Excerpt
Book 3

The Scientific Basis of the Fundamental Field

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Chapter 8

The Fundamental Field as the Organizing Framework of Life, and Some Practical Theory

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8.1 Introduction and Overview

8.1-A Overview of Chapter 8

Life-energy creates, organizes, and sustains living systems. The Fundamental Field is a systems theory and physics rendering of life-energy. The intrinsic nature of life-energy is consciousness. Life is the thus the creative expression of consciousness, as life-energy, which is scientifically modeled by FF approach using systems theory and physics. This chapter looks at the proposition that if the FF is the organizing framework of life, then living systems should reflect the **systems** and **energy** characteristics of the FF, **which they do**. The systems and energy principles that confirm the FF approach are derived from research in; biology, origin of life, medical, complex systems, and physics. Some of these principles are 'complexity' theory, the Poised Realm of quantum physics, and holographic principle of physics. In this chapter I also look at clinical confirmation of FF therapy beyond placebo effects.

8.1-B Systems Characteristics

The scientific research and perspectives from systems biology that I consider in support of the Fundamental Field model are all bottom-up reductionistic (reducto) or emergent, be they materialistic or panpsychism. In other words, conventional science starts with fundamental parts, defined by physics and chemistry or in the case of panpsychism [**Section 6.2**], the addition of fundamental units of consciousness, and builds up from there, eventually to life itself. In this process emergent structures and organizations may appear that then constrain and control their lower-level constituents.

The observations and characteristics of life defined by these bottom-up reducto/emergent theories are consistent with the Fundamental Field approach, but are not adequate to completely explain life. The FF model offers a different view of living systems. In the FF model, life is a whole onto itself, it is a top-down organizing framework from the onset. The FF is not reductionistic or emergent, but within its framework mechanical and emergence processes occur in the organization of life. Systems biology confirms the FF approach, its observations and descriptions of life are what is expected if the FF worldview is correct. In the broad context of science, philosophy, and human experience, the FF model provides a more complete and coherent explanation of life than does conventional science and systems biology.

Some of the systems characteristics considered in support of the Fundamental Field are:

Connectedness- All parts of the living system are connected, as in the FF, via a network of energy and information. This allows for the emergence of higher levels of organization, top-down causation, and integrated global functioning.

Top-down (or Downward) Causation- This is where higher-levels of organization, like the FF, influence and constrain the dynamics of lower-levels. Thus, what is happening to the body as a whole influences individual organ and cellular function, for example being under stress and the global stress response.

Integrated Global Functioning- Connectedness and top-down organization and causation allows living systems to exist as functional wholes, where all the parts are interconnected and are designed to act in cooperation for common goals, as in the FF. For example, one common goal is to maintain system complexity. Complexity is a state of the system that exhibits both stability and adaptability.

Context-Dependent Definition of Life- One of the primary aims of systems biology is to discover the laws and principles of self-organization or emergence in nature and in the creation, evolution, and functioning of life. A key point is that these laws are not dependent on the constituent parts of the system being organized. The general features of the organizing frameworks that result from these laws and organizing principles are the context of life. Life is thus seen as a function of the organizing principles, the FF, not the things being organized.

An analogy here would be a magnetic field organizing the filings of various metals. There are innumerable ways in which the filings, the constituent parts or content, could be organized within the context of the larger magnetic field. By analogy, the features of the magnetic field provide the context of life. However, in the Fundamental Field this is not an analogy, it is actually features of the electromagnetic field and other force fields, in their higher dimensional form, that are the context of life.

Replaceability of Constituent Parts- The context-dependent view of life sees organizing frameworks or principles, like the FF, that are not dependent on their constituent parts as life's fundamental nature, there is thus replaceability of constituent parts. This allows for the possibility of inorganic life forms. In the above analogy, different types of metal filings, different constituent parts could be organized by the same magnetic field context.

8.1-C Enhanced Therapy via Systems Theory/Physics- The Holographic Principle

The Fundamental Field is an expression of consciousness as the fundamental forces of nature. It is the organizing framework of living systems. FF therapy uses the physics and systems features of the FF to define patterns of therapeutic reflex points. These points are addressed to restore and optimize the function of life-energy and therefore restore and optimize health. The following is an example.

Complexity is a state of the system that exhibits both stability and adaptability. The complexity state of a system is depended on certain variables like connectedness, energy level, boundary conditions, and classical vs quantum state. Men and women have opposite values on each complexity variable, but the net effect is that both end up in a state of complexity. Complexity shows us that men and women can end up in the same place, but take different routes. These routes represent two different descriptions of the same thing, in this instance complexity.

In physics, two different descriptions of the same thing are called a correspondence or duality. There is a correspondence or duality in the male and female descriptions of complexity. Because biological sex is a function of electromagnetic polarity, there is a duality between the positive and negative charges as they create complexity. There is also a distribution of charges so that they are either located on the surface or interior of things, if positive surface then negative interior and vice versa. In acupuncture this correlates with hollow and solid organ classifications.

If we address; the boundary surface of Fundamental Field energy structures as one dimension less that the interior, and see the surface and interior are corresponding descriptions of complexity and polarity, then we can apply the holographic principle. This has important practical hands-on therapeutic applications. This approach is especially useful in the treatment of early life traumas where the size and complexity of problems are easy experienced as overwhelming and insurmountable. By incorporating the Fundamental Field holographic approach in therapy one can: Place a finite boundary or constraint around what is perceived, by the patient/client, to be an insurmountable or infinity large problem; Find a simple solution to what appears to be a tremendously complex problem; Have therapeutic effects that are scale-invariant, they apply across all scales from cells to whole person; Separate and restore positive-negative polarities.

The holographic principle of physics is a quantum theory. Given this, we can ask, does quantum theory apply to living systems? Quantum theory could apply to the Fundamental Field as the FF is an atom-like configuration of fundamental particles and forces. The FF could impart quantum characteristics to life. Does life reflect this? Despite the relativity heated, wet, and interactively busy nature of life that would make quantum processes in living systems highly unlikely, quantum processes unexpectedly exist in life and at a surprising high level. Research shows that living systems exist in a realm that stands between quantum and classical. This quantum/classical state of living systems is also a complexity variable that can be therapeutically addressed by Fundamental Field reflex patterns.

8.1-D Energy Characteristics

If the Fundamental Field, as the contextual organizing framework of life, consists of the fundamental forces and their fields, primarily electromagnetic, then we would expect life to have field-like form and function. We would expect to see a global, continuous, seamless, and interactive field-like design of the fundamental structures and processes of life. This would organize life as a connected system. We do see these characteristics in life in what is known as the living matrix. In addition, we would expect to see living systems exhibiting large-scale electromagnetically polarized structures and process that reflect the FF organizing framework, these have been confirmed.

8.1-E Enhanced Therapy via a Systems Approach

The connections and interactions within the Fundamental Field and biology validates a systems approach to therapy. A systems approach allows one to address health problems as a function of larger patterns of; trauma, adaptation, compensation, and purpose, not as isolated broken parts. These patterns that can involve all the aspects of our being; mind, emotions, physiology, and structure. This allows us to see connections between our health and all aspects of our lives. The patient can thus take a more active role in their healing.

In the systems approach, rather than the medical diagnosis dictating the treatment, the state of the patient's system dictates the treatment. The treatment is designed to restore the system to health and practice prevention, as opposed to just treat disease. In addition, treatment protocols are not preset and static like they would be if based solely on a medical diagnosis. The physician remeasures the patient's system and replans treatment protocols in real time. This could mean on every visit and during treatment protocols.

8.4 Enhanced Therapy via Systems Theory/Physics: Complexity and the Quantum Nature of Life

8.4-A Introduction to Complexity

The concept of complexity [2] was investigated by eminent theoretical biologist and complex systems researcher Stuart Kauffman [3]. He is also a Medical Doctor. A motivating factor in Kauffman's career has been to discover the laws of self-organization and emergence in nature and especially in living systems. Kauffman theorized that living systems must be both stable and adaptive in order to survive. A system that is both stable and adaptive is in the state of 'complexity', or a system 'poised at the edge of chaos', or a system at 'criticality'. If the system became overly stable or ordered, it would be frozen and not adapt to changing environments. If the system became overly adaptive, it would go into chaos and become unstable.

Complexity is an example of an essential organizing principle in living systems; it is universal and not dependent on the details of its constituent parts. Kauffman's research on evolving systems showed that there were variables that played a part in creating and maintaining the state

of complexity. Some of these variables are connectedness, energy level, boundary conditions, and classical vs quantum state.

For example, on the connectedness variable, if there are not enough connections between the components of a system, the system would freeze up and not be adaptive. If there are too many connections, the system would go chaotic. If connections between components were at a certain amount the system would be in a state of complexity, be both stable and be able to adapt.

Biological sex/gender differences affect complexity. I realized this by examining the variables defining sex differences. Connectedness and action vs information (based on brain differences and research) are examples of gender differences that affect complexity. Woman have more connectedness and this contributes to adaptability. Men have less, which contributes to stability. But on the action vs information variable, women are more information oriented which contributes to stability, they want more information before they act. Men are more action oriented, more impulsive and take more chances, which contributes to adaptability. Considering a number of these gender variables showed that each gender had equal amounts of adaptability and stability. In other words, both genders ended up in a state of complexity, both genders were stable and adaptive. However, they got there in opposite, but equality valid, ways. On each variable the genders exhibited the opposite effect on complexity; if females were adaptive then males were stable, or if females were stable then males were adaptive.

In the Fundamental Field gender differences are a function of FF contextual electromagnetic polarities, positive or yang for male, and negative or yin for female. In the FF, yin and yang energy reflex patterns can be addressed in such a way as to reestablish complexity, the balance between stability and adaptability. This is accomplished by increasing or decreasing the positive or negative energy, depending on the variable and the involved problem. For example, one might increase the yang energy in order to stabilize a chaotic emotional boundary issue, as yang is the stabilizing energy for that variable.

It is important to note that looking at a single variable may give a distorted view of sex differences. For example, while women may appear to be more adaptive than men on one variable, or a cluster of variables, but in the larger picture they are the same as men. Conversely, a measure could show that men and women are equal on complexity, but fail to discover they got there in opposite ways. Complexity shows us that men and women can end up in the same place, but take different routes and have different characteristics. These routes represent two different descriptions of the same thing, in this instance, complexity.

8.4-B Introduction to Quantum Physics

In conventional physics, particles of matter, or properties like particle spin, exists in two states; quantum or classical. In this section I will present a third state discovered by the work of Stuart Kauffman. This third state is a phase transition state hovering reversibly between quantum and classical existence. We are all familiar with the classical state, this is the everyday reality we live in where we observe things as being localized and solid, like the chair you are probably sitting on as you read this book. The quantum state represents an entirely different existence.

In the quantum state, things, like an electron for example, do not exist as a particle with a specific location and trajectory. It exists as a wave that is spread or smeared out. This wave form is called a wavefunction. The quantum entity or wavefunction can be relativity localized as in electron shells or more extended in space as when an electron is shot out of an electron gun, as in the double-slit experiment. In this experiment the wavefunction(s) spreads out, propagates, and creates interference patterns as it interacts with its environment.

The wavefunction is a wave of probability information, each point on the wave, related to the wave's amplitude, tells us the probability of finding or measuring, for example, a particle at that location. It is at the point of measurement that the quantum entity turns into a classical entity, for example, from a quantum wave into a classical particle, like an electron.

An analogy is a boat, as a particle, heading to the beach, it has a specific route. In contrast, the boat as a quantum wavefunction is like an ocean wave. As the wave encounters and goes around islands and rocks on its way to the beach, secondary waves with different phases and directions are created. These secondary waves interact with each other and the original wave creating an interference pattern. Think of dropping two rocks in a still pound, the waves created expand from each point where the rocks entered the water interact or interfere with each other, creating an interference pattern.

The beach represents where we measure the quantum wavefunction (of the boat). The wave cannot go around it. In the process of measurement, in other words, as the wave breaks or collapses on the beach, the boat, as a classical object, appears from the wave at a location on the beach. The height of the wave -as a product of interference patterns- at any point on the beach will determine the probability that the boat will manifest at that location. This is a random occurrence, we do not know where on the beach the boat will appear, only the probability at each location, in this example, determined by the height or amplitude of the wave. The wavefunction is also seen as a wave of potential, as it has many possible outcomes. The process whereby the wavefunction manifests into its classical form is called collapse of the wavefunction, or in this analogy, breaking of the wave. The wave contains information about, or a superposition of, all routes to the beach.

There are different interpretations of quantum physics. What I presented above is the standard or Copenhagen view. A big problem in this view is what constitutes a measurement. In other words, what determines whether something is in its quantum (wavefunction) vs classical state. There is nothing about collapse of the wavefunction in the mathematics of the theory. In this standard Copenhagen interpretation, measurement is typically seen to be a result of observation by a conscious agent, an additional point of controversy, discussed below. Another explanation of quantum physics is Bohmian mechanics after physicist David Bohm. In Bohmian mechanics both the boat and the wave exist. The wave is a pilot-wave guiding the boat to a specific location on the beach. The probability for any location is defined by the pilot-wave. The pilot-wave gives the same probabilities as the wavefunction. But the pilot-wave itself is not classical, it exists as a function of non-local (faster than light) entanglement connections.

The idea that measurement is observation by a conscious agent is what prompted Einstein to ask the question, does the moon exist when nobody is observing it? We can ask, when Jupiter goes

behind the sun or if for some reason nobody was observing the moon, would the planets and the moon turn into a quantum probability wave? What would happen to the gravitational effects, like tides for example? We do not see disturbed gravitational effects when planets or moons for some reason disappear from our vision. The same logic applies to our everyday experience of the world, things do not appear and disappear, depending upon our gaze.

Decoherence theory is another mechanism explaining the transition from quantum to classical existence. In this theory it is the of disruption or decoherence of the quantum wavefunction as it interacts with its environment that causes the appearance of the classic state. This is in line with the fact that it is normally small, atomic and subatomic, entities in controlled isolated conditions that manifest their quantum states. The reality of decoherence and the need to control interactions is confirmed in quantum computing. One way to control decoherence in quantum computing is by isolation and super-cooling of the system. Recent research suggests that super-cooling may ultimately not be necessary in quantum computing, but there are still extremely tight controls on conditions and interactions to limit decoherence. It is interesting to note that in panpsychism the distinction between observation by a conscious agent and decoherence is blurred, they could be the same thing, interaction and decoherence is measurement by a conscious agent.

8.4-C The Poised Realm of Quantum Physics

Stuart Kauffman, in his 2016 book entitled Humanity in a Creative Universe from Oxford University Press, communicates that along with quantum physicist Gabor Vattay and computer scientist Samuli Niiranen they have remarkably discovered a new area of physics, or a new state of matter, they call the "Poised Realm" of quantum physics. In Poised Realm theory there are three systems states; ordered, critical or complexity, and chaotic. As discussed in **Section 8.4-A**, in adaptive terms, these states would be; frozen, stable/adaptive, unstable. The Poised Realm states are defined by the whether the quantum wavefunctions of a system are localized in space (ordered), or extended in space (chaotic), or in a transition state between these two (critical).

Kauffman (Ibid) gives an example using electrons in a medium. If the electron wavefunctions are localized, the substance is an insulator (of electricity), electrons do not flow across the medium. This is the ordered state. If the electron wavefunctions are delocalized and extended across the medium, then it is a conductor. This is the chaotic state. He continues, there is a transition state where the wavefunctions just start to become delocalized. This transition is the quantum analog of criticality or complexity in the classic world. Quantum criticality is the state between localized and delocalized wavefunctions.

Poised Realm criticality is also reflected in other quantum behavior, for example, in the absorption and emission spectra (of energy) in molecules. In this context, the ordered state interacts with the world in small energy shifts. The chaotic state interacts with the world in large energy shifts. The critical state interacts with the world in small, large, and mostly medium energy shifts.

Kauffman and his colleagues make the case that living systems exist in the quantum Poised Realm. One result of Poised Realm criticality in living systems is that electron (energy) transport or bioelectricity is not frozen, as in the insulator ordered state, nor unmodulated or potentially

out of control as in the conductor chaotic state. Instead, in the critical or complexity state, there can be modulated functioning incorporating small, medium, and large energy fluctuations as needed.

From the discussion on complexity at the beginning of this section and the discussion on the Poised Realm above, we see that the small scale Poised Realm states are analog to the large scale complexity states (Ibid Kauffman). There is complexity at all scales. This means that local vs global (delocalized) functioning applies at larger scales. In other words, there is an optimal complexity or critical state of localization in system functioning that is both stable and adaptive. This optimization necessitates balancing local or individual identity, roles, and needs against larger system needs.

For example, a specific cell's function in the larger context of the whole individual. At local/global criticality there is an optimal balance between; local individual cellular expression and needs vs global system needs. For a more specific example, we see that a cancer cell fits the ordered or hyper-localized state profile. Most cancers appear to be frozen into local, or individual, functioning regardless of global input or consequences. This is to the point of even its own demise if the larger whole of the individual dies. Cancer cells can lose or diminish their cellular differentiation, which is their local role or purpose in the context of global functioning. Conventional therapy is to try and remove or kill off the cancer rather than restore local/global criticality.

If we consider an individual, or family, or corporation, in the context of society, then this necessitates balancing 'individual' needs against the larger needs of society. There is an optimal balance point for this. This is a vast societal topic and warrants further discussion, but this is beyond the scope of this book. This local/global balance point at criticality is both stable and adaptive, the system is not stuck or frozen, or unstable or chaotic; be it an individual, or society, or system of nations.

8.4-D Quantum Characteristics, Conformation of the Fundamental Field

Kauffman (Ibid) has shown that complexity occurs at the quantum scale. In **Section 8.4-D** below, he makes the point that that despite the relativity heated, wet, and interactively busy nature of living systems, quantum processes unexpectedly exist in life. The Fundamental Field is an expression of consciousness as the fundamental forces, including quantum physics, and organizing principles of nature. The FF is the organizing framework of living systems. In this capacity the FF can directly impart, on a human scale, quantum complexity or criticality and other quantum characteristics to living systems. Thus, the fact that quantum processes exist in living systems, when not expected, is confirmation of the FF.

Fundamental Field therapy can restore Poised Realm criticality (local/global complexity) in its organizing energy fields and the living system by contracting or extending FF energy fields. The general principles of FF therapeutic application of fundamental physics applies to other aspects of physics like the decoherence/coherence, discussed next, and the holographic principle, discussed in the next section.

8.4-E Classical/Quantum Criticality

Kauffman (Ibid) makes the point that despite the nature of living systems, all which promote decoherence and classical existence, quantum processes unexpectedly exist in life. Even more interesting is that in the Poised Realm things are hovering in a dynamic state between the quantum world of wavefunction coherence, and the classical state of widespread decoherence. This is a dynamic quasi-quantum state. Such a state is possible because there can be recoherence of the wavefunction. In other words, decoherence is reversible and thus, the amount of decoherence can vary. I will discuss a mechanism for recoherence shortly.

Kauffman (Ibid), on page 141 states that there is an optimal degree of coherence that allows for molecules to, in a quantum way, explore their environment, enhancing biological functions:

> *"Decoherence, compared to full coherence, may localize the wavefunction in a way that helps speed search for the reaction center target in light-harvesting molecules. Amazingly, Vattay and Csabai have shown that there is an optimal degree of decoherence in the Poised Realm that is best for some biomolecular functions."*

Kauffman further states that at a 2012 origins of life meeting at CERN, quantum physicist Gabor Vattay pointed out that:

> *"…in the Poised Realm a single molecule could simultaneously "try" many different reactions."* Kauffman continues, "*If so, we have to rethink reliance on classical chemistry and biology. The extent of quantum coherence and Poised Realm behaviors in life may be very widespread. The Poised Realm may transform our thinking in biology, mind/brain and beyond."*

From our knowledge of complexity, we can make the case that quantum coherence is a complexity variable. The variable is classical/quantum or decoherence/coherence of the wavefunction. Decoherence is the classical state. Things in their classical state are relativity stable and ordered when compared to things in their quantum state, at least there is a 'thing' in the classic state. There are only possibilities or things representing possibilities in the quantum state.

Coherence of the wavefunction is the quantum or chaotic state. But, how does quantum chaos relate to classical chaos? The classical, non-quantum, understanding of chaos is that it is characterized by unpredictability in terms of amplitude, trajectories, and timing. Small fluctuations, at almost any time, can spread throughout the entire system and be amplified into large ones. In contrast, in the Copenhagen view (of quantum physics), the transition from quantum to classical is viewed as a discreet all-or-nothing event, as the collapse of the wavefunction. The unpredictability of quantum physics is seen as the randomness of manifestation within the probabilities of the wavefunction, not the positive-feedback driven processes of classical chaos. But decoherence and recoherence theories, as interactive processes, especially as they apply to living systems, and the Fundamental Field as a large-scale quantum organizing framework blur the distinction between classical and quantum chaos.

Partial decoherence of the wavefunction, the classical/quantum complexity state, has the potential to direct, explore, and manifest different, but not every, outcomes. This has both a stabilizing and adaptive function. The classic or ordered state has relatively limited outcomes. The quantum or chaotic state has every possible outcome. For the individual, classical/quantum criticality is the ability to 'see' alternative directions or actions to take in life.

The Poised Realm state of local/global criticality and quantum/classical criticality appear somewhat dependent upon one another, but not totality. I am going to take the position that so long as one of these is relatively near or at criticality, the other can vary. In other words, they are two different complexity variables.

8.4-F Sound and Recoherence

Of special interest to Fundamental Field theory is a quote from Kauffman (Ibid), page 139, citing research that supports recoherence:

> *"...suggests that sound vibrations, called phonons in quantum mechanics, can induce recoherence in the decohering excited electron."*

I have already considered sound as an essential creative and organizing energy of material and higher-dimensional reality in **Section 6.3-E**. In Fundamental Field theory sound creates and organizes as a function of resonance geometry in terms of the number of dimensions. The number of dimensions defines a phase-shift in the quantum vacuum. In traditional energy medicine the phase-states are the traditional elements; ether (space), air (gas), fire (transitional), water (liquid), and earth (solid) [**Section 6.3-D**]. The full relationship between the quantum state and sound energy remains to be worked out. But, empirically, in FF therapy, the classical/quantum criticality of the FF can be addressed by reestablishing dimensional resonance.

Notes

2. Waldrop, Mitchell M. Complexity: The Emerging Order at the Edge of Order and Chaos. New York: Simon and Schuster, 1992.

3. Kauffman, Stuart. At Home in the Universe. New York: Oxford University Press, 1995.