Unified Natural Science

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. Western natural science theory is a classical paradigm: it is a complete world view supported by terms with interrelated connotations and contexts that reinforce the status quo. Scientific paradigms are homogeneous; it is difficult to recognize a false assumption of a paradigm from within.[1] In the arduous challenge (and valiant effort) to understand neuroscience, it is easier to theorize about disease etiology than 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."[2] The Philosophy of Science advocates that real science theories can be differentiated from ad hoc theories by *falsifying* them — explaining how to disprove them. Addressing how to disprove a theory identifies assumptions that are potential sources of error. Although current neuroscience research is an admirable endeavor, it is not being falsified to identify underlying assumptions for critical consideration.

Unified Natural Science contends that falsifying popular neuroscience research identifies two fundamental theoretical problems: the first concerns its foundational natural science theory and the second concerns its focus on molecular biology. First, it is unscientific to assume complex brain principles and ignore the simple binary science of eastern natural philosophy ("Yin and Yang") and computers that model the brain. Second, since physiology is the biological science that investigates organ functions and (whole) tissue physiology explains all other organs of the body; it is unscientific to focus on molecular biology and ignore tissue neurophysiology. The philosophy of informing sciences implores consideration of "binary whole-tissue neurophysiology" to understand brain science and numerous neurodegenerative diseases. The following sections respectively advocate that current neuroscience research should: 1) *follow basic science logic* and consider simple binary neuroscience, 2) *follow the philosophy of science* and consider simple binary neuroscience, 3) *follow a philosophy of natural science* and consider simple binary science, and 4) *follow the philosophy of physiology* and consider tissue neurophysiology — the physiology of whole nervous tissues. The conclusion summarizes how pure natural science theory implores consideration of *binary whole-tissue neurophysiology* to understand brain science.

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: information derived from the scientific method cannot legitimize science theory with a corrupt foundation. As information technologists advocate, "garbage in, garbage out."[3,4,5,6,7] Based on accepted natural science theory and logical deductions, Unified Natural Science integrates binary science (eastern natural philosophy) into physiology theory (western natural science) for true, broader foundational science.

The eloquent beauty of *binary tissue neurophysiology* may be difficult to understand from a western perspective that embraces the complexity of molecular biology but real natural science theory seeks simplicity — reductionism. Molecular biology may produce a multitude of details about neuroscience but is unable to integrate the details into a "big picture" like physiology theory that addresses organ functions. Molecular biology may promote breakthroughs in pathology, but unlike physiological theory, molecular biology cannot explain an organ of the body. Accepted science tenets implore consideration of beautifully simple "binary whole-tissue neurophysiology" to understand brain science and numerous degenerative diseases.

Unified Natural Science unifies the binary science of computers that model the brain together with physiology and biology theory.

First, in contrast to a long tradition of *assuming* complex brain principles, *basic scientific logic* implores consideration of binary neuroscience as long as brain principles are unknown; full stop.[8,9,10] Moreover, basic scientific logic implores consideration of binary neuroscience while modeling the brain with computers that operate through the principle of simple binary science; again, full stop. It may seem like 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,[8,9,10] scientific logic implores consideration of gloriously simple binary neuroscience to understand brain science.

Second, consistent with basic scientific logic, *the philosophy of all science* implores consideration of simple binary neuroscience regardless of a long tradition of *assuming* complex brain principles. All science theory is based on the principle of *reductionism, parsimony, Occam's razor*: "All other things being equal, simpler theories make better science" or more accurately

"Fewer assumptions make better science." Unfortunately, accepted neuroscience investigations are comfortable with increasing complexity and a related increase in unidentified assumptions. Foundational neuroscience theory that embraces cultural pride in a complex "mind" promotes *socially constructed science* that contradicts the most basic principle of science. Regardless of a long, painful history of oversimplification in scientific research, the philosophy of all science implores consideration of the simple principle of binary neuroscience to understand brain science.

Third, consistent with scientific logic and the philosophy of all science, *a philosophy of natural science* further implores consideration of 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 philosophy and the *assumption* of complex principles consistent with western natural philosophy. Western natural philosophy dominates western natural science. Astonishingly, western natural science theory is divided between the predominance of western natural scientists (and neuroscientists) and our most eminent natural scientists. Although the majority of neuroscientists assume complex brain principles consistent with western cultural expectations, our leading western natural scientists advocate simple principles of nature including human nature consistent with eastern natural philosophy. *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*.[11,12,13] Eastern natural philosophy advocates the eloquently simple binary science of "Yin & yang" while western natural philosophy *assumes* that the brain is "the most complex machine in the universe."[8,9,10] The predominance of neuroscientists ignore binary science or disparage the natural science of "Yin and yang." Instead of being considered consistent with dialectical science and the physics theory of "the strong force and weak force," most western scientists believe that Yin & yang theory simply elevates gender stereotypes. Eminent western natural scientists deviate from the predominance of western neuroscientists by contending that simple principles produce the complex manifestations of human nature well beyond binary neurons. While western neuroscientists assume complex brain principles, eminent western natural scientists implore consideration of simple principles of human nature. Neuroscientists should follow basic science principles to understand brain.

Fourth, besides science logic, the philosophy of science, and a philosophy of natural science imploring consideration of binary neuroscience; the philosophy of physiology implores

consideration of whole-tissue neurophysiology. Biology is the science that investigates living organisms and physiology is the biological science that investigates organ functions. The philosophy of physiology investigates the functions of organisms and their organs at different organizational levels of the body with each organizational level explaining the entire organism. The philosophy of physiology explains organisms in "layers" or "generations" of information. [14,15,16] 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. Anatomy and physiology texts investigate humans at different organizational levels of descending sizes and ascending complexity: body systems, body tissues, cells, and molecules.[14,15,16] *Physiology texts explain organisms with "body systems", explain body systems including organs with (whole) body tissue physiology, explain tissue physiology with cellular physiology, and (theoretically) explain cellular physiology with molecular physiology.* The philosophy of physiology 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 neuroscience may seem abstract from within the prevailing science paradigm but the philosophy of physiology implores the focus. The philosophy of physiology implores consideration of simple principles of *whole-tissue neurophysiology* to understand brain science.

Accepted physiology theory (western natural science) 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. Physiologists describe 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 theory explains 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 generally towards species survival*. In contrast to mainstream western natural science theory that vilifies nature with social Darwinism, pure natural science theory explains the promotion of species survival through the promotion of community (increased social justice and better stewardship of Mother Earth). This overview of brain physiology is a natural science explanation at the organizational level of body systems consistent with how physiologists explain every other organ and organ system. Physiology theory investigates the human organism at different organizational levels and can explain the function of 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

explain all organs besides the brain with more detail at the organizational level of body tissues. Physiologists explain organs with an overview of the function of four kinds of whole body tissues: muscle tissue, connective tissues (bones, finger nails), epithelial tissues (skin, veins) 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 further explain the function of the heart with additional information about tissue physiology. Physiologists explain the heart through the interaction of (entire) body tissues: 1) *muscle tissues* create the general structure of a pump while flexed muscle tissues push nourishment throughout the body and pull waste, 2) *nervous tissues* create a periodic electric spark to flex heart muscle tissues, 3) *connective tissues* create valves in the pump structure to produce directional flow, and 4) *epithelial tissues* encase muscle tissues and create pipes to carry nourishment and retrieve waste. Physiologists explain all organs besides the brain with an overall perspective of whole body tissues and their interactions.

But instead of addressing the organizational levels of body systems and tissue physiology consistent with the philosophy of physiology, current neuroscience research combines these two largest organizational levels of the body. Neuroscience research integrates the organizational levels of body systems and (entire) body tissues into what it labels “systems neuroscience.” Popular *systems neuroscience* research contradicts the philosophy of physiology by combining the organizational levels of body system physiology and body tissue physiology into a micro investigation of tissue physiology. The complexity of “systems neuroscience” is supported by shifting neuroscience research categorically from physiology (the biological science that investigates organ functions) to complex biology — *molecular biology*. While physiologists explain all organs besides the brain with whole body tissues, they are unable to explain the function of any organ with the smaller organizational levels of cellular or molecular physiology. Consistent with how physiology theory understands the relationship between organizational levels, cellular physiology cannot skip a generation of information about tissue physiology to directly inform about organ functions. Similarly, molecular physiology cannot skip two generations of information about cellular physiology and tissue physiology to directly inform about organ functions. Investigating molecular neurophysiology to understand brain science is analogous to investigating the molecular structure of steel to understand the function of an automobile engine. Molecular biology may produce significant advances in understanding human pathology but molecular biology cannot explain the function of an organ.

The philosophy of physiology explains organisms at different organizational levels of the body with whole body tissues explaining organs. Fortunately, our current basic understanding of cellular neurophysiology and tissue neuroanatomy is all the information necessary for

neurophysiologists to understand tissue neurophysiology and thereby brain science.

Scientific logic dictates that the tenets of a science are the most important guidelines to follow for any science; all true science emanates from foundational principles. Unifying natural science theory is based on unifying accepted science principles beyond the current singular focus on the scientific method. The distinguished endeavor to understand brain science should reconsider critical decisions made at the foundation of popular neuroscience theory. While molecular biology has made significant breakthroughs in pathology, physiology is the biological science that investigates organs: neurophysiology is brain science. Popular neuroscience theory should consider magnificently simple binary science since brain principles are unknown, science seeks simple principles, and neuroscientists model the brain with binary computers. Moreover, our most eminent western natural scientists advocate simple principles of human nature — simple brain principles. Besides simple binary neuroscience, researchers should also consider the neurophysiology of whole nervous tissues consistent with how physiology theory explains all other organs of the body. In contrast to the micro focus on nervous tissue through the confusion of *systems neuroscience*, the philosophy of physiology implores a macro investigative focus at the organizational level of (whole) body tissues. Researching the function of entire nervous tissues may seem abstract from the perspective of western neuroscience but the philosophy of physiology implores the focus. Science logic and the philosophies of informing sciences implore consideration of *binary whole-tissue neurophysiology* to understand brain science and numerous neurological diseases.

In contrast to western natural science theory that vilifies nature as "red in tooth an claw", unifying natural science theory explains the truth of survival based on promoting community. Human rationality can promote an understanding of human nature, and the community necessary for species survival and the stewardship of our environment. Since neuroscientists have a general understanding of cellular neurophysiology and tissue neuroanatomy, they have all the information necessary to understand tissue neurophysiology and thereby brain science. Neuroscientists should consider the binary science of "motivated-thinking" wherein the thinking process is separate from the motivation (emotions) that gives it direction. Consistently, neuroscientists should consider how a set of nervous tissues structured for emotion/motivation (the limbic system) interacts with a set of nervous tissues structured for learning, thinking, and memory (the cerebral cortex). Researchers should consider binary whole-tissue neurophysiology to understand brain science.

Unified Natural Science implores consideration of a paradigm shift of neuroscience

research to a pure natural science foundation based on unifying natural science theory. Unified Natural Science unifies the binary science of computers that model the brain together with physiology and biology theory. It is falsified by disproving its logical deductions; disproving its explanation of scientific logic, the philosophy of science, a philosophy of natural science, or the philosophy of physiology; or disproving accepted nervous system anatomy and physiology. Unifying natural science theory may be difficult to understand from the context of the established western science paradigm that embraces complexity but it is elegant and parsimonious pure natural science. Unified Natural Science advocates a reverence for scientific truth to revolutionize health care and improve the human social condition.

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