The Transmuting Ether Paradigm of Subquantum Kinetics: A Physics for the 21st Century

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Abstract: A summary is presented of the subquantum kinetics ether methodology, a type of unified field theory that successfully predicts a large number of physical phenomena. This utilizes a new approach to theory development that emphasizes the use of system theory and places theory development as primary and observation as secondary. The rationale is given for adopting an open system, process-based view of the physical universe and for choosing the Model G reaction system as a prospective "genetic code" for the physical universe. Model G is shown to provide a viable model for the creation of subatomic particles from ZPE fluctuations.

Keywords: subquantum kinetics, Model G, general system theory, open systems, reaction-diffusion systems, physics, cosmology, quantum theory, ether theory, process philosophy

1. A New Approach for Understanding Nature

The following presents a partial overview of subquantum kinetics along the lines of the presentation given on March 29, 2014 at the New Science Paradigm Symposium held in Milano, Italy. Subquantum kinetics is a physics theory, or physics methodology to be more accurate, that is based on the concept of an all pervasive transmuting ether, also known as the Akasha or Chi. This refers to a subtle medium that is assumed to underlie all physical form and to serve as the matrix within which all physical phenomena arise.

Subquantum kinetics takes a very different approach to physics than that of standard theory, which is perhaps why its track record has been so successful. Consider the current approach that physicists have been practicing for several centuries, of studying a particular physical phenomenon in isolation from all the rest and attempting to develop a theory that best explains that phenomenon. By repeating this process over and over, investigating various aspects of the physical world, physicists are left with an array of theories that have little relation of one to another. Each is best suited only to the isolated phenomenon that it was devised for and often may not serve as the best possible description. The result is a disarrayed collection of theories with physicists not having a clue as to how the parts fit together to explain the whole. Their attempt to "sew" them together to produce a "unified field theory" leaves them with a result that resembles a patchwork quilt and fills books full of complex equations.

A good analogy is to imagine the physical world as a large elephant and physicists to be blind men encountering this elephant for the first time and attempting to observe it. Because they cannot see the whole before them, they are left to a very restricted range of observation by touching the various parts of the elephant with their hands. This is a well known parable, but very suited to the current practice of physics. The one who touches the elephant's tail theorizes he is observing a rope; the one who touches its side thinks he is observing a wall, and the one who touches its foot thinks he is observing a tree trunk. While their theories may seem to each of them like reasonable inferences of what they are observing, in reality they are nowhere close to giving a correct description of the whole they are observing. Even if they were to combine together their collection of theories, they would be brought no closer to understanding their "elephant".

Physics is a branch of science that is the furthest removed from the human level of experience. Social science is very close to human experience because it deals with studying human behavior. Biological science is further removed because it studies phenomena taking place at the cellular level, entities that are far smaller in size than the human being, yet adequately accessible with microscopes and other measuring instruments. However, physicists study a level of nature that is so miniature that even using their best instruments they are destined to operate in an observational fog. By attempting to measure the position of a subatomic particle, the act of measurement affects the particle so greatly that it is no longer possible to accurately know its velocity or energy. Physics has canonized this circumstance of inherent uncertainty in the so called Heisenberg Uncertainty Relation. Similarly, in the astronomical branch of physics, astrophysicists deal with entities far removed from our solar system by distances of thousands to even billions of light years and whose time scale for evolution may span billions of years, far too long to be studied even in a series of human lifetimes. So physicists and astronomers are very much like these blind men.

Unlike current practice in physics, which puts observation first and then constructs a theory narrowly focused on those observations, subquantum kinetics does the opposite. It begins first with theory, one based on a general knowledge of how systems operate, and puts observation in an antecedent position using observations to fine tune the theory to make it realistic. Since its initial theory is directed to the "genetics" of the universe and not narrowly focused on any particular set of "phenotype" observations, it stands a better chance of producing a holistic unified theory of Nature.

In an analogy of the blind men and the elephant, the subquantum kinetics physicist begins by first attempting to formulate the elephant's genetic code and to then grow it into a virtual elephant through computer simulation. He then takes existing observations of physical phenomena and checks to see if the data adequately describe the simulation. While this approach may require some iteration and adjustment before it achieves its best result, the advantage is that, right from the start, all parts of the theory fit together holistically, resulting in a far greater understanding of the physical world, far greater accuracy in describing it, and a far greater ability to predict the outcome of future observations.

2. The Role of System Theory

The best way to select the initial "genetic code" is to realize that quantum structures such as protons, electrons, and neutrons, the entities that generate the physical phenomena that physics and astronomy study, are basically systems. Since our knowledge about this level of Nature is limited, we instead attempt to theorize about their characteristics by learning about systems more accessible to human observation whose functioning is better understood, such as chemical, biological, or social systems. The meta-discipline that engages in such cross-disciplinary theorizing is known as general system theory. General system theory, first proposed by Ludwig von Bertalanffy (1968), studies the commonalties of systems, the characteristics that they share in common. Systems theorists understand that Nature operates in similar ways at different levels of its vast hierarchy, and that often ideas and concepts developed in one scientific discipline can be brought over and usefully applied in another.

One of the commonalties that characterize all systems is that each has an environment with which it continually exchanges matter, energy, and information. In other words, systems are understood to function as *open systems*, being open to the throughput of matter, energy, or information passing through their boundaries. Moreover this activity is seen as being vital to their existence. If it ceases, the system atrophies and eventually ceases to exist. The idea of an isolated system, so revered in old school physics, is found to be a myth in the wider study of Nature.

Another discovered commonalty is that systems are hierarchical, that any given system evolves from the interaction of a collection of smaller systems that exist one step lower in Nature's hierarchy; see Figure 1 (LaViolette, 2004). For example, social organizations have evolved from transactions and interactions occurring among multicellular organisms (e.g., human beings), and multicellular organisms in turn have evolved from transactions and interactions occurring among single celled organisms, and so on.

The above mentioned system commonalties lead to the conclusion that these system characteristics should apply equally well to the subatomic realm. Hence it is reasonable to infer the following for the quantum level of Nature's hierarchy:

a) There must exist a substrate consisting of a plurality of entities (etherons) far smaller than subatomic particles and photons that we will call the ether, or Akasha, and that all fields that form quantum structures are essentially patterns in this substrate, or variations in the concentrations of these etherons.

b) This ether must maintain itself in a state of flux as it gives rise to these physical structures (etheric patterns). That is, the ether must function as an open system.

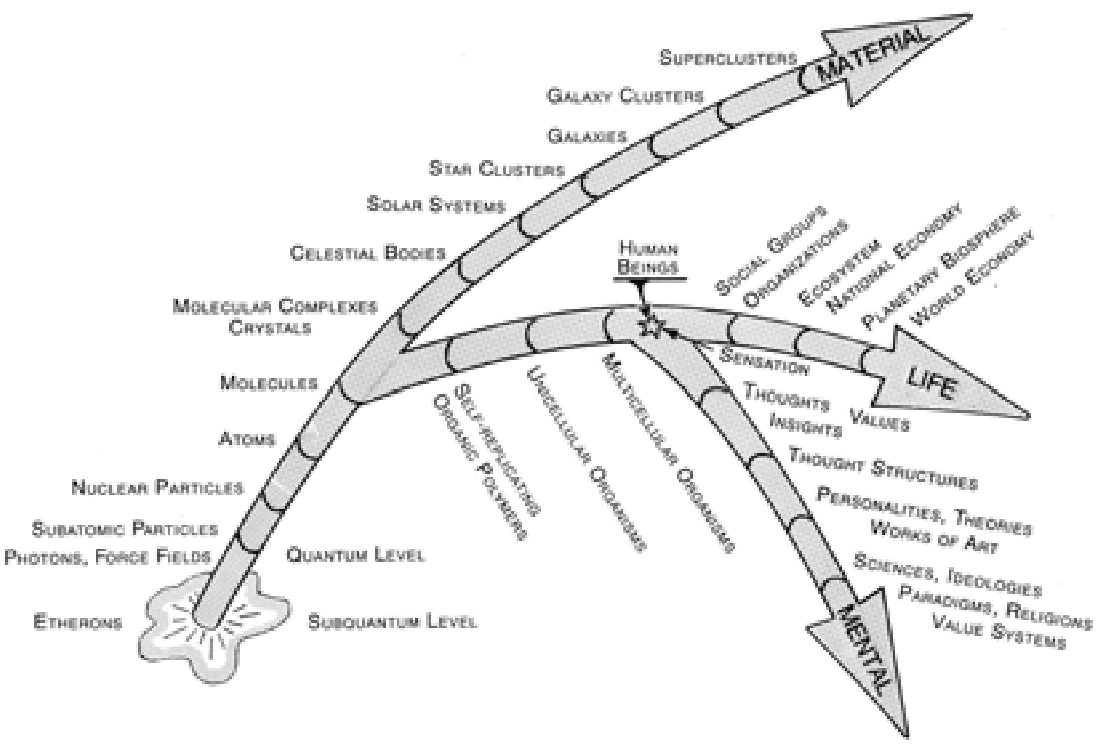

Figure 1. Vectors of hierarchical system evolution: the material, life, and mental evolution vectors. Each system evolves from preexisting subsystems.

The first precept above, (a), is one that underlies most ether theories including some, but not all, of the eighteenth and nineteenth century ether theories. But the proof for the existence of an ether substrate does not come just from system theory. There are many field and energy wave experiments that scientists have performed over the years whose outcomes point to the existence of an ether underlying all field phenomena. These experiments include: the Sagnac experiment, the Michaelson-Gale experiment, the Silvertooth experiment, the Trouton-Noble experiment, the Pappas stigma antenna and Pi-frame experiments, and various experiments conducted by Sherwin and Rawcliffe, Nimtz and Carot, Podkletnov and Modenese, and Obolensky and LaViolette which show the reality of superluminal wave propagation (LaViolette, 1985, 2008, 2012a). The null result of the Michaelson-Morley experiment, that is traditionally used for the denial of the existence of an ether, can easily be explained by the fact that it was conducted underground where no ether wind should be observed due to the ether's entrainment into the Earth's rotational motion.

The majority of these experimental results at the same time refute Einstein's special theory of relativity, one of the sacred foundations of old school physics. So it is not surprising that the physics community has neither openly acknowledged the implications of these experiments nor has begun to question the foundations of its current flawed paradigm. It is also not surprising that the scientific media machine, which is tightly controlled by the reigning teachings, has failed to discuss these experiments and their implied undermining of relativity theory.

The second precept above, (b), is more relevant to the kind of ether that subquantum kinetics deals with than to the mechanical ethers of the eighteenth and nineteenth century and, again, is also found in the ether concepts of many ancient metaphysical traditions. By incorporating this processual concept of the ether, subquantum kinetics adopts a process based approach to understanding the physical world. This results in a perspective that concords with the teachings of the ancient Greek process philosopher, Heraclitus who maintained "Τα παντα ρει" meaning "Everything changes; nothing remains still." The subquantum kinetics process physics also fits well with the teachings of modern process philosophers such as Henri Bergson (1903) and Alfred North Whitehead (1929). These world views differ radically from that of standard physics which views the physical universe as a closed system with the quantum level being built out of static subquantum structures such as quarks held together by gluons.

This second precept also implies that there is an environment, or beyond, to the physical universe, that the ether is composed of a multiplicity of states, some of which are not involved in composing the physical structures of our universe, but which exist outside our universe and enter by either transmuting or etherically reacting to form the etheron states that serve as substrates of the field patterns comprising our universe, and eventually leave as they react or transmute into states that once again reside "outside" our physical universe; see for example Figure 2. Thus just as the structure of a candle's flame is maintained through a state of dissipative flux with fuel and air entering and waste gases exiting, so too, according to subquantum kinetics, the quantum

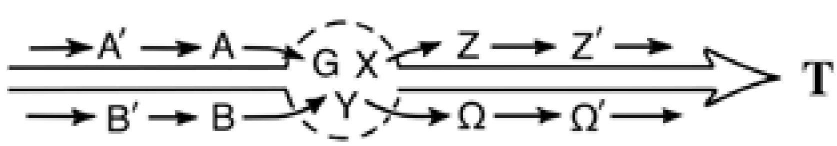

Figure 2. A suggested expansion of the ether reaction scheme as it would appear disposed along the transformation dimension. The G, X, and Y ether substrate group mark the domain of the physical universe.

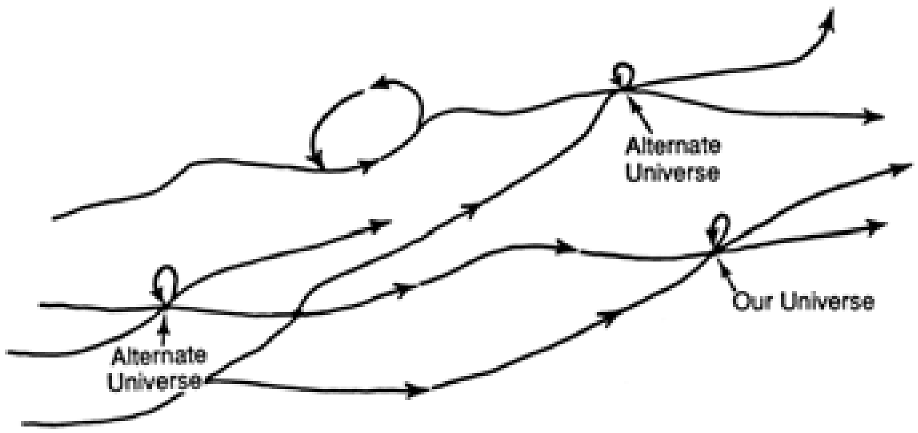

Figure 3. Five-dimensional representation of the ether reaction network showing the presence of alternate universes removed from our own along the transformation dimension. Our entire 3-D universe is but a point in this representation.

structures that form our physical universe are maintained by a subquantum etheric flux. This notion automatically implies the existence of higher dimensions, the ether having extension along a fourth transformation dimension, of which our 3D universe is but a point. Additional dimensions may also be possible, which would allow parallel universes to coexist with our own in space, but be dimensionally remote from our own universe; see Figure 3.

Subquantum kinetics proposes that the transmuting ether gives birth to our physical universe in a manner that is somewhat analogous to the way genes and their biochemical reactions give birth to a living organism, except that in subquantum kinetics this "code" is not structure based, but process based. It is the functional order, or *implicit order*, inherent in the particular group of etheron reactions. Acting together with the process of etheron diffusion through space, this reaction ordering manifests the *explicit order*, the outwardly observable order or "phenotype" that characterizes our physical Universe. The challenge of subquantum kinetics, then, is to specify this processual genetic code that gives rise to wave patterns which in turn exhibit the characteristics of subatomic particles and photons. If we correctly specify these reaction and diffusion processes, we will have succeeded in devising the sought for Holy Grail of physics, a unified field theory that is at once unitary, holistic, and accurate in its predictions of physical phenomena.

Just because the universe happens to be highly complex and varied, this should not imply that the underlying generative ether processes giving rise to it should be equally complex. General systems theorists are aware that very simple systems can exhibit highly complex behaviors, particularly systems that incorporate recursive (self-referential) processes. So, the possibility exists that the genetic code we seek may actually be quite simple. A good place to start at to get ideas for such a code is the field of chemistry, or more specifically the field called chemical kinetics. In particular, it is advisable to study open chemical reaction systems known to have the ability to produce wave patterns. Here we do not refer to mechanical waves, but to chemical waves.

Chemical waves are concentration patterns that are actively generated by and that spontaneously arise out of the molecular reaction and diffusion processes that take place in a nonequilibrium chemical reaction solution. For example, a neuroelectric impulse that travels down the length of a

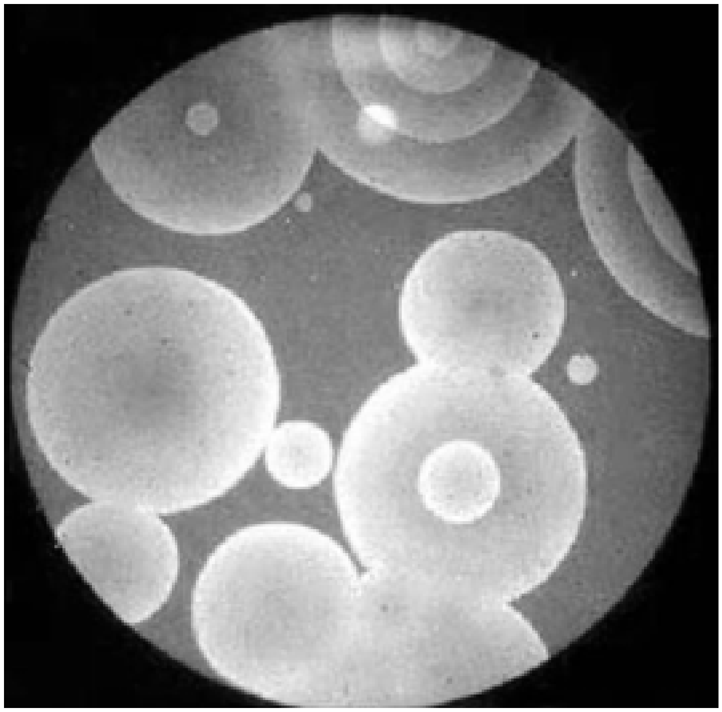

Figure 4. Chemical waves in the Belousov-Zhabotinskii reaction. In the darker regions the reaction solution has turned red and in the lighter regions it has turned light blue (photo courtesy of Arthur Winfree and Fritz Goro).

nerve fiber is conveyed by a type of chemical wave. Other examples of chemical waves are the propagating ring-like wave patterns shown in Figure 4 that are generated by the Belousov-Zhabotinskii reaction, a three-variable reaction-diffusion system. By studying such chemical kinetic systems and understanding how they produce waves, we can then transfer what we have learned to the discipline of microphysics. We can then construe similar reaction and diffusion processes which are instead intuited as etheric reaction and diffusion processes, the reacting and diffusing entities now being etherons instead of molecules.

But a more promising system to consider is the two-variable reaction-diffusion system known as the Brusselator (Lefever, 1968). This theoretical system has the ability to produce stationary wave patterns of precise wavelength, but it is much simpler than the B-Z reaction. It is specified as a series of four reaction processes involving six reactants, two source reactants, A and B, two sink reactants, Z and Ω, and two intermediate variable reactants, X and Y, that are allowed to vary in both time and space. When mapped out together, the four reactions form the reaction system graphed in Figure 5. Provided that the reaction system is supercritical, a fluctuation in the X or Y reactants is able to spontaneously grow and eventually form a wave pattern like that shown in Figure 6. This has been termed a *dissipative structure* because to form this wave pattern the system must continually dissipate energy (Prigogine, et al., 1972).

3. Formulation of the Model G Ether Reaction System

The Brusselator, however, does not create localized waves. Its waves extend with full amplitude from one end of the reaction volume to the other. Hence, although it has the advantage of being a very simple system, it cannot serve as a model capable of spawning physically realistic

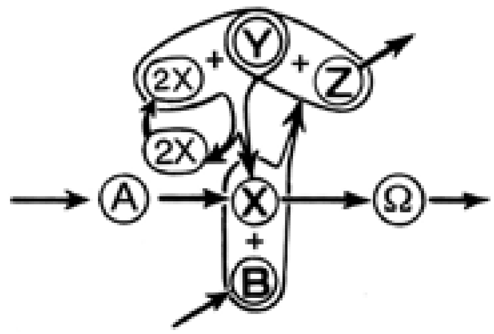

Figure 5. A schematic of the Brusselator reaction pathways.

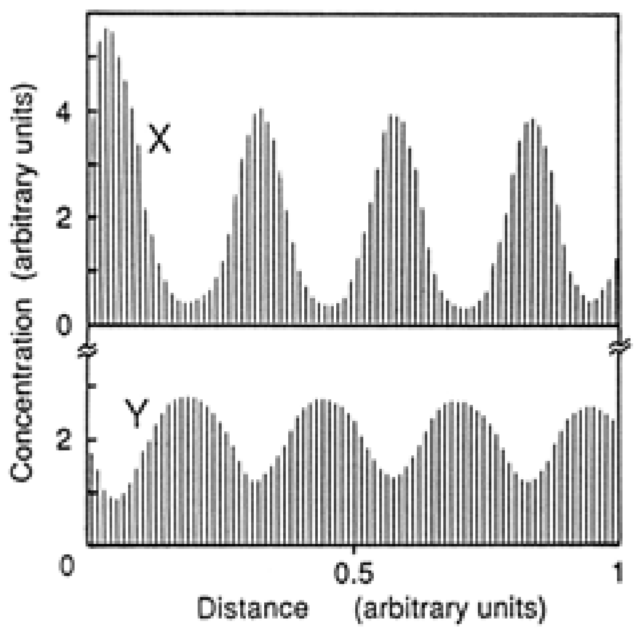

Figure 6. Computer simulation of a nonlocalized stationary concentration wave generated by the Brusselator reaction in a one-dimensional reaction volume (after Lefever, 1968).

structures. What is needed is a reaction-diffusion system that can spawn *localized* wave patterns, or localized dissipative structures sometimes termed *dissipative solitons*. Such structures have a particulate character that is more suitable to representing subatomic particles. We can accomplish this objective by modifying the Brusselator "code" slightly by adding a fifth reaction step that contains an additional third variable, reactant G. The resulting reaction system, called Model G, is mapped out in Figure 7. Model G was developed specifically for use in subquantum kinetics as a theoretical model possibly capable of generating the physical universe. Spatial variations in the G variable correspond to gravitational potential fields, and spatial variations in the X and Y variables correspond to electric fields. Magnetic fields are correlated with movement of the X and Y field components. Thus these three variables together generate all matter and energy quanta that compose our universe.

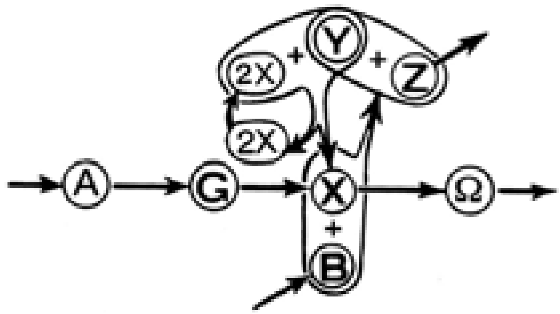

Figure 7. The reaction kinetic scheme of Model G, the proposed genetic code of the universe.

Rather than being a theory per se, subquantum kinetics is a methodology or approach to physics in that many such reaction-diffusion schemes could potentially be proposed for study to determine if they are realistic candidates that might serve as the genetic code of the universe. But, at the present time Model G is the system that subquantum kinetics has chosen to begin experimenting with because of its simplicity. Model G has been shown to be the simplest reaction-diffusion system known to be able to generate dissipative solitons. Also because of its similarity to the Brusselator, much of what has been learned about the Brusselator can be carried over to assist in the study of Model G.

Subquantum kinetics and its proposed Model G were first published in 1985 in a special three-paper monogram volume of the *International Journal of General Systems* (1985). In subsequent years a number of papers have been published that have explored the confirmation of various predictions that subquantum kinetics had made in the fields of microphysics, astronomy, and cosmology. Subquantum kinetics has had a very good track record having had over 12 a priori predictions subsequently verified; for a list see LaViolette (2012a, 2012b). This track record contrasts with general relativity, which is of much more limited scope and has had only four of its predictions verified. The subquantum kinetics track record may also be contrasted to that of string theory which has chosen the equally grand objective of attempting to explain all that is, but which has been unable to advance any kind of testable predictions.

Subquantum kinetics was published as a book in 1994, with successively expanded second third and fourth editions being published in 2003, 2010, and 2012 (LaViolette, 2012a). In the early years, when I was first developing subquantum kinetics, I regarded it as a hopeful approach, one that seemed to have much promise because of Model G's ability to form particle-like structures having a wave-like morphology. The endeavor of developing the theory was like one of building a great bridge whose other end disappeared into a fog. Whether subquantum kinetics would end up with a firm foundation at the other end of its bridge was not known for sure at that time. So, I approached its development in a tentative manner, knowing full well that its assumptions opposed standard beliefs. But as years went by and as more and more of its predictions became confirmed, like launched arrows seen to ultimately hit the bull's eyes of their target, I gained increased confidence in the theory. The former fog began to dissipate as one could see that the other end of the bridge indeed had a firm foundation.

In the early years it was just myself, and then my father and I, who shared the reality of subquantum kinetics. But following the theory's journal and book publication and the subsequent communication of its stunning track record of verified predictions, interest in it grew exponentially. Today it has gained a popular following, and at present literally thousands have crossed that bridge and appreciated the new paradigm that subquantum kinetics has to offer. Its audience today includes people of varied backgrounds: physicists, engineers, chemists, students, college professors, science hobbyists, Tesla enthusiasts, as well as nonscience professionals.

4. Matter Genesis in Subquantum Kinetics

The big bang/expanding universe theory is easily disproved on the basis of observational evidence (LaViolette, 1986, 2012a). Subquantum kinetics fills the resulting intellectual vacuum through its prediction of an alternative creation scenario, one involving continuous matter genesis in a non expanding universe. Unlike the big bang theory, which supposes that there was no existence prior to the creation of matter and energy, subquantum kinetics posits that there was existence prior to the emergence of physical form. In this pre-matter primordial state there existed the ether in its vacuum state, its ether substrates being featureless and extending everywhere uniformly like a calm sea with no major waves showing up on its "surface".

But, if we look close enough, we would see that the etheron concentrations of these ether media, A, B, G, X, Y, Z, Ω,..., are in a state of ever-present fluctuation due to the stochastic nature of their reactions these etherons are engaging in. In particular, these concentration fluctuations in the G, X, and Y ethers manifest as fluctuations in gravitational and electrostatic potential that arise randomly throughout space. Subquantum kinetics identifies these with what physicists call zero-point energy (ZPE) fluctuations. In subquantum kinetics these are very different from the virtual particle ZPE fluctuations of standard physics in that they are for the most part of subquantum energy magnitude, far smaller than the rest mass energy even of an electron. Also unlike those in standard physics, they are real fluctuations, not evanescent, virtual fluctuations of paired matter-antimatter polarity.

One of the advantages of subquantum kinetics is that its Model G is able spawn a subatomic particle (a dissipative soliton wave pattern) from a ZPE fluctuation arising spontaneously from the spatial vacuum state. But this creative impulse needs to be sufficiently large to surpass a certain critical size threshold. Since Model G is a nonlinear reaction system, it will develop ordered wave patterns in a particular region only if its reactions there are in a fertile, energy-amplifying state, or what is called the *supercritical* state. But to serve as a realistic model of physical reality, the ether must be assumed to be subcritical or infertile in its initial primordial state to accommodate the requirement that space be initially devoid of matter and energy.

So for a fluctuation to be able to grow into a particle, it must be able to generate the necessary supercritical conditions in its immediate subcritical environment. As it turns out fluctuations of positive electric polarity, high Y and low X, are able to do this. In Model G, there is a coupling between the electric and gravity fields that causes positive charge polarity to generate a negative gravity potential, a G potential well, and it turns out that a sufficiently deep G-well will generate supercritical conditions sufficient to allow the electric potential fluctuation to self-amplify. The greater this electric fluctuation grows, the greater becomes its acquired mass/energy, the deeper becomes its generated gravity well, and the more fertile and energy amplifying becomes its local environment. As a result, it is able to rapidly grow into a mature subatomic particle. In effect, it self creates the conditions that allow it to exist as a stable autonomous entity. Subquantum kinetics calls this matter creation process "parthenogenesis" which means "virgin birth." That is, unlike the big bang theory, these particles materialize spontaneously without need of any exogenous energy quantum. This feminine view of cosmogenesis stands in stark contrast to the masculine genesis concept that underlies the notion of a Big Bang.

For many years I had no way to perform computer simulations of Model G to check out whether what I was stating about the wave patterns that Model G would form was entirely correct. I was essentially simulating these reactions in my head, guided to some extent by the computer simulation results that had already been performed on the Brusselator system. It was not until 2010 that 3-D simulations of Model G were finally carried out by coworker Matt Pulver. Figure 8 is taken from the paper by Pulver and LaViolette (2013) reporting these simulation results. These confirmed what had been stated in the 1985 monograph 28 years

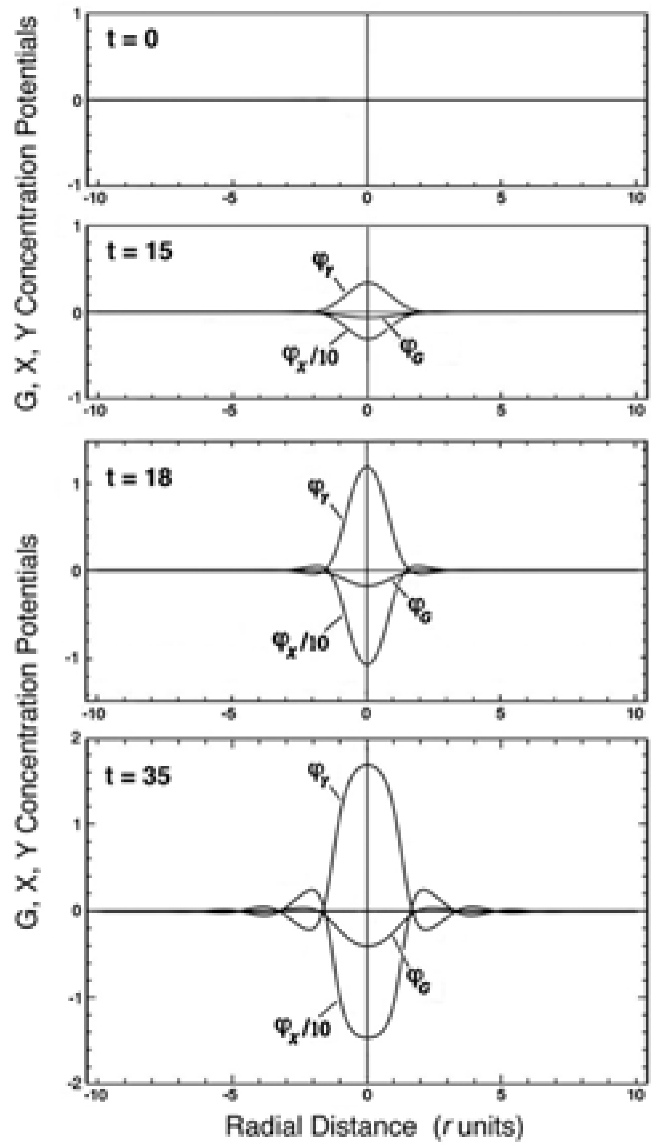

Figure 8. Sequential frames from a 3-D computer simulation of Model G showing the emergence of an autonomous dissipative soliton particle, its field profile being shown in cross-section. At time t = 0 the initial steady state is present. At t = 15 the positively charged core is growing as the X seed fluctuation fades. At t = 18 the periodic electric field Turing wave pattern begins to form. Finally at t = 35 the mature dissipative soliton particle forms and maintains itself within its own supercritical G-well. Simulation by M. Pulver viewable at: http://www.youtube.com/watch?v=2an4Y_12eCc.

earlier. They showed how a positive polarity fluctuation of sufficiently large size, seeded into an initially uniform subcritical ether medium, would grow and develop into a stable localized wave pattern. Moreover they confirmed many of the characteristics that had been previously described for these emergent waves.

Figure 8 shows snapshots taken at various time horizons in the simulated growth of this seed fluctuation as it transforms into a dissipative soliton (subatomic particle). The X ether potential valley, φ_x, and Y ether potential hill, ϕ_y, together denote the growing positive electric potential fluctuation. Note that it begins small, initially of subquantum magnitude, and gradually grows in size. As it does, the complementary ether components X and Y separate in opposite directions, to eventually form the core of the nascent neutron. As the core of the neutron grows, a peripheral wave pattern develops and spreads outward. Subquantum kinetics terms this the particle's "Turing wave," in recognition of Alan Turing who was the first to anticipate the spontaneous emergence of concentration patterns in reaction-diffusion systems (Turing, 1952). Subquantum kinetics had predicted that this wave should have a wavelength equal to the particle's Compton wavelength. Both the existence of the Turing wave and the size of its wavelength were later verified by particle scattering experiments.

5. Conclusion

Adopting the new perspective that subquantum kinetics offers requires an immense paradigm shift, one that requires that many concepts and theories that standard physics and astronomy teaches be left behind. Crossing the subquantum kinetics bridge leads to a very different world view, one that offers a perspective that is at once more expanded, more beautiful, more elegant, and more spiritual. In this new perspective, problems that physics and astronomy have been having vanish along with their paradoxes, conundrums, contradictions, incapabilities, and restricted views. In this new scientific paradigm, a paradigm in which the ether is once again a fundamental concept, one realizes the validity of novel technologies that are superior to those in use today. We are able to understand the principle of operation of propulsions systems that will one day take us to Mars in five days for an energy expense of just pennies per day, of technologies that will allow us to travel to the nearest stars in a matter of years, of energy systems that are able to spontaneously generate energy to power our homes, and of methods of communication that can send messages from one planet to another at velocities thousands of times faster than the speed of light.

To the old school physicist these ideas may sound like science fiction. But to someone who has walked the bridge of subquantum kinetics to this new way of understanding, they are a reality. Where the standard physicist may look at cold fusion, over-unity energy generators, or reactionless space propulsion engines as fantasy or flights of the imagination. The new physicist, grounded in the open system paradigm of subquantum kinetics, sees them as real, technologies that must be developed, not surpressed, ideas that if implemented could change our world and bring forth the bright future we all have been hoping for.

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