

# Unifying Eastern and Western Neuroscience Theory

by Steve Spiegel

In *The Structure of Scientific Revolutions*, eminent philosopher of science Thomas Kuhn describes the difficulty of understanding social influences that skew science theory. Popular neuroscience theory is a classical paradigm; it is a complete world view supported by terms with interrelated connotations and contexts that reinforce the status quo.<sup>1</sup> Scientific paradigms are homogeneous; it is difficult to recognize a false assumption of a paradigm from within. In the arduous challenge (and valiant effort) to understand neuroscience, it is far easier to theorize about pathological symptoms than to theorize about theoretical problems underlying the established paradigm. Eminent philosopher of science Karl Popper understood the difficulty of identifying false assumptions when he advocated the accepted Philosophy of Science principle of “falsifiability.”<sup>2</sup> The Philosophy of Science (where philosophers address science) advocates that real science theories can be differentiated from ad hoc theories by *falsifying* them — explaining how to disprove them. The process of describing how to disprove a theory identifies assumptions that are potential sources of error. Although current neuroscience research is an admirable endeavor, foundational neuroscience theory has not been falsified to identify underlying assumptions for critical consideration.

This thesis contends that falsifying the popular neuroscience paradigm identifies two fundamental theoretical problems: the first concerns its foundational science theory and the second concerns its focus on molecular neuroscience. It is unscientific to assume complex brain principles and ignore simple binary science and it is unscientific to focus on molecular neuroscience and ignore whole tissue neuroscience that explains all other organs. The philosophy of informing sciences implores consideration of “binary whole-tissue neuroscience” to understand neuroscience and numerous neurodegenerative diseases. The following sections advocate that current neuroscience research: 1) *contradicts basic science logic* when it assumes complex neuroscience principles and ignores simple binary science, 2) *contradicts the philosophy of science* when it assumes complex neuroscience principles and ignores simple binary science, 3) *contradicts the philosophy of natural science* when it assumes complex neuroscience principles and ignores simple binary science, and 4) *contradicts the philosophy of physiology* when it ignores whole-tissue neurophysiology. The philosophy of a science is the science’s most fundamental principle; it defines and frames a science with an unprovable underlying assumption. An anomaly of the philosophy of a science corrupts all of the science that is built upon it; as information technologists advocate, “garbage in, garbage out.”<sup>3,4,5,6,7</sup> Basic science logic and

accepted science tenets implore consideration of beautifully simple *binary (whole) tissue neurophysiology* to understand neuroscience and numerous degenerative diseases.

While the eloquent beauty of binary neuroscience may be difficult to understand for those assuming complex brain functions, there is tremendous social value in the scientific truth of Unifying Eastern and Western Neuroscience Theory.

First, *popular neuroscience research contradicts basic science logic while continuing a long tradition of assuming complex brain principles while brain principles are unknown; full stop.* Moreover, *popular neuroscience research continues to contradict basic science logic when assuming complex brain principles while modeling the brain with computers that operate through simple binary science; again, full stop.* It may appear that simple brain principles would be obvious to scholars but appearances are often deceiving. It is extremely difficult to reverse-engineer a system that produces a complex product based on a simple principle, especially when the simple principle is not sought. One hundred trillion neural connections produce complex thinking and complex behavior but do not prove a complex brain principle. In contrast to the common *assumption* of complex brain principles,<sup>8,9</sup> scientific logic demands consideration of gloriously simple binary neuroscience to understand neuroscience theory.

Second, besides contradicting scientific logic, current neuroscience research also continues to *contradict the philosophy of science* (the most basic principle of science) while *assuming* complex brain principles and ignoring simple binary neuroscience. All science theory is based on the principle of *parsimony* — Occam's razor: "All other things being equal, simpler theories make better science", or more accurately, "Fewer assumptions make better science." Unfortunately, accepted western neuroscience investigations ignore parsimony as well as falsifiability; they are comfortable with increasing complexity and a related increase in unidentified assumptions. Foundational neuroscience theory that embraces cultural pride in human complexity is "socially constructed science" that contradicts the most basic principle of science. Regardless of a long, painful history of oversimplification in science research, the philosophy of science implores consideration of simple binary neuroscience to understand neuroscience theory.

Third, besides contradicting scientific logic and the philosophy of science, current neuroscience research also *contradicts a philosophy of natural science* while *assuming* complex brain principles and ignoring simple binary neuroscience. The philosophy of natural science advocates that our environment is best understood with a singular focus on the natural (physical,

material) world, but there is a secondary philosophy of natural science. The secondary philosophy of natural science divides natural science theory between the *assumption* of simple principles consistent with eastern natural science and the *assumption* of complex principles consistent with western neuroscientists. Eastern natural science *assumes* eloquently simple principles of nature including human nature; in contrast, western natural science predominately *assumes* admirably complex principles of nature including neuroscience. Eastern natural science advocates the beautifully simple binary science of “yin and yang” while western neuroscience assumes that the brain is “the most complex machine in the universe.”<sup>8,9</sup> Actually, western natural science theory is divided between the predominance of natural scientists (and neuroscientists) and our most eminent natural scientists. Although the majority of neuroscientists assume complex neuroscience principles consistent with cultural expectations, our leading western natural scientists advocate simple principles of nature consistent with eastern natural science. *Our eminent natural scientists (Einstein, Brian Greene, Steven Weinberg, Walter Lewin) advocate that human nature is based on eloquently simple principles hidden beneath an appearance of complexity.*<sup>10,11,12</sup> Eminent western natural scientists deviate from the predominance of western neuroscientists by contending that simple principles produce the complex manifestations of human nature. Leading western natural scientists imply that neuroscientists should investigate human nature as a function simple principles — binary neuroscience well beyond binary neurons. Western scientists predominately ignore (or disparage) the eastern natural science of “yin and yang” as elevating stereotypical gender roles, but it is fundamentally binary science. Ignoring binary neuroscience is unscientific while eastern natural science advocates it and eminent western natural scientists advocate simple principles. Natural science theory implores consideration of simple principles of binary science to understand neuroscience theory.

Fourth, besides contradicting basic science logic, the philosophy of science, and the philosophy of natural science while ignoring binary science; current neuroscience research also contradicts *the philosophy of physiology while addressing organizational levels of the body*. The philosophy of physiology implores consideration of simple principles of “whole-tissue neurophysiology” to understand brain science while current neuroscience investigations focus on complex principles of molecular neurophysiology (including genetics). Investigating molecular neuroscience has produced significant advances in understanding human pathologies but molecular physiology cannot explain the function of any organ. *Neurophysiologists should consider whole-tissue neurophysiology consistent with how physiologists explain every other*

*organ of the body with four kinds of whole body tissues (muscle tissue, connective tissues [bones, finger nails], epithelial tissues [skin, veins] and nervous tissue).* Molecular neurophysiological investigations are *inconsistent* with how physiology explains every other organ of the body at the organizational level of (whole) tissue physiology and can explain no body organs at the molecular level.

*The philosophy of physiology explains organisms at different organizational levels of the body with each organizational level explaining the entire organism.* The body is completely comprised of body systems, and also completely comprised of body tissues, and similarly completely comprised of cells, as well as completely comprised of molecules; physiology investigates the body in “layers” or “generations” of information.<sup>13,14,15</sup> Anatomy and physiology texts investigate humans at different organizational levels of descending sizes and ascending complexity: body systems, body tissues, cells, and molecules. Physiology texts explain organs and organ systems with “body systems”, explain body systems including organs with (whole) body tissue physiology, explain tissue physiology with cellular physiology, and explain cellular physiology (theoretically) with molecular physiology. The philosophy of physiology completely explains organisms at different organizational levels and explains organs with the organizational levels of body systems (organ systems) and body tissues. Considering the interaction of entire (nervous) tissues to understand brain science may seem abstract from within the prevailing paradigm but the philosophy of physiology implores the focus.

Accepted physiology theory investigates organisms at different organizational levels of the body and can explain the function of all organs at the largest level — the level of body systems. Physiology theory describes neuroscience at the organizational level of body systems as the “nervous system” and can explain the brain and nervous system with basic, accepted natural science theory. *Natural science explains brain science at the organizational level of the nervous system: the brain receives information about the environment through the peripheral nervous system, processes the information, and sends related information back through the peripheral nervous system to affect behavior towards species survival.* This overview of brain physiology is a natural science explanation at the body systems level consistent with how physiologists explain every other organ and organ system. Physiology theory investigates the human organism at different organizational levels and can explain all organs including the brain at the largest organizational level of body systems.

Besides explaining all organs at the organizational level of body systems, physiologists can explain all organs besides the brain at the level of body tissues. Physiologists explain all other organs with an overview of the function of four kinds of whole body tissues: muscle tissue,

connective tissue, epithelial tissue, and nervous tissue. For example, after explaining the heart at the organizational level of body systems (as a pump that shoots nourishment and draws waste), physiologists explain the function of the heart with the increased specifics of entire-tissue physiology. Physiologists explain the heart with the interaction of whole tissues as follows: 1) *whole muscle tissues* create the general structure of a pump while flexed muscle tissues push nourishment throughout the body and pull waste, 2) *whole nervous tissues* create a periodic electric spark to flex heart muscle tissues to action, 3) *whole connective tissues* create valves in the pump structure to produce directional flow, and 4) *whole epithelial tissues* encase muscle tissues, and create pipes to carry nourishment and retrieve waste. Physiologists explain all organs besides the brain with a “big picture” perspective of entire body tissues (and their interactions).

But instead of addressing body systems and whole-tissue neurophysiology consistent with natural science and the philosophy of physiology, current neuroscience research molds brain science along cultural guidelines. Western neuroscience research combines the two organizational levels of body systems and (whole) body tissues into what it describes as “systems neuroscience.” Systems neuroscience *assumes* that the brain is functioning through a multitude of unknown interacting “mental” systems and (only) investigates nervous tissue under this assumption. Popular systems neuroscience investigates a complex micro focus on nervous tissue neurophysiology that obscures a macro focus on whole nervous tissues (and their interactions) that explains all other organs. Systems neuroscience combines the organizational levels of body systems and tissue physiology into a single organizational level that contradicts the philosophy of physiology.

While physiologists explain all organs besides the brain with body systems and whole body tissues, they are unable to explain the function of any organ at the cellular or molecular organizational levels. Cellular physiology cannot skip a generation of information about tissue physiology to directly explain the function any organ. Consistently, molecular physiology cannot skip two generations of information about cell physiology and tissue physiology to directly address organ functions. Molecular pathology may be able to explain cellular pathology (and thereby tissue pathology and organ pathology), but molecular physiology cannot yet explain cellular physiology. Investigating molecular neuroscience to understand brain functions is analogous to investigating the molecular structure of steel in an effort to understand the function of an automobile engine. Molecular physiology theoretically explains cellular physiology, but with a basic understanding of cellular neurophysiology, molecular neurophysiology is superfluous for understanding tissue neurophysiology and thereby brain science. Investigating molecular

neurophysiology to understand brain science contradicts the philosophy of physiology that explains organs with the physiology of whole body tissues.

Addressing whole-tissue physiology may initially seem abstract from the perspective of western neuroscience that embraces complexity, but whole body tissues explain every other organ of the body. Current neuroscience theory does not understand the brain at the tissue level of organization because it seeks a complex theory of systems neuroscience rather than a simple theory of whole nervous tissue. Seeking a macro focus of whole nervous tissues may seem abstract from the perspective of the current neuroscience paradigm but the philosophy of physiology implores the focus.

Science logic and accepted science principles implore consideration of eloquently simple binary neuroscience and (whole) tissue neuroscience to understand a new paradigm of brain science and numerous neurodegenerative diseases. Scientific logic dictates that the tenets of a science are the most important guidelines to follow for any science; everything emanates from foundational principles. Unfortunately, the distinguished endeavor to understand neuroscience is hindered by critical, long-established misdirection at the foundation of popular neuroscience theory.

Popular neuroscience research continues to contradict the Philosophy of Science principle of falsifiability as well as basic scientific logic, the philosophy of science, the philosophy of natural science and the philosophy of physiology. It is illogical (unscientific) for popular neuroscience theory to ignore magnificently simple binary science when: 1) brain principles are unknown while science theory seeks simple principles, 2) eminent western natural scientists advocate simple brain principles, 3) eastern natural science advocates binary science, and 4) neuroscientists model the brain with computers that operate through a principle of binary science. Besides ignoring binary neuroscience, it is also unscientific for conventional neuroscience theory to ignore the physiology of whole nervous tissues consistent with how physiology theory explains all other organs. Science logic and the tenets of informing sciences implore consideration of binary whole-tissue neuroscience to understand neuroscience theory and numerous neurodegenerative diseases.

Unifying Eastern and Western Neuroscience implores the reader to suspend belief in a massive quantity of complex, ambiguous and disjointed support for cultural expectations and instead follow true natural science theory that seeks reductionism. *Since neuroscientists have a general understanding of tissue neuroanatomy and cellular neurophysiology, they have all the information necessary to understand tissue neurophysiology and thereby brain science.*

*Neuroscientists should consider the binary neuroscience of “motivated-thinking” to understand brain science wherein the thinking process is separate from the motivation that gives it direction. Consistently, neuroscientists should consider whether a set of nervous tissues structured for motivation (the limbic system) impacts a set of nervous tissues structured for learning, thinking, and memory (the cerebral cortex). This treatise advocates a paradigm shift to foundational science based on unified eastern and western natural science theory. Unified natural science may be difficult to understand from the context of the established paradigm; but it is elegant, parsimonious science founded on basic, accepted science natural theory. Unifying Eastern and Western Neuroscience Theory implores a reverence for scientific truth that can revolutionize health care and greatly improve the human social condition.*

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