Tracing the Origins of Subquantum Kinetics

by Paul LaViolette

In memory of my father, Fred G. LaViolette (1916 - 2008)

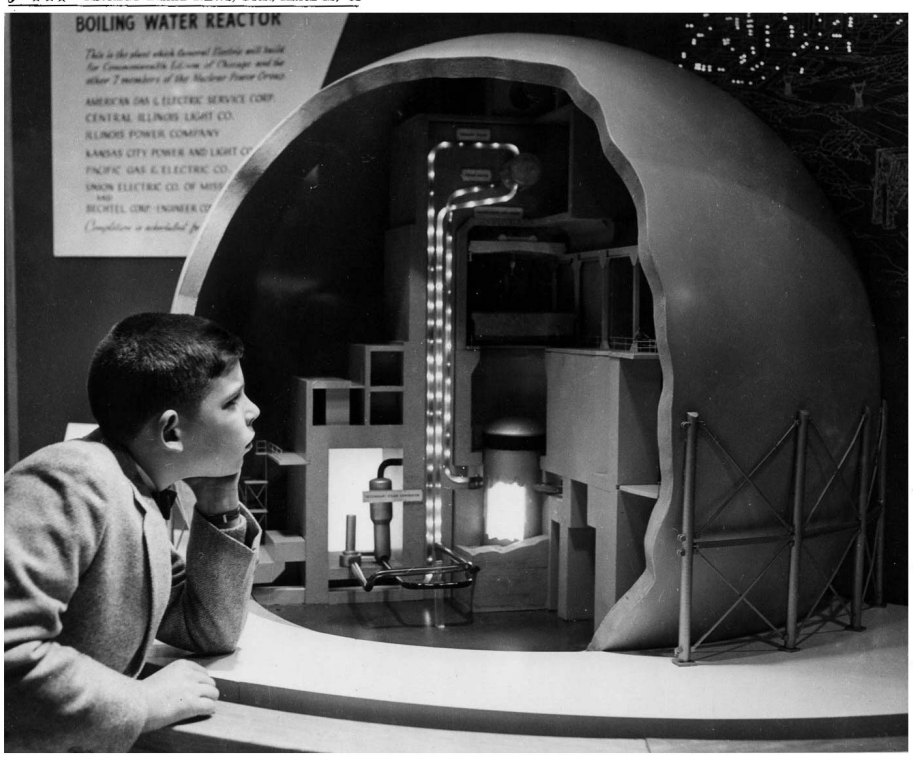
As in nature, it is not just the seed that matters in the germination and growth of a new sprout, but also the soil, the seed's environment. If the soil is not fertile and periodically saturated with water, the sprout will eventually wither and die. This too is the reality of how all great ideas are developed. We are all familiar with the life of Amadeus Mozart and the great supporting role his father played in the early flowering of Mozart's career. Were it not for the fertile environment that Amadeus's father provided perhaps the life of this gifted young composer would have taken a different turn and we would not today be enjoying the many sonatas and symphonies that Mozart produced.

Subquantum kinetics, today at least, certainly is not as widely known as Mozart's works. But what was true of Mozart's creative life was also true of mine. The fertile environment that both my parents provided, and in particular the early mentorship my father gave me, played an essential role in my ultimate development of subquantum kinetics. Below I will summarize how this unique family experience helped to facilitate the development of this important new approach to physics.

I grew up in a family of scientists. My father, Fred LaViolette, was a physicist and electrical engineer specializing in nuclear reactor engineering at the General Electric Knolls Atomic Power Laboratory (KAPL). My mother, Irene, was a chemist who had formerly worked at duPont. Before I was born, both had worked in Richland, Washington on the Manhattan Project. During my preschool years I was picking up on the ins and outs of the workings of nuclear reactors, getting a rudimentary understanding of nuclear decay and transmutation, nuclear cross-sections, and so on. Around the dinner table I would absorb all that he had to say about his research and engineering tasks at work, and as a youngster I asked him many questions. During the first years of my life, he was working on the breeder reactor project, an attempt to design a nuclear reactor that would produce more nuclear fuel than it burned up. Under the dictates of Admiral Rickover, this later evolved into a program to build the world's first sodium cooled reactor for powering a nuclear submarine. This was eventually installed in the U.S.S. Seawolf which operated successfully for many years.

My father's mentorship was a great stimulation for me, as was the experience of seeing the KAPL facilities first hand during a weekend public "open house". By the age of eight I was doodling nuclear reactor systems complete with their cooling loop, turbine, and generator. At the age of 10, I accompanied my father on a long train ride to Chicago to attend the March 1958 Atom Fair. While he sat in on technical lectures conveying the latest developments in nuclear power engineering, I would wander through the immense exhibit hall visiting one exhibit booth after another with their interesting displays and models. There I learned about rare earth elements, fuel rods, reactor core design, and such things. A few times, even poked my head into the highly technical slide talks. Being the only young fellow on the floor, I was soon approached by newspaper photographers who were looking for a story angle and were eager to get shots of me viewing the booths. The following days I found my picture appearing in two Chicago newspapers, my first ever press coverage.

As a result of this exposure, at an early age I was thinking in terms of process. Such thinking is just as fundamental to nuclear physics, as it is in subquantum kinetics, the physics theory I was to later develop. In nuclear physics you have atoms and particles diffusing, interacting and transmuting, whereas in subquantum kinetics you have etherons (subquantum particle-like entities) diffusing, reacting, and transmuting. The concepts are the same; they are just brought one step down from the nuclear or subatomic particle level to



A Boy And The Future

Paul Alex La Violette, 10, of Schenectady, N.Y., who wants to be a missile man,* dreams of the future as he views model of a nuclear power station at the Atomfair in the International Amphitheatre. The station is being built at San Jose, Calif. by General Electric. Young Paul's father is employed at the General Electric Knolls Laboratory doing research in atomic power.

(PHOTO BY JOSEPH ZACK)

* correction "rocket scientist"

(correction added to text: I was misquoted. I was interested in spacetravel, not missiles.)

NUCLEAR KNOT—The atomic age goes to work to knot a bow tie worn by 10-year-old Paul LaViolette, of Schenectady, N.Y., at the Nuclear Congress, in Chicago. Mechanical hands, intended to handle radioactive materials, are manipulated by a remote operator.—UP Photo.

Chicago Atom Fair Newspaper Publicity

the sub-subatomic level, the level that has been variously referred to as the aether or the material vacuum. In my early youth, I was exercising this process thinking by inventing and sketching conveyor belt assembly line processes where a product would continually change and modify as various automated operations were performed on it. The third grade class visit to the local milk bottling plant with its automated conveyor belt operation offered further stimulation.

My mother had served as a research chemist at duPont during the early 40's and my father had worked there as well doing electrochemical engineering. So, I was honored with the privilege of receiving early guidance enabling me to acquire an understanding of chemical processes as well as nuclear processes. The chemistry set that my parents gave me for Christmas in those early years, further helped me along the road of thinking in terms of chemical reactions and chemical processes, at a time when I was also able to think in terms of processes taking place at the nuclear level. My entry into chemistry blossomed into a full blown hobby in which I was ordering my own chemicals and laboratory equipment from a major chemical supply house. I became particularly fascinated with exothermic reactions. Following gunpowder recipes given in a nineteenth century farmer's recipe book that my father had inherited from his father, I launched myself into a four-year career of rocketry and pyrotechnics. I drew on this background later in developing subquantum kinetics. Beginning in 1973 I had the idea of taking reaction kinetic equations that chemists used for representing open chemical reaction systems and reconceptualizing them to signify reactions among etheric constituents occurring at a hierarchical level far below the quantum level. One example is the following step from the Brusselator reaction system: 2X + Y ----» 3X. I used the same symbols, but just changed what they represented. Instead of representing chemical processes, I now made them represent etheric processes.

During my early years, I learned from my father the process of abstract thinking, and of thinking clearly and conceptually about physical phenomena. We both shared the trait of being curious about nature, of wanting to explore the unknown. My mother also was an important influence. From her I learned to be an independent thinker, to not be afraid of being different from others. Following her example, I acquired the courage to fight, to stick to my ideas even if they were challenging mainstream thinking. My uncle also had an influence on me in my early years. He was an aerospace engineer who in his early career was involved in designing rockets and missiles. He also did pioneering research on ultrasound and developed the first twisted ribbon FM accelerometer, a version of which was later used to accurately measure the force of gravity on the Moon, an accomplishment duly noted on a plaque in the Smithsonian Air and Space Museum in Washington, D.C. My father, with several patents to his name, was also of an inventive nature. When my uncle visited, the two of them would toss ideas around and the conversation would get particularly interesting. Listening to them greatly influenced me and stimulated me to draw up my own inventions of sorts. I can trace my own interests to invent and think creatively back to these early efforts to emulate them. This helped me develop the ability to make connections and associations that were out of the ordinary. Basically, I lived in a future oriented family that was working on projects and ideas that were to bring humanity into the next technological generation.

If I were to recount specific events along my path that led to my formulation of subquantum kinetics, the first one that stands out is the mystical experience I had in my college dorm in the spring of 1967 while in my junior year at Johns Hopkins University. At the time I was working toward a BA in physics. As I have described in the prolog to my book *Genesis of the Cosmos*, in that experience I seemed to be receiving information telepathically from higher intelligences, relating specifically to the fundamental nature of existence. Namely, I was being instructed that Nature at its most fundamental level is in a state of flux and that what we call things or structures are simply steady-state patterns in that flux. Clearly, my past childhood training in process thinking, in understanding chemical and nuclear processes as well as factory production processes, was instrumental to making me a receptive pupil to faintly hear and understand these silent "voices" from within.

This experience launched me on a philosophical quest that was to last years and in which I attempted to clarify and develop what I came to call "my theory of existence." In essence I was developing a theory of natural systems. I was finding that by means of a set of simple concepts it was possible to explain phenomena on many scales of Nature and that there was a vast hierarchy where systems were nested within systems within systems. I had developed the term "time-stable system" to describe organized entities such as a cell, a living organism, a solar system, or whatever else. The intended meaning was that they persisted over time as organized entities or systems because their particular order was being repeatedly recreated from the underlying flux of events that were taking place. For example, in the case of a solar system, this repeating event would be the repeating circular orbital motion of the planet. In a living cell, these repeating processes would be the ongoing chemical reactions continually recreating the cell's structure. Only later would I discover that process thinkers such as Alfred North Whitehead and others had followed similar paths of introspection.

This all was new to me, for it was not taught in any university course that I had encountered. It would not be until the spring of 1973 while studying for my MBA at the University of Chicago that I would discover the discipline called general system theory. I found that other academics as well, such as Ludwig von Bertalanffy, Kenneth Boulding, Floyd Allport, Ervin Laszlo, Ralph Gerard, and Whitehead, had themselves each begun their quest independently, only to converge on similar ideas. In previous years, general system theory had a substantial impact on the field of business administration, revolutionizing the way administrators would view a company or corporation. This explains why I first encountered general system theory in a business course on organizational psychology. Recognizing that it so closely resembled the theory of existence I had been developing, I felt somewhat relieved that I would not be burdened with the responsibility of bringing this systems approach to the attention of the scientific world, for others before me had already done this. At about the same time I also encountered the works of Ilya Prigogine on the behavior of certain types of open chemical reaction-diffusion systems which have the ability to create chemical concentration patterns termed dissipative structures. I then also encountered the research of Arthur Winfree on the Belousov-Zhabotinskii reaction and its ability to create chemical wave patterns. I was also concurrently reading a paper by Albert Einstein which related his belief that particles were not point-like singularities in space, but rather diffuse structures which he termed "bunched fields."

It was within this coincident nexus of ideas that I had a memorable "Aha" experience in which I realized that subatomic particles might also be dissipative structures, concentration patterns forming in an underlying medium that engaged in reaction-diffusion processes. These, I realized, were the bunched fields that Einstein was talking about. But I was able to understand how they formed, how they emerged, and how they maintained themselves. I realized that subatomic particles would form as distinct structures in much the same way that chemical waves would form in the Belousov-Zhabotinskii reaction. In both cases a structure, whether it be a subatomic particle or chemical wave, would form was the direct result of an underlying flux, one that consisted of ongoing reaction and diffusion processes. In the case of chemical waves, these underlying processes were occurring between molecules. But to bring similar ideas down to the subquantum level to explain the formation of quantum level structures such as subatomic particles, one had to postulate the existence of a totally different substrate, one filling all space yet invisible to direct detection. Hence the rudiments of the theory of subquantum kinetics were conceived in this fashion. Although I initially had envisioned these underlying processes in terms of interacting field potentials, I later replaced this notion with the idea of a transmuting ether consisting of interacting "etherons". I realized that energy potential fields themselves were entities at the quantum level, like particles and photons, but that what I was envisioning was an activity that was at a level below this, at a subquantum level. All the long training of my childhood and youth, of learning to visualize chemical reaction processes and nuclear reaction processes,

came to fruition here. With this experience I was now envisioning etheron reaction processes and etheron diffusion processes.

These ideas were completely foreign to what was being taught in college physics, which instead conceived subatomic particles as being structures having an independent existence and not anticipating that any underlying flux or process might be needed to maintain them. I saw this as an entirely new development in theoretical physics. It was very late in the night when I had this realization. But it was so important that I felt I must share it with someone. So I called up my father. It was a night he well remembered. I will tell the story in my father's own words as he related it earlier this year to my mother's AAUW group (American Association of University Women) where he was presenting a lecture about subquantum kinetics (his favorite subject). The following is quoted from Fred's lecture notes:

> One night in 1973 I was awakened by the incessant ringing of the telephone. It was Paul calling at 3:00 AM from Chicago. In an excited voice he was saying, "If I don't live until morning, you should know about this!" This woke me up in a hurry to say: "What happened? Were you in an accident?" He said, "No, I'm alright. It's just that I have made a great discovery in physics." I said, "Well! Go back to bed and call me when I've had a good nights sleep and have recovered from this shock."

I remember that it was indeed a thrilling experience. I was awake all that night, and my sleep schedule was turned topsy turvy for the next few days. I was sleeping during the day and working during the night. Walking across campus I could sense this etheric flux in all things, in the trees, in the rocks, everything seemed to be patterns formed in this vibrant flux. I was sensing everywhere Nature's kundalini.

After many years of work and putting up with one journal rejection after another, the theory was finally published in the prestigious *International Journal of General Systems*. In fact, the editor devoted an entire journal issue to the theory's exposition, entitling it ***Special Issue on Systems Thinking in Physics***. Since that time I published other papers on subquantum kinetics, several in a cutting edge physics journal, and one in the prestigious *Astrophysical Journal*, the milestone paper which created quite a stir in the astrophysics community since it posed a deadly challenge to the big bang theory. In 1994 the theory also became published as the book ***Subquantum Kinetics***. This was followed by a second expanded edition in 2003, then a third expanded edition in 2010, and more recently a fourth expanded ebook edition in 2012. Also my book *Beyond the Big Bang* (1995) and its second edition ***Genesis of the Cosmos*** (2003) presents a summary of subquantum kinetics in a form that is more accessible to the general reader.

My father was accustomed to thinking in terms of conventional physics concepts, and since the theory I was developing warranted a major departure from those concepts, in the beginning he was a bit hesitant to accept what I was saying. When I would visit from time to time, he would ask test-like questions about my theory. Each and every time I came back with a satisfactory answer or with evidence showing that my theory offered a superior, more plausible explanation. With his background in nuclear engineering and chemistry, he readily grasped the concepts, probably more quickly than most physicists whose early training taught them to think mainly in mechanical terms. As I gradually honed the theory and more clearly expressed its concepts, he, Dad came to realize that I indeed was onto something that was very important, and he came to be an enthusiastic supporter of subquantum kinetics. It became his favorite subject for discussion, and he would often serve as my sounding board to explore the theory's ramifications.

In the course of my development of subquantum kinetics I discovered that physicist and Nobel Laureate Richard Feynman came very close to the subquantum kinetics ether conception. Feynman began his career in nuclear energy through his work on the Manhattan Project. Although, he was stationed at the Los Alamos, New Mexico and Oak Ridge, Tennessee sites, rather than at the Richland, Washington site where my father and mother were stationed. While at Los Alamos, he was assigned to develop the neutron

equations for a small water-cooled nuclear reactor called the "Los Alamos Water Boiler." It was probably at this time that he noticed that the equations describing the concentration of neutrons around the core of a nuclear reactor were exactly the same as those representing the electric field potential around a charged subatomic particle. In volume II of his book *The Feynman Lectures on Physics*, which he published in 1964 together with Drs. Leighton and Sands, he advanced the notion that the equations representing the radial dependence of the electron's electric field might be a macroscopic description of the collective behavior of a hidden microscopic realm containing what he called "little X-ons." He proposed that these were created in the electron's core and diffused outward towards its environment much like neutrons leaving the core of a nuclear reactor. So he was proposing a reaction-diffusion ether of sorts and suggesting that this might serve as the substrate for physically observable fields. Like my father and myself, Feynman was accustomed to thinking in terms of nuclear reaction-diffusion processes, so it is not surprising that he came to develop the beginnings of a similar theoretical approach. But he took it no further than to draw an analogy for the electron. Nevertheless, I did like the X-on terminology he used. Instead of calling them "subphysical units," as I had originally termed these reacting entities, I now began calling them "etherons" and began to adopt the terms X-ons, Y-ons, G-ons, to designate various etheron species.

There is no better way to judge the success of a theory than to see if it predicts something that was not known at the time the prediction was made. This is especially true if the predicted phenomenon is not easily inferred from the competing standard view. Supporting evidence of this kind mounted with the passing of each year. Since the time of the theory's inception up to this date, subquantum kinetics has had 12 of its published predictions subsequently verified either through observation or through experiment. This certainly is a far better track record than any other theory I know of. These twelve predictions are summarized in a paper on subquantum kinetics that recently appeared in the *International Journal of General Systems* and are also enumerated on various webpages.

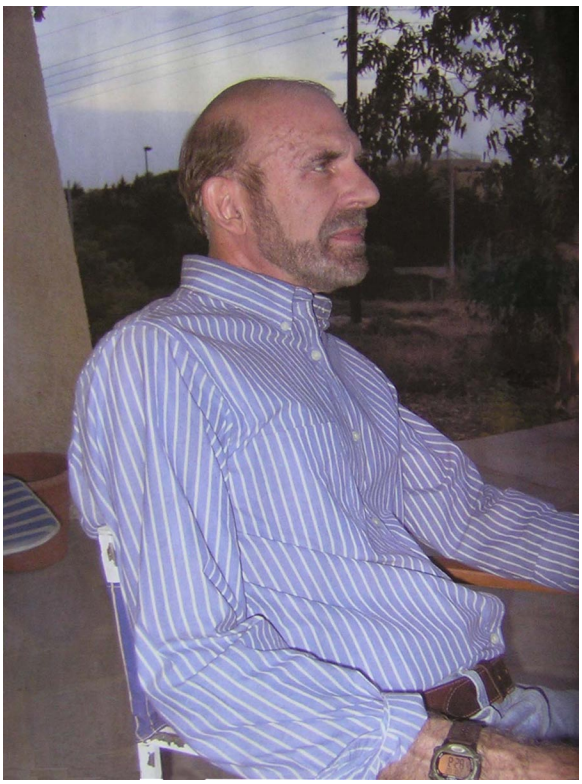
In a lecture I presented earlier this year, a physicist asked me whether there were any predictions that the theory made that were later disproved? I had to think a long time to answer this question. Going back over the years of the theory's development, I could not recall any such cases. There were instances where I had felt quite uncertain about some of the predictions that the theory was making since they were predicting something entirely different from what was conventionally believed at the time. I remember worrying that I might be exposing the theory to easy attack by publishing them. But these predictions later proved to be correct.

My approach in developing a theory has always been to maintain some degree of detachment. I believed that not only should one be able to detach oneself from the conventionally taught theories and be able to reject or criticize them if one has good cause, but one should also detach oneself from one's own theory and subject it to the same critical standards. Scientists or dilettantes developing alternative scientific theories often succumb to the pitfall of becoming emotionally attached to the theory they are developing. Their theory becomes their "child" to be cared for and protected against any criticism. They even shelter it from their own criticism, hence the expression "pet theory". Indeed, the aha experience can be very exhilarating and pleasureful for one who experiences it and so it is easy for a person to bond to the conceptual result born out of this experience. This, however, is a mistake. Just because you have a terrific insight or inventive idea, does not necessarily mean that it is ultimately workable or practical. One must test the idea and, if it is not realistic, either discard it or modify it. Criticizing one's own work or creation is, of course, a painful process. It is as if one directs one's own criticism at the most tender part of one's own heart. Few wish to endure this pain and so they leave their theory unrefined and vulnerable to attack. At the other extreme is the typical mainstream scientist who vows unwavering allegiance to the existing conceptual paradigm, banishes any thought critical of it, and suppresses any thoughts that might be directed toward alternative thinking.

Some fathers play sports with their sons, some play video games with them. The "sport" that my father and I played was subquantum kinetics. We would together enter the realm of subquantum kinetics and explore its implications. It was a shared reality. When you enter the conceptual paradigm of subquantum kinetics and its overall cosmology, you enter an entirely new way of viewing the physical realm. It is like stepping through a door into another world. Of course, we also had long discussions about my other theoretical developments such as the galactic superwave theory I had developed in astronomy, my polar ice core cosmic dust discoveries, my feeling tone theory of thought formation, my work in ancient mythology symbolism, and my SETI discoveries about pulsars. But subquantum kinetics was his favorite topic. His eyes would light up when we talked about that. As of 2008, when he passed away, I don't know that there was anyone else who had as deep an understanding of subquantum kinetics as he did.

can say now that, as of this 40th anniversary of the theory, it is likely that some hundreds of thousands of people know of subquantum kinetics and perhaps some tens of thousands share its alternate reality, or at least have an understanding of the theory's physical concepts and of the new way they offer to perceiving the world. Besides my books and papers, the internet has been invaluable for communicating subquantum kinetics to the public. I am convinced that subquantum kinetics will eventually be adopted in the future as the accepted physics and astrophysics paradigm. At such a time, I hope that my father, Fred, too will be remembered for the support he gave throughout the theory's development. And, I hope that many others will experience the same starry eyed thrill and wonderment that he did and that I did and still do in seeing the world through its new perspective.

An essay by Fred LaViolette written about the early development of subquantum kinetics is to be found in the Forword to *Subquantum Kinetics*.



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