SETTING OFF TO NOWHERE

Introduction

SEARCH FOR A DEEPER THEORY OF EVERYTHING

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For Professor Len Troncale

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Introduction

Len Troncale announced on Systems Engineering Radio in an interview that he was planning to write a book about a "Deeper Theory of Everything" that shows that Systems Theory provides a theory which is inherently deeper than any unified theory of everything in physics could be should someone actually achieve that sometime in the future. Sometime after my interview with Professor Troncale I read Robert Rosen's Life Itself which is an attempt to broaden science by providing a basis for Biological Science within the compass of science. Then this spurred me on to write Professor Troncale to say that I had at least one version of what the Deeper Theory of Everything might be. While we are waiting for Professor Troncale's definitive version of that Deeper Theory, I thought I would outline my own version of it for his edification and also to set the stage for considering further what that theory might be like. This is not meant to steal the thunder of Professor Troncale's work which will be limited to Systems Theory, but to actually provide a broader perspective on the problem from a philosophical point of view rather than a scientific point of view. Professor Troncale has spent his career attempting to synthesize twentieth century Systems Theory, playing a key role in the Systems Science community. He has developed a set of Systems Processes and the linkage propositions between them. These are Processes that are attested by many disciplines at many scales which are isomorphies. The linkage propositions are linkages between systems processes that appear in the same system as discovered by various disciplines. In other words this work brings together the results of various sciences in order to describe general patterns of systems process linkages as they exist in empirical observations. This

work as been described in various papers of Len Troncale through the years and to me is an extremely important contribution to bringing a scientific dimension to systems theory and thus actually making systems science a reality. I have encouraged Professor Troncale to make his book on the Deeper Theory of Everything a high priority so that his results will remain a part of the evolution systems science for the foreseeable future. I myself have benefited greatly from my interaction with Professor Troncale through the interviews he has done with me. And this book is hoped to be seen as a contribution to our continuing dialogue.

I need Professor Troncale's work so that I can fit it into my own wider framework which I call General Schemas Theory. Within General Schemas Theory systems are one out of many schemas. My own work is speculative and hypothetical and not particularly attempting to be "scientific" in the sense that Professor Troncale is attempting to achieve in his vision of Systems Science. Rather my work is philosophical and attempts to push the boundaries of science as far as I can, in order to understand the limitations of science. My work has culminated in a dissertation called Emergent Design which was completed in 2009 which was a Ph.D. in Systems Engineering. This is the complement to my earlier Ph.D. in Sociology from the London School of Economics called The Structure of Theoretical Systems in relation to Emergence. During my research for my Ph.D. I invented Schemas Theory the next higher level of abstraction above System Theory. And I advanced a hypothesis as to how many Schemas there were and how they were related to each other. I also created what I call Meta-systems Theory which studies the inverse dual of Systems which I also describe in my dissertation. Meta-systems are another schema that is the dual of the System Schema. Other schemas are the Facet, Monad, Pattern, Form, (System), (Meta-system), Domain, World, Kosmos and Pluriverse. Schemas Theory studies the relations between the various schemas and their relation to other important ideas like the Peirce/Fuller principles, the Pleroma, and various ontological modes called the Meta-levels of Being. So my goal here is to lay the ground work for understanding philosophically Len Troncale's work on the Deeper Theory of Everything with respect to the Systems Schema by considering the place of the Systems Schema within the context of Schemas Theory and with respect to other philosophical concepts of significance to the question. But also I wish to place this enterprise in the context of the work of Robert Rosen which is key. I was led to read Robert Rosen's work through my association with Jack Ring. I was working on an ontological project that he had asked me to participate in and he introduced me to the work of James Kineman who is an interpreter of Rosen. I attempted to figure out how my own work and that of Jack Ring and other theorists like Sowa's fit together with that of Kineman which centers around an interpretation of the four causes of Aristotle as a system. Eventually I came to the conclusion that Kineman had made a mistake by going against Rosen's advice and treating the causes as a system. I later learned I was wrong about Kineman's theory. But the misiterpretation which reads Kineman's work literally is still illuminating. You cannot treat the four causes of Aristotle as a System, if you do it falls apart. Kineman was instead using them has heuristics for the moments of the interaction of a System within its niche in the meta-system and thus treating them as what Deleuze calls quasi-causes which is something very different from what I had interpreted Kineman as doing on first reading his work. And in order to understand the roots of what I perceived as a mistake I decided it was necessary to read Life Itself, a book I should have read long ago, but

which I only knew from the secondary literature. Well as usual the secondary literature does not do Rosen's work justice, because his work is very deep in as much as it is an exploration of the structures of entailment in logic and causation. And in that work he uses the causes of Aristotle as a touch stone. Basically this work attempts to make room for Biology in Science by showing that physical theories use of entailment is extremely limited and that the space of possible entailment is richer than presumed by most philosophers of science, i.e. wide enough to include biology. I thought his work was so important as a foundation for my own work I began a series of tutorials with notes on Systems Radio (systemsradio.net) which is still on-going. However, from that I have decide to concurrently write this book which attempts to bring together my arguments for a deeper theory of everything at the Schematic level as a complement to the hoped for version that Professor Troncale has said he would like to do at the Systems Level which of course would be more scientific than my exposition and less speculative, but probably less rooted in philosophical concerns, especially of the Continental type.

Here I begin to sketch my argument for a deeper theory of everything at the schematic level inspired by the work of Professor Troncale and his rework of the list of systems processes and the linkage propositions which he is engaged in with other collaborators. Professor Troncale was kind enough to send me preprints of this work and allow me to comment. My comments consisted of an attempt to place the Processes in the context of the Schemas hierarchy, and also an attempt to add all the schemas to his set of linkage propositions. His main comment on my contribution and my talk on Special Systems Theory that he saw was that my theories are somewhat Grandiose. And since I consider myself a speculative philosopher I am willing to embrace that characterization. Speculative Philosophy is somewhat out of vogue as has been until recently Continental Philosophy. I advocate both and attempt to practice them with my problematic being an attempt to understand the nature of the Western Worldvew, and within that of the limits of Western Science. As Western Science and Technology hand in hand with Corporatism (capitalism combined with communism and fascism as a result of a century of mutual struggle that is striving for global domination) is engaged in a war on the planet we dwell on I think this is a worthy subject of study, since the fate of all we hold dear is bound up in it.

Is there a Deeper Theory of Everything?

Here I outline my argument for a deeper theory of everything along probably different lines from those suggested by Len Troncale in his announced book on the subject. In my own version I would like to start with the work of Robert Rosen especially Life Itself. The details of Life Itself I will leave to my tutorial on it. But I think for all Systems Theorists that his work is an excellent starting point for considering the nature of Natural Science and our relation to it via our understanding of entailment as it exists in syntactic formal systems and casual natural systems. The basic message of Life Itself is that Physics as a descriptive framework based on mechanism and machine is very narrow. There are more possibilities in entailment than is contemplated by Physical Science and its handmaiden Analytical Philosophy of Science. We need to make use of that richer region of entailment in order to include Biology in Science but also in order to understand Autopoietic Systems theory, and other Special Systems including Autonomic

Systems and Self-* systems of various kinds. But the focus on Entailment by Rosen is not enough. And so here (as in the tutorial on Rosen's work) we will talk about what is still missing after we recognize the space of richer entailment that Rosen points out.

The basic argument is as follows:

Rosen deals with entailment in Formal Systems and Natural Systems and the modeling relation between them via insights into Category Theory. But Rosen does not recognize the difference between systems and their inverse duals meta-systems and he does not recognize the inverse duals of Sets which is Masses. Both Meta-systems and Masses tend to be conflated and ignored in our tradition. I only happened on Meta-systems because in the Issue of the International Journal of Systems Science where I published my lone published paper there was a categorical representation of George Klir's Architecture of Systems Problem Solving which is my favorite Systems Theory which I have been using for years as the basis for much of my own work on Systems Theory. My paper on Software Design was based on his Formal Structural Systems theory. I did the only thing I knew to do with a category theory representation at the time, I tried to reverse the arrows to see if it was self-similar. But when I reversed the arrows it seemed to me that it was describing something else and not a systems theory any longer. So I started searching for another "schema" other than the system that the reversed arrows might be indicating. Eventually I found theorists who had posited such a entity in the work of Arkady Plotnitsky (Complementarities) and in Bataille (Accursed Share). Once I found a candidate for the inverse dual of the System I started trying to formalize it. And out of that came my work on Meta-systems theory and Schemas theory and eventually my dissertation on Emergent Design. Now when we realize that Rosen is not seeing the whole universe of possible entailment structures because of his leaving out of meta-systems and masses, then we start to realize that the whole territory that is being surveyed is much narrower than that which exists. So my addition to the ideas of Troncale, Klir, and Rosen revolves around attempting to show that this wider territory now marked with 'be here Dragons' is interesting and worth considering for any version of post-modern science. Just as Rosen shows that the view of entailment is too narrow in physics with their concentration on mechanisms and machines, so to I claim that the view of logic that is only syllogistic is also too narrow because the dual of the set on which syllogistic logic is based also has a dual which is pervasion logic, and instance of which we see in the Laws of Form by G. Spencer Brown which is a boundary logic for masses as shown by W. Bricken (http://www.boundarymath.org/). The recognition that both Meta-systems and Masses are ignored in our worldview and conflated allows us to see that there is a bias in the worldview against these types of formalism, or systemism, or meta-systemisms. And because here meta-means what is beyond, i.e. the context, situation, medium, environment, ecosystem, etc. it is precisely the problems in the environment that are being caused by this blindspot in our tradition. So while Len Troncale wants to operate within the boundaries of Science with his catalog of Systems Processes and the associated linkage propositions that are based on various empirical studies in different disciplines that use the system schema, what I am talking about basically goes beyond science and technology as it is being practiced today into the netherworld which is beyond the pale, and we can only get there via speculation because our tradition has suppressed or repressed the knowledge of this inverse dual of the system. Rosen calls it

the ambience, and he wants to relate it to language, but he wants to keep it vague. However, what we want to say is that the meta-system is just as formalizable as the system if you can see it. But we cannot see it because it is not part of the gestalt of our worldview, it is a blindspot that everyone misses "systematically" precisely because it refuses systematization.

The presentation of the System and the hiding of the Meta-system from our view is part of what Heidegger calls the Enframing of Onto-Theological Metaphysics which Derrida calls Logo-Centrism. The Enframing cause everything to appear as a resource to be ordered systematically, including man himself. Such an ordering is called a Standing Reserve. But resources is what the Meta-system orders. The meta-system is the operating system, the Universal Turing machine, that runs many Turing machines, i.e. Systems applications. As such it gives time slices, and memory regions, and communication portals to systems applications, i.e. Turing Machines. Operating Systems as we know from Computer Science have a fundamentally different structure from applications. One difference is that operating systems never halt and thus there is no such thing as a halting problem for them. Rosen does not seem to think this difference between the Universal Turing machine and the Turing machine is worth mentioning in his analysis of the machine in terms of a Turing machine. But it is important for understanding that the Meta-system even though it has a different order from the System is still formalizable. And we understand as well that when we talk about the Enframing that Heidegger points out what it means is that we are systematizing resources, i.e. creating an operating system, and it is precisely this reduction of the meta-system to the system, thinking that a universal Turing machine is still just a Turing machine, is the fundamental reductionism of our worldview that wants to see everything as a system, and wants to suppress the idea that there can be a different alternative order that is the inverse dual of the system, that I call the meta-system but which more precisely should be called with its own name the OpenScape. When we systematize the ordering of resources we enter the enframing that makes the system a figure on the obscured background of the meta-system, i.e., where the resources originally come from that are managed systematically. Rosen wants to see the Ambience and Language as these obscured broader concepts than the system with its environment or the formal system as a sub-language. He uses Godel's proof as the basis for that segregation of environmental causal systems and syntactic formal systems from the ambience and language as a whole. But this prevents us from recognizing the fundamental duality between the system and the meta-systemic openscape and the fact that both are representable and formalizable as has been done in mathematics already. In mathematics we have the breakup of geometry into three kinds, and algebra into three kinds, and this symmetry breaking that produces the various kinds of geometry and algebra is exactly the same move that produces meta-systemic field as the inverse dual of the system. And we owe it to my initial misinterpretation of Kineman and his apparent misinterpretation of Rosen which treates the four causes systematically (that was actually my misinterpreation of him)for us to understand how this catastrophe works in systems theory by which the system collapses into the meta-system. Kineman appears to go back to Rosen's use of the four causes that Rosen thinks are separate grounds. Kineman appears takes them as a cyclical system of causal types and thus produces the difference between the model and the concrete system on the one hand and the difference between structure and function on the other. Rosen does not go so far and in fact warns us against

thinking the causes of Aristotle are a common ground, but rather he sees them as different ground, in fact that is central to his argument that the final cause should be separated from Telos and included as a bonified type of entailment that is available to make biological systems comprehensible within science itself, rather than as a separate type of life-force (elan vital) as was done by Bergson. What happens when we consider the four causes as a system is precisely the same as what happens when we consider the four axioms of pure geometry a system by adding to it the axiom of parallel lines, the purity of the system breaks down into the meta-system via a catastrophic symmetry breaking that produces the meta-systemic field. Now Rosen himself points out that Aristotle's causes are universal in the sense that they apply equally to formal systems implication and natural systems causality. And so what we recognize is that the four causes (aition) of Aristotle is the axiomatic platform for entailment in general, and that when we take them together as a system, this actually generates the meta-system as a catastrophic failure to attain closure. And so actually this misinterpretation of James Kineman and his apparent interpretation of Rosen does us an immense favor by showing that it is the causes of Aristotle that plays the role of the Axiomatic Platform in Science. In other words if I had not misinterpreted Kineman I would not have seen that it is possible for the same kind of collapse that occurs when we go from absolute geometry to the non-euclidian geometry also occurs if you treat the four causes of Aristotle as if they were a system. Kineman actually is avoiding this pitfall, but on first reading it is easy to interpret what he is doing as making that mistake. Only after a lot of explanation did I realize that he was addressing a completely different problem which was precisely the relation of the system to the meta-system in which he used the four causes as heuristics for quasi-causes, so that the systematic treatment of the causes was not his intention. And the attempt to systematize that platform is precisely what causes us to be thrown into meta-science. And this as Rosen says is because of Godel's proof, because science cannot have a science of itself, but when it tries to do that then it explodes into philosophy of science or metaphysics or worse that deals with the questions that Science cannot answer and also those it cannot even ask.

It turns out that actually Kineman was doing something much more sophisticated than I first understood in my critique of him, and he took time to show me how I had mistook what his intention in his papers. I corrected my paper "What are the Principles in Practice" once I understood that he was not talking about causes but quasi-causes, and he was focused on the relation of the system to its niche in the meta-system and was merely using the causes of Aristotle as the heuristic to describe the interaction of System and Meta-system within its niche. It turns out that Special Systems Theory confirms the relations he posits heuristically in its mathematics. Thus Kineman was not reifying the Four Causes by seeing them as a closed system as I had thought. But still this is an interesting point that if we take the four causes it falls apart like the axiomatic platform does when absolute geometry falls apart by the addition of the fifth axiom and producing an image of the meta-system though the production of non-euclidian geometry. Just looking at the diagrams in Kineman's work that is what appears to be happening, and it is very interesting to note that this interpretation of the four causes is unstable, while the more subtle interpretation that sees these as heuristic quasi-causes within the system/niche/metasystem interface which is intended by Kineman is a very interesting development in line with Special Systems Theory. This shows that misinterpretations can

themselves sometimes be productive.

Much of this is the territory that Husserl already staked out in his work Krisis. Usually Krisis is seen as the rejoinder to Heidegger's Being and Time. Husserl did not agree with Being and Time and saw it as going outside the province of Phenomenology as he had defined it in a Kantian frame. But when we look closely we can see that many of the themes are the same, and when we learn about Husserl's unpublished works from D. Welton (The Other Husserl) then we see that really Heidegger and Merleau-Ponty are really just adumbrations of genetic phenomenology developed by Husserl toward the end of his life. Thus Husserl's Phenomenology is broader than we give it credit for based on the published works. But also Heidegger is trying to distance himself from Husserl by going back to Hegel's earlier phenomenology for inspiration, and also treating Aristotle phenomenologically. It is generally not noted that Dasein is Hegel's term for determinate being, and that for Hegel this was prior to the arising of subject or object. Hegel saw nothing and being as primal opposites, and conceived of nothing in the Buddhist sense of emptiness. He saw the aufhebung of this duality between being and existence as giving the flux of Heraclitus, and Dasein was a determinate being that arose out of this flux. This is a very sophisticated and farsighted position. And Heidegger takes advantage of it to define a point prior to the arising of the subject/object dichotomy, which is existential in his sense, i.e. an ecstasy by which the world is projected by dasein that lives in the world, which is fundamentally the Kantian picture. Kant solves the problem of Hume's skepticism in a very sophisticated way by positing that there are synthetic a priories like space/time that are projected prior to experience and that based on that the categories that sustain the object of science are projected as well. This projection that is a necessary condition for the possibility of experience Kant calls transcendental. For Kant then causes as external entailments in the natural world come from us, and thus are species of formal entailments such as you get in logic. We discover them in experience but if we did not project them first they could not be discovered. Kant does not question the types of Cause elucidated by Aristotle so they continue to resound in the tradition. Kant merely says that if causes are applied to external phenomena that are the result of noumena then they must have originally come from our prior projections of them. It is this Kantian view that Rosen should really deal with rather than only mentioning Descartes as a starting point for his rummaging around in the metaphysical basement of science. Descartes philosophy was still dogmatic, as was that of Spinoza, Leibniz and Hume, and was not raised to the Critical level that sees the subject rather than the object as the center of the Universe that humans see, because we cannot get out of ourselves into some objective viewpoint from nowhere. The only way we can have transcendental realism is on the basis of a transcendental idealism and that is the only way to get out of the dilemma of empiricism verses rationalism. But Kant's modernist philosophy, which by the way proposed the system as the basis for understanding things, and posited galaxies for the first time as our home beyond the neighborhood of our nearest star, had its problems in that it intensified the tendencies of the enlightenment. For Hegel Kantianism led directly to the Terror of the French Revolution which Blake writing at the same time as Hegel characterized as Urizen, i.e. reason out of control, cut off from emotion. The romantics were a reaction against this tendency to venerate reason, only part of the human psyche above all else. And Hegel wanted to get beyond this nihilistic opposition between the beautiful souls of the Romantics and Science based on reason alone. This led him to posit beyond Reason

Absolute Spirit, which in history discovered an absolute reason, a reason that did not become separated from concrete embodiment in historical phenomena. At one point in Being and Time Heidegger identifies Dasein with Spirit (Geist), literally the Ghost in the Machine.

Krisis is about how Science is pulling away from the lifeworld and becoming incompressible to men who are not scientists. And we can see Being and Time as offering a solution to this problem. It is little noted that Heidegger wanted a professorship in Physics, and Theology and that philosophy was his third choice. Thus he was well aware of the state of science of his time which saw the rise of relativity theory and quantum mechanics. We can see Being and Time as an analysis of these two incommensurate theories of physics that each consider a different scale, but which if brought together at the Planck scale generate nothing but absurdities. Both theories suggest that there are two planes of reality, the one that everyone sees which is the Newtonian, and another scale that is not seen. For one of them this other scale is very big, and for the other it is very small. Now both of these theories have had various tests and are considered confirmed even though they are at odds. Heidegger obviously thought as a philosopher that if science sees the world as bifurcated into two levels, then we should think of our everyday life in the same vein. Thus he went back to Aristotle and saw that he actually divided experience into several kinds of knowledge and one of which we had forgotten about was Phronesis (Judgment) and so Heidegger based his ideas about Dasein on Aristotle's kinds of knowledge which includes techne and episteme among others. If you think of Dasein being in the realm of phronesis, and its modes of Being are related to Techne (as ready-to-hand) and Episteme (as present-at-hand) then you get a picture of how Heidegger used the resources of Aristotle's philosophy of knowledge to show that in everyday experience there are also two levels, i.e. Pure and Process Being. Pure Being is Newtonian, and Process Being can be seen as either the Relativistic Level or the Quantum Level. Since all science is predicated on techne, our access to the remote levels either macro-global or micro-local is mediated by our view of techne which Heidegger calls circumspective concern. So in his solution it is our view of technology that underlies science through this modality of Being that allows us to access the insights of Relativity and Quantum mechanics that goes beyond the Newtonian view. So from the point of view of Heidegger, the problems of Science being alien originate in our relation to technology within our lives, and the fundamental problem is that technology hides itself as it makes possible our immersion in the Newtonian world that seems so obvious to us as that which explains everything on the scale at which we are at home. We only can experience the extremes at which relativity theory and quantum mechanics operate via technology, and so it is a split in Being that already exists that is the root of the Krisis. Very few recognize that Heidegger is really a philosopher of science of his time and that he is oriented toward solving the problem that Husserl raises in Krisis after the appearance of Being and Time. The fact that Heidegger goes back beyond Husserl to get resources from Hegel and Aristotle to boost his phenomenology is very significant. Basically he is saying that his teacher who is following closely Kant has forgotten what came before and after Kant, namely Hegel and Aristotle and that they offer resources to get beyond the Subject/Object dichotomy with which Rosen begins his rummaging around the basement of science as he depends on Descartes too heavily, but also the various kinds of knowledge some of which Husserl has forgotten can also help us understand how Being

itself has different modalities, and how it is the split between these modalities that cause the separation of science from the mundane lifeworld, and makes science incomprehensible to most of us because it harkens from a remote region we can only approach through sophisticated technology, and so technology that enables also cuts us off from understanding these other realms because technology hides itself and pushes Pure Being, i.e. frozen representations such as those that appear in Newtonian models to the fore. Notice that really Rosen only deals with Newtonian models, and he attempts to subsume Relativistic and Quantum science under the same rubric as far as entailment is concerned. He is probably right about this, but this sweeping of Relativity and Quantum science under the table is a limitation of Rosen's argument because just as philosophy fundamentally changed with Kant, Science fundamentally changed with the rise of relativity and quantum mechanics. This makes Rosen's treatment seem naïve in certain respects. There is more in philosophy and science than Descartes and Newton. But Rosen feels he can do this because from his point of view entailment has not changed.

Heidegger's solution, which was to split, Being into Modalities, i.e. present-at-hand and ready-to-hand which emanated from Dasein prior to the arising of the difference between Subject and Object, i.e. prior to the arising of the first dichotomy posited by Rosen in the metaphysical basement. But what Heidegger did not count on was the fact that once you allowed Being to be other than univocal, that other modes of being would appear. But of course he discovers the third one himself, which he called ~~Being~~ (crossed out) and which was later called Differance by Derrida. Heidegger was deeply shocked by this and instead of trying to discover what other modalities of Being might exist he attempts to get rid of Ontological Difference all together and produces instead the inverse dual of Being (Sein) which he calls Beyng (Seyn) again following Hegel who used Old High German. However, Merleau-Ponty was not so gun shy and he explored the upper reaches of Being and named Hyper Being (Difference, ~~Being~~) and Wild Being. Deleuze went on to explore the nature of Wild Being in his work with Guattari, in Anti-Oedipus and Thousand Plateaus in which they attempted to construct an anti-Lacanian psychotherapy called schizoanalysis. So Continental Philosophy was driven to explore the higher logical types or (taken the other way) meta-levels of Being. We can apply Russell's theory of Higher Logical types to understand what they have done which is to name and work out the qualities of each emergent meta-level of Being. This is important for our story because it is an unexpected development that changes radically how we understand our own worldview. Rosen wants to adopt Category Theory that has a similar hierarchy which is element, arrow, functor, natural transformation, modulation, and fluctuation . . . The interesting thing about both of these hierarchies is that they are practically finite even though theoretically infinite. Heidegger thought he had opened an infinite Pandora's box as Cantor had. But in fact what happens in both hierarchies is that the space of possibilities widens and then dramatically narrows and keeps narrowing approaching a limit. We see this in the volume and surface areas of hyper-spheres. We would expect them to keep getting larger, but they stop growing and start shrinking between the fifth and seventh dimension, so high dimensional hyperspheres are extremely small. Because of this Rosen's appeal to Category Theory is justified as something that in relation to entailment will approach a limit. In the case of Being that limit is existence, and we obtain that phase transition at the fifth meta-level beyond Being which is called Ultra Being. Higher meta-levels of Being are actually nonduals and not further higher more

esoteric kinds of being. Ideally Category Theory is infinite but practically it is limited. This is similar to algebra for which there are higher hyperalgebras but because they lose properties they become uninteresting after a few steps of the Cayley-Dickson process. So sometimes mathematics has its own limits built in to it, and we can occasionally take advantage of those, and sometimes they limit things such as the higher logical types of some set of categories, for instance they limit the aspects of being and the kinds of being themselves in a fundamental way. The evidence that these kinds of being have some bearing on the situation and are not just made up is the fact that Plato talks about the Third Kind of being in the Timaeus and hints around concerning the fourth. But they were forgotten in the tradition until they were rediscovered in Continental Philosophy. But if we look back into the Indo-European tradition we find that they exist since at least the time of the Vedas as the difference between the Indo-European gods and the Castes as discovered by Dumazil. So Heidegger's solution to the problem of the split in the world between the lifeworld and science which called forth the modalities, caused us to remember something that had been lost in oblivion within the tradition. But this worried Heidegger and that caused him to make an even more radical move, i.e. to posit an inverse dual of Being, i.e. Beyng, which he announces in his Contributions to Philosophy and Mindfulness. And this reveals the Pleroma which is a deeper ground within the worldview that had been also lost. The pleroma is comprised of striated and unstraited pairs of which Being is striated and Beyng is unstriated because it is strange, unique and onefold. Beyng in my own view is the realm of semantics, the realm that Rosen does not treat. The scandal that we do not know what semantics is in our tradition comes from the fact that we have lost Beyng in oblivion. The difference between Being and Beyng is that Being is forgotten, but Beyng is under the cover of Oblivion. Being is receding in forgetfulness from us while the Oblivion of Beyng overwhelms us. And the realization of the plus one and minus one positions of the pleroma causes us to realize also the zero position of Striated Emptiness and Unstriated Void. Emptiness is the nondual of Buddhism while Void is the nondual of Taoism which are two interpretations of the zero point of existence that occurs at the fifth meta-level of Being. There are other striated and unstriated opposites of the pleroma, which is the field out of which the worldview arises. But for our purposes here we only need to mention these opposites. What is interesting is that even at the ontological level there is the possibility of inverse duality like we have between system and meta-system (Openscape) and or between Set and Mass. Subsequently Beyng, Meta-system and Mass are conflated because there difference is not recognized. But in fact this conflation is not true because each has its own place and its own order that is just different from that of the orders that are recognized by the tradition which are extremely limited and constrained compared to the orders that exist in each of these very different realms. The systematic supersession of these various inverse duals in different registers is what onto-theological metaphysics is all about, and it is this over emphasis on one side and ignoring of the other side of these various inverse dualities that enact the enframing which is maintained as long as these fundamental differences that make a difference are suppressed and repressed.

So what happens when we stop suppressing and repressing these inverse duals? Suddenly there is a different duality that is seen as the core of the worldview which is the difference between physus and logos. Nomos stands between them as a nondual barzak, i.e. interspace or barrier. Thus instead of the subject being opposed to the ambience

(external world) that Rosen gives us we have a broader duality that is central and both sides of which shares in the order of the nomos. That means we can understand how it is that entailment structures in formal systems can mirror causal structures in nature. It is because the nomos comes before the duality that separates them into two partitions. It is not an arbitrary miracle but rather a mirroring that is built in because nomos came first. Nomos is in fact in Existence not in Being. The Physus/Logos split appears as an illusion in Being, but in existence there is only one essential order that is reflected differently as formal systems or as causal systems. So in this Badiou was wrong and we cannot identify Set theory with Being. Rather we must recognize that there are multiple possible foundations of mathematics and that they are all significant perspectives in their own right. But all of those perspectives point back to the original nomos the source of order than is seen in different ways through the lens of various possible foundations, like category theory, set theory, mereology, etc. all which contribute meaningfully to our understanding of the nomos as it appears in the logos and physus.

Once we recognize that Rosen has the wrong fundamental dichotomy when he posits self/ambience as key following Descartes, then we can begin to rethink the entire realm that Rosen is characterizing. Logos is Language, and Physus is Ambience, but interestingly we do not have to confound formal sublanguages with mathematics. Rather logic (the physus of logos) is what governs sublanguages in the logos. And you will be surprised to hear no doubt that the logos of the physus are the schemas we project. In other words we project the schemas as a first move that is prior to science as such, so that we can hear back anomalies that do not agree with our projections in science. Science is not so much the modeling of causal structures as entailments in formal systems, as it is the listening up for what nature has to say that is contrary to our projections of the schemas, i.e. templates of intelligibility, onto phenomena. Rosen conflates logical sub-languages and mathematical categories, which we should really keep apart. Our division of Logos/Physus with Nomos between as barrier and interspace allows us to separate the two because mathematics always belongs to the prior nomos in existence. Logos which is the house of Being, and Physus which is a certain kind of Being (bheu) that was the focus of the speculations of the Pre-socratic philosophers appear in a different realm which is in fact illusory for the most part. One reason for this is that Being is something that only Indo-Europeans possess. It is an anomalous structure at the core of the logos, but also governing how we see the physus ("whooshing up, staying for a while and then fading away", cf. Kelly). So in a certain sense the distinction between Physus and Logos is predicated on the Existence of Being in language and that appears only in Indo-European languages as an anomaly. We cannot take some linguistic anomaly as the basis for the universal characterization of phenomena. So there is something fundamentally wrong with the idea that the Western Tradition is the arbiter of all experience of existence. Even though we are destroying other worldviews faster than other species by decimating their languages, on principle we cannot allow the univocality of Being to speak for everyone, if it is a unique feature of one family of languages, whose users just happen to be taking over the entire globe when ever they get a chance. So we are led to doubt on first principles, because of the lack of universality, following Kant's own dictum, the dichotomy and distinction between physus and logos posited within Being in by our idiosyncratic language family. But we must admit that this is the central distinction that exists within our worldview and the way of dealing with that was set up by Plato in his

analogy of the Divided Line.

Plato's divided line is the core of the Western Worldview in as much as it describes the arena in which all experience occurs and separates that into Ratio and Doxa. Ratio is based on the logic within the logos and understands based on reasons. Doxa is appearance and opinion and applies to the realm of physus, which is the source of phenomena that we apprehend. Ratio has two divisions between representable and non-representable intelligibles. Doxa also has two divisions between grounded and ungrounded appearance or opinion. Whatever we see from the physus appears to us as phenomena, which we apprehend as appearances. Empiricism is when we control the appearances such that it gives us good information about the physus. When we appeal to empirical data we ground our opinion, but still because of its changeable nature it is still just opinion ultimately because it is based on appearances that ultimately cannot be trusted. On the other side of the divide in the line is ratio, which is taken as the sign of reason. Applying a ratio to something was taken as the hallmark of reason. Reason means to be able to give a "because" to anything we do, i.e. a casual explanation. Reason is particularly about explaining things we do, and the best explanations are causal in some sense where the reason we did what ever it was is syllogistically entailed by the preconditions. So causality starts out as how we see our own behavior and explain that behavior to others. If there were no language there would be no explanations but only the behavior itself. Aristotle says that there are four bases for Aition, causal explanation, and as Rosen says they apply equally well to our own behavior and to the behavior of things out in the world.

The causes are the Formal, Material, Efficient, and Final. What is interesting is that these are combined in Kant where the Formal and Material make up the Categorical Imperative while the Efficient and Final make up the Hypothetical Imperative which we hear much less about. But it must be possible to actually do something before one can decide whether it should be a law applying to everyone. Practical Reason is involved in applying to itself these two imperatives. Pure reason on the other hand is caught up in antinomies unless it is tempered by experience. Pure reason thus naturally sees the world in terms of nihilistic opposites that cannot be reconciled. Or when they are reconciled by realizing that they are really the same then there is a loss of meaning because there is a loss of difference. So instituted into the tradition is a radical difference between Pure and Practical Reason which Kant reemphasizes, that eventually leads to the modalities of Being in Heidegger. But what is interesting is that it is the Categorical Imperative that is associated with Technology and Poiesis, while the Hypothetical Imperative is associated with Phronesis and Praxis. Episteme is associated with science and that is the realm of rationality and representable intelligibles. So from the point of view of Aristotle there are different kinds of knowledge associated with Pure reason and the two imperatives of Practical reason.

This brings us to a crucial point which is that Aristotle has a kind of knowledge for each phase of the divided line and its two limits. The limits are Supra-rationality on the one side and Contradiction, Paradox and Absurdity on the other. Thus there is nous which is the knowledge of the light of the gods or the numinous in everything. There is sophos which is wisdom and is related to virtue and non-representable intelligibles like Good and Fate. There is Episteme which is related to science and is theoretical reason which deals with representable intelligibles such as Euclidian geometry. Then we cross into doxa where there is Techne that allows us to deal with poesis and relates to grounded opinion and appearances. Then there is Phronesis (Judgment) that allows us to deal with praxis and relates to ungrounded opinion. Finally there is Metis (trickery) which relates to contradiction, paradox and absurdity. Odysseus embodies metis. I don't think this isomorphism between the phases of the divided line and the kinds of knowledge in Aristotle has been noticed before, not at least in the secondary literature I have read, mainly because Plato and Aristotle are treated by different scholars for the most part, and because it is their differences that are considered salient. But this shows that they had a single model in mind for the structure of the Western worldview. Heidegger drew on the kinds of knowledge to produce the modalities of being with Dasein being drawn from Phronesis, while the techne related to circumspective concern of the ready-to-hand with respect to technology, and episteme related to the cognition of the present-at-hand. But Sophia, Nous and Metis are still lost in Heidegger's account. What we see is that Phronesis and Techne are both kinds of knowledge that deal with Doxa. If you are confronted with ungrounded opinion or appearance you need to apply judgment, which you use to control your own praxis or behavior. If you are confronted with grounded opinion then you can apply techniques in your control of poesis of nature, or oneself in terms of being a skilled craftsman. When we transition out of Doxa we are also transitioning away from the physus and away from practical reason which is the only part of our countenance that can deal with the appearances generated by the physus. What we transition to is the ratio, which is governed by logos, and at the core of logos as almost physical constraints by logic. We use logic to control our use of language so it continues to make sense. But we use reasons to explain our behavior, and we apply that explanatory framework back onto the physus. But this only works according to Kant if we combine reason and experience of the physus itself. We note that science makes use of grounded opinion as empiricism and representable intelligibles as reasoning based on representations. Where reason goes wrong is where it does not stick closely to empirical realities in judging invisibles. Ungrounded Opinion is associated with Superstition. Non-representable Intelligibles are associated with Theology and Metaphysics. And from the view point of science there is not much difference between these two. However, on the other hand the atoms it posits and the forces of nature it posits are in fact invisibles also. So in a way Science is always about invisibles and its hold on those is tentative especially when we get to extremes that yield Relativity and Quantum Mechanics. So the realm in which we build formal systems is the realm of representable intelligibles. And these are related via empiricism by experiment to appearances that are considered grounded because of the presence of tests. So the difference between rationalism and empiricism that Kant was confronted with was based on the Divided line. This split led to the skepticism of Hume who denied that formal entailments had any connection at all with casual entailments. But this situation from Kant's point of view leads to an interesting

result which is that reason by itself cannot know anything but nihilistic antinomies, and that all real knowledge comes from the physus which is split between the imperatives. Only reason in service of experience is fruitful from Kant's perspective. Other wise it just leads to dogma about invisibles that is unsupported, and nihilistic views of those dogmas. Kant wants to limit pure reason to service of science, i.e. the study of the physus, and it is in this service that the models that Rosen speaks about are created and maintained. As a reaction to this view of reason Romanticism was given life as an alternative to the revivification of the enlightenment. And then as said it was Hegel that tried to overcome this dichotomy between the beautiful souls of the romantics and the terror of pure reason isolated and tied to science as we see in Blake's Urizen in the Four Zoas. Blake posits Albion and Hegel posits Spirit as a way of overcoming these higher order dualisms instituted by Kant.

But we know that Kant's notorious move is toward transcendental idealism as the only route to transcendental realism. And Kant is very clever when he identifies the possibility of A priori synthesis with space/time. Both Space and Time are singulars that are both universal and underlying particulars at the same time, and thus cannot be reduced to either universal or particular. Positing these singulars as A priori syntheses gives to Kant a means of grounding causation as our own projection. Now of course we know that Space and Time are not absolute as Kant and Newton thought but part of one interval with a phase-shift between them that can appear differently in different inertial frames. But the other mistake that Kant made was to think space/time was homogeneous. What we posit in General Schemas Theory is that there are different schemas for different scopes, and that schemas are tied to dimensions. S1 hypothesis says that there are ten schemas and that there are two schemas per dimension and two dimensions per schema. Once we realize that there are different schemas and there is a specific set of them which is facet, monad, pattern, form, system, meta-system (openscape), domain, world, kosmos and pluriverse, and that they are tied to dimensions, then many things become clear that previously are unclear. For instance, schemas are ontological, while phenomena are ontic. There are ontic emergent levels such as quark, fundamental particle, atom, molecule, macro-molecule, cell, multi-cell, organism, reproductive group, flock, colony, society, spirit? Gaia? Any of these levels can be looked at through the lens of any of the templates of understanding that the schemas represent. So the "Rashamon" phenomena is possible in science with different scientists looking at the same phenomena through different schematic filters and thus seeing different things. There are also other schemas that we apply as pre-understandings of the world, fore-havings, and these run into biases eventually. We are only talking about what Eco in Kant and the Platypus calls mathematical and geometric schemas, which is the most basic projection. But it breaks up our experience into different kinds of organization a prior and these support separate syntheses. What we understand first about the phenomena is the schemas we expect them to be in given their scale. At each dimensional level there are two possibilities, and we preordain which we will see the phenomena in, and sometimes have to change that assignment later but that is always painful because it involves relearning. The first thing we know about something is what schema it appears in, later we find out about its individual qualities, not the other way around as empiricism expected. Science is

systematical unlearning the schematic pigeon-holing and actually learning about the ontic emergent qualities of the phenomena itself beyond our ontological projections. Of all these projections in our culture the only one we suppress actively is the meta-system. And this is the cause of many problems. It makes us literally blind to the environment and its ecosystems.

It turns out that these schemas apply to language and they are also projected on external beings. So the layered structure of language has basically the same structural differentiation as the things being comprehended by language and named. So schemas are the substrate connecting things in the world and language that names them and thus helps with the translation or coding that exists between the formal system and the natural system being modeled. But it also means that there are different kinds of dictionary based on the schema chosen for coding. Not all dictionaries are the same as Rosen might have thought. Basically schemas provide natural sublanguages for experience. Wittgenstein mentions many different schemas in his Philosophical Grammar that was the precursor to Philosophical Investigations. We can make sense out of his 'meaning as use' idea because we use different schemas to understand different phenomena at different scales and these differences and their non-commensurability is one source of meaning. So not all referents are the same, and there are sets of different patterns of referents that together offer intelligibility. Assigning an ontic phenomena to a given schema makes 'a difference that makes a difference' in Bateson's terms. Significance and relevance are somewhat generated by the fact we can see the same ontic emergent phenomena through the different lenses of different schemas and they look differently through those different lenses with various features standing out depending on which template of understanding you use. So the differentiation of schemas at the same time their connection with the structuring of language itself together serve to give a basis for the generation of significance and relevance that normally is not recognized. There is also a tension between the schemas and the nomos because they are connected to the nomos via dimensionality. So the schemas also serve as a bridge between sublanguages that are formalized and the mathematics we use to structure our theories. The congruence between the sublanguages governed by logic and the mathematics governed by its transformations, and the causal entailment of the phenomena all these are needed to have a robust scientific theory in the sense propounded by Wallis.

Once we understand the role that the schemas play then it is possible to go on to see why these make possible a deeper theory of everything. First of all physical theories of everything do not explain other emergent ontic levels. Second they assume priority of some schemas over others. They participate in the suppression of the meta-system for no apparent reason except to highlight the system under some proscription by onto-theology that sets up the enframing and gives it what appears to be unthought and senseless authority, which provides a fundamental bias in our worldview that is unnecessary and arbitrary. Rather when we begin to recognize the inverse duality between system and meta-system then we have no reason to conflate it any longer with masses. As we start disentangling mass from meta-system we begin to realize that even Rosen has circumscribed us in a much narrower box than is necessary. That gives us an insight into

the possibility of meta-science, i.e. perhaps allows us to bring out into the open some of the things hidden in the dark recesses of the basement of science, i.e. metaphysics.

So we must begin again and comprehend that what Len Troncale calls systems processes are in fact schematizable in the sense that we can decide at what level of the schemas they become possible. And I would suggest that this might give us something like the following list.

Facets: -1.0 (dimensions)
They are like the Quarks which are never seen as separate. Quantum processes relate to these both in Superposition and Entanglement, which represent the two extremes of the divided line. So we will guess that Quantum Processes are the most basic, which relate to Quantum Logic, and to superpositions of meaning, where the same word means different things, and also entanglements which are contradictions, paradoxes, and absurdities. Facets do not move.

Quantum Processes
Variation, Systems Level /or/ Innovation Mechanisms (on a systems level)
Symmetry, Systems-Level
Origins (Systems) Processes
Phases, States
Possibility, Potentiality

Monads: Fundamental Particles, Atoms, Molecules 0.1
These exist in the spacetime singularity. They can spin. They have facets within them, which can be seen as modes. They can move along a trajectory. You can have a lot of them. They can swarm. So basically you get physics when you get a monadology like that of Leibniz. But there are no real relations between things.

Field Processes & Potential Fields
Chaotic Processes
Constraint "Field" Processes***
Limits and Constants as Processes
Neutralization Process (Neutrality Quest)
Spin Processes
Replication Processes
Information Flow Processes
Entropy, General (Energy?)
Emergence Processes
Thermodynamic Processes
Happening and Existence in Spacetime

Patterns: Structures, Fluxes, Values, Signs 1.2
Gestalt and Flow type relations

Flow Processes
Fractal Structure & as a Process
Growth Patterns & Laws
Hierarchies & Clustering as a Process
"Structure" as a Process both 50 and 36
Minimization: Maximization Processes

Recursive Processes
Storage As A Process
Power Laws, Cross-Disciplinary
Non-Equilibrium Thermodynamics (Irreversibility) Processes
Network Structure & Processes
Feedback, General
Evolutionary Processes (Generalized)***
Equilibrium & Steady State Mechanism
Decay & Senescent Processes***
Cycles and Cycling, General
Causality Processes
Binding, Interaction, Linkages, Connections Processes
Amplifier, Gain
Combinatorics
Order, Organization
Turing Complete

Forms 2.3
Synergy As A Process
Dysergy Processes (anti-Synergy)
Redundancy Processes (equifinality)
Integration/Unification/Synthesis Processes
Actuality

Systems 3.4
Output Processes
Input Processes
Functions, System (Goals, Purpose)
Exaptation, Cooption
Criticality, Self-, Tipping Pointsts, Catastrophe Theory
Competitive/Exclusion? Processes
Boundary Conditions as a Process
Autopoiesis & Autocatalysis & Self-Assembly & Self-Organization & Hypercycles
Allopoiesis
Allometry
Adaptation Processes
Agency
Dialectics, Trialectics (work)

Meta-Systems 4.5
Developmental Processes, Systems (Patterns & Laws)***
Duality-Complementarity-Counterparity Processes***
Fragmentation/Concrescence of the System
Breakdown of the Environment into different Regions
Environment, Ecosystem, Media, Situation, Context, Circumstance, etc.
Indirect Reference, Indication, Influence, Dependent Co-arising. Quasi-causality
Filtering, Protocols
Requirements, Needs, Maslow hierarchy
Resource Allocation
Universal Turing Machine (Operating System)
Parallelism, Multi-tasking, Virtualization
Quadralectics

Domains 5.6

Observer Mechanics
Relativity Theory

World 6.7
Language
Social Community
History, Culture
Humanity

Kosmos 7.8
Physics

Pluriverse 8.9
Multiverse

Once we segregate the Systems Processes by the levels of the Schemas where they are first possible and then add others (in red) that do not appear in the new list then we can see that really we are talking about Schemas processes and they only apply to the system when we are only considering the systemic level.

The next point is that the Linkage Propositions which connect systems processes can be viewed as applying between schemas as well and so I have developed a hypothetical list of those propositions which add to those developed by Len Troncale that appear in the Appendix of this paper. And thus we can consider that there are linkages between the various processes that exist at the various levels of the schemas. At this point I would prefer some term that is schema independent like "Tattva" but we will continue to use the term Process here with the caveat that Processes are something that really only appear at the system level. Processes are the conceptual dual of Systems, just as flow is the perceptual dual of gestalts. Tattvas (called Dharmas in Buddhism) are mechanisms that are found to operate in existence at some given level of concreteness. This concept comes from Tamil philosophy and has been associated with the Me in Sumer. It is a concept that assumes no unity or continuity between these little mechanisms that confer some sort of viability on a given schematic configuration. For instance there are seven simple machines out of which all other machines are built one way or another which are independent of each other. Tattvas have a similar kind of independence but occur at different levels of existence.

Once we have the set of Schematic Processes (Tattvas), however that is refined by Len Troncale and his collaborators, and we have a set of linkage propositions that connect them to each other that are in agreement with our list of schematic processes, then the next step is to realize that we can combine various linkage propositions together to produce a concrete realization of a system to produce artificial syntheses of schematic linkages. Len Troncale talks of this under the rubric of Artificial or Virtual Systems Simulation. In other words we should be able to combine a set of linkage propositions to synthesize a schematic configuration and test out its viability or workability as a synthetic object of investigation, building virtual schematic instances in which various concrete linkages coincide simultaneously or taking turns in being effective. This could be done in the spirit of artificial intelligence (cognition) or artificial life or artificial sociality but at a

more general level producing arbitrary schematic combinations with linkages between the schematic processes (Tattvas). We have to realize as M. DeLanda has that simulation is in fact the production of artificial syntheses and therefore we should be able to combine Processes (Tattvas) from various schemas into a single concrete synthesis and simulate it to see if it actually works, and thus it may be possible to combine schematic processes that have not been combined in nature and create new schematic configurations which we discover to be viable even though they never actually occurred in nature. For instance, G. Klir in Architecture of Systems Problem Solving has combined the schemas Pattern, Form, and System to create a Formal Structural Systems Theory and thus has gained increased explanatory power by combining three adjacent schematic levels together in a single theory. Many scientific theories in particular disciplines gain explanatory power by combining elements from all three of these schemas. But various schemas can be combined to do the same thing.

But what we notice here is that we are climbing the levels of the Pierce/Fuller principles when we make this combination. Peirce based his work on Hegelian Philosophy when considered it from a Kantian perspective and identified three principles, which he called First (isolata), Second (relata) and Third (continua). And basically what we have said just now about building up artificial schematic simulations from Schematic Processes (Tattvas) and Linkage Propositions (or Hypotheses), to create artificial syntheses traverses this set of categorical principles. We can add to these the principles of Fuller which are Synergetics and Integrity to get a Fourth and Fifth, and we can add further to each end a zeroth and neganary principle prior to the first, and a sixth and seventh principle to beyond the Fifth, in order to produce a series of nine principles:

- Neganary source
- Zeroth void
- First isolata
- Second relata
- Third continua -- mediation
- Fourth synergy
- Fifth integrity
- Sixth poise
- Seventh singularity

And when we consider these categorical principles as a set we can see how we could continue to build up deeper and deeper structures that attempt to demonstrate these principles in the artificial syntheses that we build. In other words there is a design space as I said in my dissertation which is a field that we construct by giving the meta-levels of Being for each of the Categorical Principles. That design space is widest at the level of Hyper being and then it narrows again just like the n-category theory does. And so that is the level at which the quadralectic of design is poised. That Quadralectic is merely an extension of the Dialectics and Trialectics (Work) described by Hegel. Artificial Schematic Configurations that make use of Schematic Processes (Tattvas) and put them together in ways that seek viable solutions in a given context is what we are doing whenever we build technological artifacts. In effect Systems Engineering is really

'schemas engineering' and we are already using multiple schemas to build our technological infrastructure which is necessary to pursue higher forms of science. Ultimately Science and Technology, Science and Engineering are symbiotic and support each other by the design of Schematic configurations that strive for viability and usefulness in our world. We use our set of schemas as the basis of what ever we design and it is normally forged out of a combination of schemas, and now we can say the tattvas that appear at the various schematic levels and also exist at other schematic levels in similar forms. At each level emergent tattvas (called Processes and Patterns by Troncale) appear and have viability in some cases at multiple levels once they appear. We use these tattvas once they emergently appear to produce viable schematic configurations which we design. When we do design we create artificial simulations of what has been designed to try to understand the viability prior to production if it is possible. So in some sense Artificial Schemas Simulation is just part of the design phase of schematic artifacts we construct. However, we can still strive for the higher principles such as synergy, integrity, and poise in what we design. And following Rosen we can strive to produce systems with higher levels of entailment and even circular entailment that are anticipatory, as well as Autonomic, Self-*(stared), as well as having qualities such as artificial life, consciousness, intelligence and socialization properties which pass various levels of the Turing test.

So now we have a vision of what would allow us to produce artificial or virtual schematic configurations that operate at several schematic levels simultaneously and entertain the operation of some or perhaps even many processes (Tattvas) or linkages between tattvas simultaneously in the same simulated artificial schematic configuration, and our designs of these can attempt to mimic higher principles in the C.Peirce/B.Fuller spectrum of principles such as Synergy, Integrity and Poise. And so we have some idea of where the schematic sciences might go in the future and can see how much wider this vision is than what is currently conceived at only the systems level by Troncale and other Systems scientist who have not quite realized that they are actually operating within Schemas Science when they pursue Systems Science. But what is particularly poignant here is the fact that the existence of the meta-system as the inverse dual of the system is not recognized fully. Because of that inverse duality we should be learning many things about systems by considering them in relation to their meta-systemic inverse duals. But that is blocked to us as long as we suppress or repress the meta-system due to our being caught in the enframing of onto-theological metaphysics and logo-centrism. Logo-centrism pushes us in a slightly different direction in as much as it tries to get us to recognize what Plato in the Timaeus called the third kind of Being that was necessary for the Demiurge to actually engender and thus embody the world, i.e. take it from design to embodiment. Derrida calls that Differance (differing and deferring). We call that Hyper Being, and recognize that this esoteric meta-level of being is where the widest design potential exists because it has the greatest combinatory space for us to explore to find the next adjacent possibility to what we have already actualized. This is why quadralectics is directed explicitly at this non-representable level as the fundamental arena of design activities.

When we realize that anything that we build will come out of a particular schematic combination and employ a given set of linked processes (tattvas) but that it will appear in

the design space which is the Cartesian Square of the Peirce/Fuller principles verses the Meta-levels of Being, and so what ever we create will be an embodied schematic confutation on the back ground of that design field, and the two will stand in a system/meta-system relationship then suddenly it becomes very important to recognize the nature of the system to meta-system inverse duality, because the field of possibilities of design is the inverse of the actual concrete design solutions that appear in that field in response to some problematic. To explore that relationship deeper we recognize that Aristotle's four causes is the axiomatic platform for entailment as such whether it is in terms of the Formal System or the Natural System. This platform when we treat it as a whole in itself self destructs into the meta-systemic field just like the four axioms of pure geometry give rise to multiple geometries and which are like the dispersion of Jordan and Lie Algebras away from normal algebra that climbs into the clouds of imaginary hypercomplex algebras as we lose algebraic properties. It is precisely the addition of completely circular meta-causation that we see as just causation that causes this breakdown, which my over hasty misinterpretation of Kineman's interpretation of Rosen produces. But what is interesting is that we can look at the breakup of Geometry into nine geometries and the break up of Algebras into the cross product of the three algebras and we can then consider the cross product of the algebras and geometries and this gives us what I refer to in my dissertation as a particular level of the WorldSoul which is 27. In other words if we go the route of geometry there are nine, and at the same time we can take the cross products of the algebras to get nine, or we can take the Cartesian cross product of the algebras and geometries with respect to each other and also get nine, and so the field has precisely 27 variations from a combinatoric standpoint, which is one of the levels of mediation that exist in Plato's WorldSoul. But the key combinations is that of normal algebra paired with Euclidian Geometry, which is the central case that represents our view of the system, and contrast to that is the Hyperbolic Geometry with Lie algebra on the one hand and Elliptical Geometry with Jordan Algebra. These are the two complementary images that exist in the meta-system that defy totalization and unification. The others are all degenerate cases. And what is interesting here is that we can consider these all as images of possible systems. Thus we are given in the meta-systemic deconstruction of the Axiomatic Platform due to Godel's proof so often appealed to by Rosen, three different systems theories as archetypes, and what we see is that our normal picture of the system is not the central one, but is instead the elliptical one with the Jordan algebra. That is to say our vision of the system is closed or at least concave and this is an extreme, which is poised against the hyperbolic system with the Lie algebras. Now Jordan algebras cause the elliptical closed or convex system to expand and contract. Lie algebras on the other hand relate to braiding, and thus the Hyperbolic Systems are dispersing and also complexifying the relations between their elements in the process. This hyperbolic dispersion is seen in the phenomena of entropy. It is interesting that the expansion of the universe is seen as such a mystery, when it is clear that it must be due to the fact that our universe is essentially hyperbolic and thus every point is sliding away form all the other points and dispersing due to its geometry. And so we can see something strange which is that our view of open and closed systems as the basic kinds comes from the juxtaposition of these extremes in the meta-system. Open systems are open to energy and matter and information fluxes and subject to entropy. Closed systems are also subject to entropy but due to their convex nature there is more

conservation of energy, matter and information due to the fact that they are context free, and as Rosen says purely syntactical. Rosen sees formal systems and natural systems in these terms as closed mechanisms, but he talks about the fact that entailment can involve circularity and thus admit finality and thus make room for biology with the realm of science. But even so he says that it is the referents that are outside this closure of syntax that are the source of meaning. And so he talks about the bridge between formal systems and representations of natural systems in terms of encoding and decoding something that takes work and thus is a mediation, i.e. is trialectical. So dispersion touches the two systems casual and logical in the process of translation, and the combination of the various terms can be seen as a braiding, a complexifying as we attempt to find a direct translation that is pure between the two closed systems we are comparing. Interestingly enough this leaves out the normal Euclidian system that is flat or perhaps parabolic and its algebra. We can see that a completely closed system is elliptical, and a completely open system is hyperbolic, so that means the normal system related to parabolic or flat space and the normal algebra of time must be in some sense a halfway house between open and closed. Of course, this is where we suddenly see the nature of the hypercomplex numbers becoming important, because they create the possibility for a third possibility between open and closed. We will define an "openly-closed" system as one in which information can get into it from outside without crossing its boundary. Victor Frankl had a similar idea to this. We will make this concrete by saying an openly closed system is oracular, i.e. it has singularities within it that yield information that does not come across the boundary from the outside, like our thoughts that appear to us inside our heads without seeming to come from outside. In schizophrenia due to a time displacement those thoughts are considered the communication of the other. But normally we recognize them as our own, but they are definitely an almost unstoppable upwelling of information inside us that does not appear to come across any boundaries from the outside. It is interesting that these representations are in the same medium as outside communications. And so our thought is dependent on our socialization, but still they are something that happens inside of us in which we get information, knowledge, wisdom that does not get transferred to us by normal communication routes from our social milieu but just through thinking, sometimes very hard, sometimes by inspiration. We can understand openly-closed systems in terms of higher dimensionality, because each dimension we add allows lower dimensional constraints to be circumvented without violating those lower dimensional constraints. So even if we see ourselves as a closed elliptical system, purely syntactic as Rosen says, then there is still the possibility of higher dimensional access to that realm of closure. In this regard we would like to mention Lawson's work Closure: A Theory of Everything, which attempts to specify the dialectic between openness and closure that occurs in our material realizations of ourselves, and of our representations and artifacts in our ambience. But the key point is that if you have a circle in a three dimensional space then you can get in just by escaping the plane in which the circle forms a boundary, if you have a bubble in four dimensional space then you can get inside the bubble by traversing the fourth dimension without bursting the bubble. And that is precisely what higher complex algebras allow. Quaternions are the group structure of four-dimensional space. So complex numbers in general introduce orthogonality and independence with conjunction into the normal system that is Euclidian and Algebraic. By losing some properties of algebraic systems we are able to introduce four dimensionality into the heart

of this system and thus allow oracles to appear as singularities within that system. This also opens up the possibility of the special systems, which have been described elsewhere as Dissiaptive Ordering ala Prigogine that are related to conjugate complex numbers, Autopoietic Symbiotic ala Maturana and Varella (corrected by staying true to the mathematics of non-commutative Quaternions), and Reflexive Social ala John O'Malley and Barry Sandywell that are expressed by the non-associative Octonions. This series ends with the Sedenions that lose the division property and are the image of the Emergent Meta-system embracing all the prior levels of hyper-complexity in a single natural cycle of relaxation from high anomalous organization. All of these Special Systems are self-organizing. And Self organization is seen as the property of knots, they are organized against themselves. Most knots are hyperbolic. And most knots are merely braided tangles that have been reconnected at their ends to form a continuous loop with the discrete but movable points of crossing as a natural digitalization. Thus we see suddenly the reason that the Lie algebras are associated with the divergence of the hyperbolic, because for organization there is both braiding and unbraiding and this happens at the level of association. Note that Category Theory is associative and not commutative and so it describes a lot of math but not non-associative math. When you lose the associative property then it matters who sets next to whom at the dinner party. In other words it is only when you lose the associative property, and thus go outside of Category Theory confines that we get social phenomena. So Category Theory cannot describe everything in the Nomos.

But it is interesting that prior to the establishment of the special systems based on Euclidian Geometry and Normal Algebra by the introduction of the imaginary levels there is already the three primal kinds of system at play. And it is of interest that we an see all three of these as playing a part in the arising of the Dissipative Structures that are negatively entropic described by Prigogine. First of all Dissipative Structures have boundaries and tend to be convex and closed partitioning themselves into the realm already encompassed by their expanding boundary and the ambience which they are gobbling up and transforming into their own organization. That organization tends to come from a singularity inside the territory of the dissipative structure and seems to emanate outward. Thus in some sense they are openly-closed with regard to the incursion of organizational patterning. But at the boundary where they are converting their environment into themselves we get a hyperbolic wave that is unbraiding what ever organization there is in the environment and re-braiding it into the organization that is inside the dissipative ordering special system. Thus the Dissipative Ordering special system can be seen as an interesting combination of the three archetypal systems that appear with the deconstruction of the ideal system into the meta-systemic field through the violation of the independence of the four Aitions. And then once you have the Dissipative Ordering Special System that combines these three archetypes of the system together in a special configuration, then we can begin conjuncting them to get the Autopoietic Symbiotic Special System and the Reflexive Social Special System. So although we see that the character of these special systems is dictated by the hypercomplex algebras and other mathematical or physical anomalies like non-orientable surfaces, or Solitonic solutions to physical equations, or in number theory the perfect, amicable, and sociable numbers, the very first special system actually is a combination of the three primal systems images that appear in the meta-system breakdown we see in

Geometry and Algebra.

What conclusions can we draw from this finding that the conjunction of the archetypal systems within the meta-system is the basis of the second order geometric-algebraic (Complex-plane and Mobius strip) anomalous system beyond the real numbers that expresses itself physically as a soliton. What we see is that these meta-systems like language and the ambience are formalizable because mathematics has already done it. However they are merely contrary to our expectations in their composure. We expect normal algebra and Euclidian geometry. They are Newtonian and all we need is calculus to make sense of that worlds physical phenomena. But as soon as we go into relativity theory and quantum mechanics then the assumed structures of experience are brought into question in a fundamental way. So we need to understand the structures of the meta-systemic field after the breakdown of the axiomatic platform through the attempt to systematize it through itself. Basically as shown in my dissertation axiomatic platforms need to systematize each other and not themselves if we want to avoid these problems, but then the meta-system becomes the medium through which the axiomatic platforms communicate. That communication needs to be translated. And it is the meta-system that provides the lines of communication and all the resources that the entailment systems built on the axiomatic platforms need to carry out their building programs that produce theorems from premises and lemmas along the way. And we can see that they can be used to model each other as Rosen says, and we can use Category theory as a basis for understanding that modeling itself. But we have learned that Category theory itself has its limitations, in as much as it assumes at least the associative property and we do not always have that property when non-associative algebras are found and even zero divisors appear.

When we separate out the meta-system, from the mass, from the inverse dual of Being which is Beyng (the province of sematic value), and we recognize both the meta-levels of Being and the Peirce/Fuller principles then suddenly we have a much wider field to understand anomalies such as the Special Systems and how they can arise when the various primal systems are configured to work together in the dissipative special system, that is then conjuncted together in twos and fours to give rise to the autopoietic and reflexive special system. And just as Rosen wanted to increase the scope of science by including richer forms of entailment which allow us to define component structure and function, so to we can understand it even better if we recognize the formalizations that we already have of the meta-system and put them to use in our modeling endeavors. Those models are not going to be necessarily commutative, and associative, and they are not going to necessarily be just open or closed, but rather than recursion (extension) we will have to recognize the *incursion* (intension) of self-organization within the openly-closed system at some dimensionality, and the way we understand the dimensionalities concrete embodiments is through the hierarchy of the schemas. However, all the relations between the various schemas are conjunctive, and so they form an autopoietic and reflexive ring. They are the medium that gets warped as we go from Hyperbolic (animism? capitalism?) to Euclidian (flat or parabolic, resource, and commons stewardship; See William Corlett's Community without Unity; mythopoietic polytheistic with service of the gods?) or Elliptical (monotheistic, totalitarian, as communist or fascist extremes?). Anticipative systems that are living, conscious, and social at once are parabolic within the time

dimensions. Our bias is toward anticipatory systems because for us as Heidegger says the future takes predominance. But in past Indo-European societies which had no differentiation between past and future but only peterite or closed and still open, the parabola was toward the past as seen in the orlog, the sedimentation of what has happened that can be remembered and recalled from forgetfulness and oblivion. Science has opened up the past far more than it has opened up the future even though we are predominately future oriented in our time, i.e. oriented towards progress, toward process improvement.

At this point it is worthwhile mentioning that in Heidegger's Being and Time there is an unexpected mapping between existentials and ecstatic horizons of time. Essentially understanding (verstehen) is projection which is mapped to the future, and foundness (befindlichkeit) is thrownness which is mapped to the past. The problem comes with the mapping of fallenness (verfallen) to the present because this is the obverse of the three existentials that include discourse (rede) which appear negatively as idle-talk, ambiguity and curiosity. This means the existential of discourse (rede) does not bet mapped to a horizon of time, and what is mapped to the present is a mixture of the existential in their negations. This is a curious asymmetry between the existentials and the temporal horizons. It is possible to explain this asymmetry if there is a fourth moment of time which is the virtual co-now related to mythos which is related to discourse. This makes sense if there are four moments of time and we have transitioned out of the metaphysical to the heterochronic era. But within the context of Being and Time as an example of an attempt to end metaphysics it does not make much sense because existentials do not line up with temporal ecstatic horizons as we would expect. In the secondary literature on Heidegger I have not seen anyone mention this anomaly. But this is another example of an anomaly that sends us into a meta-system. There are three major existenitals and three major temporal ecstasies and we would expect them to be related to each other, but instead there is an asymmetry in Heidegger's view between them that suggests that there is a fourth moment of time.

The deeper theory of everything must depend on the opening up of these hither to ignored or closed realms of inquiry that are broader. Depth is dependent on the broadness of our thinking and the founding of the theories of the schemas on what twentieth century mathematics found to be the structure of the Nomos which is far more variegated than we expected. A broad overview of mathematics now shows us that we have a wide range of possible nomic models to use to support our theorizing, and it is the anomalous parts of that structure that are the most valuable as a explanatory basis, for local phenomena that violate global push toward entropy. If we are going to understand that and how the schematic tattvas play a role in giving those special systems viability by combining the tattvas via linkage propositions, and synthesizing artificial schematic configurations to test via simulation so that we design out of the tatvic building blocks types of artificial systems that never existed in nature, as we do all the time when we produce cultural artifacts. But so far all those cultural artifacts have to be maintained by us and none of them are even autonomic.

We must distinguish entailment from explanation and realize that the depth of entailment does not necessarily equal depth of explanation. Strevens has given us a view of depth of

explanation independent from depth of entailment in his book Depth. The link between theory, and mathematics and empirical evidence in formal models is only there as a means to explanation and in some cases prediction for simple mechanistic systems. Autopoietic Systems are mostly closed except for perturbations and their oracles and thus not predictable in a mechanistic fashion. Reflexive systems are even less predictable. Basically we move from determinism to probabilities to fuzzy possibilities to propensities as we move up the hierarchy of the Special Systems. Normal mechanistic systems are determinate and can be predicted deterministically by calculus according to the Newtonian methods. Dissipative Structures are probabilistic, Autopoietic Systems are rough fuzzy, and only understandable through possibilities and fuzzy minima across alternative universes. Reflexive Social systems are based on propensities and the habitus. At the emergent meta-system level we have singularities that exist as zero divisors which is the level of Ultra Being and the phase transition to existence. All the various Special System are in fact images of existence rather than the illusions of Being, but when we look at them from the view point of Being then we see them in terms of the different kind of mathematics that are available for trying to understand these various kinds of special system. Different kinds of mathematics become relevant at the various levels and are associated with the meta-levels of Being.

It should be noted that normally the kinds of Being and the Peirce/Fuller principles are interleaved with each other, just as the kinds of Being are often seen as interleaving with the special systems or the roots of Being. The interleaving with the roots of Being allows us to describe sources of Being in Indo-European language, the interleaving with the principles allows us to describe the limits of the nomos, and the interleaving with the special systems allows us to describe the anomalies in the physus (or more properly phusis). So the meta-levels of Being span the three regions of Logos/Nomos/Physus. However it is only when we treat the Peirce/Fuller principles as orthogonal to the kinds of Being and see category theory as the various meta-levels of the relata that the design field is revealed within which all schematic configurations of tattvas and their linkages and their syntheses must be actualized.

The deeper explanation that is possible is in my own opinion related to this field of schematic design possibilities that comes to full fruition only at the level of Hyper Being or Difference via the quadralectic based on the unfolding of monolectic, dialectic and trialectic to the next level beyond that envisaged by Hegel but which we see worked out in Blake as the Four Zoas.

Appendix: addition of hypothetical schemas to linkage propositions of Len Troncale

See “Elaborating Linkage Propositions with Linkage Hypotheses based on General Schemas Theory, Special Systems Theory, and Emergent Meta-systems Theory”

https://www.mediafire.com/?f25c6v87qai72c4

Len Troncale has produced a draft series of Linkage Propositions to which elaborations have been added in italics based on General Schemas Theory and Special Systems Theory. Kent Palmer developed General Schemas Theory and Special Systems Theory as well as Emergent Meta-systems theory independently. See http://kentpalmer.info This elaboration shows the relation between Troncale’s Linkage Propositions and the theories of Kent Palmer expressed as Linkage Hypotheses.

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