studies. Plotting the side-to-side temperature differences produces a graph that doctors and students use as part of the clinical evaluation. In particular, the "Pattern" analysis is used to detect relative stability in the graph from day to day. Stability of the graph is considered a sign that the patient may be in a subluxated state. Special computer software has been developed to help determine the similarity of graphs. The software is in its final testing phase, and data collection is underway in this project.

Leg Check Studies – Leg checking to determine relative leg length inequality (LLI) is one of the most often used tests in chiropractic. We are studying some of the factors that go into the performance of the leg check, such as the amount of headward pressure the doctor uses when checking the legs. In this study, force transducers have been mounted into the sole of a special shoe the patient wears. The doctor contacts the force cell when doing the leg check and the force is monitored by a computer. We are looking to see if the force is applied evenly from side to side, and whether the force applied influences the findings of the leg check.

Muscle palpation – Palpation of the spine is another of the most frequently used methods of subluxation detection. Muscle palpation is a technique used at Sherman College to detect small side-to-side differences in muscle tone as an indication of the need for adjustment. Reliability and validity studies are being carried out to test the objectivity of the measure. Comparisons to other clinical measures, such as x-ray analysis and thermography are being done using health center patients as subjects.

General health/wellness - quality of life – This study is aimed at detecting the effects of long term subluxation centered spinal care on the general health and wellbeing of patients. Data is being collected on patients with the cooperation of field doctors. Surveys are mailed to the doctors for administration to groups of their patients. This project is currently enrolling new doctors in the program and seeking funding from outside sources.

Summary

This article provided descriptions of some of the ways that art, science and philosophy interact in chiropractic. Of particular interest were the interfaces between the approaches, areas where conflict and interchange arise. An outline was given for how a scientific research program could be developed from philosophical principles unique to chiropractic. Several examples of studies were described that operate within this framework.

References

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