

On The Social Construction Of Emergent Worlds:

The Foundations Of Reflexive Autopoietic Systems Theory

Part 1: The Foundations

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1. Abstract

This paper attempts to lay the foundations of reflexive autopoietic systems theory as a specialization of general systems theory. An autopoietic system is a closed cognitive-living system as defined by Maturana and Varela. A reflexive autopoietic system is, by definition, social. It can look at itself and act upon its organizational processes. Where the autopoietic system is homeostatic maintaining its own organization as a variable, the reflexive autopoietic system is heterodynamic, meaning it is ecstatic in its variety production. This essay seeks to provide a framework within which the relations between these different more specialized kinds of systems may be understood in relation to each other.

2. Keywords

Autopoiesis, Reflexive Social Theory, Formal-Structural Systems, Virtual Reality, Software Methodology, Self-Generating Component Systems, Worldmaking

3. Disciplines

General Systems Theory, Theory of Emergent Worlds, Software Engineering, Systems Engineering, Ontology, Theoretical Sociology, Theoretical Psychology, Constructivist Artificial Intelligence, Artificial Life and Artificial Intersubjectivity

4. Introduction to the General Theory of Worlds

This paper will attempt to lay the foundations of Autopoietic Reflexive Systems Theory. By laying the foundations is meant situate this special theory in relation to General Systems Theory. Laying the foundations does not mean providing first principles. First principles are independently verifiable foundational statements from which everything we say might be derived. After the proof of Godel this enterprise has been given up as impossible. So laying the foundations must come to mean something different for us. Our work of laying the foundations recognizes that ultimately all foundations of Formal systems rest on quicksand. However, following Rescher, we can postulate that any axiomatic system may be considered as a network, analogous to the hermeneutic circle. So laying the foundations means continuously exploring the network of founding principles in order to sharpen our interpretation of their consequences. Laying the foundations, in these terms, is an effort that makes manifest the hidden implications of our network of assumptions. In our case, that which we are interrogating is itself a way of manifesting things called a system. Thus, laying the foundations here refers to manifesting something about a form of manifestation. As a manifestation about a manifestation, our enterprise becomes a philosophical, ultimately ontological, endeavor. It asks, “What is a Reflexive Autopoietic System?” Since a Reflexive Autopoietic System (RAS) is, by definition social, this also becomes an exercise in grounding sociological theory. However, the RAS is in some sense a minimal social machine, what Deleuze and Guattari call the *Socius*. So here we are speaking also in terms that Systems and Software engineering disciplines may interpret in terms of the interaction of distributed autonomous agents. This is to say that our study is interdisciplinary to the extent we are looking at many different systems from specialized disciplines which exhibit social properties, as for instance Minsky’s *Society of the Mind*. It is meta-disciplinary to the extent it is a philosophical exploration of the metaphysical foundations of social systems. It is trans-disciplinary to the extent that it posits that the social, as the epitome of the emergent, is the basis of the manifestation of all systems.

General Systems Theory (GST) treats all possible systems. A system is a gestalt for a particular observer which exhibits showing and hiding relations. Thus, a system

is a certain form of manifestation which has the attributes defined by Nicholas Rescher¹:

Lambert contrasted a system with its contraries, all “that one might call a chaos, a mere mixture, an aggregate, an agglomeration, a confusion, an uprooting, etc.” . . . And in synthesizing the discussions of the early theoreticians of the system-concept, one sees the following features emerge as the definitive characteristics of systematicity:

1. wholeness: unity and integrity as a genuine whole that embraces and integrates its constituent parts
2. completeness: comprehensiveness: avoidance of gaps or missing components, inclusiveness with nothing needful left out
3. Self-sufficiency: independence, self-containment, autonomy
4. cohesiveness: connectedness, interrelationship, interlinkage, coherence (in one of its senses), a conjoining of the component parts, rules, laws, linking principles; if some components are changed or modified, then others will react to this alteration
5. consonance: consistency and compatibility, coherence (in another of its senses), absence of internal discord or dissonance; harmonious mutual collaboration or coordination of components “having all the pieces fall into place”
6. architectonic: a well-integrated structure of arrangement of duly ordered component parts; generally in an hierarchic ordering of sub- and super-ordination
7. Functional unity: purposive interrelationship; a unifying rationale or telos that finds its expression in some synthesizing principle of functional purport
8. functional regularity: rulishness and lawfulness, orderliness of operation, uniformity, normality (conformity to “the usual course of things”)
9. functional simplicity: elegance, harmony, and balance, structural economy, tidiness in the collaboration or coordination of components
10. mutual supportiveness: the components of a system are so combined under the aegis of a common purpose or principle as to conspire together in mutual collaboration of its realization; interrelatedness
11. functional efficacy: efficiency, effectiveness, adequacy to the common task.

These are the definite parameters of systematization. A system, properly speaking, must exhibit all of these characteristics, but it need not do to the same extent -- let alone perfectly. These various facets of systematicity reflect matters of degree, and systems can certainly vary in their embodiment.

1.N. Rescher, *Cognitive Systematization*. Rowman & Littlefield, Totowa New Jersey, 1979, pages 10-11.

Thus, we do not associate a system with just any object as many theorists have done¹. A system contains objects and embraces them with specific showing and hiding relations as befits a gestalt which exhibits the characteristics laid out by Rescher to some degree. In fact, it is clear that there are a series of ontological levels of which the system is merely one among many. These levels are called ontological emergent levels.

Table 1: *Hierarchy of Emergent Ontological Levels*

LEVEL	Locus of Manifesting	Way of Manifesting	Example
Primitive <i>Structural Theory</i>	Pattern	Information, Fact, Assumption	Color, Texture, Tiling
Object <i>Formal Theory</i>	Shape	Formation, Production, Design, Concept	A thing
System Systems Theory	Display, Gestalt, Showing & Hiding	Presentation, Performance, Observation, Theory	Television show, Commercial, or Play
Meta-system <i>Meta-systems theory</i>	Constellation, Collection of shows	Multimedia, Montage, Collage, Paradigm	Circus, Multi-Channel Entertainment, Festival, Department Store, Convention, Operating System, Mission
Domain <i>Domains Theory</i>	Framework, Architectonic	Environment, Market, Enterprise, Epistemes	State, Economy, Discipline, Corporation
World <i>Worlds Theory</i>	Enfolding, Encompassing	Fourfold (Gods, Mortals, Heaven, & Earth), Epochs of Being	Global Economy, World Government, Planetary Ecology

1. See Klir, ASPS

Reflexive Autopoietic Systems Theory

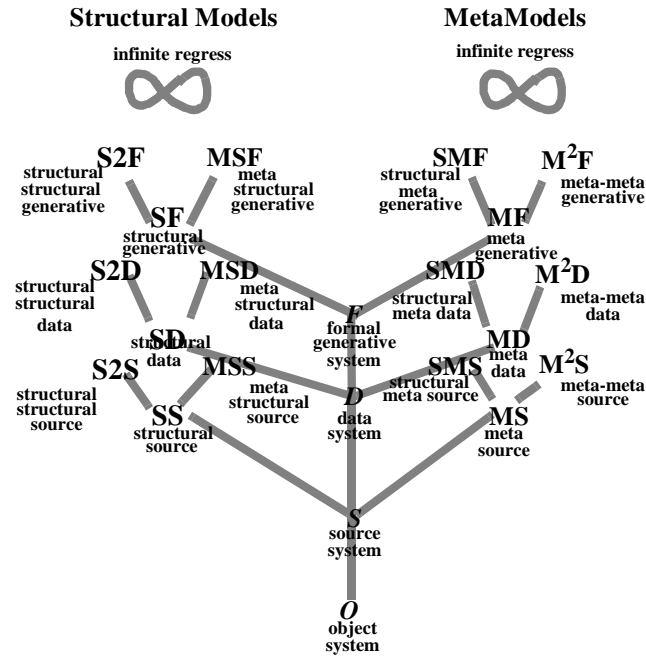
LEVEL	Locus of Manifesting	Way of Manifesting	Example
Universe <i>Universal Theory</i>	Totality, Deformed Spacetime, Quantum Soup	Universals, Laws of Nature, Theory of Everything	Everything under the Suns of all the Galaxies
Pluriverse , Multi- verse <i>Reality Theory</i>	Matrix, Detotalized Totality	Possible universes with different universal constants or different laws of nature, Theory of all possibilities	Plurality of Universes, Deep Ecology Rights of Species to be undisturbed, Includes all current anomalies

Each of these ontological emergent levels have their own way of manifesting. Any particular focus of attention may be seen as embedded in any one of them or all of them. But it is important to keep them separate from each other in our minds. Objects are not systems, and systems are not meta-systems, domains or worlds. Thus, GST needs to be understood as a discipline that treats all of these ontological levels. In fact, we should, within that discipline, replace the System in GST with the particular level of concern, or we should restrict GST to dealing with its particular ontological level and develop other disciplines to deal with the other levels in the way that GST deals with the Systems ontological level. In fact, the “General” added to the beginning of Systems Theory is an attempt to cover a multitude of sins. It is the only indication we have that this discipline might deal with more ontological levels than just systems.

Engineering practice is here perhaps ahead of current thinking of the sciences. The relation between systems analysis and mission analysis is fairly well recognized in the Systems Engineering discipline. Missions are accomplished with many systems acting in concert. Prior to the analysis of the system comes mission analysis. This is a recognition that every system plays a role in a meta-system or mission. In Software Engineering, the production of meta-systems such as operating systems that allow many application systems to operate at the same time are well known and understood engineering practices. In both Software and Systems Engineering the practice of Domain Engineering as a part of the reuse initiative is becoming a standard practice. It is clear that Systems and Meta-systems belong to classes, and that savings can be had by designing the domain rather than the individual system and meta-system. Also with the advent of Cyberspace and Virtual Reality, the

design of worlds is just starting to become a viable kind of Engineering. Virtual worlds will encompass many domains, meta-systems, and systems all under the same rubric. So within engineering these distinctions are slowly being made on an ad hoc basis. But within academic disciplines, these differences and similarities between emergent ontological levels are not well appreciated.

Figure 10: Klir's set of model types for general systems theory.



In order to lay the foundations for Autopoietic Reflexive Systems within the overall discipline of GST, it is necessary to understand what GST itself is. Systems appear in specific disciplines or domains. General systems theory treats these domain specific systems at a level of abstraction that is beyond the specific domains in which systems are concretely embodied. Thus, we can see general systems theory operating at the meta-system level looking at abstractions of systems taken from different domains. This means that GST really involves an interaction between different ontological levels. However, it is also clear that GST does not treat worlds, and it only treats objects to the extent it reduced systems to objects or to the extent that objects appear as parts of systems. A formal-structural system also operates between different levels. Formalism defines objects but cannot deal with time. Structuralism is needed to deal with time, and it posits primitives that cohere to make up the object and allow the object's transformation to be tracked across discontinuous change boundaries. When all the structural transformations are seen to be operating together dynamically as a system, then we have a formal-structural

system. So notice here that formal-structural systems tie together three levels of the ontological emergent hierarchy, and GST ties together three levels of the hierarchy, both overlapping in their coverage of systems. The two combined give us something like George Klir's General Systems Problem Solver which abstracts formal-structural systems from domains under the auspices of a meta-system. In the case of Klir, the meta-system is something that produces the architectures of formal structural systems and allows them to be compared in terms of his epistemological framework. That framework allows General Systems Theory itself to become a domain. Notice how the set of emergent ontological levels working together allow this discipline to appear as a viable meta-discipline within the landscape of scientific endeavors.

What is missing in this is a discipline of Domains, Worlds, Universes and Pluriverses. We can attempt to supply this missing element when we note that at each level there is a level of conceptual abstraction that provides some kind of

Table 2:

Primitive	Fact
Object	Concept
System	Theory
Meta-System	Paradigm
Domain	Episteme
World	Interpretation of Being
Universe	Theory of Everything
Pluriverse	All unexplained anomalies. What lies beyond the theory of everything.

or the theory of No-thing

unification. At the level of the world we move beyond epistemology into ontology. Here we say what exists and in doing so, give an interpretation to Being in Heidegger's sense which sees Western history as a series of epochs with different interpretations of Being. The Universe has a theory of everything associated with it which is based on the interpretation of a given worldview. Finally, the Pluriverse ends up being the catch-all category for everything that lies outside what is explainable by a theory of everything. For instance, what were things like before the Big Bang? This question is strictly speaking outside the real of scientific theorizing. The possibility of a plurality of universes also inhabits this category of theoretical anomalies relegated to the multiverse. Thus, we might posit that there must be a Discipline that might be called a General Worlds Theory (GWT) which

encompasses all domains in worlds and projects the universe as perhaps one of many possible universes. This theoretical discipline is important to cosmologists and also to anyone attempting to study different worldviews as well as how our own worldview changes. It is also becoming important as a discipline in relation to Virtual Reality or Artificial Reality in which different worlds are being designed and built. The whole concept of changing the rules or constants by which the world operates and obtaining different sorts of worlds is fascinating and becoming ever more feasible as we produce simulated worlds in cyberspace. Cyberspace is the generic term which covers the interactional realm of all computer mediated communication and interaction. Virtual Reality is specifically when one creates dynamic inhabitable spaces or worlds. From the point of view of Virtual Reality, there may be many worlds, and all the worlds that exist make up the Virtual Universe. All the possible worlds that could be designed and built make up the Pluriverse. Of course, every world contains many meta-systems that support myriad systems and objects composed of primitives. Each of these emergent ontological levels may be nested to any level of depth. But what is interesting is that finally technology has reached the point where we are actually discussing the design of worlds so that World Theory as encompassing formal-structural systems and general systems theory has become a viable discipline. When we begin talking of standards for different worlds to communicate with each other, we will then need the extension of Universe Theory and perhaps the concept of the Pluriverse as the source of spawning of new universes within the realm of cyberspace.

Thus, in our approach to defining autopoietic and reflexive autopoietic systems, we begin with the general description of cyberspace as a realm in which artificial life and intelligent artificial life might inhabit. These virtual worlds give us an experimental realm in which all kinds of different lifeforms exist which are disconnected from what exists in our designated-as-real world. We are going back to the point of the Burgess Shale, only this time the explosion of different forms is occurring in cyberspace, not in designated-as-real space. In fact, we might describe a hierarchy of levels which shows how the virtual world relates to the real world. That hierarchy has an ontological basis. There are four meta-levels of Being as we move away from actual beings we encounter in the designated-as-real world. As Heidegger says, there is an ontological difference between beings and their Being. Being as a general characteristic of all beings may be separated and treated as a meta-characteristic. This meta-characteristic of all beings itself has structure. That structure is the four meta-levels of Being. Those meta-levels differentiate the modalities through which human beings relate to everything within a world. Each

modality has a specific kind of technology related to it. For beings, the key difference is their ontological difference from Being. It is from Being that they draw their designated Reality because the concept of Being contains the sub-concepts of Reality, Truth, Identity and Metaphor. Once that is established, then those beings may be seen as embedded in the illusory continuity produced by ideation which sees them as ensnared in a formal system. When we look closer and drop to the next meta-level, we see that underlying the stasis of the formal system and implied in the steps of its proofs is the formal-structural system that has dynamism. At this level, humans relate to other entities via a different modality, and it is at this level that technological manipulations of entitled occurs. The formal-structural system has the structure of the general computing device and thus gives us the basis of the hardware infrastructure of cyberspace. Looking still closer, we see that there is a further meta-level which allows technological systems to play together and coordinate their activities. This level is called meta-technological and is the realm of software. Human beings relate to entities differently with respect to this level through a modality called the in-hand. This is the level where what Derrida calls DifferA~~n~~ce appears. Merleau-Ponty called this kind of Being: Hyper Being. It is the cancellation of Sartre's Nothingness and Heidegger's Process Being. Heidegger called this ~~Being~~ (crossed out). At this level what Michael Henry calls the essence of manifestation, or pure immanence fails to appear. Looking still closer, there is yet one more meta-level of Being which Merleau-Ponty called Wild Being. Deleuze and Guattari have explored this level in their study on Capitalism and Schizophrenia called Anti-Oedipus. This is the level where Artificial Intelligence emerges. Human beings relate to entities through this level of Being by a modality called out-of-hand. It is also the level where proto-technology appears which is really a nostalgia for the world before technology. Each of these levels of being define the way in which entities within the world may be seen by humans who project the world those entities inhabit.

Table 3:

beings in the world	Has a modality in relation to observer	Ontological difference	Designated as Real
Being ¹	Present-at-hand	Illusory Continuity	Formal System
Pure Presence			

Table 3:

Being ² Process Being	Ready-to- hand	Technology	Formal- structural System, Hardware Level
Being ³ Hyper Being	Out-of-hand	Meta- technology	Software Level
Being ⁴ Wild Being	In-hand	Proto- technology	Artificial Intelligence Level
beings in virtual worlds	Has a modality in relation to the observer	Ontological difference	Cyberspace, Virtual Reality Level

However, what we notice in this sequence is that it turns round on itself like a mobius strip. Cyberspace beings also have an essential relation to these meta-levels of Being. Because as we defined each level, we moved from no hardware, to hardware, to software, to AI. The essence of AI is that it uses software systems as a machine, like software, in turn used, hardware as its underlying machine. At the point where AI appears, the animated conceptual world has torn away from all constraints of the real world. Thus. we can posit virtual worlds that deify all the laws of the designated-as-real world. The entities that inhabit these worlds are artificially living intelligent beings, i.e. autopoietic. The world of cyberspace is the mirror image of our designated as real world but existing on the other side of the surface of the meta-levels of Being. We posit that there is again an ontological difference between cyberspace entities and Being. We further posit that every cyberspace entity can be seen in terms of each of the modalities associated with the meta-levels of Being. The real difference is that they are looking at the mirror of Being from the opposite direction than we are looking at it. They see the AI level as closer to them, and software further away, and hardware still further away. They look out across this barrier produced by the meta-levels of Being and see the illusory continuity of pure presence as being precisely the illusory continuity of their world produced by the computers that are running the software which allows them to be insulated from the designated-as-real world. So at this point our perception of the difference flips, and we see that there is no real difference between the entities in the designated-as-real world and the inhabitants of cyberspace in that both of them are enmeshed in an illusory continuity, one produced by ideation and the other animated by the computer and software technology that allows virtual

worlds to disconnect from the designated- as-real world. It is clear from this that cyberspace is an imitation of the real world, and as such, a production of infinitely many virtual worlds which mirror the real world across the divide of the meta-levels of Being. Both cyberspace and real entities are related to that mirror though ontological difference. But the designated-as-real world is opposite the cyberspace worlds in many respects. The virtual worlds are able to simulate the real world as in David Gelertner's vision of Mirror Worlds. Or they are able to tear free and simulate worlds that could never exist in our universe. Thus, they are able to simulate other possible and perhaps parallel universes from the pluriverse. The theory of Worlds is based on this flipping of the ontological structure of our world over to reveal the possibility of another discipline that is involved in World Design and World Identification and Reconstruction (the two major problems of GST as defined by Klir) which is parallel to the efforts of General Systems Theory in our own world.

World Theory (WT) including the design of worlds and the reconstruction and identification of worlds attempts to build or see how worlds are built. It builds worlds out of objects composed of primitives that allow structural changes. It contains systems and meta-systems of these objects. But more importantly, it is a theory directed at the understanding of domains within worlds and how they interact to form a world. And also, it is concerned with how worlds interact to form a universe and how universes appear out of the real of all possible universes or the pluriverse. World Theory has to be ontological at its basis. Just as GST has epistemological levels, so WT has the levels of the ontological emergent hierarchy and the meta-levels of Being. World Theory is about how human beings relate to higher meta-levels of Being and how they interact with each other and artificially intelligent beings within cyberspace which is on the flip side of the ontological inversion layer. Since humans can communicate with each other across cyberspace, they may appear as if they were on the other side of the mirror from the point of view of other humans with a different access port to cyberspace. The artificially intelligent creatures somehow inhabit the interstices between the access ports to cyberspace. Thus, we can change our perspective and the cyberspace environment as the designated reality. We can experience the real world as virtualized. This is because for us, as social beings, the major impetus is for communication, and cyberspace is a new medium for communication that is two-way. Thus, when we give reality to this socially constructed realm and give it priority over the real world, we get an interesting relation between ourselves and the inhabitants of cyberspace. From the point of view of others, we are the inhabitants of cyberspace

along with whatever artificially intelligent and living, autopoietic, things we can construct there. This new medium quickly becomes the designated-as-real world because it is all encompassing. It encompasses the whole world. It is a social world where global communications is giving far flung people instant access to each other who could only with great difficulty meet each other in person. The work of the knowledge worker quickly becomes the time he spends dealing with cyberspace and its human and non-human inhabitants. The social nature of cyberspace calls us to attempt to understand what are called reflexive autopoietic systems. These are social systems which embody the property of emergence. They do not just organize themselves, but also can reflect on themselves and re-organize themselves. They are not just self-constructing, but other-constructing in that they construct each other in the process of the social construction of reality. What we share with the artificially living and intelligent inhabitants of cyberspace is that we and they may participate in reflexive autopoietic systems. We construct them, and they will construct us. They are embedded wholly in cyberspace across the ontological divide from us. We are dipping into cyberspace from various ports around the world. But we are both enmeshed in it together. We may think of ourselves as machines if we go back before the arising of the distinction between humans and machines as Deleuze and Guattari urge us to do. So the difference between us and them is merely a matter of the structural components. We are both intelligent living organizations, one based in carbon, the other in silicon. However, what we gain from considering ourselves as autopoietic systems embedded in autopoietic reflexive systems that produce worlds is that we get a better view of our exact relation to proto/meta-technology. That relation makes it possible for us to produce cybernetic autopoietic systems which we see in the looking glass of cyberspace.

Table 4:

Hierarchy of Emergent Phenomena

Quark
Fundamental Particle
Atom
Molecule
Macro-Molecule
Cell
Multi-celled Organism
Multi-organism Groups
Society
Gaia?

The General Theory of Worlds (GWT) seeks to understand the structure of all possible worlds, not just those within the universe of actualized worlds. We posit that what projects a world, what Heidegger called Dasein, being-in-the-world, is the social reflexive autopoietic system. Thus, we cannot understand all possible worlds without understanding the origin of those worlds. We may say that the understanding of the Reflexive Autopoietic System is the actual foundation of not just GWT, but also GST which includes all formal-structural systems. We might express this by saying that we have turned upside down the phenomenal emergent hierarchy which stretches from quarks to Gaia. We might well posit that the actual embodiment of Gaia is the cyberspace world network, not any esoteric vital force encompassing the planet. It is the implementation of what Teilhard de Chardan called cyberspace the Noosphere. Desan attempted to develop a phenomenology of this Planetary Man. What we can say is that our study is based on an intersubjective phenomenology which sees the all the phenomenal emergent levels being differentiated out of the social. The only reason the other emergent levels can be isolated is through the intersubjective process of science by applying formal-structural principles to objects at different emergent levels. One level's primitive is another level's object. At each level there are systems and meta-systems operating. Different disciplines explore each level as their own domain. All the levels together comprise the world which, looked at from a scientific point of view, attempts to be seen as a universe. Where science reaches its limits we meet the pluriverse. Our intersubjective phenomenology turns the phenomenal emergent levels up-side down and sees the social rooted in the lifeworld as the basis of all the other levels that can only be seen through social process. That social process has a minimal form called the reflexive autopoietic system which is engaged in by groups of autopoietic systems. The living/cognitive autopoietic systems reflect each other through symbolic interaction and are able to not just organize themselves, but to re-organize themselves. It is in this way that emergence first enters the picture as the appearance of the completely novel thing within the world projected by the reflexive autopoietic systems. Emergent phenomenal levels are merely the history of this projection back before the appearance of the reflexive autopoietic system. This entire view of the universe is based on a possibility that only arises with the reflexive autopoietic system. So that we might guess that our vision of the universe as separated into phenomenal emergent levels is merely a projection of our own intrinsically emergent social nature on the universe. This is related to the Anthropomorphic principle that we see who we are reflected in our image of the universe. Here is another example which has deep implications for the Philosophy of Science. It is similar to the concept within Buddhism that there is no actual

physical reality. Here we say that all phenomenal emergent levels arise out of the social so that the basic building blocks of the universe are socially constructed by applying emergence to the world. This is the same emergence that appears as the spontaneous repatterning of the reflexive autopoietic system experienced as new things coming into existence. As we rewrite the history of our world and as we explore it through science, we project the phenomenon of emergence back on the world as we construct a history of how the universe successively appeared through the emergence of different phenomenally emergent levels which eventually gave rise to the social level of emergence. But actually, historically the view of the world in those terms via the differentiation of scientific disciplines associated with different phenomenally emergent levels is exactly the reverse. Historically viewing things from the point of view of the lifeworld, the phenomenal emergent levels is a story about the world constructed over time by a social process of discovery and criticism.

It is important to distinguish subjective phenomenology from intersubjective phenomenology. From the point of view of subjective phenomenology such as that of Husserl, intersubjectivity is a problem and solipsism is an inescapable theoretical dead end. But intersubjective phenomenology takes the social as a given prior to the appearance of the individual human child which that child, through its development, comes to embody. Levinas, for example, attempted to outline a social phenomenology. Another less well known example is John O'Malley's *Sociology of Meaning*. Sartre deals with many of the problems in his *Critique of Dialectical Reason*. But the pre-eminent treatment is that of Deleuze & Guattari in their *Capitalism and Schizophrenia* series including *Anti-Oedipus* and *A Thousand Plateaus*. In *Anti-Oedipus* they designate as real Desiring Machines and the Socius. They do not give any reality to the individual, but only to emergent levels above and below the individual. This is equivalent to designating-as-real the *Primitive* and *System* emergent ontological levels, but denying reality to the *Object* level. This is a ruse that allows them to produce an intersubjective phenomenological/psychological theory. Different levels of the emergent ontological hierarchy may be designated as real for different purposes. The main point is that they attempted to produce an intersubjective theory rooted in Wild Being. This establishes the vantage point from which all subjective phenomenologies are considered. Once we establish the status of the intersubjective lifeworld, the socius, as primary, then we can set about understanding the structure of the phenomenal emergent levels of discovered entities and the ontological emergent levels which are discovered in the things through the action of our worldview on them. Having reached that point

where an intersubjective phenomenology can be constructed at the highest meta-level of Being, we can now look back and discover the actual structure of the General Systems Theory and its relation to the special cases of Autopoietic systems and Reflexive Autopoietic systems within the context of our General Theory of Worlds.

5. Overview

5.1. Disciplines.

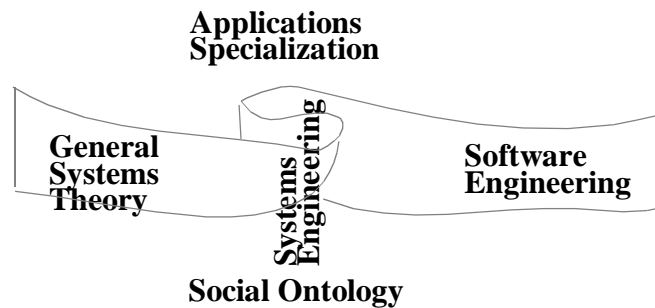
This paper cuts across multiple disciplines. It is an attempt to produce a new basis for understanding systems. In particular, it focuses on reflexive autopoietic systems which are defined as social in character. It strives to turn the normal series of emergent levels of phenomena upside down and establish why social phenomena are the origin of all other levels of emergent phenomena. This strategy directly follows from the work of G.H. Mead in The Philosophy Of The Present in which he identifies the social with the emergent itself. Thus, the very possibility of our recognizing emergent levels within the universe flows from the essence of the social which is the origin of all other phenomena because the intersubjective construction or projection of the world itself comes first before any other phenomena are seen within the world.

We posit that there is an emergent ontological hierarchy which is prior to any emergent phenomenal hierarchy. It is the province of General Systems Theory to deal with the possible interrelations of the elements of this emergent ontological hierarchy. Within the province of GST there are many kinds of specialized systems. We are interested in describing the spectrum of these possible types of systems. As we categorize the types of systems and formalize their relations to each other as we proceed, then we will advance to more and more specialized kinds of systems of which the dissipative, autopoietic and reflexive autopoietic are those with which we are most concerned.

However, this work is seen as taking place in the arena of reversibility between GST and Software Engineering. These two disciplines cannot exist separately. If we take the GST of George Klir, then we see that the architectural structure of systems are produced by computing combinatorial possibilities. We always think of software “systems” and seldom care about software fragments or pieces. Thus, we are dealing with the duality between the most general abstraction of systems on the one hand and the most concrete computational embodiment on the other hand.

Normally, we think that if we have abstract models of something it is understood. But more and more it is realized that embodiments many times exhibit phenomena that do not show up in the theory where dynamical systems are involved. Thus, GST needs Software Engineering just as much as Software Engineering needs GST. The point of reversibility between GST and Software Engineering occurs at the point where Systems Engineering appears. Systems Engineering designs concrete allopoeitic systems which conform to the general outlines proposed by GST and are embodied by Hardware and Software Engineering. All allopoeitic systems appear as a result of these three disciplines combined with application domain experience. By moving into the realm of embodiment from the realm of pure theory, we gain new perspectives on the nature of systems which are not visible when these disciplines are academically separated.

Figure 11:



Thus, we posit that the social is the foundation of the world, and it is inherently emergent, and because of that all other emergent phenomena may appear. That the phenomenal emergent levels are based on ontologically emergent levels. That it is the task of GST to comprehend the relation between the layers of this ontological emergent model and understand the relations between the entities that exist at each of these ontological levels. Also, we posit that it is necessary to understand embodiments of these entities as dynamical systems as well as the general theory so the spectrum between GST and Software Engineering must be considered and not just GST by itself. Once that spectrum is considered, then one must also consider the roles of Systems Engineering and applications or domain specialization.

Thus, this study integrates Ontology from philosophy, Sociology from the social sciences, General Systems Theory, and the technical disciplines of Software Engineering and Systems Engineering. We might characterize this combination of specialties as interdisciplinary inasmuch as each of them contributes from its own findings to the overall field with which we are dealing in this essay. But we must

consider any foundation that unites these disciplines meta-disciplinary because it goes beyond and organizes the specialties. Because it has its foundation in ontology, we can consider our study trans-disciplinary. It is important in this time to recognize the necessity of trans/meta/inter-disciplinary studies where we are essentially attempting to discover the synergy between existing disciplines and explore the mutual ramifications of findings between disciplines.

It is no longer possible to separate engineering disciplines from academic disciplines. The reason for this is that autopoietic systems are embodied, and engineering disciplines deal with embodiment issues as opposed to theoretical issues. Thus, artificial intelligence and software engineering must be considered in the context of systems engineering which are not separated from sociology or general systems theory. All these disciplines are interrelated and inter-embedded because embodiment does not discriminate the lines of disciplines. The domains interpenetrate, and if we only view phenomena from one of them, we miss the real picture and only have shadows to deal with as we attempt to understand autopoietic embodiments.

In this paper we will constantly bounce from one discipline to another in order to attempt to catch sight of the inter-embeddedness of embodiments. This creates problems for the reader who may be tied, at least superficially, to one particular discipline or a few, but not so widely dispersed as it is necessary to deal with here. In order to assist the reader we will start with a particular discipline not mentioned above and ground our discussion in an autopoietic psychology. This should help establish the paradigm from within which this study seeks to operate. In fact, we hope to extend this psychology into a sociological theory that is ontologically grounded and from there extend our field of view into Systems, Software, and Knowledge Engineering as we carefully advance in our process of laying the foundations of reflexive autopoietic systems theory.

5.2. Autopoietic Psychology

The paradigm for autopoietic psychology is set forth in Human Beings as Self-Constructing Living Systems by Ford. In this book he announces several principles which are fundamental to the understanding of autopoietic systems as they are expressed in human beings in terms of personality and behavior. As we go through these principles, we will notice that they apply equally well to teams or social groups as they do to individuals. Thus, the book that purports to be an autopoietic psychology is actually giving us a paradigm that will allow us to

understand social levels of reality as well. From our point of view, all the autopoietic structures, embedded in the individual in terms of personality and behavior are social constructions during socialization. Therefore, when we look at psychological structures we are looking at the results of social processes. As we review Ford's principles, let us keep in mind the social ramifications of his theory and start to see how we can apply these principles to social systems as well.

- Principle 1: Self-Organization

- Organismic Boundary Conditions

In autopoietic theory we always start with embodiment. Thus, here we begin by discussing the embodiment of the organism as the basis of psychology, but we could also discuss the set of organisms that make up the social group.

- Environmental Boundary Conditions

The autopoietic system is always set over and against its environment. The autopoietic system is closed, and influences from the environment are seen as perturbations of the internal states of the autopoietic system. Ford does not talk about the closed nature of autopoietic system but seems to assume that autopoietic systems are open which is a flaw in his thinking on this point, if true. It is clear that the boundary conditions set by the environment is very important to the existence of the autopoietic system, even though it is basically inward looking and does not care about the environment.

It is possible to see that here Ford may have some inkling of the possibilities lurking in reflexive autopoietic systems theory. In this later theory there is an active interaction with the environment instead of the closure exhibited by autopoietic systems. This active interaction occurs because a special part of the environment, i.e. other social beings, are the means by which the system undergoes reflexions and thus is able to produce re-organizations of itself. Thus, to the extent that Ford sees systems as projecting beyond itself, he is talking about reflexive autopoietic systems.

- Selective Action

“Conditions within and around persons are continually varying and changing, which means that each person's adaptive conditions change from moment to moment. People cannot deal simultaneously with all of the conditions within and around them. . . . It follows that individuals must be able to selectively organize their behavioral repertoire in relationship to selected, currently relevant aspects of their environment. They selectively respond to events impinging upon them, and they selectively initiate activity to identify and produce desired consequences. Because variability of events is sequentially organized in a space-time matrix, individuals may behave selectively, not only in terms of current events, but also in terms of event flow. This capability for selective action, both in terms of current events (what is happening) and past and potential future events (what has happened or may happen), provides humans with especially powerful adaptive potentials.” (page 157)

This selection is explained in autopoietic systems in terms of the homeostatic maintenance of organization as a variable. The fact that an autopoietic system reacts differently in the same circumstance is treated as proof of closure. However, in autopoietic sys-

tems this is never presented as active selection. It is rather seen as a blind side effect of the inward operation of the autopoietic system. Thus, it is really the reflexive autopoietic system that actively selects what is relevant or significant.

- Individual Differences

“Individual differences exist not as fixed, unchangeable characteristics, but as dynamic patterns which themselves exhibit patterns of variation and change.” (page 159)

Each individual is unique. This is the essence of instantiation of concrete individuals which is the basis of autonomy. As Stanford Beer, says the individual human being is the source of variety and the very first cause of variety production is individual differences. Each individual is a specific combination of discrete attributes who developed in a unique set of circumstances. We must cease to generalize and look long and hard at the individual as a concrete manifestation. This means we are not looking at the essence of the individual which is still a generalization. Instead, we are looking at the specific unique combination of qualities. This is termed the Integra. The Integrity of the individual flows from this fine coalescence of qualities and attributes which is more than just a generalized essence that belongs to the species.

- Performance Variability

“People seldom behave exactly the same way twice, even in the same circumstances. At any moment, all of the performance possibilities of which a person is currently capable is that person’s behavioral repertoire.” (page 159)

Once we get past the fact that each specific individual has their own integrity as a historical product, we can speak of the variability of the actions of that individual. People react differently in the same situation and have a repertoire of possible responses which are unique to that individual as well. Thus, integrity has an active face as the integrity of the individual’s actions.

- Interdependent Hierarchical Organization

Everyone’s actions forms a hierarchy of goals and sub-goals which are organized and interdependent. When we consider the whole holoarchy with holons¹ at each level, we see that this applies not just to the organization of the organism as a unique individual, but also to the action train of that individual. The individual is a spacetime eventuality which is organized in space and time simultaneously in terms of a hierarchy of holons. Holons are parts from one perspective and wholes from another perspective. All we are saying here is that they are parts in spacetime, not just in space. So each holon has an extension into time which is its behavior or action pattern.

- Principle 2: Self-Construction

Self-Construction has to do with the ongoing evolution of the Self-Organizing system.

- Selection by Consequences

We make current selections based on the consequences of our prior selections. In self-organization we saw that actions are selective. But there is an interaction with the environment so that the selection comes out of the dialectic between the autopoietic system and the environment. This is accomplished by the autopoietic system perceiving the reactions to or consequences of its actions in the environment. This allows a feedback loop to be established between the organism and the environment with self-reinforcement of actions through feedback.

Here we are not dealing with a strictly autopoietic system which ignores its environment for the most part because of its self-involvement. Here we have a system that is cybernetic, steering itself based on the reactions of the environment to its actions. Thus, we are talking about a reflexive autopoietic system rather than a straightforward closed autopoietic system.

- Developmental Flexibility and Sequencing

1. See Koestler, [Janus](#)

“For a new or different behavior pattern to evolve, it must start with some existing part of the person’s behavioral repertoire. Therefore, some capabilities have to develop before others can be learned.” (page 166)

In the reflection between the system and the environment there is learning and development. The system has degrees of freedom that allow it to negotiate developmental channels, partially choosing its way as it flexibly adapts to its environment and hones its behavior for its niche within the ecosystem.

- Environmental Specificity

“All behavior is performed and learned in specific environments in relationship to specific behavior-contingent events. . . . what is learned is not a behavior pattern but a behavior-environment event pattern.” (page 166)

The environment and the autopoietic system form a greater whole which expresses harmony in symbiotic adaptation of the environment to the system and the system to the environment. The system grows into its niche in the environment, and the environment makes a place for the system. They mutually exhibit fittingness to each other through adaptation until they can be said to be the Same, i.e. they belong together, deserving one another.

- Performance Change

People perform differently from occasion to occasion, so just because someone did something one way one time does not mean that they will do it exactly the same way the next time. In spite of selection based on consequences, there are still many degrees of freedom for the autopoietic system to express its uniqueness. Thus, the fittingness with the environment does not result in the poverty of the autopoietic system’s behavioral repertory. The autopoietic system evolves its behavioral repertory constantly trying variations in order to keep things interesting.

This may be understood in terms of erratic change that is necessary for the system to keep things visible. The system must constantly produce a variety of reactions and pro-actions in order to keep feeling its relation to the environment. It maintains its visibility within the environment and its visibility of the constraints of the environment by continually varying its actions for no apparent reason.

- Capability Change

“Capability change involves the elaboration of the behavioral repertoire itself.” (page 170)

Not only does the performance of particular actions change, but new actions are added to the repertoire of possible actions. This is higher level learning which not just varies actions to react to differences in the environment, but which allows the autopoietic system to develop new ways to interact with the environment by expanding its capabilities.

- Habit Formation

Over and against the variation of performance and the addition of capabilities there is a strong conservative force that expresses itself in the channeling of behavior into habit. The closed aspect of the autopoietic system can be seen in terms of this habit. The homeostasis is really a habitual reaction which seeks to return to behaviors that have already been learned and resists change and learning. Habit balances Performance Variability and Capability Change. Different systems may have greater ratios of retentive behavior or greater ratios of novel behavior. By balancing these two against each other, the autopoietic system may manage its evolution over time.

- Principle 3: Self-Reorganization

Self-Reorganization has to do with more radical changes than continuous evolution. This level is definitely related to the reflexive autopoietic system rather than a mere living/ cognitive system.

- Disorganization Flexibility

This is the ability of the reflexive autopoietic system to stand disorder. The more disorder it can stand, the more capable it is of radical change or repatterning. This signals its capacity to handle emergent events.

Reflexive Autopoietic Systems Theory

- Stability-Instability Ratio

The reflexive autopoietic system must manage the ratio of stability to instability. It must maintain itself on the edge of chaos and thus be able to transform itself without becoming chaotic itself.

- Transition Protection

During radical repatterning, other functions may shut down or become very conservative in order to balance the radical reorganization against the necessities of remaining viable.

Ford has produced a paradigm that is not really autopoietic, but is partially reflexive autopoietic in nature. This is because human beings are social products and thus carry with them the traces of the socialization process such that they act in a manner that is partially cognitive/living and partially reflexive. Everything that is said above about individual humans could be said about social groups only more so. We can add a few characteristics to this list from our knowledge of autopoietic and autopoietic reflexive systems.

- Closure (Self-Organization)

The autopoietic system maintains its organization homeostatically as a variable. This is the fundamental basis of every autopoietic system.

- Cognitive/Living Fusion (Self-Organization)

Every autopoietic system is simultaneously a cognitive system and a living system. There is no separation between these functions. Artificial Life and Artificial Intelligence must be two aspects of the same thing.

- Structure/ Organization Distinction (Self-Organization)

In an autopoietic system there is a clear demarcation between structural units and the organization of those units. The units may be replaced, but the organization is maintained through the appearance and disappearance of the structural underpinnings. This is how the form of the autopoietic system is maintained. It says that structural elements are actually interchangeable. This is the opposite of structuralism that sees structural elements as bridges between transformed forms. Here the form is maintained, and the structural units are changeable.

- Visibility Maintenance (Self-Construction)

Reflexive autopoietic systems maintain their visibility through the production of erratic change and variety. By this, they are constantly exploring the limits of their environment and also drawing attention to themselves.

- Perpetuity and Death (Self-Construction)

Autopoietic systems attempt to maintain themselves in perpetuity. They strive for immortality by definition, but they are bound to be destroyed either from internal or external causes. Thus, death has a particular meaning for autopoietic living systems. Systems that are not living by definition do not experience death. Death has meaning in relation to the concept of continuous existence. The cognitive aspect of the autopoietic system can have this concept of its own survival and also experiences its own demise.

Life and death are totally unrelated. There is no gradual death. Suddenly the autopoietic system is dead (apoptosis), or suddenly it is alive. There are no half way houses between these two states for the autopoietic system.

- Instantaneous Arrival and Departure (Self-Construction)

Autopoietic systems pop into existence and suddenly disorganize. There is no partial evolution into an autopoietic system. Suddenly they are there, and then suddenly they are gone.

- Symbolic Interaction (Self-Construction)

Reflexive Autopoietic Systems Theory

Autopoietic Reflexive systems interact with themselves through symbol systems. This behavior has been elegantly described by G.H. Mead and his successors in Sociology in the school of symbolic interactionism. These kinds of systems are circular and symbol transforming. In them symbols are circulated and transformed and transduced by individual members of the social group.

- Generalized Other (Self-Construction)

The process of mutual coordination of activities within a social group produces in each member a auto-response pattern that represents the hypothesized response of the rest of the group to the members' actions.

- Ecstatic Projection (Self-Reorganization)

Reflexive autopoietic systems are heterodynamic instead of homeostatic. They project plans and are proactive in their self-other relations within their environment.

- Emergent Behavior (Self-Reorganization)

Reflexive autopoietic systems produce and react to emergent events. The social has as its essence the emergent. This is to say that they do not just react to disorganization from the outside, but also produce re-organization in themselves and force it in others. Thus, the reflexive system may be an emergent event for another such system, or it is prepared to react to such an event.

- Worlding (Self-Reorganization)

Reflexive autopoietic systems project a world. That world entails all the different modalities of being-in-the-world which encompasses them. Heidegger called this having a world Dasein, being-there.

- Care (Self-Reorganization)

The core of Dasein is Care for itself and others. It does not reorganize randomly, but its reorganizations are driven by its carefulness.

What Ford affords us is a paradigmatic framework for understanding autopoietic and reflexive autopoietic systems in terms of psychological theory. However, it is desirable to have a theoretical exposition in terms of General Systems and Worlds. If we had such a theory of autopoietic and autopoietic reflexive systems, we would be better able to see the implications across disciplines rather than attacking domains one at a time and having to derive the principles again and prove them relevant to each domain separately. Also, we would be more readily able to see the functors between the different kinds of autopoietic and autopoietic reflexive systems that appear in different domains.

5.3. Emergent Worlds Philosophy

It is of interest that there has been no reapproachment between Systems Theory and Process Philosophy. There seems to be a natural link between these two disciplines which has been ignored by systems theorists in their attempts to gain respect within the scientific community that abjures philosophy. But this is essentially a missed opportunity that it is necessary to redress. What is necessary is a philosophical framework that is based on process philosophy but explains system and so connects to general systems theory. It would also be good if this philosophical framework explained not just evolutionary change but also discontinuous changes, which is to

say not just organization and construction but also reorganization. This is to say we need a framework that allows us to step down from process philosophy to general systems theory to the systems such as Ford is describing within one discipline which is faithful to the need for explaining not just evolutionary changes but also punctuated evolution where genuinely new things appear and can be handled by the systems under study. We found such a process philosophy in the tradition of Whitehead's Process and Reality by looking at what was wrong with process philosophy itself. Process philosophy has the same disease as systems theory which is the desire for scientific respectability. Thus it attempts to take a view of process which distances itself from those processes. This is a fundamental error in process philosophy which is excusable in systems theory. It is an error because we are totally immersed in processes and cannot separate ourselves from them if nature is really based on them. Thus we must re-think process philosophy in such a way that we place at its very basis a process that we are immersed in. This turns process philosophy into phenomenology because the primary and fundamental process is now seen to be manifestation which occurs in a social group. Manifestation to individuals is secondary to manifestation to the group as a whole. Thus science as an intersubjective process is totally immersed in this primary process in which each individual finds their lifeworld as immersed in the They (Das Mann). This is to say the scientific worldview is at its basis a process of projecting a specific world carried out by a specific group of individuals engaged in a social and symbolic interaction. Our process must begin with this primary process of manifestation to the social group and then build from there the concepts of processes as fundamental constituents of the universe. It is an error to posit processes as ontologically founded things separate from the manifestation. This is because positing them as ontologically founded things attempts to point at them in Pure Presence when their actual mode of Being is Process Being. Thus there is a fundamental disconnect between ontologically posited processes and their basis in reality. Instead if we start from the primary process of manifestation and see processes phenomenologically as appearing within primary process then we have a firm foundation in experience for the understanding of indicated processes and can build our process philosophy from there and connect it directly with our GST and to the systems that appear in specific disciplines.

This new way of looking at the connection between Process Philosophy and GST through Intersubjective Phenomenology is called Emergent Worlds Philosophy. It sees primary processes as both continuous and discontinuous in nature and so the concept of emergence is built in at the beginning. It addresses the whole spectrum

of emergent ontological layers and it is concerned with all the aspects of the fragmentation of Being into meta-levels. Because it is focused on intersubjective phenomenology as its fundamental starting point it is concerned with the organization, construction, and re-organization of worlds by the social group out of which the subjects as mutually symboling creatures arise. Within these worlds arise domains, meta-systems, systems, objects and primitives. So Emergent Worlds Philosophy covers what might be called Emergent Systems Process Philosophy which is the basis of General Systems Theory in Process Theory.

From the point of view of our disciplines we see that there is a process by which science does its work and derives its results about the universe. This is a projection of a specific Western worldview. We can also see the projection of that worldview in disciplines concerned with embodiment such as Systems, Hardware, and Software Engineering. Thus we need to be concerned with the processes which deal with embodiment as well. In our approach disciplines that deal with embodiment are equivalent to disciplines that deal with the cognitive aspects of things. There is a fundamental fusion of the embodied living organisms with its cognitive aspects. So to with disciplines there is a fundamental fusion of the theoretical disciplines such as scientific theory as studied by Philosophy of Science and the practical disciplines of Engineering. So we must study the processes of generating embodiments in Engineering just as we study the processes of generating the conceptual models in through Philosophy of Science. Philosophy of Technology balances Philosophy of Science as the discipline that looks at the ways embodiments are produced and within that there is the study of Engineering processes which are in fact very poorly understood because of neglect by academics. Academics in Philosophy of Science study how physicists work but not how engineers work. One of our aims is to redress this imbalance and show that engineering processes which do construction are just as important to study as processes of conceptualization in physics. Engineering processes are mundane. But it is clear that all experimental work done by physicists assumes engineering. Experimentation is the place where embodiment occurs science. Engineers build the experimental apparatuses in many cases or at least it is scientists acting as engineers. Thus there is a fundamental connection even within science between engineering and the advances in conceptualization about the physical universe. So to engineers use scientific results to base their designs and constructions upon. These two disciplines need each other and are in fact inseparable. Thus we see that Philosophy of Science and Philosophy of Technology are in fact inseparable as well.

We posit that the social group that does science/engineering is immersed first and foremost in primary process of manifestation and that their praxis is a specific way of making manifest. That this specific way of making manifest is a secondary phenomena within the overwhelming ongoing manifestation that they discover in their lifeworlds. Science and Technology is a superstructure built up within and engulfed by the primary process of manifestation and all the pictures we have of what processes are whether they are the processes of the scientists and engineers at work engaged in their disciplines or they are processes that are seen as occurring in the world as the supports of objective dynamic systems, all this knowledge of what processes are comes from our immersion in the primary process of manifestation. Thus what Ford speaks of as the principles of self-constructing human beings is an articulation of primary process of manifestation. In order to fully appreciate what he is saying we need to ground his principles in not just system theory as he does but also in processes philosophy which is in turn grounded in Intersubjective Phenomenology which discovers Primary process as manifestation.

5.3.1. A NEW METHODOLOGY

A new methodology is proposed as the basic means of building the process philosophy. This methodology has been developed in the field of psychology and is called Heuristic Research. Heuristic Research is compared to other basic methodologies such as phenomenology, hermeneutics, critical theory (dialectics) and structuralism. A synthetic methodology based on all of these, but emphasizing Heuristic Research, is suggested as the means of building the new process philosophy.

Philosophical systems are often limited by the method used by the architect to approach the project. Here we would like to found our new approach to emergent systems process philosophy on a new methodology. Many philosophies are founded on the methodology of science. Pragmatism is a good example of this. It uses scientific method and also enshrines it as the centerpiece of its philosophy, reducing all human behavior to the supposed way of understanding and acting of the scientist. Other philosophies attempt to generalize scientific paradigms into philosophical systems. Normal process philosophy is perhaps guilty of this. Most of the best philosophy of this century has been based on the insights of phenomenology. Phenomenology is a kind of scientific exploration of consciousness. However, instead of projecting the approach of scientists on everything, or taking the results of scientific investigations and blowing them up to

cover other phenomena, phenomenology attempted to produce a science of consciousness which was adequate to its object. Husserl tried many times to found this science rigorously. And from it has come a wealth of new insights far beyond his imaginings. He was very upset that his pupils did not follow him to continue to build the scientific edifice he envisioned. Instead they got the essential idea and developed it in a myriad of ways that went far beyond his dream. Essentially all of the insights of modern ontology flowed from this project.

The methodology of phenomenology arose from the first scientific studies of psychology which were not behavioral. Husserl adapted the approach of Brentano to his purposes. The approach of Brentano focused on intentionality and how it functioned within consciousness. Husserl took up this focus on intentionality and made it central to his phenomenology. Husserl's students accepted the phenomenological methodology which promised to go back to the things themselves and usually combined it with the other great methodology of the human sciences called hermeneutics. Heidegger was the first to realize that these two methods were complementary. Gadamer developed Heidegger's insights by refocusing on hermeneutics which was originally taken from Schliermacher. Phenomenology takes us back to the things themselves, and then hermeneutics allows them to speak to us through the process of circular interpretation. Hermeneutics and phenomenology work together to give some sense that the things can speak to us with their own unique voice which can be overheard beyond our projections on them.

Yet another methodological strain is that of dialectics and structuralism. Dialectics was developed originally by Hegel out of a close reading of Kant and ancient dialogic methods such as those used in Plato's dialogues. Sartre and Adorno took different but similar directions in order to define the modern equivalent of the dialectical method. In Sartre's *CRITIQUE OF DIALECTICAL REASON* he uses the dialectic on itself in order to develop a new approach to the dilemmas in the Marxian interpretation of Hegel. In *NEGATIVE DIALECTICS* Adorno attempts to develop, in a different direction, the means of seeing the dialectic in action by looking at it negatively through a critical appraisal of its effects. The dialectic gives a diachronic view of the development of complex systems. Another related but different view is that developed by Chomsky, Piaget and Levi-Strauss called Structuralism. Structuralism is a synchronic view of systems which says that as they evolve, they constantly maintain certain deep structures. These deep structures of language, cognitive development, and myth are maintained by redundancy that is

constantly reaffirmed and reconstituted regardless of what changes occur within the system. From this view, dialectical transformation is merely a reassertion of the same pattern at a new level of synthesis. From the structural point of view, the discovery of deep patterns is more important than the understanding of dialectical movements of the system. From the dialectical point of view, the set of contradictions and their resolution is more important.

Here we have enumerated four fundamental methods which have informed much of the development of philosophy in this century. These methods appear in complementary pairs: Dialectics/Structuralism and Phenomenology/Hermeneutics. These pairs are themselves complementary. D/S pair is complementary to the P/H pair. Where D/S explores the external relations between things, P/H explores the internal relations between things. The relations between things are considered as a system that is engaged in self-overcoming, and as it evolves, it continuously reinforces deep structural relations between things that are redundantly reconstituted. On the other hand, those relations are only known through their appearance in consciousness as objects that can be queried about their meaning. That meaning partially appears as the net of diacritical relations between all things within the system. Thus, semiotics, which links the external relations with inner meanings, is important. Phenomenology allows us to get to the things themselves, and hermeneutics allows us to hear what they have to say themselves beyond our projections of what they might say. (Semiotics allows us to understand those meanings as they relate to all the signs in our field.) Dialectics and structuralism allow us to see that field as a whole system which has both recurring patterns and also is evolving over time with occasional discontinuous leaps or repatternings. This complex of methods has formed the core of the development of much of science and philosophy in this century. We must understand it, but also we must be prepared to move on to other methods when the right ones appear.

This complex of methods has the effect of distancing us from experience. It is understandable why this would be the case. In this same century, science was on the rise as the uncontested champion of methods for understanding the universe. Science is based on distancing ourselves from the phenomena we study. The goal is to get a view of objective reality. If the humanities are to get any respect at all, they must find a way to distance themselves from the phenomena as well. Thus phenomenology says that every experience is “experience OF something” so that distancing is built into experience itself. So, we can have a science of consciousness which is just as precise and rigorous as any outward science.

Hermeneutics says we need a hermeneutic circle by which we continuously move between related things in order to appraise their meaning. Here distance appears as the other thing that is necessary for exploring the meaning of any one thing. Structuralism tells us there is a distance between surface patterns and deep structural patterns. When we look at phenomena, the deep structural patterns remain the same and can be understood if we know how to find them. Dialectics tells us that the interaction between elements give rise to whole/part relations that will transform into higher level patternings. In order to understand the part, one must see the whole it is a part of and the internal contradictions that lead to transformation. In dialectics there is distancing by the consideration of the parts in relation to the whole. Distancing is the key to understanding what the methods of this century have in common. Now that we are about to enter into another century, we might consider if there are any other methods that might reveal a new direction that we might explore in order to expand our horizons. Formulating a new philosophy without a new methodological framework is a futile activity as it is bound to revolve in the envelope of all the other philosophies that are based on similar methods.

Fortunately for us, there is a new method that has not yet been applied to the development of any philosophical system. This new method has the good feature that it questions distancing as a basic assumption. Like phenomenology, it has been developed in the psychological realm. But unlike phenomenology, it explicitly gives up distancing as a fundamental tenet to gain acceptance in scientific circles. This new method, which I propose to underlie Emergent Systems Process Philosophy, is called HEURISTIC RESEARCH and is explained in a book by its developer, Clark Mistakes. Heuristic research involves complete identification with the phenomena under study. Therefore, it rejects distancing as a criterion of scientific research. Rather, it develops a research method based on lack of distance or encompassing. Here is how Douglass and Moustakas compare Heuristic Research with Phenomenology:

- (1) Whereas phenomenology encourages a kind of detachment from the phenomena being investigated, heuristics emphasizes connectedness and relationship.

This connectedness and relationship is exactly what has been rejected by science as purely subjective. Unfortunately, it is clear that subjectivity and objectivity are bound together as empty opposites which ultimately are meaningless. The phenomenological tradition has clearly shown that objects are grounded in consciousness without which they would never be seen. Physics itself has not been

able to rid itself of consciousness, and it is fairly well accepted that consciousness plays a role in the outcome of experiments. Those very experiments (Bells Theorem and its experimental proofs) show us that once two entities are related to each other, they remain related no matter how far apart in spacetime they get. Thus, now even connectedness and relationship are gaining honor in physics which worked so hard to disprove action at a distance. It is clear that there must be a place for relationship and connection in our arsenal of philosophical methods. Heuristic research is the first methodology to establish that place. The distancing of phenomenology, hermeneutics, dialectics, and structuralism is transformed under this new method. Instead of establishing a dialogue with the things themselves and using the hermeneutic circle, a more direct means of establishing meaning is used which relies on the relation between the thing under observation and the self. Here the self, the very element banished by objective science, becomes a key tool in establishing meaning. "What does it mean to me?" becomes a key question. The self becomes an important variable in the equation of knowledge again. The redundant patterning of deep structures and the transformations of gestalt wholes, which are clearly part of structuralism and dialectics, is also transformed because the self is seen as part of the whole that are transformed and as being an element in the deep structure. This is an extreme departure as structural and dialectical systems are for the most part seen as objective structures. However, that objectivity depends on intersubjective recognition, which in turn, is a problem. In heuristic research intersubjective connection and relationship through communication is used as a bridge to explore the deep structures where social and mythical deep structures become expressions of the collective unconscious. Heuristic researchers exploring the same problem domain share notes and experiences in order to refine our appreciation of those deep structures. And in dialectics the transformation of the whole into a new gestalt becomes the inner transformation of the individual as he has realizations in the process of his research. The questioning of the fundamental assumption of distancing produces a transformation in these other methods as they are related to the fifth perspective of heuristic research.

(2) Whereas phenomenology permits the researcher to conclude with definite descriptions of the structures of experience, heuristics leads to depictions of essential meanings and portrayal of the intrigue and personal significance that imbue the search to know.

It is interesting that hermeneutics deals with only outward meaning. By constructing the hermeneutic circle, one attempts to use other things as a means of allowing the meaning of the thing to shine through one's own projections.

However, in this very act of constructing the hermeneutic circle the self is left out so a valuable tool is lost. But cleansing the meanings derived through hermeneutics or phenomenology of personal experience in order to get rid of subjectivity is ultimately futile. The self is still there, still warping the results. Why cannot we trust ourselves and use the self to see beyond the external significations to the real essence of the phenomena under study. Each investigation is a personal adventure. We want to present the results and lose the person who came to those conclusions. Instead we should consider the person integral to the results. They are HIS results. So the question should immediately be: “Who is HE?”

In dialectics and structuralism the structures or dynamics of the whole is seen as patterns that are impersonal. That is the whole point of the exercise, to come up with laws that are independent of the people who were determined by, or themselves determined, those structures. But in the end, because we lose the biographies, we also lose the means of verifying that those structures and dynamics played a part in the lives of the people being described. We are saying that we want universal non-subjective patterns which still determine the lives of people. Yet we throw away the very evidence that this connection actually existed. We throw away that evidence because we do not know what the roles of those forces or patterns are on people’s lives, and we throw it away because we do not allow ourselves to research into what their impact on our own lives are. Distancing produces basic disconnect in human sciences in which the humans are lost. The researcher is forced to exclude himself, and his own feelings and intuitions, from his findings as if that supplement is unnecessary. In fact, it is by that exclusion that the meaning of the results are lost. And each of us that take up those results must reconsider that meaning again for ourselves from scratch without knowing what they meant to others.

(3) Whereas phenomenological research generally concludes with a presentation of the distilled structures of experience, heuristics may involve reintegration of derived knowledge that itself is an act of creative discovery, a synthesis that includes intuition and tacit understanding.

Heuristics includes within itself the experience of discovery, creativity, innovation, emergence of meaning. Thus, it does not describe this phenomena from the outside as a phenomenologist would, even though it is happening in his own consciousness. The relation to the source of meaning generation is direct instead of indirect as it is in hermeneutics. In hermeneutics one depends on other things from the hermeneutic circle to give a clue to the significance of something new. In heuristics

one depends on one's direct apprehension of the meaning of the novelty itself. The moment of creativity is often described as a moment of synthesis, but in dialectics that raising to a new level is seen as an external event, not as something one relates to directly from within one's own striving for understanding. In such moments, deep structural changes may occur as with paradigm shifts. However, from structuralism we get no hint of how those deep structural changes effect the repatterning of consciousness directly. How can we pretend to understand creativity, novelty, newness, emergence in our process philosophy if our own methodology excludes it. So just as the pragmatists place the scientific method at the center of experience, so we must place the experience of creativity at the center of our methodology which will be used to understand creativity.

(4) Whereas phenomenology loses the persons in the process of descriptive analysis, in heuristics the research participants remain visible in the examination of the data and continue to be portrayed as whole persons.

Phenomenology, hermeneutics, dialectics and structuralism all lose the person who is the experiencer. We might cry "back to the experiencer him/her self." We have gone back to the things and discovered that without the self we ultimately misinterpret what the things are saying to us. Without the self in the hermeneutic circle there is always a break in the spiral that can never be mended. Without the self in the loop dialectics remain something which we are not sure actually ever happens in experience. Without the self the deep structures, no matter how well documented or clearly present, can never be seen as causal in any sense. They are just interesting patterns that may have no relation to anything anyone ever experiences.

Phenomenology ends with the essence of experience; heuristics retrains the essence of the person in experience¹.

If phenomenology ends with the essence of experience, and that essence is seen as the persistent structures of consciousness, then we can see that structuralism is the projection of those persistent structures outward. Hermeneutics then can be seen as the opposite of dialectics. In hermeneutics we attempt to move from the forms with content that appears within structured experience toward meanings sustained by the interrelations of those phenomena that are showing themselves. With dialectics one is attempting to move toward a greater synthesis outwardly. The realization of meaning inwardly and the outward synthesis are both projections. One is a

1. (Douglass and Moustakas 1985 p43)

projection based on the hermeneutic circle, whereas the other is a projection based on the interrelation of thesis and antithesis. These projections tend to fall back on themselves. In fact, the missing element in all this is the self which was excluded on purpose. The self is the basis for the projection of the synthesis of the dialectic and of the meaning from the hermeneutic circle. The self is the one who lives within the structures of consciousness and society in which intersubjective deep structures are propagated. The self is the key element which has been forgotten by the great methods which have driven philosophy in this century. Heuristic research steps into the midst of this fourfold set of methods and gives them sudden life. So it is not a matter of forgetting them, but of adding to them their lost center. Heuristic research provides access to that lost center. It goes full circle and declares that all methods that forget the self are ultimately “non-scientific” because the self cannot ultimately be separated from the object of study. To study means to have a self in action focusing on the object and querying it. No self, no study, so no science. Heuristic research finally gives a complete picture of what science should be. Combined with the other methods which allow distancing, heuristic research gives the missing element that completes the set. Heuristic research is a new method that will allow us to pursue emergent systems process philosophy with new vigor, and hopefully new insights, that have been lacking hither to because our set of methods was not complete.

Heuristic research as presented by Clark Moustakas is really a constellation of related methods for “getting close” to a particular facet of human experience. One lives the experience, and one participates with others living the experience as well as performing a variety of other research techniques which are secondary to the experience but focused on it. The methods are really just a catalogue of things which have been found to work, and any ethical method may be used which allows one to more fully “get at” the experience. This list includes the following methods:

- Identifying with the focus of inquiry

Here one imagines what it is like to be the thing under investigation.

- Self-dialogue

Here one has a dialogue with oneself about the experience or a imaginary dialogue with the phenomena itself.

- Tacit knowing

Here one allows all one knows but cannot express to come into play in attempting to understand the experience.

- Intuition

Here one uses one's intuition in a directed fashion to understand the focus of investigation.

- Indwelling

Here one concentrates on staying with the experience itself and dwelling in it to understand it.

- Focusing

Here one allows one's unconscious to come into play with the experience.

- The Internal Frame of Reference

Here one allows one's personal view of the world to interact with the object.

Likewise heuristic research has several specific phases that one goes through to reach understanding of some experience.

- Initial Engagement

Here the question being asked is formulated as precisely as possible.

- Immersion

Here one attempts to immerse oneself totally in the experience and attempt to understand it by whatever means possible which is ethically correct.

- Incubation

Here one switches away from the focus of research on purpose to allow one's encounter with the experience to gel by making use of the unconscious processes.

- Illumination

"The illumination as such is a breakthrough into conscious awareness of qualities and a clustering of qualities into themes inherent in the question" (p29)

- Explication

In explication one attempts to capture and examine what has been brought to consciousness by the illumination.

- Creative Synthesis

In this process one attempts to express as a creative unity the whole of what one has learned about the experience.

- The Validation of Heuristic Research

Here one attempts to test one's expression of the experience in the intersubjective context.

It is clear that this research methodology is totally opposed to distancing of the

subject of investigation. Here the investigator prizes not his detachment, but instead his total immersion in the focus of his concern. It has been said many times that the “subject” is “subjected” to and subjects the object. Subject is used for both the seeker and what is sought. In scientific investigation both the seeker and the sought are subjugated to the rigors of detachment. In heuristic research these bonds are broken. Instead of distrusting ourselves, we begin to trust ourselves. We allow ourselves to become one with the focus of investigation. Both we and it break the bonds of detachment and subjugation. Instead we become pro-active in our seeking and attempt to throw ourselves into it fully in order to get the most we can out of the experience. Instead of being thrown, we throw ourselves completely into the focus of our investigation. The word “heuristic” is used because its Greek root means to discover or find. If we throw ourselves into our research completely, then we are most likely to find or discover whatever lies in the inner depths of that experience.

This is, of course, how anyone discovers things. They throw themselves into some question completely until they understand it. That understanding may come from a myriad of directions, but unless you are focused on the problem sufficiently, you would never recognize them when they appeared. Heuristic research is, in fact, what all researchers do in a haphazard fashion already. Everyone who has ever attempted to understand something to any depth knows that this can only be done by throwing oneself completely into it. All the talk about distancing is really a charade which allows us to maintain our illusion of objectivity. It is quite clear that one’s findings, once found, must be presented in such a way that hides the process of discovery. The results are presented as if they were logically deduced. Method, in fact, means “meta-hodos,” or the way after; methods are merely a matter of paving the way for others to follow you. However, science constructs these methods in such a way to appear as if the subject was distanced from the object of investigation. In fact, if such distancing was in place, one would never discover anything. Thus, the distancing can be treated as a sophistry because everyone knows that total immersion is the only way to discover anything. The distancing is only applied later when the results are presented. Those who are fooled by this trickery and attempt to follow methods to discover things end up never discovering anything and are conveniently sidetracked from the real work of science. As Feyerabend says, in science the only method that works is “anything goes.” This means that distancing is thrown out the window first.

We must be careful not to allow ourselves to be taken in by the sophistry of science and believe that heuristic methods such as those outlined above are in some sense

“unscientific.” The scientists do not really know what their own methods are. They just keep trying things until they get some result that they can present. What becomes clear is that there is an essential relation between the methods of distancing and the complementary method of immersion. And taken as a whole, we can see that by adding immersion to the set we transform the methods of distancing. So we need to reconsider each of the distancing methods from the point of view of immersion. And that will give us a new methodological perspective from which to undertake our philosophical studies.

When heuristic research is added to phenomenology, then the descriptions of consciousness become “my” own consciousness as a historical being. Already with Sartre’s critique of phenomenology through the development of existentialism, this historical grounding of phenomenological studies has been made an issue. Thus, heuristic research merely extends trends that are already under development. However, heuristic research still adds something to phenomenological existentialism by making consciousness pro-active. Phenomenology and existentialism tend to treat consciousness as if it were passive. Instead, heuristic research would treat consciousness as in the act of total immersion in an inquiry. The structures of consciousness in the act of discovery may not be the same as those of the passive consciousness of everyday life and existence.

When heuristic research is added to hermeneutics, then one is suddenly allowed to grasp the phenomena as a single unique thing unrelated to the other things in the hermeneutic circle. The uniqueness of the focus of inquiry is allowed to find full expression. We would like to call this uniqueness the “integra.” Just as Husserl discovered eidetic intuition, or the direct perception of essences, regardless of induction or deduction, so here there is also the direct perception of the unique entity which goes beyond the essence. George Leonard in the SILENT PULSE has explored this area in some detail. The perceived thing has a wholeness and a position in the universe all its own. Just as Husserl freed us from thinking every essence must partake in induction or deduction to be related to an idea, so heuristic research frees us from the delusion that there is nothing in a thing beyond its essence that it shares with all things of the same kind. In fact, each thing is imbued with a myriad of specific details that make it unique. Total immersion allows one to become immersed in those details and enters into that realm of specificity completely in order to learn more than can be learned at the level of differentiating kinds. The integra is the whole thing in all its myriad of detail which has a specific place in the universe. The integra expresses that integral nature of the myriad

specific details and how they fit into the context of the universe in a specific place. Heuristic research binds together the spiral of the hermeneutic circle and allows the focus of inquiry to speak to us directly in its specificity beyond its relations to other things.

When heuristic research is added to structuralism, then we see what intersubjective constraints really have some effect in our lives. Deep structures, which normally remain unconscious, when focused on either, do or do not appear. If they do not appear, then they may be neat intellectual ideas but perhaps have no impact on experience. Heuristic research uses the unconscious actively to attempt to understand experiences. It uses both the individual unconscious (id) and the collective unconscious in any way it can to get a total picture of the phenomena. Structural analyses can feed this process, and heuristic research would seek to bring to consciousness as much as possible concerning the focus of research. In that process if the patterns show some features of deep structural patterning, these would be recognized. However, if the patterning has no effects at all in consciousness, we can easily doubt whether they are of importance at all.

When heuristic research is added to dialectics, then we see that heuristics attempts to experience the synthetic movement of the dialectic. Thus, the dialectic is no longer an external thing but an active process of personal integration in the sense of Jungian psychology. As such, the dialectical dialectics of Sartre and the negative dialectics of Adorno attempt to take round about routes to get at dialectical phenomena; with heuristic research the dialectical phenomena can be brought into play directly. Dialectical synthesis is either experienced directly or not. If not, then they have no place in human affairs. But if creative synthesis happens, then it can be understood through a living embodiment of the dialectic.

Now this series of methods taken together is the basis for examining the question which Nicholas Rescher set before us of whether it is possible to develop a robust process philosophy. Under the auspices of heuristic research this process becomes our own process. We expect the process philosophy to be presented from the point of view of all four of the distancing methodologies as well. But the center of our work will be to develop a process philosophy that is directly related to our self without distancing. This brings us to the important point of considering ontology. Process philosophy in the past entered into a similar type of distancing, considering processes to be the fundamental entities in some materialist sense. So instead we will establish the distinction between “primary process” which is manifestation and

“secondary processes” that appear as vortices within manifestation. Primary process is the subject matter of ontology. Heuristic research demands that I consider that manifestation process in relation to myself. Thus, I will look at the upwelling of manifestation in myself first as the starting point of my research. Then I will use the other distancing methodologies in order to stabilize my own inner work on the issue of upwelling manifestation. Heuristic research must function as a figure on the ground of the distancing methodologies. They exist in a gestalt. At times the distancing methodologies need to be brought to the fore, and heuristic research becomes part of the background in the gestalt. But in our application of heuristic research it is always part of the methodological equation. In this development of heuristic research it is always grounded in the distancing methods. Thus the self does not become narcissistically the center of attention, but it is always there, and never intentionally excluded.

So in the application of this methodology to the problem of the construction of an emergent systems process philosophy, we will focus on primary process, i.e.. the process of manifestation. And our fundamental question will be, “How do new things come into existence?” This question will organize all our thoughts about philosophy. Coming into existence is obviously a process. It is, in fact, the process of emergence which was first focused on by G.H. Mead in his key book *THE PHILOSOPHY OF THE PRESENT*. Things do not come into existence in isolation. The new thing is part of the system that it emerges into and changes. Thus, emergent events are intimately related to the systems they effect and are part of a meta-system which encompasses the evolution of the system under consideration. Thus, new things coming into existence is always both a test of and an illumination of the systemic aspects of things. This question also is very philosophical because it goes right to the core of our worldview which, unlike many traditional worldviews both past and present, thrives on change. In a recent public television series and book by James Burke called *THE DAY THE UNIVERSE CHANGED* this aspect of our worldview was explored in detail. We thrive on change, and it defines our character more than any other single aspect of our culture. But there are very few philosophical treatments of how it is possible for new things to come into existence. A process philosophy must treat this question above all others because the process of new things coming into existence is the fundamental process upon which all other processes are based, as all processes must have come into existence at one time or another in order to be in existence to be discovered there as an aspect of the universe.

So in this series of essays the fundamental question will be how new things come into existence. This will be the focus of our heuristic research project. We will apply phenomenological, hermeneutic, dialectical, and structural methods as well. We will relate these through a study in semiotics of the new thing. But fundamentally all these methods will be guided by the core of heuristic research that gives these other methods coherence and a new aspect. Given the availability of this new approach toward phenomena, there is an auspicious beginning to our project of discovering how new things come into existence because we are applying a new method, and in that method the focus is on discovery and finding. Thus, the methodology and the focus project are in alignment. We are doing what we say, which is a fundamental prerequisite of theorizing from the point of view of reflective theorists¹ who say a theory should always do what it says. Our theoretical approach is to practice heuristic research, which is geared for discovery, in order to approach the phenomena of discovery as an aspect of experience in which I myself am engaged. I want to discover the structures of consciousness that constrain new phenomena; I want to discover the meaning of new phenomena; I want to discover the deep structures that appear in the process of unfolding of all new phenomena; I want to discover the part/whole relationships and how they change in the process of emergence occurring between the system that the emergent event enters and the event itself. But most of all I want to find out what this all means to me. I am an inheritor of my worldview. In that worldview drastic changes are rampant. I am constantly being challenged by these fundamental changes. Each of us are in this position in which I find myself. So that if I, and others, confront this fundamental process of change in our worldview, then perhaps we will find some answers to why things are like this and how it works, which will allow others to learn to understand and cope with the onslaught of change. What heuristic research posits is that if different groups of us focus in on an aspect of experience and totally immerse ourselves in that experience, then what we discover together will be accessible to others and help them better deal with that aspect of experience.

This research needs to be intersubjective. Science has left the age of the single discoverer. Now scientific papers have many authors. Science has entered the age of group discovery where everyone contributes their own insight and expertise toward a common goal, and no one person, except in rare circumstances, has enough knowledge to do it all by himself. So too, in philosophy, it is group work

1. See THEORIZING by Alan Blum

that is the key to expanding our horizons. It is this realization that keeps heuristic research from being merely subjective. It is fundamentally intersubjective. And this is the new horizon for philosophy, in general, to follow physical science toward a new future where we no longer have philosophy schools, but instead, philosophy groups which ideally have open-ended agendas for working together to produce a common philosophical perspective.

Heuristic research is really just a way of pursuing a quest. Here my quest is (and has been for many years) the attempt to understand how new things come into existence. Heuristic research gives me a way to work through this problematic in a way that does not distort it any more than it is already distorted by my own self. That is why this series of working papers, where the goal is not “know until it is achieved” is the correct approach. In exploring, we enter into a new territory not knowing which way to go or what will be found along the way. However, we know that we seek a diagram of our own worldview which is comprehensive and gives us insight into its distortions of what will be called primary process. Once these distortions have been understood and the relation to other key worldviews delineated, then it would be possible to embark on a systematic account like Nicholas Rescher demands of us. To set out now to develop that systematic exposition would assume that we knew the limits of the territory completely. Is it not the territory we have all been living in since the beginning of the metaphysical era? Isn't Emergent Systems Process philosophy just one philosophy among others within the metaphysical era? If the answer is “no,” then we must keep searching until we find out how this new philosophy itself emerges to become a system within our Western worldview.

5.3.2. PRIMARY, SECONDARY AND TERTIARY PROCESS

Primary process is manifestation or presencing of whatever appears. This is distinguished from all secondary processes which appear within manifestation. Manifestation is a maelstrom of emanation within which observer and observed alike are caught. All individual processes are somehow differentiated within this maelstrom of presencing. Primary process has these characteristics:

- **Overwhelming:** Every “thing” is caught in presencing and manifestation and is completely caught up in it.
- **Intersubjective:** All consciousnesses (of our own and all other species) are caught in the web of presencing. Our awareness of each other is through the medium of manifestation.
- **All Embracing:** All phenomena appear through and within manifestation and presencing, whether tied to specific things or not.

- **Differentiated:** Presencing of phenomena contains a myriad of differences beyond all reckoning.
- **Kindness:** Differences congeal and conspire to reveal natural complexes or kinds of things. It is not in any sense a pure plenum, but a multifarious cornucopia of continually emerging phenomena.
- **Aspectival:** Every kind has myriad aspects which interlock with the aspects of other kinds to form a natural landscape which is orientable and navigable with internal and external coherences.
- **Unfathomable Depth:** The extent of manifestation is unknowable and unknown. As far as you go within a horizon of exploration, there is always more phenomena revealed.
- **Wondrous:** Presencing and manifestation is an epiphany of meanings, intentions, expressions, discoveries, vistas, landscapes, states, sensoriums and various other incredible impacts on our experience which engages us utterly in the process of its unfolding.

Primary process appears before all theoretical distinctions such as between subject/object, self/world, mind/body, idea/matter, idealistic/empirical, etc. J.G. Ballard calls it the “archaic.” We discover ourselves in it before we differentiate ourselves from it. We are lost within it before we find ourselves. Distinguishing ourselves and other things within primary process is an ability that arises from the primary process itself as one of its own aspects. But eventually we use that aspect to distinguish ourselves from that in which we are immersed. So by continuously distinguishing, we begin to make theoretical and practical distinctions which allow us to build a world and a designated reality to inhabit. By distinguishing, one begins to isolate sub-processes or secondary processes within the primary process. This isolation of secondary processes comes from us using the ability to distinguish we find already differentiated within primary process. Secondary processes have the following characteristics:

- **Bounded:** Secondary processes are distinguished from other secondary processes by either fuzzy or sharp lines of demarcation.
- **Transforming:** Secondary processes normally perform a transformation which sustains differences between kinds.
- **Active:** Secondary processes normally align with aspects in a behavioral confluence. In this way distinct auto-poetic secondary processes form vortices within primary process.
- **Hierarchical:** Secondary processes are made up of sub-processes which are in turn made up of lower level sub-sub-processes on down to lower and lower levels of differentiation.
- **Autopoietic:** Secondary processes are self-generating, evolving, dynamically self-maintaining nexuses of activities.
- **Unreified:** Secondary processes are reified into “things,” “entities,” “objects,” and other matters that are described in terms of nouns which are divorced from their active aspect and which are frozen in the process of manifestation. But secondary processes themselves are not reified and continue to be isolateable but active and evolving.

Secondary processes may be distinguished from tertiary processes which are not autopoietic and have imposed boundaries rather than existing as natural complexes. Tertiary processes have the following characteristics:

- **Artificial Boundaries:** Their outlines are imposed instead of self maintained.
- **Entropic:** They disperse without constant maintenance.
- **Intrinsically Inactive or Set in Motion:** They must be set in motion and guided or remain inactive. Any life they have is not their own, but borrowed from secondary processes.
- **Reified:** They come into existence by the process of reification.
- **Limited:** Have limited aspects and kinds associated with them.

Distinguishing these three levels of process is possible on the basis of innate capacities within primary process. Distinguishing within each of these levels is also done solely on the basis of capabilities taken over and refined from what is available within primary process. So secondary and tertiary process are embedded within primary process and feed off of its energy and vitality. Primary process forms a ground out of which secondary processes arise as identifiable vortices from which tertiary processes spin off and reify as partial representations of the activity of secondary processes. No representations of primary process are possible. Primary process is too magnificent in both scope and content to be captured except by reference.

Attempts to represent primary process are called “primal scenes.”¹ A primal scene attempts to portray the “always already lost” origins of some secondary process or of all secondary processes. The arising out of the ground of the primary process, or the return to that ground, may be pictured by a primal scene. The primal scene attempts to picture the non-representable nature of the embeddedness of the secondary process in the primary process.

The major example of primary process is the pluriverse in which we find ourselves made up of possibly parallel universes along with the intrinsic connection that pluriverse has with our combined consciousnesses. All secondary and tertiary processes are embedded in primary process and ultimately indistinguishable from it. All distinctions from primary processes are tentative and not necessarily defensible. From some perspective the secondary or tertiary processes are still fully embedded and indistinguishable from the primary process.

1. See PRIMAL SCENES Lukacher (Cornell U.P. 1986)

The major example of a secondary process is a living organism. The living organism is the key example of an active self-generating autopoietic negentropic vortex within manifestation. As Nicholas Rescher¹ says, our concept of “system” stems almost entirely from the distinguishing of kinds of organisms within our environment which have all the aspects of life and many of the aspects of consciousness in common. The universe can be seen as a secondary phenomenon when viewed as just one within a pluriverse of multiple parallel universes. In this sense each universe is a secondary phenomenon. However, since we only directly experience the nexus of universes in which we exist, those other universes become theoretical. Thus, some secondary processes only appear so from a theoretical viewpoint. The major secondary processes can be distinguished practically as well as theoretically. To the extent a secondary process is not practical, is the same extent that it is still not fully distinguished from its grounding in primary process.

The major example of a tertiary process is all the artificial things that animals, especially, men create and produce. All the artificial aspects of the world we live in are covered by this category of existence. But in nature there are many tertiary phenomena as well, such as bird’s nests and woodpecker holes. However, many natural phenomena may be seen as tertiary phenomena; for instance, any phenomenon that is the result of an active process which ceased to be acting upon it. So from this point of view the universe can be seen as a tertiary process in as much as it was produced perhaps by the Big Bang. At our scale of timespace relations the Big Bang is no longer a factor in our perception of natural phenomena. It is for us as if the process of the Big Bang has stopped acting. For instance, a mountain range may have been produced by volcanos, but the volcanos have long since become inactive so that the mountains appear to us divorced of their generating secondary processes. This view of the tertiary is always somewhat arbitrary, depending as do all tertiary distinctions, on arbitrary demarcations.

Emergent Worlds, or Emergent Systems Process, philosophy is really an attempt to understand secondary processes as they are embedded within primary process. It attempts to eschew the appearances of tertiary process which cover over the appreciation of the role of secondary process. Secondary processes are emergent. Many aspects only apply to some kinds of secondary processes and not others. So life and consciousness are aspects of some secondary processes called organisms. They appear based on a foundation of other types of phenomena with other aspects

1. See COGNATIVE SYSTEMATIZATION

and bring some novel properties which do not exist at the level of things that can be fully explained in terms of physics and chemistry. Not only do secondary processes have novel aspects, but they themselves appear emergent to the extent that they come into existence and go out of existence with those novel properties. Thus, secondary phenomena all have some sort of surprise factor in the combination of aspects in a particular kind which may reveal new aspects not seen before. Also, since the highest form of secondary process is the organism which conditions all our concepts of what makes up “systems,” then our view of secondary manifestation must include a systems view of things. And since some organisms have consciousness and intelligence, and other intangible characteristics, these two must be factored into our view of secondary processes. However, we must realize that not all secondary processes have these aspects, and we must not be guilty of projecting these higher level aspects on all kinds of secondary processes. Also, we will not forget that these higher order aspects are only a part of the full panoply of Primary Process. As a philosophy we are attempting to view the middle stage between primary and tertiary process, but without forgetting either of the other types of processes. Primary process forms the context, ground, environment and ecological complex within which all secondary processes appear. Tertiary process is the means we have of making arbitrary distinctions within our own environment and which ultimately allow us to identify secondary processes. Secondary processes are the stable vortices within the primary process that allow us to distinguish things as we ourselves are distinguished within primary process by applying tertiary processes to ourselves.

Primary, secondary and tertiary processes work together to give a complete picture of the field in which we are producing our Emergent Systems Philosophy. Unless they are distinguished, yet kept clearly together because they belong together as the SAME, then we are liable to lose our way before we really begin to create our new systems process philosophy. If we lose the context of primary process, then we will think that a description of independent secondary processes will do. Or worse yet, we will be satisfied with a description of tertiary processes and their reifications. Many processes philosophies fall into these traps. Instead we must continually see how secondary processes are grounded in manifestation and presencing. We must see how they are reified by tertiary spin-offs. Primary process is elucidated by seeing within it secondary process manifestations. Secondary process is further elucidated by seeing how it is reified by tertiary processes. In each case it is the name for what is the same at all levels. Process implies that there is continual change at all three levels. However, the nature of that change is different. There is

the change in presencing and manifestation. There are the emergent changes to secondary processes as they come into and go out of existence. There is the non-radical change of tertiary process which is like regulated flows within channels. Secondary process vortices form those channels. The channels are like inversion layers within the ocean that separate streams within the water, or like the jet stream in the atmosphere. The difference between primary and secondary process is a difference within primary process itself. This is to say it is a grounded difference, but not an absolute difference, that would separate the phenomena irrevocably from primary process. Tertiary processes are non-grounded differences. This means they are arbitrary and imposed rather than following the contours of what is given.

With regard to our methodology, heuristic research, we can see that it is directed exactly at understanding things through their immersion in primary process. As we immerse ourselves and what we study in primary process, and delve into the boundary between ourselves and the secondary process we are studying we get a dose of complete immersion. All the distancing methods attempt to divorce themselves from primary process in some way. Thus, they are methods that appear at the level of secondary processes in order to study secondary processes. Phenomenology attempts to look at the conscious aspects of our own organism as a framework for seeing other secondary processes. Thus, we as secondary processes are seen as a context for seeing all other secondary processes within the territory mapped out by intentionality. Hermeneutics attempts to discover the meanings of things by a process of comparison and delving into the whole field of related things. Thus, the field of related meaningful secondary processes is seen as the arbiter of all meaning. Dialectics sees the part/whole hierarchical relations between secondary processes as the best means of understanding the process of unfolding of the whole set of secondary processes. Structuralism sees the constraints within the field of secondary processes which underwrite all its transformations as primary. In fact, the characteristics of secondary processes are the starting point for the formulation of all these distancing methods. Only heuristic research dips into primary process itself where the subject and the object lose their distinguishability in order to come to a deeper understanding of each of the secondary phenomena at the level at which they are indistinguishable.

By placing manifestation at the heart of systems process philosophy, we construct a bridge between process philosophy and critical theory on the one hand, and fundamental ontology on the other. Instead of a philosophy lost in the mires of English and American objectivism, we can draw upon the insights of modern

continental philosophy in order to overcome the basic limitations of objectivist process philosophy. We take process philosophy that normally only deals with secondary processes back to its ground in primary process. In so doing we make available the basic structures of manifestation discovered by fundamental ontology for a deeper understanding of process that hitherto was available. We also make available the insights of the critical theorists who through the use of dialectics, rather than phenomenology and hermeneutics, went back to Hegel for the basis of their insights into secondary phenomena. Structuralism existed as a safe haven for those caught in the crossfire between the proponents of fundamental ontology and critical theory. It too has rendered available certain insights that should not be lost in our attempt to rebuild process philosophy from the ground up. The emergent systems process philosophy arises out of primary process as presencing and manifestation to understand the emergent and systemic aspects of secondary processes. It uses heuristic research as the means of searching within the realm of primary process, and in relation to the distinction between primary and secondary process while it borrows insights from phenomenology, hermeneutics, structuralism, and dialectics for the study of secondary processes in their own right. It uses semiotics as the means of comprehending the import of tertiary processes. Tertiary processes are always signs pointing at secondary processes, and secondary processes, in turn, point toward the primary process. The semiotic of the primary process is always in terms of the construction and adumbration of the primal scene.

5.4. Philosophical Categories

Once we have understood the difference between Primary and Secondary process it is possible to begin to explore the category system that differentiates out of the nexus of primary process. Categories are our most general concepts. It appears that these most general concepts have some internal differentiation from each other that gives us some idea of the minimal set of concepts necessary to think about secondary processes. Beyond that differentiation we have what Loy calls Non-Duality of perception, thought, and action. We must begin at the point where the first differentiation occurs of concepts into different kinds in order to begin discursive thought about secondary process we find arising out of primary process. Here we will use the Category Theory of Ivar Johansson who produces a full fledged theory of Categories instead of just giving tables as is traditional with Aristotle and Kant. Johansson is the first ontologist to make a full fledged attempt to produce an intersubjective ontology which encompasses all of the emergent phenomenological levels. As the first real attempt we appreciate his valiant effort even if we do not wholly agree with his ontology. He must be praised in his attempt

to unify the physical and human sciences and account for the relation between the relation between the subjective and intersubjective. He produces what he calls a level ontology which explains the relation between the phenomenal emergent levels very well. He also sharpens considerably our conceptual and categorical vocabulary as well as explaining the relation between many categories in relation to space and time. However, his ontology has is on the whole dissatisfying because it lacks an architectonic which is readily graspable. He has patterned it off of Husserl's Logical Investigations so that it stands a a series of in-depth studies that does not produce an overall theoretical structure. Throughout he speaks of his position in relation to the positions of others rather than attempting to produce a synthesis which might be intersubjectively agreed upon as a foundation for an intersubjective ontological perspective.

Kant introduced the concept of an architectonic into philosophy. His philosophy had a structure with a definite aesthetic appeal that structure allows us to appreciate the connection between the different aspects of his philosophical system instead of being confronted by each aspect separately and having to piece together the structure for our selves. In Johannson's ontology we are confronted with a workshop with many tools laid aside by workmen in the midst of their work where the structure they are building is not yet apparent. We must not concentrate on the fact that the building is not yet constructed but be pleased that the tools are already at hand for the work to be completed. We will take it upon ourselves to produce an architectonic which has aesthetic appeal but is also functional using the fine tools we have been provided. We will now discuss some of these tools in order to get some idea of what we have to work with when we enter the shop where Johannson has been busy with his investigations. Johannson leaves us an interesting set of categories to work with.

5.4.1. CATEGORIES

5.4.1.1. Space-time

For Jonannson container spacetime is a fundamental category. He differentiates this from relational space. For him relational space is a straw dog thrown into his argument to differentiate his container space which is relativistic. He makes five claims about container space.

5.4.1.1.1. For our world, each possible ontology has to rely on a container space.

Johannson takes a position against relational views of space in favor of container

views of space.

5.4.1.1.2. No development within physics is in conflict with the category of container space.

He wishes to make sure his ontology can be seen as a basis for physical theories. This is of course a desired outcome but should not be seen in any way as a prerequisite. Physics has been wrong before about the nature of space and time and they may be so now although the chances of that are probably becoming smaller all the time. However, there are some very interesting theories of the nature of space that does not see it merely as a container but as a soup of the creation and destruction of opposite particles. So we can postulate that perhaps the concept of container is too passive and misses the active dimension of primary process when it is visualized as the spacetime matrix.

5.4.1.1.3. Container space is a necessary condition for external spatial relations; consequently external spatial relations function as criteria for container space.

Container space is in essence the externality of the individual. Through it the individual has external relations with other individuals or itself. It is the place of embodiment and as such is crucial to the concept of autopoietic systems that must be embodied in a space. It is because space can be viewed as a container that the autopoietic system can be seen as constructing its boundary within spacetime to differentiate it from the outside world. The autopoietic system defines the difference between self and other within its container space. The autopoietic system does so not to establish relations with other things but in order to look inward. The autopoietic system defines its interiority in relation to these external relations. Thus we can see that the external relations of the container space is opposite the interiority defined by the autopoietic system living within the container space.

5.4.1.1.4. Container space functions as a principle of individuation.

This is the key point about spacetime. It functions as the means for locating different instances of some kind. Without spacetime there would be no individuation of instances and thus no embodiment. Spacetime in some sense produces the differences between universals and the subjects that bear universals by making these subjects into individual instances. The individuals are engulfed by the spacetime matrix itself and via it enmeshed in a web of relations with everything else that exists in spacetime. They bear the properties which connect them to their kind as well as those so called accidental ones that are unique to them extrinsic to

their kindness. Spacetime bears the things that inhabit it as warpages to its apparently smooth structure. The individual is grasped by spacetime through forces that act upon it as a physical body. Within spacetime the individual is able to grasp other things and thus come into bodily contact with them and manipulate them. Also spacetime appears as a an illusory continuity in which everything is purely present. Within spacetime the individuals existence also appears continuous. All the relations between the individual and spacetime are versions of the modalities of the humans perception of things in the world and correspond to the modalities of Being.

Table 5: Psychological Aspects of the meta-levels of Being

Being ¹	present-at-hand	pointing
Being ²	ready-to-hand	grasping
Being ³	in-hand	bearing
Being ⁴	out-of-hand	encompassing

If we see that part of the relation of the individual to spacetime is reenacts the relation between all things and fragmented Being then we see how spacetime is a way of looking at manifestation, a way of reifying it and rendering it objective. This means seeing the containers of everything as being a kind of pure distancing. By projecting distancing over everything and attempting to produce a pure plenum of availability a reification occurs both in our conception of spacetime and our conception of the individuals that inhabit spacetime. All those beings are rendered present at hand. But in that process all the other aspects of fragmented being are embodied implicitly through the relation of the individual with spacetime and through the individuals with other individuals caught in the arena of pure distancing.

The only way to get beyond this view is to look at the fact that our real relation to spacetime is through the mediation of our body schema within the lifeworld. One of the things that become clear when we switch from our imagination of space to our actual perceptions is that space is horizontal and hyperbolic¹. We are fixed by our conception of the vanishing point² within a flat Euclidean space. But our actual connection with spacetime through the lifeworld and our own body image is much more dynamic and multifaceted than our imaginations of a pure plenum of space and time.

1.Patrick A. Heelan Space-Perception and the Philosophy of Science. (Berkeley: U. of Calif. Press. 1983)

2.Signifying Nothing

5.4.1.1.5. Some ‘properties’ of things (enantiomorphic properties) are necessarily relations between the things and container space.¹

Johannson mentions enantiomorphic properties as ones that show the relation between things and space. But generally we should remember that all symmetry group operations are important in the respect that they maintain the orientation in space so that things remain the same after the operation. As such we can say that group operations relate space to the individual in space because they differentiate the possible transformation of the individual in space according to its own spatial shape and it returns the individual to the same orientation which sets up a reference in relation to spatial coordinates emanating from the thing itself. Enantiomorphic properties of things are special in that the turning inside out to produce the mirror image is a symmetry operation that relates the three dimensional thing to four dimensionality. In other words in a four dimensional space things can rotate into their mirror images without turning inside out. Enantiomorphism establishes the relation between the matrix of four-dimensional spacetime and our three dimensional representations of it.

By taking a position Johannson misses the possibility of connecting the container space to relational space and deriving the difference between Spacetime and Timespace. Spacetime is relativistic container space. But Johannson does not really consider Minkowski² who has conceptualized spacetime in a completely different way from Einstein. Instead Minkowski concentrates on relations of causality and produces a view of spacetime that emphasizes the flow of time and the actions of causality within time rather than the container aspect. Rather than seeing time as the three spatial dimensions minus time Minkowski sees time as the subtracted moments within light cones past-present-future plus nowhere, the place outside the lightcones.

Thus instead of taking a position that space must be a container rather than mere relations we will recognize that there are two views of spacetime the other non-container view being called timespace. Both views see the same thing, the underlying spacetime/timespace matrix in different ways that are useful for different purposes. Like the wave/particle duality there is a spacetime/timespace duality. Also there is a duality between continuous and discrete views of the matrix. We can never see the matrix itself but only representations of it either as a

1.Categorical Investigations page 160

2.He is mentioned in passing as not contradicting Johannson’s theory.

container or as relations. We never know if it is continuous or granular or whether objects are merely perturbations of spacetime or are actually differentiated from spacetime within it. The Matrix is not a category because strictly speaking it is a way of looking at primary process. Only spacetime or timespace can be seen as categories because they are representations by which the human deals with the bewildering nature of the place it finds itself dwelling.

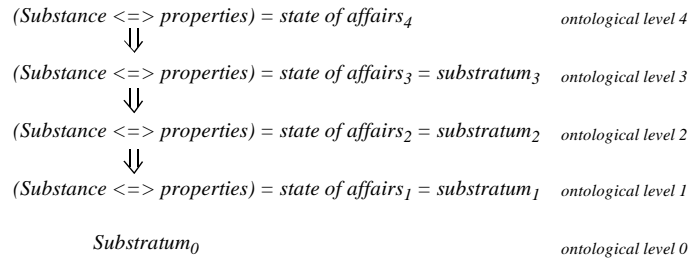
5.4.1.2. State of affairs

Johannson has a interesting conception of things that occur individuated in spacetime. He calls these things “states of affairs.” A state of affairs is composed of substance and property. The set of substances and properties at any one ontological level may completely different from those on the other levels. Substances and properties cannot have independent existence. Thus for Johannson anything that has existence as a state of affairs must be complex and not simple. The primitives in Johannson’s ontology are not simples, and this is a key insight that he brings to ontology. Ontologists are normally attempting to find a set of primitives with which to furnish the world and build other more complex structures that we normally deal with. Johannson realizes that everything that manifests is already complex and that this is a condition of manifestation. For him there are two completely different aspects or moments to every state of affairs. The substance is that which bears the properties. There may be multiple properties associated with every substance. But substances and properties are mutually dependent as well as properties being mutually dependent among themselves. He gives the example of a commodity and a price. Both the commodity substance and its property of price entail each other. You cannot have a commodity with no price nor a price without a commodity to attach itself to. Commodities may of course have many properties that are all mutually dependent.

Another key point that Johannson makes is the difference between a substance and a substratum. A substance exists at a particular ontological level. But besides the substance at that level there may also be dependence on another state of affairs at a lower ontological level. This state of affairs upon which another state of affairs at a higher level is called the substratum. The substratum is always a state of affairs, a substance and property configuration. This difference between substance and substratum is a key point that when not distinguished leads to a lot of confusion. Johannson deftly separates the two concepts:

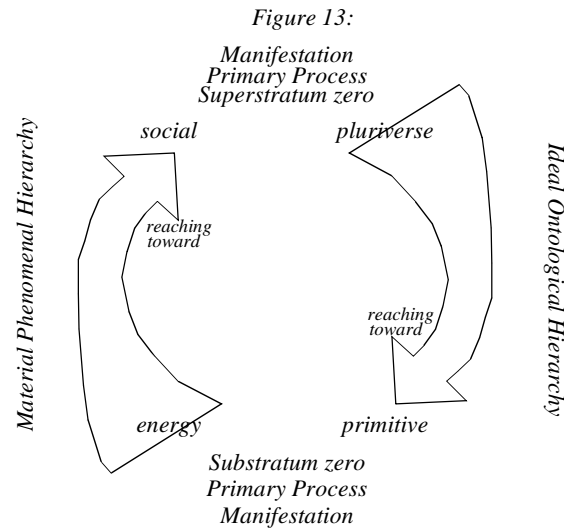
The substratum as distinct from the substance, is always a state of affairs (i.e. not merely an aspect of a state of affairs). Of course the substratum can in turn be divided up into aspects of substance and property, but the latter substance or substances belong to the underlying natural level.¹

Figure 12:



Johannson immediately brings up a problem with this structure which he does not attempt to solve. This is the necessity of positing a Substratum zero. In physics this is energy while for Aristotle it was prime matter. Any phenomenal ontological hierarchy such as that which Johannson has this conceptual problem of the ambivalence of the base substratum. This is one reason for formulating the ontological emergent hierarchy as the dual to the phenomenal. Instead of having to posit a level below the level of the most primitive which makes all transformations possible we posit that primitives can go down to any level in our study of nature and we posit instead the pluriverse at the top or our hierarchy which is the catchall category, a kind of superstratum zero. Both of these hierarchies (phenomenal and ontological) act as duals of each other one conceptual or idealistic and the other materially based. Both bracket the primary process representing it in one case as substratum zero and in the other superstratum zero from which all the other substrata emanate. Idealistic ontological hierarchies descend from the superstratum and material or phenomenal hierarchies ascend from the bottom. So that we can ultimately see them as arising pairs of ladders ascending out of primary process endeavoring to reach it again or descending from primary process endeavoring to reach it again.

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5.4.1.3. *Quality (substance/property)*

Substance and property entail each other and give complexity to each of the minimal things that appear at each level of the level ontology whether ideal or materialist. Each of them is an aspect or moment of the state of affairs and as such together make up its quality. Quantity derives from the countability and from metric relations which occur primarily through the metrical nature of spacetime. However as we shall see there are different kinds of metrical relations. However, what we want to attend to at this point is the concept of minimal complexity at a given ontological level. Buckminster fuller states that a system must have at least four moments in order to appear. So the minimal system has a tetrahedral structure when considered geometrically. This introduces a criteria not considered by Johansson but we shall consider what it does in relation to his postulate that all states of affairs are complex. The question here is what minimal complexity from the point of view of manifestation. We know that from the point of view or representation we can picture simpler systems than tetrahedra and for the most part do that. But the question is from Buckminster Fuller's pint of view whether these representations of simpler structures are anything more than representations. In order to connect with manifestation we need to produce the minimal structure that three dimensional spacetime will allow and that is the tetrahedron. This is because three dimensional space is the closest we get to the underlying four dimensional matrix. When we build one or two dimensional representations we are in fact very distant from the underlying structures of manifestation. What we want to do is actually get as close as possible to the underlying four dimensional matrix and even to hypothesize extensions to that minimal system that allows us to attempt to

represent the structure of the matrix itself beyond the wall of three dimensional representation. One and two dimensional representations are distant from the underling structures of manifestation. And though perhaps they are easier to manipulate and think about they do not give us a good picture of minimal complexity. They only give us a partial view of that minimal complexity over simplifying it.

Now this concept of minimal complexity adds a great deal to the idea of Johansson that whatever manifests must already be complex. It means that each thing must at least have four properties related to a substance at an ontological level or must relate four substances via a single property. If we view the minimal complexity as four properties related to a single substance we get what might be called the minimal kind. If we view it as four substances related to a single properties we get a geometrical configuration of the tetrahedron. The tetrahedron is four points (minimal substances) related by a single property (distance in space from each other). Given this example we can see that substance/property together has a phase structure and has the nature of an interval. Part of the interval is the culmination of the properties into a single face or aspect. The other part has to do with differentiation by attachment to universals which go beyond the substance to its kind. Johansson makes an interesting point which he does not elaborate on. Which is that substances have genus-species hierarchies of subsumption where you can tell something about the species from the genus, whereas the subsumption of one property to another does not tell you anything about the subsumed property. This means that there is a trade-off between properties and substance. Substance represents unity within the state of affairs while properties in relation to each represent their internal diversity. But that diversity is directly related to universals that go beyond the individual substance. The substance of a particular kind is a pattern or coherence of properties that form a unity within the individual. That pattern of properties connect to the properties of other individuals of the same and other kinds. Individuals with a certain set of properties form a kind and are related to higher kinds with similar sets of properties and coherences. So we get a strange kind of relation between substance and property which has to do with the relation between particular and universal. The substance is a particular individuated thing but participates in the universal of kindness and maybe even higher subsumptive relations with other higher level kinds. The property is a universal which connects the substance with other like and unlike things. Where the substance unites the properties into a unity related to the kind the properties may be orthogonal to each other and do not necessarily inherent anything from whatever subsumes them. So

the properties represent discontinuities within the thing both in terms of their relations to each other and their subsumptive relations. Substances represent unity in the thing both because they are the point of coherence between the properties and because they inherit those coherences through subsumptive relations.

Now when we talk about substances we need to be clear that Husserl's analysis is more detailed and insightful than that given by Johansson who is attempting to follow in his footsteps but who has been influenced by analytic philosophy. If we want to relate things to language all we need are substances. But if we are relating things to perception the situation is more complex. Husserl differentiates in relation to substance three different things. First there is the noematic nucleus which is the actual coherence of properties in the individual. Second there is the Idea that is the concept that unites the coherence of properties into a single unity. Between these there is a discontinuity. Normally we think of breaching this discontinuity by means of induction or deduction. However, one of these requires many individuals and the other requires a preexisting concept which the noematic nucleus is tied to arbitrarily. Husserl's great insight is that there is a special kind of perception called essence perception that allows us to immediately cross the bridge between noematic nucleus and idea without either an arbitrary connection nor many individuals to induct from the idea. Essence perception is our connection to kinds and allows us to see directly the patterns of natural complexes. It is a dynamic that connects the static center of the noematic nucleus to the idea that floats above it. It is very important to understand essence perception because it is the central concept that the whole phenomenological movement seized upon as the access to other modes of being other than Pure Presence.

When we say that there is a minimal complexity which relates substance and properties we are saying that the state of affairs is a nexus which relates unity and diversity and that is done in such a way that there is a trade off between the unity of the thing as a kind which gets represented as an idea which glosses over a coherence of properties that may be orthogonal to each other and thus represent diversity. And on the other hand there is the unity of properties as universals that connect diverse things within experience and thus give unity to the whole of experience due to the same properties allowing us to bridge between one individual of a kind and another individual of a different kind. Properties are orthogonal but they give unity to the whole of experience whereas substances give unity only to individuated kinds. Here we see how experience is really a weaving of woof and warp. The woof is the properties as universals that weave through the individuals. The warp is the kinds

that connect individuals by genus-species subsumptions. The subsumptions of properties connect different orthogonal realms of experience. The individual state of affairs is the point at which the warp and woof interfere with each other. The state of affairs stands opposite to the whole of experience in which it appears. This is the dimension that Johansson forgets even though he has read Husserl's Logical Investigations. Phenomenology does not forget this connection between the state of affairs and the field of experience in which it is embedded. But what Phenomenology does forget is that each of the things that appear in the field of consciousness has a social dimension. Thus there is a difference between subjective and intersubjective phenomenology. At least Johansson has not forgotten this intersubjective aspect to existence. Thus between Husserl's investigations and those of Johansson there are definite trade-offs we must be aware of as we proceed.

5.4.1.4. Grounded and External relations

Both properties and substances may have relations among each other which are of three types. The first of those types are internal which are "relations where it is logically impossible for the relata to exist independently of each other." This is the kind of relation that property and substance have to each other in Johansson's ontology. These relations are internal to any given individual instantiated state of affairs. But if we want to talk of relations between states of affairs we need other concepts beyond what comes with the idea of the state of affairs itself. The first of these is the grounded relation. It is of a kind of "relations where it is logically possible for the relata to exist independently of each other along with another category of relation called external. Grounded "relations are derivable from the qualities of the relata." This set of possible relations allow us to connect individuals to other individuals in various degrees of dependence. Internal relations mean total dependence of two things on each other. External and grounded relations allow independence between things but grounded relations are bound up in the properties of the things themselves whereas external relations are not only free of the existential relation between individuals but also of the existential relations between properties. The external relation is emergent in that it is a relation that has an independence from both substance and properties. For instance relations between individuals in space are external. Thus space gives us the limit of what externality means. So there is a specific relation between the kinds of relations a thing can have and its situatedness in pure externality of the spacetime container.

5.4.1.5. Existential dependence

Johannson speaks of this as really being a meta-category because it relates the different categories to each other. I discuss it here because it builds on the different kinds of relations he has defined. He takes the category of Existential dependence from Husserl and differentiates it from internal dependence.

- D9.1 A is existentially dependent upon B if and only if it is logically impossible for A to exist if B does not exist.

Existential dependence is contrast to internal relations. It turns out that all the relations discussed in the last section were mutual. But Johannson and Husserl claim that there are no one-way internal relations. However, this does not mean there are not one-way internal dependencies. Thus Johannson abstracts the dependency relations saying that existential dependency may be mutual or one-way. All other relations mentioned (external, grounded, and internal) are mutual between relata. Only existential dependence can be one-sided and so it comes to have a very powerful effect on the whole of Johannson's category theory because he posits that categories and not just states of affairs or their aspects may be related through existential dependence. He posits that this opens up new possibilities within ontology which his ontological system takes advantage of and which converts his category system into a unity through the relations of existential dependence between categories. It is in fact what allows his category system to unfold the different ontological levels which are related by one way existential dependence. What existential dependence (or its inverse existential independence) allow is for one orthogonal category to be related to the another without a reverse relation of mutuality. This can produce a network of existentially dependent relations between orthogonal elements. This network is very important because it gives us a means of working with axioms which are orthogonal without having them all bound up in either internal, grounded or external relations of mutuality. Consider Johannson's categories as such a set of axioms. He can allow his categories to partially interact with each other so that higher ontological levels are dependent on lower ones without the orthogonality between the levels being compromised. He says that without existential dependence one is trapped either in idealism or holism. This is because one either sees all relations as internal mutual relations of the mind or of material things. But with the concept of existential dependence it is possible to escape this mesh of mutual relations and posit one way relations that give hierarchical order and thus allow something like a level ontology to be built. Due to the set of existential dependencies he builds the he has only one category that is

absolutely independent and that is spacetime. All others are dependent on some other category for their existence. States of affairs need spacetime. Substances and Properties need states of affairs. They are mutually existentially dependent on each other but one-sidedly existentially dependent on states of affairs which is in turn one-sidedly dependent on spacetime.

The category of existential dependence is in itself both spaceless and timeless in the sense that all specific relations to space and time have to come from the relata related. Relata of existential dependence need not necessarily coincide in space and time, even though this is often the case. Pitch and sound-intensity, to take one example, are mutually dependent and occupy *exactly the same* place in space. They are distinct but coincident. It is this feature which one should bear in mind when thinking of irreductive materialism and its ontological levels. An overlying level is distinct from but, in spite of this, coincident with its substratum. As I stressed in chapter 2, ontological levels should never be pictured as geological strata or bricks laid on top of each other. The levels coincide in space. The category of one-sided existential dependence makes the idea of something which is at one and the same time both distinct and coincident absolutely clear. The concept of 'ontological level' has in this way become a very well defined term.¹

Table 6: ^a

A and B are mutually dependent	A is constituted by B	state of affairs =substance; state of affairs=prop erty
	A and B are founded upon each other	substance=pr operty
A and B have a relation of existential dependence	A is constituted by B	state of affairs=subst ratum

Table 6: ^a

A is one-
sidedly
dependent
upon B

A is founded state of
upon B affairs=space
; overlying
level=substra
tum

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Johannson says something very significant after he defines this meta-category that knits his system of categories together into a hierarchy. He then asks what he calls the Bradley question: “What relates the relation of existential dependence to the other categories in question?” And his answer is: “Nothing!” All that exists are the categories in their relations of existential dependence. The infinite regress of relations of relations is not generated in his opinion. This is significant because it says that only one meta relation is related to knit together the category system which gives it unity. Of course he then immediately goes on to differentiate all sorts of kinds of existential dependence the most interesting of which is existential exclusion which says that if A exists then B cannot exist. It turns out that existential exclusion is a more interesting kind of relation but Johannson does not go on to develop it. He is satisfied with a hierarchy. However, we are not satisfied with a hierarchy and so wish to point out that a hierarchy is not the only form of system that may be produced by the one and two way existential dependency. We recall Deleuze in 1000 Plateaus talking about the arbor-centered view of the world which he contrasts with the concept of rhizome or network. He uses the word plateau to signify something similar to what Johannson calls levels. He specifically wishes us to discard the whole concept of the hierarchy in favor of networks as we will recall that Rescher posits that it is possible to found a formal system on a network of mutually elucidating axioms instead of attempting to found it on completely orthogonal axioms. We are reminded that an autopoietic system is a network as well. It is a network that produces and organizes itself. Thus we can see that it is possible to have a category or axiomatic system that is not a hierarchy as Johannson’s has turned out to be but instead has either relations of existential exclusion between axioms or relations of one-way existential dependence between elements such that A is one-way dependent on B which is one-way dependent on C

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which in turn is one-way dependent on A. This kind of structure is called in Buddhism mutual dependent arising. There is in fact a hierarchy of kinds of existential dependencies. First there is existential exclusion in which independent axioms exclude each other. Second there is mutual dependent arising which forms a ring such as the wheel of Samsara (life and death) in Buddhism. Third there are relations of mutual existential dependencies which form very strong bonds between relata. There are all the mutual relations which are not existential such as internal, grounded, and external. Our ontology sees each of these stages as ways of looking at states of affairs. The first one sees the appearance and disappearance of different sets of states of affairs as one set comes on stage then another set vanishes from the stage. This is the ground of manifestation itself: Showing and Hiding. The second sees the fact that as some things appear other things follow and that these may form circular rings which give us manifestation as the eternal recurrence of the Same. This is still looking at manifestation. Forth is the mutual existential bonds which only hold between things manifesting at the same time. This determines a specific presentation within the showing and hiding dynamic. Fifth there is the trees of existential dependence. They show us causal chains within a particular presentation. But they trail off as we reach the leaves of the tree. They give us all the relations that exist at each of our ontological levels or phenomenal levels between things presented at the same time. Every thing else is produce by the addition of internal, grounded and external relations at any given ontological level. So we see that Johansson has opened the door for us to understand manifestation but did not venture through that door himself. He merely pointed the way because his ontology is built not to understand the dynamics of manifestation that is dependent on existential exclusion and one-sided existential dependencies that form rings or networks. He is instead only interested in the static ontology of the trees. Thus his ontology is pre-Godelian in the sense that it believes in something which is a ground upon which the entire edifice can be erected. However, we know that there is only quicksand and that quicksand is manifestation itself. And it is amazing that there are very precise ontological tools to conceptualize that quicksand. Those are the tools of existential exclusion and networked or ringed oneway existential dependencies. All other relations float on top of manifestation without actually explicating the mechanism of manifestation itself. Hopefully we will use the keys that Johansson has given us, perhaps unwittingly, to unlock a different brand of level ontology based on these structures and that lends itself to conceptualizing a different kind of architectonic that is not a tree but is embedded in the structure of spacetime itself. The significance of spacetime is not questioned merely the way the categories are architecturally connected. It does not in fact go deep enough into

the structure of spacetime and merely remains on its surface. If we are embedded in spacetime then we would expect that everything that we need to know about what is possible within spacetime is inscribed there. We need to learn to read those inscriptions, or perhaps see what we have known for a long time about those inscriptions in a new light.

Now with the conceptual tool of existential exclusion we can see how our hierarchy of ontological levels is extended to include domains, worlds, universes, and the pluriverse. Where the lower four levels (primitive, object, system, and meta-system) are all about dependencies these upper levels are about exclusions. So in our ontological hierarchy half of it emphasizes things that are dependent on each other in some configuration while the other half concerns the dynamics of manifestation produced by exclusions within the showing and hiding process. Showing and hiding means that when one thing appears the other disappears. This is precisely a relation of existential exclusion. Therefore we can see that domains contain meta-systems, systems, objects and primitives of different types. But domains are exclusive of each other. If you are in one domain it is very difficult to operate with things from another domain. So it is with worlds which are collections of domains. Worlds are even more exclusive. You can only have one worldview at a time. With the universe, which is projected based on our worldview onto nature there is the strongest exclusivity because we believe that there is only one physical universe. But we realize that there may be many possible or parallel universes out of which this one arises as an instantiation in which we are totally trapped from a physical point of view. The realm of all the possible or parallel universes is the pluriverse. It is in a sense the ultimate realm of excludedness. If we want to understand primary process we must take into account existential exclusivity as a fundamental component of the showing and hiding of manifestation.

Existential exclusivity allows us to give a strong and sound definition to our different levels of Being. Pure Presence (Being⁰) is the real in which all existential dependencies are hierarchical. When we project this on everything it produces the illusion of continuity which makes everything available. When we see this availability as a container in which things exist we get the container concept of spacetime. When we move down to the level where there are circular or networks of existential dependencies where showing and hiding first appears as extended chains of showings then we realize that manifestation is a process and this is a model of Process Being (Being¹). At this level there are showing and hiding processes operating but what we see are the showings in chains or rings of

existential dependence. When we move down yet another level we see that within the chains and rings of showing and hiding there is some thing that is never shown, that is purely immanent which Henry calls the Essence of Manifestation. This thing which is never shown has a relation of existential exclusion with everything that becomes manifest. This is seen in psychological terms as the Unconscious. Here is where we first meet existential exclusivity as the necessity of pure immanence that counterbalances pure transcendence of manifestation. The more robust conception of manifestation is that it has depth and does not show us everything. Manifestation in fact hides itself as it shows us everything else. This level of Being is called Hyper Being by Merleau-Ponty and ~~Being~~ (crossed out) by Heidegger. It is called *Differance* by Derrida. It appears to us as the personal unconscious. If we go down another level we realize that exclusivity pervades all of manifestation. Showing and Hiding does not just have one part which is never seen. In fact there are exclusive relations between different rings and chains of existential dependencies. The point at which one realizes that Exclusivity is diffuse throughout manifestation is called by Merleau-Ponty Wild Being and by Deleuze and Guattari Schizophrenia. It is in Anti-Oedipus posited that the essence of manifestation, called the body-without-organs, has intensities. It's zero intensity is the practico-inert, pure substance or substratum zero. As the intensity of the body-without-organs increases one realizes that diffused through out the socius is a fundamental level of schizophrenia or wild variety production. That there is a fundamental level of what might be called a cornucopia of forms unfolding into existence in wild abandon and profusion that is normally repressed by society but which is an essential aspect of the socius. It is in fact the aspect in which the social is¹ emergent. The continuous production of novelty is an upwelling of exclusivity because the genuinely emergent changes the world into another world. It produces a direct experience of exclusivity which are discontinuities in our ways of perceiving and thinking about the world based on the appearance of genuinely novel things. When a person sees only this novelty production which is the foundation of the social then we call that schizophrenia. It is the obverse of the always already hidden Essence of Manifestation. It is the always already present showing of existential exclusivity pervading all manifestation. For Merleau-Ponty this was thought in terms of our immersion in our bodies and perception and the opacity of these modes of embeddedness in the world. He saw the exclusivity in the way we perceive through or body images where we can see one thing but another. He illustrates this with the chiasm of touch touching. There he posits that we cannot feel ourselves feeling. There is a

1. Here we use Derrida's extension of Heidegger's crossing out of ~~Being~~. See *Of Grammatology*.

fundamental reversibility at the base of our perception through our bodies that is the foundation of manifestation. This produces realms of exclusivity mixed with existential dependencies throughout our experience. These are two ways of conceptualizing the same thing. Either it is the production of novelty as paradigms, epistemes, or interpretations of Being that causes us to move from one exclusive realm to another within which there are new relations of dependence **or** it is the mixture of exclusivity and dependence within our embodied perceptual apparatus. Both of these are ways of looking at the mixture of existential dependence and exclusivity in manifestation.

Beneath all these layers which are in fact the meta-levels of Being sharply defined there is a final realm of pure existential exclusivity in which we do not see things as existentially dependent at all. This realm has been called Emptiness or the Void. It is from the void that both Superstratum zero or Substratum zero arise. It is a realm which we can see as either completely mutually existentially dependent or completely existentially exclusive. If we see it as completely mutually existentially dependent then we call it interpenetration. If we see it as completely existentially exclusive we call it Emptiness or the Void. These are two ways of looking at the same situation. We say that beyond the meta-levels of Being is the Void. We might just for consistencies sake call it meta-level Being⁵ which is actually anti-Being. But it is in fact the opposite of Being. This is the great discovery of the Buddha that led to his enlightenment. He was part of the Indian branch of the Indo-European tradition which like the Western philosophical tradition projected the subtle clinging to existence we call Being. He discovered the antidote to Being in Emptiness. Emptiness is a way of looking at everything that sees only existential exclusion between everything. Since Manifestation is shot through with existential exclusion it is possible to look at everything as if it were disconnected from everything else through existential exclusivity. In the development of the Mahayana tradition this understanding eventually changed into its opposite where everything was seen as mutually existentially dependent as in the image of the jewelled net of Indra.¹ Everything reflects everything else like a hologram and the whole is like a building where everything is connected by their differences from everything else. Everything is in this case seen as if it were all interconnected which we know from the proof of Bells Theorem and the fact of the Big Bang to be true. Since everything in the universe started out in intimate connection and since everything which was once connected remains connected no matter how far apart

1. See Francis Cook Huan Yen Buddhism

we get the effect that everything is actually still connected at a distance and mutually existentially dependent. However, since we only know things through manifestation and since showing and hiding is shot through with existential exclusivity then we can see everything as being empty as well. These two views see primary process as either void or interpenetration. In fact both the view that projects the subtle clinging of Being and the view that denies it as either interpenetration (too much clinging) or Emptiness (too little clinging) are both reifications of Primary Process. The middle of the road between these two opposite reifications and distortions of reality are displayed in Taoism. The middle way is the Tao. For an excellent view of this one should refer to Knowledge Painfully Acquired by Lo Ch'in-shun who is a Neo-confucian who thought deeply about his tradition and attempted to get back to the inner essence of it where it is in unity with Taoism. He produces a simple statement which summarizes the results of his research:

Day and night I was immerse in this, seeking intently to achieve personal realization. I had devoted years to it when suddenly one day it seemed to me that the whole of it had become transparently clear. I submit that the subtle truth of the nature and endowment is summarized in the formulation, "Principle is one; its particularizations are diverse." This is simple and yet complete, concise and yet utterly penetrating.¹

"Principle [Li] is one; its particularizations are diverse," derives from a statement made by Master Ch'eng in his discussion of the "Western Inscription" ("Hsi-ming"). These words are extremely simple, and yet when they are extended to the principles of the universe, there is nothing that that is not comprehended. This is definitely true for heaven (or nature), it is likewise true for man, and it is true for all living things. It is equally true for the individual, for the family, and for the world. It is true for a year, for a single day, and for all time.²

Principle (Li) is one. Only in response to action will there be form. Once there is action, there is duality. Without duality, there would not be unity. Within heaven and earth, action and response are everywhere, and therefore principle is everywhere.³

This statement of Lo Ch'in-shun "Principle is one; its particularizations are diverse" is as close as we can get to capturing the essence of our experience of primal process in words. It therefore must be the starting point for any laying of the foundations in the quicksand of primary process. For what appears as quicksand for the builders of empires is the wondrous nature of existence that permeates all

1. Knowledge Painfully Acquired page 64-5

2. KPA page 69

3. KPA page 82

things.

Only in “principle is one; its particularizations are diverse” is everything encompassed, nothing left uncomprehending. Isn’t this the true meaning of the statement, “In the universe there is no single thing that lies beyond the nature?”¹

Lo Ch’in-shun applied the methodology of Heuristic Research which entails total immersion in order to reach this fundamental principle which expresses the essence of the Tao as expressed within the Confucian tradition. He did not reach it through distancing himself from his subject but throwing himself into the problem day and night until he finally realized what the seemingly diverse writings of the masters of Confucianism were getting at. His deep thought allowed him to get as close in words as you can get to what is really an intrinsically tacit knowledge about the nature of the primal process. Thus when we say that we are laying the foundation of Autopoietic Reflexive systems we are taking this principle of Lo as our basepoint because it says in one statement what the Buddhists discovered as separate ways of approaching the void. That principle is one points to mutual existential dependence of everything. To say that its particularizations are diverse points to the view of things that sees complete existential exclusivity. Notice that these two phrases are connected yet there appears between them a break between phrases. Primary process is actually delimited within this break between the two phrases. It is the break or discontinuity between the two phrases that is the center of meaning which goes beyond what we can say. This is our ultimate foundation which exists in the realm of the unspeakable.

One thing that is worth noticing is that the state of affairs is a nexus of this expression of Lo’s aphorism. It combines a warp and woof of unity and diversity into a single expression which shows unity of principle (Li) at the same time as showing the diversity of particularization. Thus our ontological position which attempts to comprehend as much as possible primary process has direct expression in every state of affairs where the unity of substance is contrast to the diversity of properties. But in that relation properties are universals connecting to other things while substances connect to other substances in a differentiated hierarchy of kinds. Each state of affairs brings the Lo’s aphorism concrete exemplification so that it does not remain an unconnected to our experience. This is because every state of affairs appears on the ground of our total experience and thus appears in a phenomenological context. The universal aspect of properties relate each state of

1.KPA page 67 quote from Chu Hsi in Chu Tzu-yu-lei

affairs to the total context while at the same time maintaining the disconnection between existentially exclusive relata. Thus the descending hierarchy of kinds gives unity to experience while the orthogonality of properties as universality allows existential exclusivity to operate between myriad states of affairs. Thus the warp and woof on unified principle (Li) and diverse and discontinuous particularizations expresses itself not just universally but in every state of affairs.

61. In the Way of nature the sun, moon, stars, and the asterisms are the warp, and the wind rain thunder, clouds, frost, and dew are the woof. The warp and the woof are characterized by constancy wherein lies the wonder of origination, prosperity, advantage and correctness. It is through them that creation is completed. In the Way of man the relations between sovereign and minister, father and son, husband and wife, elder and younger, friend and friend are the warp, while the feelings of pleasure, anger, sorrow, and joy are the woof. The warp and the woof do not err, and the reality of humanness, rightness, propriety, and wisdom are included within them. Their [excellent] virtue and [great] calling are fulfilled through this.¹

5.4.1.6. Inertia and Spontaneity

In our exploration of Johansson's category system we now come to a very important point. He defines Inertia and Spontaneity as self-change and self-preservation. "Inertia is self-sustaining non-change and spontaneity is self-sustaining change."² We now see that these twin categories have an important relation to autopoietic systems. Autopoietic systems are self-organizing. Self-organization is defined as homeostatic maintenance of organization as a variable. Thus, self-organizing systems are inertial. They preserve their organization. But strangely they are spontaneous in that they appear out of nothing and dissipate in a puff of disorganization. So we can see self-organization as a mixture of inertia and spontaneity. Johansson speaks of *causa sui* or self-causation. Temporal Gestalten³ *causa sui* differ from the Inertial and spontaneous temporal gestalten in the following ways:

- (1) they involve a mutual dependence between two temporal Gestalten in one and the same thing;
- (2) one of the two Gestalten enjoys ontological priority in relation to the other

1.KPA page 97

2.OI page 97

3. "An entity is a pure temporal Gestalt if and only if it is a unity of a temporally inclusive universal and a connected non-variation of a temporally exclusive universal, i.e. the inclusive universal can when instantiated have no actually included universals." OI page 93; Exclusive universals have no parts whereas inclusive universals do.

A temporal gestalt *causa sui* is made up of four parts. It has two temporally inclusive universal aspects and two temporally exclusive universal aspects combined in such a way that one of the pair of inclusive (having parts) aspects is connected to one of the pair of exclusive (having no parts) aspects to make a temporal gestalt. One of the two temporal gestalts are seen to depend on the other. In other words one temporal thing can kick start another in such a way to make the entire gestalt appear self-starting. One temporal gestalt acts as the background against which the self-starting change of the other acts. In this way inertia is combined with spontaneity in the temporal gestalt *causa sui*.

There can exist relations between different properties in one and the same thing which are of such a nature that a change in one property (i.e. temporal Gestalt) has a necessary connection with a non-change in another property (i.e. another temporal Gestalt). Such relations are not included in the definitions of inertia and spontaneity. In the following discussions we shall run into a radically new type of entity which is of great importance with respect to change. All of the quantifiable properties which have been discussed so far have been examples of what physicists call scalar quantities -- mass, density, for example. Now we come to vectorial quantities. A scalar quantity is defined by reference to its magnitude, a vector requires in addition a direction.¹

The example that Johansson gives is of course velocity. He connects velocity to motion through the calculus.

The operation of integration, as well as the corresponding differential operation, represent a necessary connection between a temporally inclusive property, motion, and a temporally exclusive property, velocity. If velocity appears in a certain temporal interval, there must exist a completely determined motion during that time and vice versa. Anything else is not inconceivable.²

In a vectorial quantity there is an inherent connection between two temporal gestalts and through one of them to the foundation of inertia or spontaneity. Which one is a matter of viewpoint. We can either say that motion is self causing or that the velocity is inertial maintaining the motion as a state. In the connection between the two temporal gestalts there arises a specific complexity which allows us to either see it as moving or still depending on our viewpoint.

The concept of 'self-movement' is ambiguous. It may mean either spontaneity or *causa sui*. But there is sometimes a connection between *causa sui* and spontaneity. A Gestalt *causa sui* is always founded in either spontaneity or inertia (Gestalt =

1.OI page 98

2.OI page 101

change or pure Gestalt in time). These latter categories are the more fundamental. That a process happens *causa sui* means there exists a necessary connection between two universals in one and the same state of affairs. And if that connection is to explain the process, the explanatory universal must be inertial or spontaneous or, via a new *causa sui*, be connected with such a universal. Otherwise an infinite regress occurs.

A spontaneous process in a state of affairs is a process which has its basis neither in something outside of the state of affairs, nor in some property of it. A process *causa sui* does not have its basis in something outside the state of affairs, but it has a basis in a property of the very same state of affairs. Motion with a constant velocity is an example of a process *causa sui*. Motion occurs because a certain other property is instantiated in the same thing, the vectorial property of velocity. This property is, in turn inertial.

The non-change of a property of a thing is inertial if non-change does not have its basis in something outside of the thing, nor in some other property of the thing. But a non-change can in principle also be a case of *causa sui*. A non change *causa sui* of a property does not have its basis in something outside of the thing either, but in another property of the same thing. If one turns round the velocity/motion example, and sees constant velocity as brought about by a spontaneous motion which founds the former, one obtains an example of non-change *causa sui*. It could be called 'Heraclitian non-change,' because ultimately there is change, but this change is sometimes necessarily connected with non-change.¹

This is very significant because it says that there are things that combine change and non-change in a special way that is very much like the autopoietic system. We said earlier that we can see the autopoietic system as both spontaneous and inertial from different points of view. Now we have a specific vectorial formation that allows that to occur such that we can have two views of the same thing. We can see the spontaneity based on inertia or vice versa. An autopoietic system in the classic formulation is a set of nodes that are self-productive which has inbuilt a cognitive dimension. Now we can begin by seeing these nodes as vectorial quantities. As such they each produce a connection between inertia and spontaneity. Self organization in this model would be an interaction between such vectorial nodes. In classical physics as Johansson points out there is only one such quantity, velocity which interacts with a lot of different scalars. But instead think of a system which has many such vectors interacting. What is called the cognitive dimension of such a system is the views of it as arising from spontaneity or inertia. Such a system is self-starting and self-maintaining-- it causes itself.

1.OI page 102

The category of process *causa sui* of course includes the possibility in principle of a regress of processes which are *causa sui*. A certain motion can in principle be produced by a varying velocity, and that change of velocity in its turn be produced by an inertial acceleration. In the same way it is in principle possible to imagine a second-order color-change velocity, i.e. a color-change acceleration.

This fact has the consequence that the operation of integration leads from acceleration to change of velocity and from velocity to motion. Change of velocity is related to acceleration in the same way as motion is related to velocity. This means that change of velocity is categorically distinct from velocity. The former is inclusive in time (like volume in space), the latter is exclusive in time (like color in space). This is made opaque in physics by the fact that all quantified determinate-properties are named via numbers, and thus always are named via their distance from some zero-point on a scale. In this way both velocity and change of velocity, for example receive the same physical dimension, meter per second, in spite of velocities being something a thing has at a point in time, while change of velocity is something the thing undergoes during a particular period of time.¹

Johansson says that this produces an infinite regress. But according to G. Bateson one cannot think this series past the fourth meta-level. Johansson does not follow it out far enough to see that phenomena. But following Bateson we can see that these different meta categories do not form an infinite regress. But the regress of *causa sui* abruptly ends. If we project what Johansson says back on the vectorial nodes of the autopoietic system we see that the autopoietic system through the interaction of its vectorial nodes and the production of higher level *causa sui* interaction generates the four meta-levels of Being. This is to say that the nodes themselves exist in the present-at-hand but the next level of *causa sui* is the ready-to-hand, and the next is the in-hand, and the final is the out-of-hand. After that there are no other levels because they are unthinkable. But this unthinkableness is equivalent to the void or interpenetration. Each level has its two cognitive views. So we posit that existential dependency plays a different role at each level. At the level of emptiness or interpenetration there is either complete existential exclusivity or complete mutual existential dependence. At the level of Being⁴ (Wild Being) there is the complete dispersion of existential exclusivity and existential dependency. At the level of Being³ there is concentrated existential exclusivity as pure immanence in a field of existential dependence. At the level of Being² there is rings or networks of one way existential dependency. At the level of Being¹ or the level of the vectorial nodes there are trees of existential dependency. This model allows us to see the autopoietic system in an ontological framework and directly connected to the structure of manifestation via the generation of meta-levels of *causa sui*. It is

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through these meta-levels of *causa sui* that the autopoietic system evolves its capability of self-organization. At the level of Being¹ all we have is the set of vectorial nodes as if they were frozen as the organization to be preserved. This level can only generate the illusion of self maintenance. At the level of Being² we get the process of self-organization where the nodes cooperate to produce the whole original organization and impose it back on itself. Autopoiesis is a process. There can be no doubt about that. But it is a process of maintaining a stasis or an inertial state. But that process can only arise whole and spontaneously. Thus inertia are connected in the autopoietic system. Now at the next higher level a strange phenomena occurs that is not covered by standard autopoietic theory. A point of pure immanence is produced within the process of manifesting self-organization. This point of pure immanence stands behind the cancellation of process and anti-process. In this case anti-process is the cognitive views that are generated as a side effect of the interaction of the vectorial nodes. Process cancelling with cognition is pure opacity -- non-transformation and non-cognition. This nexus of pure immanence becomes the organizing center of the vectorial nodes. It is the other internalized. G.H. Mead calls this the Generalized Other. It is the hallmark of sociality. It is the internalization of the response of the other in the self which is referenced prior to action of the self. Thus we say that at the third meta-level we reach the boundary of the social. The generalized other is the source of the design for self-construction that Ford talks about. The source of the design and in fact the design itself is non-represented and non-representable. It is in fact being constantly recreated through the social construction of reality. Reality does not mean just external reality but also internal reality. At the fourth level of Being⁴ we have the complete fusion of existential exclusion and existential dependence. After the cancellation of the cognitive with the transformative what occurs is the same as the Essence of Manifestation being spread out uniformly throughout the system. Opacity is mixed with transparency. This is the nature of Wild Being where the opacity of perception and cognition get noticed for the first time. For Heidegger this was the realization of the opacity of Language. We use language but in some sense it is what Frederic Jameson calls the Prison House of Language. We speak its words not our own and ultimately we do not know what they really mean. But at this final level of the manifestation of the autopoietic system as vectorial nodes we encounter the genetic development of the system. It is here where we see that the system has its origin in other autopoietic systems and that the origin of all autopoietic systems of this type is always already lost as Derrida likes to say quoting Heidegger. Thus any one autopoietic system is inherently social because it comes from other autopoietic systems of the same kind. It has a development

trajectory that includes the other autopoietic systems as an assumption. It works out its own way to negotiate between the environment and its genetic programming. The emergent quality of sociality appears at meta-level four. At this level the non-binding of the genetic heritage and the environmental conditions occurs as the cancellation of freedom and determinancy. This is what allows the reflexive autopoietic system to re-organize itself. It walks the cutting edge between freedom and determinancy which allows it to balance the needs of maintaining order against the risks of change. In some situations remaining the same is a greater risk than changing. At the fourth meta-level these trade-offs are possible. This cutting edge between freedom and determination is what allows the emergent event to be seen and reacted to and even produced and projected thus changing the world. The reflexive autopoietic system is opposite the normal autopoietic system in that it is heterodynamic instead of homeostatic. It is ecstatically projecting itself out onto the world and thus is projecting its world. But beyond the fourth level there is nothing. No infinite regress of categorical levels. But instead a trailing off into the unthinkable. You cannot think what is beyond an acceleration of an acceleration. So likewise you cannot think what is beyond the fourth meta-level of the autopoietic system as a set of self-generation vectors.

Johansson goes directly to the point when he argues that emotions are related to actions in precisely the same way velocity to motion.

The relation which exists between emotional states and their corresponding actions also normally holds between intentions and actions; exceptions are cases like omissions and counteracting intentions. Intentions cannot exist though a temporal interval without expressing themselves as actions; and conversely it holds that it is impossible for certain actions to exist without corresponding intentions. Emotional states, feelings, character traits, and intentions are, like velocities and accelerations, kinds of temporal vectors. They exist at points of time but also point toward the future. Our common concepts are such that we must be said to understand many actions as changes *causa sui*. ...

There is a difference between velocity and acceleration on the one hand, and intentions and emotional states on the other. The former are quantitative, and the latter only qualitative. This means that only the former can be represented by a temporal definitive in the strictly mathematical sense. But that kind of 'pointing' towards future points of time which is constitutive of temporal vectors can be understood purely qualitatively and does not require a mathematical formulation -- even if it is a pedagogical advantage to be able to present the pointing with the help of quantitative temporal derivatives.¹

1.OI page 107-8

The brilliance of Johansson is that he can see through the mystification of physical science formulations to the common core of categorical concepts that connects the social to the physical.

In 7.2 I argued that the category of *causa sui* allows us to synthesize two distinct views of the Newtonian concept of motion. Now I am going to argue that this category also allows us to synthesize two conflicting views of the relation between emotional states and those actions which correspond to a state. A state is conceived by some as an underlying property distinct from, but causing, the actions. Others (e.g. Gilbert Rile), see a state and the actions as in some way identical; a state is described by a dispositional statement, but such statements are taken as not referring to distinct properties or states of affairs.

In a way, both intuitions are right. During a given time interval the emotional state and the actions are indistinguishable in the sense that they occur the same space-time. The situation is approximately the same as in the case of the color and shape of a thing. They are aspects or moments of the same bit of space-time. The emotional state does not lie beneath the actions, nor do the actions lie under the state; they exist on the same level and occupy the same space. But in spite of this there is an asymmetry which constitutes the ground for the intuition that the emotional state is in a sense more fundamental, is 'underlying'. The asymmetry is the fact that the state is a temporally exclusive property while the actions are inclusive; the state can therefore exist 'as a whole' before the corresponding actions can become instantiated as wholes.¹

Here we have the crux of the relation between the autopoietic system and its cognitive aspect. They are separate but equal aspects of the system that occupy the same space-time region. One aspect you can see. The other represents the forward arrow in time of all the vectors taken together. At Being¹ meta-level this arrow of intentionality is seen as a static tie to pure spontaneity or pure inertia. At Being² meta-level this arrow of intentionality is seen as cognitive processes that somehow inhabit the body of the autopoietic system. At Being³ meta-level this arrow of intentionality cancels with the transformations themselves which they inhabit and we see the unconscious as hiding behind this cancellation. The cancellation is the refusal to become present of the unconscious. At Being⁴ meta-level the arrow of intentionality appears as the collective unconscious. When the other disperses throughout consciousness then the archetypes appear within consciousness from out of the social fabric from which the individual consciousness was spun. The archetypes of Jung are all social images. We notice that the single unconscious ID (it) has broken up into several active centers which are like the gods of the ancient Greeks which like them can then come in conflict. When this dispersion is taken to

1.OI page 109

its logical conclusion no-thing is left thus the process leads to the void. It is the process of the other entering the system and breaking it up until it is completely dispersed. In this way we can see the coming into being and the going out of being of the autopoietic system as a traversal of the meta-levels of Being. The autopoietic system has the structure of the emergent event. The other which enters and breaks it up is the emergent event itself of which the autopoietic system is one. Thus the entering of one autopoietic system into another is the definition of the social. They interpenetrate and the difference between them is void.

5.4.1.7. Tendency

Johansson speaks of a category of tendency. “A tendency is a thing of itself but has no results of itself.”¹ “It is impossible for a tendency to have a contrary or opposite.”² Tendencies are partial intentions. They add together to give the overall intention. That addition is vector addition. When multiple vectors interact it is through vector addition. Out of the addition separate tendencies combine to produce a result. But they are added together at a point. At that point there is no actual movement only directional tendency. So the tendencies are not real aspects of things like substances and properties. They are potentials only. We see their results in the final addition that gives the intention.

Now understanding this new category on tendency is based on an understanding of the fact that each kind of Being is associated with a kind of mathematics.

Table 7:

Being ¹	Calculus	Determinate
Being ²	Statistics	Probability
Being ³	Fuzzy Sets & Logic	Possibility
Being ⁴	Chaos	Propensity

What should be noticed is that at Being¹ is the production of a static vision of illusory continuity. Being² is the production of actualizations. Being³ defines the possibilities which might be actualized. Being⁴ gives the means of producing actualities out of possibilities by the means of propensities or dispositions. We have already said that the vectors are defined using calculus through integration and differentiation. They are combinations of two temporal gestalts in a way that gives direction to one on the background of the other. Klir speaks of these in terms of

1.OI page 164

2.OI page 165

variables and their supports. The two temporal gestalts themselves are made up of two properties. So we have a minimal system of properties where pairs of exclusive and inclusive properties are cross-matched. The configuration of this minimal system of properties must be related to one substance so they make up a single thing. The substance is as it were in a different dimension from the properties. The temporal gestalt *causa sui* has yet another different dimension which is its intentionality. It arises out of the interaction of the two temporal gestalts. We might think of these two directions within the same ontological layer and in the same thing as being related as two different poles of unity for the minimal system of properties. If we treat the minimal system of properties as a lattice we see that a lattice always has a greatest and least common denominator. The substance and the intention are like these greatest and least common denominators. Between these two top and bottom points of gathering of the lattice there is its differentiation. That has the structure for the minimal system of 1-4-6-4-1. The four properties are one set of four points. These can have six relations. Together these relations produce four faces of the properties which are its different aspects as a noematic nucleus. When we walk around it we see different sides as we see different three way combinations of properties. The minimal system can also have a mapping to the substratum and also to a superstratum. These mappings between ontological levels together with the two dimensions of unity within a level produce a meta-minimal system of relations which relate it to the outside world. Now the vectors in the Being¹ level are just quantities or qualities. But at the Being² level the relations between the intentionality (mind) and substance (body) become important. We see the substance as that which is transformed by the work of process through the variation of the properties. We see the intentionality as being the cognitive aspect of the transforming autopoietic system. In transformation actualities are produced.

Actuality is when the lighthouse is dark between flashes; it is the instant between the ticks of the watch; it is a void interval slipping forever through time: the rupture between past and future: the gap at the poles of the revolving magnetic field, infinitesimally small but ultimately real. It is the interchronic pause when nothing is happening. It is the void between events.

Yet the instant of actuality is all we ever know directly. The rest of time emerges only in signals relayed to us at this instant by innumerable stages and by unexpected bearers. These signals are like the kinetic energy stored until the moment of notice when the mass descends along some portion of this path to the center of the gravitational system. One may ask why these old signals are not actual. The nature of a signal is that its message is neither here nor now, but there and then. If it is a signal it is a past action, no longer embraced by the "now", but its implies and its transmission happened "then." In any event, the present instant is the plane upon

which the signals of all being are projected. No other plane of duration gathers us up universally into the same instant of becoming.

Our signals of the past are very weak, and out means for recovering their meaning still are most imperfect. Weakest and least clear of all are those signals coming from the initial and terminal moments of any sequence in happening, for we are unsure about our ideas of a coherent portion of time. The beginnings are much hazier than the endings, where at least the catastrophic action of external events can be determined. The segmentation of history is still an arbitrary and conventional matter, governed by no verifiable conception of historical entities and their duration. Now and in the past, most of the time the majority of people live by borrowed ideas and upon traditional accumulations, yet at every moment the fabric is being undone and a new one is woven to replace the old, while from time to time the whole pattern shakes and quivers, settling into new shapes and figures. These processes of change are all mysterious uncharted regions where the traveler soon loses direction and stumbles in darkness. The clues to guide us are very few indeed: perhaps the jottings and sketches of architects and artists, put down in the head of imagining a form, or the manuscript brouillons of poets and musicians, crisscrossed with erasures and corrections, are hazy coastlines of this dark continent of the “now,” where the impress of the future is received by the past.¹

This quote more than any other I have found demonstrates the problem with trying to define the actual. The actual is ultimately void. But for arguments sake let us say that there is a difference between the actual and the possible. The actual occurs in time as a result of a process. It is the laying down of traces in time. The possible lays out all the potential outlines of those traces. We know these ultimately by studying the structure of the actual. The possible is in some way the inner necessity behind the trances laid down in time. Together the actual trances and the potential trances make up the Li or what was earlier called by Lo Principle. But this does not tell us where tendencies enter the picture. Tendencies or propensities or dispositions are ultimately chaotic and they are what turn potentials into actuals. They actually reside between the potential and the actual as chaotic inclinations that at a particular moment throw an actualizing potential this way or that so that one potential is realized over another for no apparent reason. This is in spite of our intentions. Or it is better to say that our intentions before the act and our intention in hindsight are not necessarily identical. Just as the substance before the transformation is not necessarily the same as the substance after the manipulation of property relations. So we see that propensities or tendencies are fourth meta-level entities. They make the transformation of possibility into probability occur. They are very important entities in that they are the basic social matter if we can call them

1.G. Kubler THE SHAPE OF TIME (New Haven: Yale U.P. 1962)

that. We have our tendencies, dispositions, propensities, inclinations only within the social field. They are actually the diacritical moments of significance or what Alfred Schutz calls relevance. Peirce called them the Third. They have also in sociological field theory been called tendencies in a situation. They are the extensions of any relation into the realm of significance which that relation only has in a meta-relation to the observer. The observer only exists as a social being in relation to other social beings. There is no lone observer which perfectly exemplifies objectivity.

Walter Coutu in his book Emergent Human Nature: A Symbolic Field Interpretation goes the furthest in delineating the concept of the tendencies in the situational field of symbolic interaction. He calls tendencies **in** the **situation** “tinsits.” Coutu conceptualizes the tendency in terms of probabilities instead of purely chaotic propensities. Chaos theory had not become widely known at that time and the differences between propensities and probabilities and other mathematical approaches such as fuzzy numbers were not well developed. But tendencies can be looked at as subjective probabilities as a stepping stone to understanding them as chaotic propensities. He defined a tendency as a “probable behavior”¹ within a field of the situation which is “the total configuration of relevant behaviors and stimuli involved in an adjustment problem.”²

Since the process could not possibly occur except in some situation, tendency is herein always treated as a function of the situation, meaning that the tendency varies with the situation. The situation, then, is an integral part of the tendency. It is not something necessary to, but separate from, tendency. There are not two things here, but one, tendency-in-situation.

A mode of thought is becoming evident which... tries to determine the predisposition, not by excluding so far as possible the influence of the environment, but by accepting in the concept of disposition its necessary reference to a group of concretely defined situations.³

Words and phrases like “field,” “context,” and “social setting” are equivalent to the concept of “situation,” but the present book will consistently use the words “conditions under which” interchangeably with the word “situation.”⁴

The properties of the Tinsit are as follows:

- Direction (toward which)
- Magnitude (strength)

1.Coutu, W. Emergent Human Behavior page 12

2.EHB page 14

3.K. Lewin: A Dynamic Theory of Personality (NY: McGraw-Hill Book Co., 1935) p. 40-1 Quoted by Coutu with italics added.

4.EMN page 13-4

- Stability (frequency of configuration)
- Commonality (degree of uniqueness)
- Form (kind of energy released)
- Classification into somatic and personic.

A key point is to look at the way Coutu uses the concept of Emergence. He posits a series of levels that begin with the Universe seen as an ongoing process and ends with his fundamental unit of behavior: the tinst differentiating into the following levels:

- Universal Process
- Social Process
- Group Process
- Situational Process
- Individual Life Process (John Doe)
- Unit Behavioral Process (Tinsit)

It is exactly this kind of emergent hierarchy¹ that needs to be the basis of any social phenomenology. Coutu posits that behavior is emergent:

A behavior as an emergent means that it must necessarily, as a resultant integration, come out of other related behaviors already established in one's behavior structure. A behavior appears or occurs in action, as action, because life is a continuous process, and because of the relatively stable configurations of symbols which direct and control the process of living in a given society. Every act emerges as part of a configuration which has itself emerged out of previous configurations of acts. Every act emerges from similar previous acts in similar situations. Every act is a special case of a tinsit.

Behavior as an emergent is illustrated by contemporary concepts of invention which regard inventions as degrees of improvement in devices or techniques already known, and not as completely new or "unique" events. While every act is to some degree a new phenomena, no act is completely new; it is, as it were, made of old parts more or less. An act is new only in the sense that it is an emergent; but we therefore know something about it before it occurs. It has a degree of probability in appropriate situations and can be predicted in these terms. "Emergence," says Mead, "involves a reorganization, but the reorganization brings in something that was not there before." This something new, a continuous variable, is of greatest significance in personality study, for it represents change, the fundamental principle of all dynamic systems.

1. Notice how similar this is to our emergent ontological hierarchy.

A second, and very closely related, idea involved in the concept of emergence is the idea of wholeness, configuration, or gestalt -- the idea that every act is supersummative. Whatever occurs does so as a part of a configuration of relationships, as part of a synthesis no part of which is exactly the same as the synthetic whole. This is usually stated in the form "a whole is more than the sum of its parts."¹

Here we see that Coutu plays down the difference between genuine emergence that produces the completely new or "unique" events and artificial emergence which is just an extension of what already exists by small changes and combinations of what already exists. He sees the difference between these two as a continuous variable. However, this is a small part compared with the establishment of emergence as a fundamental part of our understanding of the social situation where tendencies appear. Emergence is just the first of Coutu's delineation of the structure of interaction. He includes selective response that Ford has already mentioned as well as the specifically sociological concept of role taking. Role taking "refers to our use of the tinsits of others in our own behavior toward them; that is, in interaction we assume the relevant tinsit of the other person, rehearse it within ourselves and then respond to our own rehearsal."² Also introduces the concept of Interpersonal integration which means that in the social situation the tinsits of all those present are integrated into a single gestalt or whole. "Meetings, conversations, interviews, discussions, and all other social situations are integrations of all the relevant attraction-repulsion tinsits of all the participants ("integrants") in the configurations context called the situation. The interactional situation is the crucible in which differential preference patterns and differential attraction-repulsion patterns emerge and become the mechanisms for the assignment of situational roles and other social expectancies."³

We cannot recount the entire content of Coutu and other social field theorists such as Lewin's work. But we have given enough of an idea to show that it is possible to build a theory that is based on tendencies as the primitive of which actions or behaviors as temporal objects are built up. These are construed to exist in emergent gestalts or systems of behaviors which are make up personalities (personics) and which appear in meta-systems of situations. All of this devolves from the fundamental emergent layer of the social that arises out of the primary process conceptualized as the universe. This analysis by Coutu does not separate the

1.EHN pages 25-6

2.EHN pages29-30

3.EHN page 39

Vectors from the tendencies in as refined a way as Johnson does. It uses the cruder idea that tendencies are probabilities rather than partial intentions which can be thought of as chaotic propensities. Having established that a social science based on tendency is possible we return to looking at the implications of Johansson's ideas.

It is of interest that we find that there is a category at Being⁴ which has components of the Vectors at Being¹ but that there are no parallel categorical structures at Being² or Being³. Let us dwell upon this for a moment. Being² supplies us with actualities which are realized potentials from Being³. We have said that these two together define what we have called along with Lo Principle (Li). This means that we are saying that all the possible orders along with the orders that actually manifest are the sum of the orders of the universe. Determinate models of these orders at Being¹ and Chaotic models of the opposites of all the possible disorders are excluded. But Being¹ and Being⁴ have something that goes beyond Li or Principle which are their own contribution and this is the vectors which are ordered and the tendencies that add together via vector addition which are means of the expression of Principle. We know that the opposite of Li is Chi. Chi is the flowing or growth of things which lay down the traces which allow us to see Li. Li as a nonmaterial ordering principle directs the Chi which lays down the traces that in turn allow us to intuit what the operating principle is. Chi is always flowing and thus is always directional. The vectors at Being¹ may be said to be moments of its flow. The directionality of the flow is embodied in the directional aspect of the vectors. All the vectors taken together provide us with a total flow. We get this total by vector addition. So the tendencies that come out of vector addition which represent all the partial directionalities are also implicit in the flow of the Chi. In fact this gives us two views of the Chi. One view is that it is an illusory continuity. The other view is that it is a myriad of competing tendencies which together give an overall result. Thus we can see the flow as either fragmented or continuous. Likewise we can see the Li as the collection of all actualities that show us a pattern. Or we can think of Li as the set of possibilities beyond the actualizations which we discover through the actualizations. Thus we get a picture here of how Chi and Li are opposites and how they emanate from different meta-levels of Being working together and the whole set gives a picture of the unity of Chi and Li. It is important to have this connection so we are not thinking that Chi and Li are ambiguously defined terms that do not relate to our model of manifestation. In fact Chi and Li together are manifestation and they give us a means of relating to the flowing of the autopoietic system as manifestation occurs as its engulfment by primary process and as its

arising from primary process as a secondary process. We see quite clearly that the meta-levels are the interface between the autopoietic system and manifestation as primary process. The actual operation of the autopoietic system as a set of nodes that are vectors is the way the autopoietic expresses itself as a secondary process. Primarily we see it as a static image in meta-level one and as a process in meta-level two. But these are only two out of the four meta-levels and they take only two of the elements we have associated with Li and Chi. We see Li as actualization and Chi as continuity. Together these give us a picture of the actualization of the secondary process as an illusory continuity. But it does not deal with the complete interface to primary process. It is only the reflexive autopoietic system that maintains this complete interface between its secondary process and manifestation. Reflexive autopoietic systems, i.e. social systems, fully manifest the workings of Li and Chi. Here the other two aspects of Li and Chi respectively play a role. Possibilities and Tendencies show us the connection between the autopoietic system and the social fabric. The social fabric defines the possibilities and gives rise to the tendencies any specific reflexive autopoietic system might realize. We might speak of these upper two layers as the reflexive system and the two lower layers as the autopoietic system proper. Both together are necessary for a full interface between the autopoietic system and primary process. Thus we may say that in the reflexive autopoietic system primary process and secondary process have a complete correspondence, i.e. the secondary process has a full complement of means and capacities for interfacing with primary process but these do not mean that primary process is limited to that or does not go beyond that. By definition primary process engulfs and goes beyond secondary process.

This is a good point to bring back up the question of our four distancing methods verses the method of heuristic research. These are the ways we have developed for looking at the manifestation of the secondary process of the autopoietic system. Phenomenology looks at it according to the presentation of the vectorial nodes attempting to see the system in terms of its intentionality. Dialectics looks at it in terms of part whole relations. Hermeneutics looks at it in terms the hermeneutic circle and interpretation of significances or relevances attempting to intuit meaning. Structuralism looks at it in terms of the discontinuities in the flow and attempts to get a picture of what makes continuity possible. We know that intentionality, part-whole relations, significances, and discontinuities are basic aspects of any dynamic system. But how do we relate these disciplines to what we have already said about the relation between primary and secondary process. First it is clear that meaning which Hermeneutics seeks lies beyond meta-level four and actually enters the

system from out of the void. What we have within the system are many significances that do not in fact add up to meanings but only point toward meanings. We might say the same for the ultimate unified intention. What we have are a lot of tendencies that are parallel to the significances and the nested intentionality that contains many intentions rolled up into a single overarching structure but it is unclear where that structure gets its unity. We might notice that unified intentionality is opposite the multitude of meanings. We might also notice that significances are like tendencies but that intentions are contained in the vectors. What we might see if we looked closely is that both multiple meanings and unified intention appear out of the void. They give interpretations to the structure of tendency and intention found within Being level four and one respectively. Meanings organize significances (the equivalent to tendencies) and inform actions (the equivalent of the vectorial direction). Unified intention from the void organizes the vectorial directions called intentions and are prompted by tendencies. Thus in this formulation meanings and intentions are opposites. They are not in fact the same thing and they both come out of the void into the system. One comes out unified and the other comes out in multiplicity. One primarily concentrates on the vectorial direction layer and the other primarily concentrates on the tendencies layer seen as significances. But both have to do with the layer they are not primarily concerned with as well. This is a strange formulation. But it is prompted by the idea that words and actions are opposites and have different foundations appearing from the void. Johansson thinks words are reducible to actions instead of setting up an opposition, so he does not deal with words and does not distinguish meanings from intention. However, if we do distinguish them we see that they can be seen as opposites in the way they appear from the void and the way they interact with the vectorial and tendency levels of the reflexive autopoietic system.

Dialectics and structuralism are similarly related. Dialectics deals with part-whole relations and Structuralism with discontinuities. When Johansson talks about nested intentionality he is saying that intentionality has part-whole relations and so this is really a meta-categorical concept for him. Similarly Johansson constructs a leveled ontology shot through and through with unexplained discontinuities. The ability to distinguish levels in his categorical system is also meta-categorical. The part-whole relations allow us to bridge discontinuities. Discontinuities allow us to distinguish parts from wholes. So these two meta-categories are duals. Now we posit that the synthesis appears out of the void and the discontinuities appear ultimately out of the void. But they interact with the reflexive autopoietic system in different ways. The most important distinction for the autopoietic system is

between organization and structures. Organization is a series of part whole relations stretched across the discontinuities defined by structural relation. So we see that within the autopoietic system the part-whole relations is arrayed against the discontinuities. In fact this occurs at every level of the autopoietic systems organization. Discontinuity as it appears from the void is unified because there is no differentiation in discontinuity, as there are among positive things. Synthesis as it appears from the void is multiple because every synthesis is of different things. A synthesis is shot through with discontinuities. Discontinuity is defined by the things it separates. These two duals belong together. If we return to Phenomenology of unified intentionality and Hermeneutics of multiple meanings we see that unity and multiplicity are embodied in a pair of meta-categories that are arrayed against the combination of part-whole relations and discontinuities. Thus our set of four disciplines are well founded in relation to the meta-categories implicit in Johansson's presentation of his categories. When we see the autopoietic system in terms of meaning we use Hermeneutics. When we see the autopoietic system in terms of intentionality we use Phenomenology. When we see the autopoietic system in terms of discontinuities we use Structuralism. When we see the autopoietic system in terms of part-whole relations we use Dialectics. So these methods are founded on meta-categories that actually exist in the constitution of the autopoietic system.

When we turn to Heuristic Research we see that it attempts to get rid of distance. The distance it gets rid of is between the four methods just described. Thus Heuristic Research collapses the tetrahedron of meta-categories. It treats them as exclusive rather than inclusive. It reduces distance between them until it is no longer clear which methodological framework is being applied. This is because we are immersing ourselves into the interspaces of the discontinuity, what Kubler called the darkneses between light flashes. We are taking the phenomena as a whole and treating it as a synthesis. We are searching for all the meanings and the grand intention or the Why. So in some sense heuristic research walks out into the void in order to come to know the phenomenal better than if we rely on the meta-categories as they appear within the phenomenal realm. Each method relies on a view of the void. It views it either as meanings or as unified intention or as pure discontinuity or as the ultimate synthesis. But if you do all these things at once you are pursuing the void itself not just as a means of organizing knowledge about the phenomenal. The difference that allows this is to not distinguish between these things. It is a Chinese principle that the center lies in the undifferentiated. Thus when we do not differentiate meanings from intentions from discontinuity from

synthesis then we are pursuing non-action (wu-wei) which is a direct expression of the void. So we can say that where the meta-categories overlap is the void. Using them without distinguishing them is the practice of Heuristic Research which is similar to Feyerabend's dictum "Anything goes" and "Do whatever works." In heuristic research one becomes totally immersed in the on going work of identifying with one's object of investigation and one forgets method. It is a bottom up approach that is called constructivist¹. Engineers have been using such explicitly trial and error non-methods ever since they started building things. In software it is called "hacking" or direct programming without intermediate application of a method. In the course of this essay the status of embodiments in relation to methods will be explored in detail. But it is important to understand the relation between methods and the a-methodical constructivist paradigm or non-method of immersion and action without guiding theory. This is what heuristic research attempts to formalize. It is the major means of producing embodiments.

5.4.1.8. *Intentionality*

Once we have understood the relation between an intention and an action by means of the vector analogy we can go on to formulate intentions as their own realm and reality which is co-present with actions but have their own nature. Johansson explores this reality and points out something of its nature. What we just briefly touched on and what his analysis centers on is how he finds that there is a similar structure for social intentionality and individual intentionality. He sees intentionality as being nested so that there are multiple layers of intention all rolled up into every concrete intentional residue. He says that social intentionality has the same structure and this is why social intentions are mistaken for individual intentions and vice versa. But instead here we want to introduce the issues of social phenomenology. Social phenomenology was really inaugurated by Merleau-Ponty and carried forward by Deleuze and Guattari. Other attempts have been made to formulate a social phenomenology but they do not usually operate on Being⁴ meta-level. There has been some work by Levinas to formulate a social ontology based on the priority of ethics over metaphysics which is posed at meta-level three. However, a full theory must account for the fourth meta-level of being. This brings us to ask how we deal with cancellation in metaphysics because meta-level four operates after the cancellation of all antinomies of pure reason. Deleuze and Guattari solve this by allowing two other disciplines outside philosophy cancel instead of two philosophies. This allows us to view philosophy as a meta-discipline which is

1. See Alexander Riegler "Constructivist Artificial Life and Beyond" manuscript.

not rendered silent by the cancellation. This is a brilliant ruse. The disciplines that are allowed to cancel are Marxist economics and Freudian analysis. Ontologically what is destroyed by the cancellation is the level of subjectivity and the individual. This leaves two ontological levels in tact: desiring machines and the socius. The desiring machines can be seen as the partial objects as discovered by Melanie Kline. We may associate them with the vectorial nodes of the autopoietic network. The socius may be seen as the level at which atomic tendencies float in clouds above the autopoietic nodes. The socius is a social field made up of many little inclinations that show how the field is configured at the moment. What we think of as the individual subject with a personality is an artificial construct that has been dismantled because its economic and Oedipal structures have been destroyed by cancelation. Intersubjective or social Phenomenology must delimit the social field as a primary reality. It must remain closely connected to embodiment as with the desiring machines construct. It must be constructivist in that it constructs the individual subject instead of taking it as given. Dasein's immersion in the they is seen as primordial. We do not have to give this a negative interpretation as Heidegger does making it inauthentic nor as Canetti does in Crowds and Power making it equivalent to mass hysteria. These prejudices were born out of their times when mass movements were the order of the day based on mass media. But we can ask for a kind of analysis like that Sartre gives in Critique of Dialectical Reason volumes I & II. Here we are thinking of the analysis of the fused group as the primary social nexus that is similar to Canetti's pack or hunting group. The analysis by Sartre is the best that is now available. It is stated in dialectical terms. But his philosophical maneuvers were superb because he uses the dialectic against itself and gives a dialectical treatment that goes beyond what Marxism normally has to offer. It may be noted that structuralism may be used against itself to get a superstructuralism. Hermeneutics and Phenomenology likewise can be used against themselves. This produces paradox as a means of simulating the void. Sartre had already used this method in developing the concept of Nothingness. In Critique of Dialectical Reason the detotalized totality of the practico-inert replaces Nothingness as the key locus of paradoxicality. In general generating paradoxes to represent the void obscures the issue rather than makes things clearer. But we can say that a similar kind of analysis of the social might be carried out in any one of these disciplines and achieve similar results as Sartre achieved using dialectics against dialectics. In Phenomenology we turn the problem of intersubjectivity into the starting point as Merleau-Ponty did (Child development and language development show that phenomenological structures of consciousness change over time through socialization). In Hermeneutics we do an analysis of signs as Thirds

as Peirce did (Signs on signs produce a third thing which strives to express meaning). In Structuralism we study episteme changes like Foucault did (We see the structures of our own projection of structures by looking at our way of organizing knowledge in categories). All of these kinds of analysis which change the context by using the thing back on itself have a possibility of capturing a representation of the social level. In sociology it is called reflexive theory as practiced by Alan Blum and John O'Malley among others.

Johannson is wrong about the individual and social levels being identical in terms of the structuring of intentionality. Instead we must look at the social situation as a field in which the individual is constructed using parts that appear as nodes in the autopoietic system. Ford's psychology of self construction and reconstruction is really the beginnings of a theory of reflexive autopoietic, i.e. social, systems. The individual is constructed just as the world is constructed. The individual construction imitates the social construction of the world and in many ways reverses it. Other than a construction the individual has no reality. The only realities are the level of machines, the autopoietic nodes or vectors, and the socius or the realm of tendencies. Thus the individual nested intentionality may be an imitation of social nested intentionality and that is why they are the same but they are not the same as parallel ontological realities. The individual intentionality is a simulcrum of the social intentionality. This is why the individual can only immerse himself in the void or the combination of distancing methods. He does not have access to unified intentionality, multiple meanings, discontinuity and synthesis except as they arise out of the social field. These are socially emergent phenomena reflected in the configurations of the social field but arising out of the void which permeates the cloud of the field itself. The field is really nowhere. But it allows multiple overflowing meanings to manifest. It allows for unified intentionality between dispersed reflexive autopoietic systems. It allows synthesis to occur. It allows the appearance of pure discontinuity as emergent events. When you take these elements and put them together you get the essential transcendental aspects of the reflexive autopoietic system. The reflexive autopoietic system acts in ways that appear meaningful, it has unified intentionality, it synthesizes its world and it produces and reacts to emergent events. All of these allow the reflexive autopoietic system to make non-nihilistic distinctions. It can distinguish meaning from diacritical significance. It can distinguish authentic intentions from inauthentic ones. It can distinguish things that are natural complexes or wholes in the senses Rescher outlines from the artificial or allopoeitic. It can distinguish genuine emergent events from artificial emergences which are changes just for the sake of

change which do not actually change anything. Thus the void introduces the possibility of non-nihilistic distinctions into the world along the lines of each of the individual methods meta-categorical basis.

When Johansson talks about intentionality he calls it object the intentional “correlate” instead of the intentional “object.” That correlate does not have to be something in spacetime. It may be a universal such as a property. He says . . .

[t]hat [just because] an intentional correlated can be independent of space and time does not of course mean that the subject which has intentionality can exist outside space and time. This is impossible. Every intentional act must exist in space and time, but not every incantational correlate.”¹

So Johansson wants to anchor the subject which projects the intentionality within space and time but allow the correlate to be independent of spacetime. Considering those correlates that can have position . . .

we make an observation which is seldom accorded the importance it deserves: intentional pointing is normally a pointing over or across a spatial and or temporal distance. The subject is spatially and or temporally separated from the intentional correlate. Intentionality is normally ‘intentionality at a distance’²

This is very significant for us in terms of our previous discussions of Phenomenology (intention), Hermeneutics (meaning), Dialectics (part/whole), and Structuralism (discontinuity). We see that although Phenomenology is the science being discussed the same statement applies to all of the distance projecting methods. We can only really appreciate this distance when we contrast them with their opposite which is Heuristic Research. Heuristic research’s immersion in the object destroys all distance and the subject even becomes dislodged from its steady position in spacetime. The subject becomes overwhelmed and submerged in the intentional correlated so that it is as if the distance across spacetime vanishes. Thus Heuristic Research enters into the realm that Johansson calls impossible. And it is impossible if you are obsessed with maintaining distance in whatever form. However, if you give up the necessity of distance then it is clear that the subject need not be rooted so firmly in spacetime. Thus we have the Psychokinesis and Psychovision experiments of Jahn. Here are examples of where the subject is seen to become unrooted from its spacetime nexus and is able to project itself in order to have visions of distant phenomena or to change phenomena so it deviates from the

1.OI page 199

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statistical norm. These phenomena are explained by Jahn in terms of the macro-quantum mechanical effects. Where it is possible for the subject to tunnel through the potential well that normally traps consciousness and subjectivity in one particular spot in spacetime. It is clear that the Copenhagen interpretation that limits quantum effects to the micro world produces an untenable and artificial discontinuity in the world. Better to accept that there are macro-quantum mechanical effects, and that the universe is uniform and not split by an artificial theoretical barrier. If we can live with this postulate then we turn round and view the distance effects concentrated on by phenomenology, hermeneutics, dialectics and structuralism differently. We see these as means of screening us from macro-quantum effects. If we project significance to cover meaning, if we project intentions to cover propensities, if we project part/whole relations and discontinuities then we can remain distracted by these from the macro-quantum mechanical effects that we are totally immersed in but have learned to separate ourselves from in order to project an external reality in which we are isolated subjects. Social phenomenology collapses this distancing by which the world or subsets are designated as real. Social phenomenology returns to the always already lost origin where meaning, intention, discontinuity, and synthesis are one matter. Social phenomenology pushes us out into the void. But by that move, that jumping off the deep end, social phenomenology can give a coherent account of subjectivity and its arising out of the social and of the social construction of the world through the differentiation of meaning, intention, discontinuity, and synthesis. Through them the world is kept at bay and understood. But we always have the possibility of walking into the zone where these moments of the void fold into one another again. But we also see, and this is the strange part, that the social is fundamentally described by these four meta-categories. The social is dependent on the existence of discontinuities between reflexive autopoietic beings. There is no society of the mind in this sense. Societies must be based on separate embodiments correlating their actions and attempting to achieve resonance with each other. Society is in fact a Synality or a synthesis of personalities. It is a synthesis of what the individuals that make it up have to offer which is a priori to those individuals. It is based on symbolic exchanges that coordinate significances and attempt to approximate meanings. It is based on coordination of actions so that the partial intentions or tendencies, we could call them desires, describe the behavior of whole groups of people. Societies coordinate actions and symbolic exchanges of their members. Societies form a sui generis whole out of essentially disconnected organisms. So although society emanates from or describes the always already lost origin of the social group it also in its concrete embodiment exhibits the properties of the four

essential social methodologies. Thus we may posit, and the Chinese knew this very well, that when ever we enter into the void we are entering into the origin of the social. Thus the person who is not doing anything, who is not speaking, who is not distinguishing, who is not differentiated, i.e. the sage, is the center of society. They are not vegetating but have gathered themselves into themselves and have intimately entered into the most social of realms. We normally think of the outward interactions as social. But these are only social in a derivative sense. They are the outward manifestation of sociality as something differentiated in the world. But the inner manifestation of sociality is in the non-differentiated, non-discriminating, non-intending, non-signifying social individual. Jung knew this. He said that the collective unconscious lay below the subjective unconscious and was far deeper than what Freud called the Id. When we go into ourselves superficially we encounter solipsism. But when we go deeper we encounter pure sociality which is the source from which our egos originally appeared out of through socialization. So both the origin out of the void and the differentiated social methods are views of the same basic socially rooted phenomena.

We are positing that intentions are not the only ways of relating to correlates. In fact we can say that there are signification correlates, discrimination correlates and synthetic correlates as well. Thus we see Kant's philosophy with the synthetic a priori coming before the analytic as an example of a philosophy concentrating on synthesis instead of intentionality. Phenomenology concentrates on intentionality but this is a reduction of consciousness which is more multifaceted. Intentionality was selected by the phenomenological movement because this was the correlate in consciousness of action. Forming Hyle into noematic nuclei is the equivalent of action within consciousness. But this tends to subsume meaning and eventually led to the necessity of using hermeneutics as a means of supplementing this internal action orientation. Likewise both of these approaches tend to play down discrimination of relevant differences and discontinuities. The ability to discriminate the relevant correlates is an important aspect of consciousness as well. Finally, the ability to synthesize is equally important within consciousness. The fact that synthesis is necessary first before analysis can take place is lost in current day so called Analytic philosophy. There are synthetic correlates of consciousness as well that lead to the formations of gestalts. But the correlates are in all these cases not just objects. Objects are one example from the emergent ontological hierarchy. In fact, correlates can be any of these levels. Thus, we posit that each level in the ontological hierarchy has at least four possible ways of being constituted within consciousness. A system, for example, is discriminated by separating it from the

rest of the world. It is synthesized into a gestalt. It is the correlate of intentionality that relates the gestalt to the actions of the observer, thus giving the gestalt a noematic nucleus which is seen by the regulation of behavior in relation to the object. Lastly it is given significance in relation to other things in the world. Each of these moments of the constitution of the correlate from an ontological level can be realized within consciousness. Now this consciousness is not the primary possession of the individual. This emphasis in our culture on the individual is a distortion of normal human relations. Instead, we say that consciousness is first and foremost social so that constitution of any correlate is a negotiation process. The shared aspects of the correlates are primary and dominate the non-shared aspects. And notice that the moments of constitution are exactly those things that can be shared most easily. Meanings are shared through language. Intentions are shared through reciprocal actions which establish and maintain rapport. Discriminations exist first and foremost as taboos. Synthesis exists as shared fate of the community. These moments of constitution are in fact the basic means of establishing sociality or intersubjectivity. But in truth they come out of the origin of sociality in which they are all melded together into a non-dual source. Loy speaks of non-dual perception, thought, and action. The non-dual character of these aspects of our behavior and consciousness is a difficult state of mind to reach. Loy identifies it with enlightenment in several Asian religious traditions. Such possibilities of experience are cut off in the West by the predominance of concepts related to duality and excluded middle. However, it is precisely the non-dual that is in fact social. And it is the absence of significant reasoning tools that help deal with non-duality that the social is not recognized as being the most important strata that props up our whole world. Instead we think it is the physical which Loy in the end must deny. And we must deny that too if we are going to establish a proper social phenomenology / hermeneutics / dialectics / structuralism. The social is primary and objective reality beyond the lifeworld is an artificial construct which is designated as real. It is constructed by multiple simultaneous means of distancing. We construct it by cutting off meaning, denying the unity of intention, producing nihilistic distinctions that cloud every issue instead of non-nihilistic ones, and by denying synthesis. But when we look deeply into it we see that this production of the objective as correlate that reduce us to subjects quickly falls apart when we first realize that beneath the superficial strata of subjectivity is a deep well of the intersubjective which is hard for us to recognize because we are not used to dealing with non-duality. The social is non-dual in that in it meaning, intention, discrimination, and synthesis are bound together into a non-whole that projects out into the void and that gives our world its fundamental basis. Levinas is wrong about

the social situation being the confrontation with the other. Beyond the bearing of the other which he describes is the total engulfment of by the other which occurs at the highest meta-level of Being. All the levels of Being (pointing, grasping, bearing, encompassing) stand against the void. But ultimately the self and other are non-dual. That non-duality is the essence of the social. Pointing at the Other, Grasping the Other, Bearing the Other, being Encompassing by the Other all assume some sort of duality between self and other. But sociality assumes that the self and other are non-dual, they are the Same, belonging together instead of standing in dualistic power relations. Non-duality denies the dualisms set up by the West between mind and body, self and other, nature and culture, etc. But the denial of dualisms in a sense presuppose dualism. The realm of dualisms are the realm of Transcendence, of projecting distancing. Against that stands the non-dual realm of the void which is ultimately the social as a source of the world. From the social the emergent worlds arise. The social construction of the world is not a cooperative project between individuals. The social appears before there are any individuals. Individuals are our cultural reification. The social construction is a form of mutual dependent arising. All the players arise together to play their roles and create each other as a harmonious interdependent network. It rises through the levels of harmony defined by Chang as logical, interaction, mutual dependence and interpenetration. When it reaches the level of interpenetration the social is identical with the void. So when critics of the social say it is really no-thing they are right. But the point is that it's reality is preeminent so that everything else has even less "reality" than the social.

Jonannson differentiates fictional from real intentionality and then goes on to differentiate presentational from representational intentionality under the rubric of the real. Both presentation and representational intentionality may be satisfied or not depending if they reach their objects. These different kinds of intentionality may be mixed in the same intentional act. A satisfied presentational intentionality has an Immanent intentional correlate. A satisfied representational intentionality has a Transcendent intentional correlate. Fictional intentionality or unsatisfied real intentionality have no intentional correlate. What is called immanent and transcendent here is only relatively so and are actually both transcendent from the point of view of manifestation. I believe this distinction between representation and presentation in Johansson reflects some uncritical assumptions on his part about manifestation. From the point of view of manifestation both presentations and representations have the same status. He attempts to give presentations a stronger link to reality and this attempt would probably be hard to defend as we looked closer. Where is the line between presentations and representations given

Feyerabend's idea that all perceptions are submerged theories which are no longer held at the conceptual level and have just become the furniture of our world. So the distinctions are there for those who think they are valuable.

Far more valuable is his defense of naive realism which sees perception as a looking out at things rather than a passive reception of energy waves. Here he defends the concept that intentionality operates at a distance or across a distance both in space **and time**. This violates the assumption that everything is compact in spacetime and does not effect anything it does not touch.

The other alternative is to accept an irreductive materialism and "intentionality at a distance" as a special form of connection across both space and time. A connection which, without necessarily being mental, allows 'hops' over both spatial and temporal distance. This type of connection is the only type which allows us to retain our concept that, in a literal sense, we live in a common world. It implies, given the view that perceptions require energy transport from the object to the subject, that we normally perceive backwards in time. The subject- and object-poles in a perception are non simultaneous. We perceive through time (as through space), but only backwards. Such a conception does not upset our everyday conception very much, as does the view that we can perceive forwards in time. But there are neither ontological nor scientific reasons for the later view.

The two alternatives described here are the main two possible alternatives today. The choice consists -- to put it more sharply -- in either accepting a monadology or in accepting that we can be in direct contact with distant states of affairs and with the past. It seems obvious to me that the costs of the first alternative are too high. We must begin to accustom ourselves philosophically to the thought we all daily take as implicitly given, namely that we are in at least partly direct contact with both nature and other people.

What is most difficult to accept in this form of naive realism which I am advocating, is of course that part which is not directly in keeping with genuine naive realism, namely the view that one perceives across or through time instead of at a particular moment. Here we ought to remember that "through time" is always connected with "through space," otherwise it is easy to become confused. . . It is an illusion that ordinary temporal perceptions are momentary in time. If one accepts this, then it is not difficult to imagine perceptions through time.¹

Here we see that Johansson lays the foundation for the entry of the social into his ontology directly by situating intentionality as a phenomena that operates at a distance **through** space and time. This allows us to have direct connections to other subjectivities which are isolated in space. It explains the signaling problem that

Kubler spoke of in his definition of actuality. We do perceive signals but we do not perceive them as momentary. Instead our intentionality is operating backwards in time so we feel as if we are looking out into the world when in fact we are receiving signals. The ability to operate backwards in time allows us to feel as if we have direct contact with other social beings at a distance and achieve rapport and resonance with them. In fact the concept of consciousness running backward in time explains a lot of paradoxes which otherwise remain unexplained. It connects with Husserl's concept of internal time consciousness that sees retention as a sliding into the depth of consciousness with new deposits pushing down the old. If we just posit that we read the retention stack upward instead of downward, as Husserl implied, then we see how we can feel as if we are reacting to things that are momentary which actually took place somewhere back in time. By reading backwards we feel as if we are projecting when physics and biology says we are receiving emitted signals. One of the mysteries of the blankness between signals that Kubler indicates is that we are processing backwards during those blanks so that we can feel as if we are projecting forward. The cleverness of Johansson's formulation is that by reversing the processing of temporal events by consciousness he has found a way to make naive realism make sense even though the whole idea that we are constantly going backwards in time may seem absurd at first blush. But by going backwards we can act as if we are in sync with the signals in the moment even though we are actually in "actuality" out of synch because of signal propagation times. This reversal makes it possible understand how intentionality at a distance works as an illusion of direct contact across a distance with others. Everyone is operating backwards in time. So they are syncing with each other to form a rapport or resonance by running the sequence of signal impacts backwards, and reacting in the moment to the sets of signals taken in chunks. This suddenly makes the Old English concept of time as always past make sense. They had no concept of the future. Acts were either finished or in process. Finished acts were laid down in stratum into the past. But think of it. For this system to work there must be chunks which are processed backwards. During processing there must be blank periods such as Koestler suggests. The the current act must be the result of running a particular chunk of signals backward and then coming up with a response which is then acted upon to produce another set of signals for others I am interacting with. By processing the chunk backwards I feel as if I am projecting it and am directly in touch at a distance with those with whom I am communicating. It is an illusion but it preserves the feeling of direct interaction in the moment. But it means that we are actually closed down while processing occurs with gaps in experience. Then enters multi-processing. Our brains are very good at parallel processing. So we get a view

of the processing of different chunks simultaneously so that we feel as if there is an illusory continuity to consciousness when in fact there are great blanks in our experience which we do not see while processing is occurring. We are skipping from one result of backwards computation to another to quickly to observe the discontinuities between the chunks that are being processed backward in parallel. Suddenly we see how the unconscious enters into our consciousness and why we cannot see it. It is the unconscious that accepts and chunks signals and then calls for the parallel processing of many chunks and then offers them to consciousness one at a time in a virtual serial fashion to give the illusion of continuity and projective connection at a distance with other beings especially social beings with whom we feel in rapport. This connects with Benjamin Goertzel's concept of consciousness of being made up of dual networks both hierarchical control and heterarchical memory networks. These two networks occur together in consciousness and the mind is the structure of the networks. In this work he talks of how things that are associated are stored near each other and that the mind might be constantly shifting whole collections of things that are stored together. The description is all in terms of memory as a space. But if we add to this the concept of memory processing signals backward and we see the memories as the chunks that have to be parsed and processed in parallel then the whole model proposed by Goertzel makes a lot more sense. We do not see the shifting of the heterarchy because that is the work of the unconscious as it manages the backward processing of chunks called memories. We could go so far as to say that the memories we have and associate are in fact traces of prior computations done in the same part of memory and that the unconscious tries to use the same parts of memory to compute the same kind of experience. This is how analogies are produced. There is a channeling effect or an increasing returns where the parts of the mind that have processed a particular kind of experience before will be best suited to process it again. That in the kind of memory we have every computation leaves traces and these traces can be recalled. It also explains how the future can be just an illusory inversion of the past. Actually there is only the past but we can project the future because we are constantly doing that by running experiences backward in time in order to sync with other subjects that are at a distance. The Old English concept of time with only the past is closer to the truth in that it recognizes the mechanism by which this illusion is created. It is created by the laying down of memory deposits as particular experience chunks are processed backward in time in parallel managed by the unconscious.

Now we see clearly where the unconscious or the immanent aspect of manifestation comes into play within the individual's experience. In order to be synchronized at a

distance we need to run through experiences backward in time so we feel as if we are projecting when in fact we are receiving impulses. This produces the chunks of experience which are being processed in parallel and being offered to us in what Goertzel calls a virtual serial processor simulated within the parallel processing of the brain. This means that consciousness is an illusory continuity which is underlain by vast discontinuities which are not seen by consciousness which thinks it is seeing everything in the now and processing along with time working forward. But we can also see where the intersubjective unconscious enters the picture. Since all subjects who are apparently in rapport are doing the same thing, processing experiences in chunks backward in time, then there is a global coordination problem. Any one set of signals must be coordinated with other signals coming from different sources. So there must be unconscious cues that coordinate the reciprocity between signals sets from different sources. This is called a protocol in computer communications theory. We see that the collective unconscious must be continually managing this protocol which gives the feeling of rapport and resonance with one's interlocutors. Otherwise the chunks that are processed backwards might get out of synch. In fact this is the difference between a monadology and a social space such as projected by naive realism. In a monadology this synchronization and protocol is missing and everything occurs in the moment for everyone. Since there can be no global clocks it is impossible to synchronize and so everyone is trapped in a solipsist universe of their own making. Symbolic Interactionism shows us how the synchronization occurs. It occurs by means of signs and symbols. If we merely add the concept of symbolic self-completion to the normal ideas of symbolic exchange then we have the necessary chunking mechanism which renders a set of symbols complete in a chunk of the protocol. In other words there is a great desire for a given symbolic production to be completed because that forms an experiential chunk which will be processed on the other end of the communications channel. Also we see how chunking involves all four of our approaches delineated earlier. It is intentional in the sense that it is a connection at a distance. It is connected to meaning in the sense that language and meaningful gesture forms the protocol for exchanging chunks that all participants will process backward in time in parallel. It involves discontinuity and discrimination of differences because each chunk must be a finite size which is quickly processable. It involves synthesis because each chunk must in some sense be a whole. So suddenly we have a picture of how our four approaches to the social can work together to form the underlying social illusory continuity which the illusory continuity of consciousness is based upon. Note that the set of interacting persons are multiprocessing and the brain in multiprocessing chunks of experience. The bottle neck of virtual serial processing in the consciousness of the

individual is the bottle-neck. However, we can see that this bottle-neck is intimately connected to the multiprocessing on the other two levels. It depends on the social unconscious that produces the cues and coordinates the protocol and the individual unconscious that does the parallel backward processing of experience chunks. The social and the individual unconsciousness is intertwined completely so that one makes no sense without the other. They are both completely intertwined with the individual illusion of consciousness as a now point moving through time. They together make that illusion possible. But that illusion could not be further from the truth. The illusion is shot through and through with the gaps between the chunks and the redundancies of the protocol. Naive realism is supported by a very strange mechanism which is mostly hidden from view. It also makes us understand why we do not see macro-quantum mechanical phenomena. The chunks are the macro quanta and thus because our consciousness is completely enveloped by these quantal effects it cannot see them. The illusory continuity effectively covers them over. Thus in one fell swoop because of the key provided by Johansson we can unify Goertzel's theory of dual networks of consciousness, macro-quantum mechanics that denies the Copenhagen interpretation and sees all levels of reality as quantal, and also we are able to clearly see how the collective and individual unconscious work together to produce the illusion of the subject moving on a now point forward through time based on the actual processing of chunks of experience backward through time. It is a strange world in which we live. And we are the strangest of all the creatures in this world. That strangeness is our inherent sociality at the foundation of our natures.

I don't believe that any ontologist has been so brave before as to say something so counter intuitive. The whole idea that intention that seems to move forward through and across time is built on the processing of experiences backward through time and that is what solves the problems of solipsism is an amazing discovery. It is like the discovery of the counter intuitive aspects of relativity or quantum mechanics only at the ontological level. It is indeed a crazy idea. But as one considers it the merits begin to outnumber the demerits. Of course it makes one think of Feynman diagrams where particles move backward in time. In fact this is exactly the idea. In our experience there are certain chunks where we are moving backward in time but since these chunks are being parallel processed we do not experience them in our conscious serial virtual computer. But if we were to draw a map of the parallel processors we would see them moving backward from the now back into short term memory processing the whole chunk of experience until they had a whole which they could present to consciousness as a picture or snap shot. Since the snapshots

overlap in what we cover the serial virtual processor does not notice that the snapshots are really durations played backward. Instead it has the sense of moving forward through time, of looking out at things, and forming them with the intentional morphe, and synchronizing with other people. Our experience is opposite of what an organism moving forward through time would have. this is why it is called naive realism. But the fact that this oppositeness can be generated just by reversing the processing of time to backwards instead of forwards is an amazing counter intuitive move which yields unexpected results.

Johannson also makes the point that reflexion is also an illusion. He says that when one reflects on one self say thinking about thinking one is making a connection through a temporal distance between one point in time and the next. So one is really reflecting on the last moment's reflection. Thus the paradoxicality is also an illusion which sees thought thinking itself. Thought is really separated from itself by a duration in time. That duration is a chunk that is processed backwards. Therefore, the reflexion contains a reversibility in time. We posit that this reversibility gives reflexion its opaque character. This is the same reversibility that Merleau-Ponty called the chiasm only expressed in temporal terms. Each reflexion contains two phases one processing forward in time and one processing backward in time which are connected. For this reason thought thinking about itself, as carried out by Descartes, is not transparent but opaque. The thoughts appear from nowhere. But like all intentions they leap from thought to thought. Thought like a dog chasing its own tail cannot quite catch up to itself to be pure in some sense or to give itself a ground in first principles. But this inward reflexion is just an internalization of the outward reflexion of society looking at itself through the illusory continuity of communality which is really artificial synchronization produced by using linguistic protocols to coordinate backward processing in all individuals making up the group. The outward reflexion is the essence of the social through the production of rapport and resonance among the members of the community. Each person takes the role of the other in relation to themselves and uses that to predict what is expected of him. Thus each individual is looking at himself through the medium of the group looking at him. This is called taking a role and Coultu and other symbolic interactionists go into great detail on how this works. It is based on the insights of G.H.Mead's social psychology. But here we see the backward processing at work, call it back tracking. When a person has an intention and looks toward the results of his actions we might liken that to forward chaining of rules that give a result. but we might instead say given a result what conditions must have been true to arrive at that result. This is back tracking. Now we see back tracking and forward chaining combined in the

taking of roles. We decide what the other would like to see and backward chain to see what conditions would give that result and then starting from those conditions we forward chain to see what that would mean for us if we attempted to do what the other wanted. Thus our forward goal is related to the backward chaining from the goal of the other as we project it. The reversibility of taking the role of the other towards one self is exactly the same as thought thinking itself. Only in the social thought the separation is between different individuals each thinking about themselves via their rapport with the other in order to maintain resonance with the other. In fact thinking is the necessary capability that all role taking is based upon. Thinking is the internalization of the social as a set of subdued responses that allow us to predict the social consequences of our actions before we do them. First and foremost we think about social consequences. Then slowly we spread out to think about other things. Finally thought discovers itself and starts thinking about itself. Then the reversibility which appears outwardly in the social is fully represented inwardly. But just as the social is an illusion so to is the paradoxicality of thought thinking itself. But then when we think about it the social process and its illusory continuity is all we really have as a basis for the world. So we ultimately must turn our designation of reality upside down and see that what is socially agreed upon is really the only reality there is and all the mechanisms that produce this illusory continuity are less real than it.

Now our analysis of role brings us to Johansson's analysis of shame. He is following after Sartre here in his analysis which shows that Shame is a structure within the world which presupposes interacting intentionalities of different subjects. Shame is the result of a role gone wrong. So it (or its opposite Pride) is of the same logical type as the role. Roles are intersubjective realities or what Johansson calls nested intentionalities.

When an intentional act of a subject is existentially dependent upon intentional acts of other subjects, we have a very specific kind of ontological unity which I shall call nested intentionality. Such unities can be more or less nested, but the fundamental structure of nested intentionality is $A \rightarrow (B \rightarrow A)$.

Here we see that the reversibility occurs within the subject where he takes the role of the other looking at himself. He posits that the student teacher relation is of this type as well. The teacher is only a teacher if he sees students which see him as a teacher. The student is only a student if she sees a teacher who sees her as a student. Now it is possible to construct different kinds of nested intentionality where the two subjects see themselves in the eyes of the other and want the other to see them

seeing themselves in the eyes of the other. This can lead to very complex structures which are in fact infinitely nested and reflective on each side. Johansson calls this “intentional mirror infinity” where each side is producing an opposite infinitely nested series of reflections. It is like the images in two facing mirrors. Actually the images are not infinite but only appear to be infinite in both directions.

My thesis is quite simply that intentional mirrors constitute a special sort of infinity. They are of course potential infinities in the same sense as spatial extension is potentially divisible to infinity. But spatial extension and intentionality are as different as categories can be, and so we must have two completely different kinds of infinity. That intentionality can involve infinity is neither more nor less disturbing than the role of infinity in other categories.

An analysis of the intentionality moment of phenomenal of the mutual type -- like friendship, love, and loyalty -- must result in an infinite regress of the type described. Even if A likes B and knows that B likes him, friendship is more than this. It contains the possibility that B should know that A knows that B likes him, and the possibility that A should know this, and so on. Since the intentionality category is such that the subject-pole is anchored in only one body-substratum, there can be no question of any absolute mutuality in the sense of the complete merging into one another that the mystics claim to describe. The closest we can come to one another as subjects is to stand in the mutuality relation exhibited by intentional mirrors.

By adding more and more subjects with similar nesting Johansson shows what the structure would be like with three or four or n subjects. He says that this generalized structure of nesting to infinity gives the real structure of intersubjectivity. Now here we both agree and disagree with Johansson. First we agree that nested intentionality is the basic structure of intersubjectivity. We know that from symbolic interactionist sociology already. Subjects take roles in relation to others based on how the others view the subject. With everyone doing this at the same time as they participate in the illusory continuity of social relations then we have a very complex structure of everyone taking everyone else into account. But the suggestion that there is virtual infinite regresses in these relations and that there is no merging of subjects is where we beg to differ with Johansson. First the regresses are only potentially infinite and no one actually explores the regresses to any level of depth because to do so would be to stop action and become frozen. That these possible sandtraps exist as they do for thought can be accepted. However, real interaction avoids the sandtraps of regressing reflexion like the plague. Johansson has forgotten his own category of spontaneity. Interaction is based for the most part on either spontaneity or inertia. Inertia keeps the action trapped at the lowest levels through force of habit. One occasionally might look into the sand trap and contemplate for a moment what would happen if one fell into it but for the most part we do not realize that they are

there because we do not reflect on our roles. Or we avoid the sand trap by spontaneously generating new roles and new ways of relating which through their very novelty cause us to forget about being socially self-conscious. However, that these sicknesses of social relations can be produced usually as double binds there is no doubt. However, normally they are not encountered unless our actions lead to unexpected results or we are approaching some situation that we wish to avoid. Then we enter these sandtraps as a matter of course. For instance if one has done something wrong. An internal conversation with the other automatically starts and may not end for some time as one explores all the possible ways of getting out of the situation with the least damage to one's position within the structures of nested intentionality of the group. However, the fact that intersubjectivity can be explained through nested intentionality does not mean that we have a full picture. Johansson has forgotten the very phenomena that we dream most social which is the establishment of a rapport or resonance between different people within the same community. This rapport or resonance is indeed a mystical merging that Johansson denies. But this is because Johansson does not recognize the non-category of the Empty or Void which appears as non-duality and in terms of the levels of harmony of the nested relations. Johansson's nested relations assume the law of excluded middle. He does not recognize the state of neither--nor or both--and as having any possible truth value. However, against his position we posit that relations between subjects form a fully embedded structure. There are nestings which are combinations of subjects that are neither--nor and we call this the Other. There are nestings which are both-and we call these macro-agents. Over and against his analysis of the relation between micro and macro agents we posit that they are not just summaries of separate micro agent intentionality structures held independent of each other. But that intentionality structures not only interpenetrate but also become enmeshed in each other and held in common. This occurs when one person steps into the both-and spot and becomes the locus of sharing nested intentional structures. Johansson seems to forget learning and the possibility that I could acquire a nested intentional structure from someone who is a what G.H. Mead calls a significant other. The significant other is the one who holds nested intentional structures that can be copied and used by members of the group and thus through learning these intentional structures may be shared between multiple participants. Besides this we note that intentional structures may in fact be mystically shared through internal rather than external mechanisms. We have already posited that the heart of the social is the void which is the highest level of harmony. As we work up the levels of Harmony proposed by Chang we see that two subjects with logical harmony are totally static in their juxtaposition with each other. Then at the next

level there is interaction and so we get analyses such as Sartre does of two fighters and the whole fight they together constitute. But it is at the level of mutual support where roles come into play and we get nested intentionality as the harmony of separate agents who voluntarily take each other into account. But there is one more level of harmony posited by Chang which is the level of interpenetration where there is more than mutual support. It is where the actual intentional nested structure is shared and merged. This level of harmony is equal to entering the void. It is the origin of the social. It only appears when one becomes non-dual. Not only is the excluded middle thrown out but the both--and is considered as an internal relation between the subjects. That internal relation is called interpenetration. In this state the two subjects have aspects of the same learned nested intentionality that they share but as such they also have images of the other net inside their net so that the result is the social equivalent of the hologram. Each part contains a representation of the whole. G.H. Mead called this the Generalized Other. It is the opposite of the collective unconscious. It is a unity that represents the things consciously known about the collective other. The collective unconscious is a fragmented cluster of suppressed or forgotten things unknown about the collective. The generalize other is abstract and passive whereas the collective unconscious is particular and active. Be that as it may we see that the social has “mystical” aspects which are not reducible to individual subjectivities and their nested intentionalities. The different kinds of macro agents such as the fused group of Sartre and the Pack of Cannetti make reference to these special social formations in which the individuals are immersed in the They (Das Mann). Johansson’s analysis is flawed in that he tries his best to maintain his analysis in the realm of the present-at-hand that all analytic philosophers worship. His non-recognition of higher meta-levels of Being and failure to take them into account lead to what can only be seen as flawed conclusions. However, in spite of these obvious flaws Johansson’s analysis is the best around to base our social phenomenology. For given the added structures just mentioned which account for other meta-layers of Being we may because of Johansson’s work give a precise definition of intersubjectivity in terms of nested intentionality. The only points added to his account is that there is the neither--nor of the Other and the both--and of the one who exemplifies the shared nested intentional structure from whom we can learn our nested intentional structure. Also there is the different levels of harmony the last of which takes us out of nested intentionality into the harmony of interpenetration which is an inward both-and as opposed to the outward both-and mentioned before. Macro agents come in various types and have their own realities as combinations of nested intentionalities which can have characteristics different from the intentionalities of the micro agents taken

in sum. Here the whole is greater than the sum of the parts and we can call it Synthality (or synthetic personality of the group). The fact that Johansson does not affirm this is a flaw in his ontology that should be corrected because he allows properties to combine together to produce a substance which has independent reality within the state of affairs. How is the production of a social whole any different? In fact it is necessary to produce social groups with realities of their own in order for sociology to have any phenomenon to study separate from psychology and it is also necessary to affirm that the social is a fundamental reality from which all other forms of reality are derived. This cannot be affirmed if macro-agents are nothing more than the addition of separate nested intentional structures. Mysticism may not be respectable in a viewpoint that lives by imposing distance through the distancing approaches to social phenomena. But with our methodology of Heuristic Research we no longer have to be afraid of becoming over involved in the object of study. In fact we realize that is the only way to really know anything about it. Heuristic research is based on the concept of fusion with the object of study via total immersion. This immersion allows one to explore the mystical aspect of the social which sees it as a manifestation of the void. We say that because it is fundamentally empty at its source, that is why it can accept the emergent event as the genuinely new thing. If it was full of itself it could not entertain the new. The fact that the source of the social is empty is exactly what it needs to be emergent at the same time. Emptiness is the condition of emergence. So to the relation between the emergent event and the situation where it arises must be one of interpenetration. This is because the new thing reuses and reinvents the old turning it into a genuinely new thing which is different from itself. It could only combine the new and old in a novel way if the situation in which emergence occurs fundamentally interpenetrates so everything is connected and reflecting everything else. Thus the emergent event is a differing of the whole from itself made possible by its self identity via difference. Only the interpenetrating thing can experience emergence and that emergence must come out of the void. The nested intentionality of intersubjectivity is the vehicle for this self-identity via difference to take place. The social can be the same with itself, belonging together with itself. And through the reversibility it has intervening between itself and itself it can realize the difference of the genuinely emergent event and repattern itself. The social's ability to reconstruct itself is a wonderful thing. We need to dive deep into the nature of spacetime to understand how the possibility of social machines are embedded within it. All embodiments merely explore the possibilities already inherent in space time. Johansson says that the infinity inherent in intentionality is different from that inherent in spacetime. This is not true. The infinity inherent in intentionality is an inner possibility of the

infinity inherent in spacetime. Slowly we will show that this is true although we must go through many stages to get to that point and we have not even begun that journey that will occur in the second part of this essay. However, here we can announce the result that all machines are embodiments and that embodiments are wrinkles in spacetime exploring some of its possibilities. There are some very special wrinkles two of which are the autopoietic system and the reflexive autopoietic system. The autopoietic system is cognitive and living. The reflexive autopoietic system is intentional and social. Here we also include the other four approaches which include meaning generation, discrimination of discontinuities, and the proactive production of syntheses. Taken together we can discriminate very finely between the autopoietic and the reflexive autopoietic. The reflexive autopoietic exhibits thought internally and nested intentional relations externally. Thought is the means of articulating the network of external nested intentionalities.

Johannson ends his ontological analysis with the consideration of four models of individual / society interaction. These were developed first by Roy Bhaskar. In model one the individual creates society. In model two the society creates the individual. Model three is a dialectic between the society and the individual such as that proposed by Peter Berger. A fourth model is that these two strata are independent of each other as ontological levels and yet interact with society socializing the individual and with the individual reproducing and transforming society. But the question becomes what is the societal matter of which the social level is sustained as opposed to the individual level which is rooted in matter by the attachment of the subject to the body. Here Johannson maintains that the social matter is nested intentionality. And the two levels are interdependent because intentionality is a vector in relation to the action of the body. They occupy the same spacetime place at different ontological levels. To produce a social phenomenology all we need to do is say that the structures on nested intentionality are prior to anything at the level of the subject and his body. This means that the collective body of the group is prior to the recognition of individual bodies of members. This is because there is a social substance made out of rapport and resonance between group members out of which the other levels of the phenomenal emergent hierarchy differentiate. All we have to do is look at the development of the child to see that this is true. They literally come out of the bodies of their parents and emerge as social beings first who only later realize that they have separate bodies and separate intentional structures. Not looking at human development is a big flaw in Johannson's arguments which stick with reified ideal subjectivities and do not realize even the reality of Dasein beyond the illusory and nihilistic difference

between subject and object.

Before social matter there is the emptiness or interpenetration of the social origin itself. This is the always already lost origin of society, or language, or customs, or the economy, or the political system, etc. The basis of social matter are the tendencies, proclivities, propensities, desires that appear as a category at the fourth meta-level of Being. These dispositions combine to produce intentions. But intentions are a separate category and as Johansson says tendencies and the intentionality may point in different directions in relations to the same act. So ultimately social matter exists at the fourth meta-level of being as the myriad tendencies or desires which from which intentional vectors are produced through vector addition. These tendencies are continuously being interpreted on the basis of the four approaches and presented as unified summations of different kinds. The primary social matter of desires or tendencies are in this way turned into secondary processes which are built up as nested intentionalities, deep meanings, non-nihilistic distinctions, and synthetic unities. This matter is then further reified as tertiary processes into subjective intentions, diacritical significances, nihilistic distinctions, and superficial glosses and abstractions. As we delve back into the origin of the social which is by definition empty and yet interpenetrating emergent events occur that destroy the reification and again unleash profound meanings, unified intentions, distinctions that make a difference, and produce conceptual syntheses. We need to become familiar with social matter again. We need to realize that social phenomenology, hermeneutics, dialectics and structuralism is possible only on the basis of Heuristic Research that has the potential to delve into the source of the social which is also the source of the emergent.

All in all Johansson's categories give us an amazing new perspective on ontology and its relation to our social phenomenology (hermeneutics, dialectics, and structuralism). He leads us step by step from spacetime to things and from things to an understanding of the autopoietic and reflexive. What we wish to do is attempt to ground the two ends of this argument, the social and spacetime in each other. If we could do this then the argument becomes a circular network instead of a tree and so we move to a deeper level of the understanding of manifestation. The social must be embedded in spacetime. If we could show that then we would be in a position to understand the inner necessity of the social and of the living/cognitive as the substrata of the social. This would produce a completely grounded theory of Reflexive Autopoietic systems. Not grounded in the sense of going back to first principles but grounded in the sense that Rescher speaks of when he talks of

cognitive systematization. There networks are treated as a hermeneutic circle instead as sets of first principles. Grounding is continued explication of inherent relations between parts of the network. This work of grounding in the network never comes to an end. Proofs are self-referential in that they cease when a circuit in the network is proved. That circuit can be a ring of mutually existentially one-way dependent nodes that produce circular features of mutually dependent arising. These are autopoietic stabilities manifestation that separate primary from secondary processes. Johansson has taken us to the point that we can now recognize our goal which must be a derivation of the social from spacetime itself. When that is achieved then embodiment will be complete and reflexive autopoietic systems will be grounded in the foundation of embodiment even though no foundation in first principles is possible. That foundation will depend on the discovery of stable co-arising phenomena that appear to form rings out of networks of nodes.

6. Emergent Ontological Levels

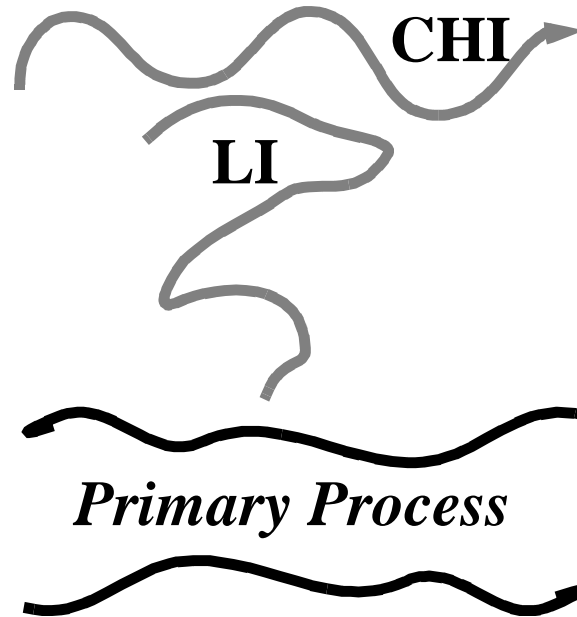
Let us follow Igvar Johansson and say that there is a difference between a category scheme and a theory of categories. Categories are themselves the highest concepts which do not collapse into the unity of Conceptual Being. Different Category schemes will recognize different ultimate categories and also will differentiate in terms of the ways those ultimates are combined. The category theory must both present the ultimate concepts but also say how they are related. Many traditional category schemes only list the categories in a table and do not say how they interrelate. A true theory must do both.

Our category theory does not strive for ultimate minimality. We do not just name the entities that are fundamental and not say what their status of Being are. Instead we build up step by step a picture of what a generic level in our hierarchy must look like and then attempt to describe each level using the same template but using different words for each level in order to capture the differences between the same concept in the same position at different levels.

6.1. The complexity of a generic ontological level.

6.1.1. Energy Flows and Traces

Figure 14:



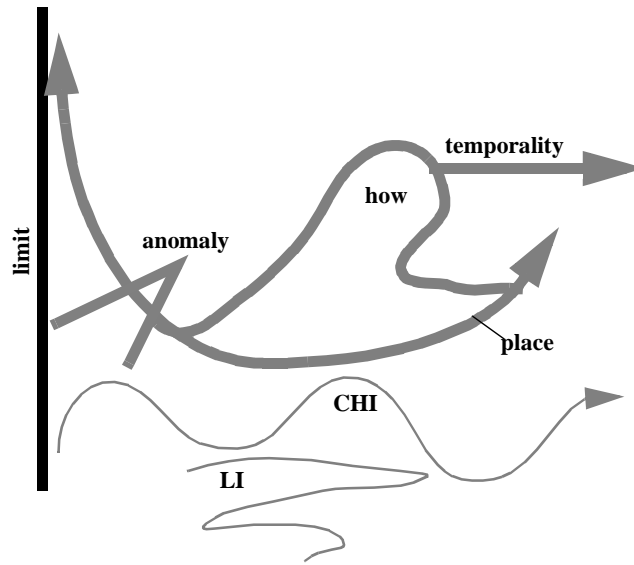
We begin by asserting that every level in the ontological hierarchy can be seen as differentiating Primary Process into two fundamental features. From the point of view of causality these features are known as Yin and Yang. Yang is the unseen causes which produce all the Yin or visible effects. From the point of view of phenomenology we see another pair of opposites which are immediately perceptible. These are flow which is called by the Chinese “Chi” and the traces left by that flow called “LI.” All phenomena which appear are differentiated into Chi and Li. Through these phenomenal opposites which differentiate the Yin we are able to see the Yang. The active causality of the Yang is seen in the movement of the flow and the inner coherence of the cause is seen in the traces left by the movement of the flow. This view is fundamentally different from the view of western science which does not openly to the study of unseen causes. In fact in Western science it is only with the Quark that it is posited that the object cannot by its nature appear. However, the present ontology does not strive to push the unseen to the lowest level of primitive but asserts that it appears at every ontological level. This unseeable aspect of manifestation is the advent of primary process. The action of primary process on what appears occurs at the base of every ontological level.

We approach the Yang via manifesting Yin Chi and Yin Li. Both of these are pointers toward the primary causality that lies beyond the overtly manifest. The action of Chi and Li in relation to each other is the fundamental dynamism at every level of the ontological hierarchy of emergent levels. The flow may be of energy or information or some other “substance.” The embodiment is not as important. What is important is the relation of the flow to traces. In the Western tradition the flow is called Physis or Logos. Physis is the growth of things in nature. Logos is the outpouring of talk within the human being. So there is a fundamental split in the inward human flow of talk and the outward flow of nature as growth. But this split is imposed upon the upwelling which is unified beyond the split between physis and logos. The Chinese saw this unified primordial upwelling as the Tao (‘Dao’ in current transliteration). That upwelling was seen from two different viewpoints. It was seen as the upwelling itself called by the Chinese “Chi” and as the traces left by the upwelling called “Li”. A good analogy is growth of a tree and the rings left in the tree that records that growth. However, Li comes to mean the inner coherence of what appears. In the West this is known as the Laws of nature because the coherence of the physis is judged by the coherence of the logos. But because the Chinese never split nature from human talk and are speaking about something more primordial than both, what Ballard calls the “archaic,” this error of judging the natural coherence on the basis of the coherence of talk is not made. Thus we know that Chi and Li are merely descriptions of the same thing

6.1.2. The representation of the spacetime container.

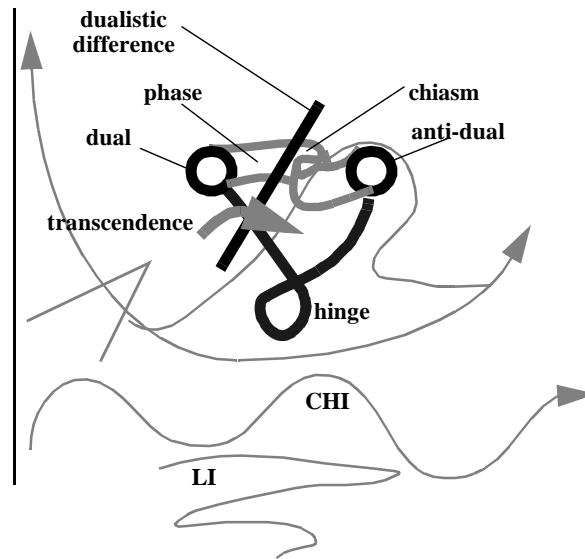
On the basis of the identification of the two primary orthogonal ways of describing the upwelling of primary process we move to the next layer of differentiation which sees secondary processes. Secondary processes are located in spacetime at a place which has a temporality associated with it. The place and temporality together form the basis of an interval. The interval must have limits and so at this stage there is the positing of the limit. Also we can say that there is the indicators of actuality which are the incongruences or warpings in the spacetime as expressed as the temporal palace. These four elements serve to allow us to differentiate secondary processes from primary processes that can only really be described in terms of Chi and Li.

Figure 15:



6.1.3. The Fragments of Being

Figure 16:

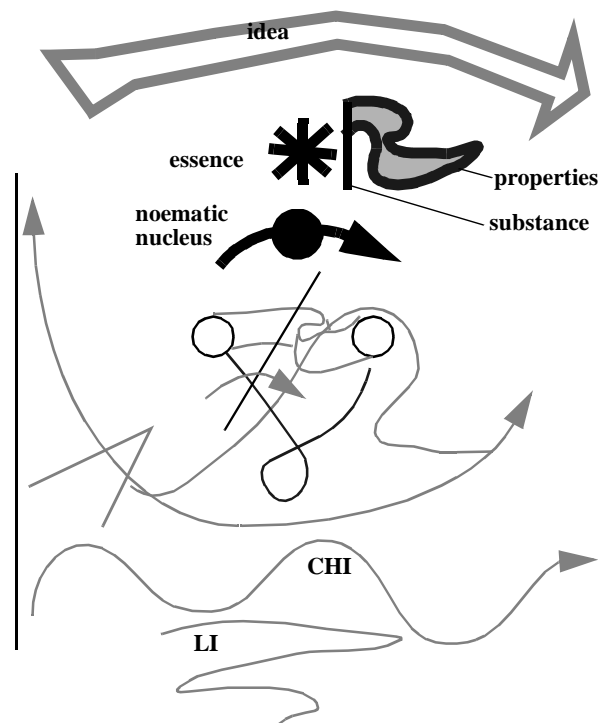


Functioning within the strata of the ontological level (which ever one it is) must be the movement of transcendence or Being. Being has its sub-structure which is the made up of the meta-levels of Being. Thus we see that the representation of the container spacetime is the stage for the operation of the meta-levels of Being working together to produce manifestation at that ontological level. If that mechanism was not there at every level then these would not be ontological levels. Basically this involves the projection of a dualistic difference at that level of Being

and the positing of a transcendental movement across that dualistic difference. These may be thought of as control structures. On either side of the dualistic difference is the dual and its anti-dual. The dual and the anti-dual are present-at-hand representatives of Pure Presence. At the level of Pure Presence the dual and anti-dual are symbols. The movement across the dualistic difference is a process with the ready-to-hand modality representing Process Being. At the level of Process Being the dual and the anti-dual are seen as signs. At the level of Hyper Being where the modality is in-hand there is a different kind of connection between the dual and anti-dual that sees them as traces instead of signs. Derrida calls this kind of connection the hinge. It sees the dual and the anti-dual as being hinged to each other and thus connected by specific kinds of breaks which are part of their natural complex. At the Wild Being level we see the hinging as taking place in an interval of reversibility. Here there is no trace of the symbol, sign, or trace any more. We are talking instead about the actual warping of the spacetime container. Each of these four kinds of Being work together to produce manifestation as we see it in the Western worldview. We must represent them at each ontological level in their dynamic interaction in order for the ontological level to represent the manifestation of the secondary process that has been differentiated by the last level in our generic model of levels.

6.1.4. States of Affairs

Figure 17:

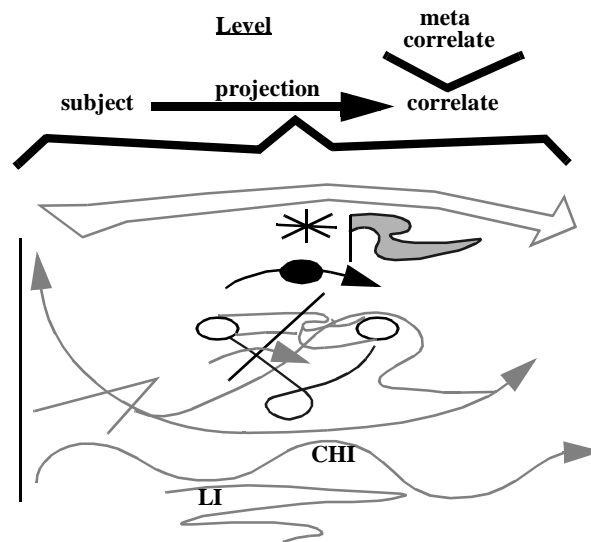


The next level of our generic model of an ontological level shows us how states of affairs are generated out of the confluence of the fragments of Being. Here we follow Husserl and differentiate the noematic nucleus, essence and idea. The noematic nucleus is the combination of noema and noesis in the state of affairs. When we perceive the correlate we can vary it around its noematic nucleus through our behavior toward the correlate. The noematic nucleus is the complex interrelation of aspects, moments, sensations, thoughts that arise in our interaction with the correlate. But these must be differentiated from the essence of the object. The essence is the core of the noematic nucleus that under variation remains the same. We have according to Husserl direct apprehension of the essence beyond our perception of the noematic nucleus. The essence is our direct intuition of kindness of the correlate. Through the essence we get our first real look at the relations between properties and substance within the correlate. You will notice a small flag beside the essence. The flag pole stands for the substance and the flag itself stands for the properties that are connected to the substance and to each other. There should really be a streamer for each independent property. There is always only one substance that is connected to a set of properties revealed by studying the essence of

any given correlate. Over the essence arches the gloss of the idea. The idea is an abstraction that captures part of the relations between the properties and substance found in the thing. Induction and deduction operate between the noematic nucleus and the idea. Essence perception is a completely different way of relating to the object which is similar to what Peirce called abduction. It is a direct relation to the core of the correlate without the interference of logic or reason which directly apprehends the kindness of the correlate.

6.1.5. The projection level

Figure 18:



Finally we see above the gloss of ideation the projection of the correlate by the subject. This is the basic differentiation of the intentional morphe at that particular ontological level. We see here the relation between the correlate and the meta-correlate and the identification of the level.

6.2. Great Ultimate or Primary Process

Now we begin again to look at the relation of the levels to each other. At the basis is what the Chinese have always called The Great Ultimate which is the combination of Yin and Yang into a whole. This is the ultimate image of Primary Process. In relation to Yin and Yang's mutual interpenetration in all phenomena we affirm the principle of "no secondary causation." This means that there is only one source of causation for all phenomena. This is the fundamental basis of unification of all

phenomena. As we look at phenomena we see it as first and foremost Primary Process which reflects this unity but this is impossible for us to comprehend directly. Thus we immediately break that down into dualities. The basic dualities are Yin and Yang. Everything that appears is Yin. It is moved by unseen causes that differentiate the primary causation. What we see are a secondary differentiation of all the caused Yin movements of the phenomenal into Chi and Li. Through the interaction of flow and traces we see the Yang unseen causes and through the Yang unseen causes we get indications of the Single Source of all causation. Thus our ontology realizes that everything in existence points to this deep unity of causation. Primary Process is an upwelling from that source of unity. Our approach of Heuristic research is the means of appreciating that continual pointing of everything toward the underlying unity of experience. Heuristic research abides in its object of research and does not treat that as other than itself. As such it allows deep resources of the mutual participation in Primary Process of both the subject and object to manifest. Only Heuristic Research that gives up distancing allows these resources to appear. Since the deep unity of causation lies beyond the void we see these resources appear step by step through which ever ontological level we project on the phenomena. The projection of ontological levels is in fact a negotiation between the observer and the phenomena under observation. It is a dance of mutual constitution and unfolding. But if we watch the unfolding we see that it goes through specific stages which we have attempted to partially capture by distinguishing parallel elements of all the ontological levels. Since the Chi and Li are the first moments of the Yin phenomena that appear this is where our differentiation begins. Ultimately the full differentiation should work back toward understanding the Yang unseen causes beyond the phenomenal and through them to attempt to understand the unity of all causation. But whether this completion is realized we still need to start with Chi and Li as our fundamental distinction of the phenomenal. Through that we can have access via the Yin to the Yang and attempt to get a glimpse of the Great Ultimate which is the unity of Yin and Yang. We should be careful to realize that Yang always refers to unseen causation and Yang things are only so by analogy not in reality. The Chinese view is the nature is a combination of seen and unseen causes interpenetrated. Thus the traditional Chinese view realizes interpenetration as the mixture of Heaven and Earth. This is contrast as we said before with the void of no form out of which all forms arises. There is in this view no realm of Being between the void and things as exists in the Western view. We project this layer upon the unfolding of Secondary processes from the Primary process. It is a fundamental error¹ intrinsic to the Western worldview that continues to project a subtle clinging over the face of all existence.

Our ontology aligns with this error in order to show the relation of the Western ontology to the anti-ontology of the void. In this way we hope to make it clear how things manifest in the Western tradition through the meta-levels of fragmented of Being.

6.3. Ontological Levels

We now trace the unfolding of the net of distinctions which have already been alluded to at each ontological level. Here we have attempted to give a unique name to each aspect of the correlate at each ontological level. This is difficult and in the end imperfect because our language does not support this kind of naming naturally. Sometimes we have to settle for a phrase or a neologism in order to fill a space for which no name comes immediately to mind. The point of doing this is to give the reader some concept of the difference between levels. The same aspects appear on each level in a parallel structure. The ones named are not all that could be named. In fact each ontological level supports a myriad of aspects. But by attempting to produce a series of parallel structures we are able to show the ontological structure of the levels. It is this ontological structure that is of interest here. We differentiate it from the phenomenal structure which Johansson bases his ontological investigation. The phenomenal structure does not allow a deep investigation into the interface between different levels of process. We are especially interested in making the interface between primary and secondary process visible so we can deal explicitly with the emergent epiphany of secondary process from out of the primary process.

By using this technique we can look at the differentiation of any correlate within an ontological level and also at the cascades of the same aspects through all the ontological levels. Each aspect at a particular ontological level is emergent and thus has different qualities as we traverse the ladder of ontological levels. But unlike the phenomenal hierarchy we are able to look at the unfolding of a particular aspect and get a view of the unity of all the different ontological levels which is generally hidden in a phenomenal emergent hierarchy. Thus what is hidden in the phenomenal hierarchy is readily visible in the ontological hierarchy. On the other hand, what is invisible in the ontological hierarchy is the phenomena itself. This is the difference between the ontological and the ontic. Of course science is concerned almost entirely with the ontic and ignores the necessity of constructing a Formal Ontology in order to elucidate the ontological. But this only means that the work of

1. See my The Fragmentation of Being and the Path Beyond the Void: Speculations in an Emergent Onto-mythology. (Manuscript)

producing the Formal Ontology is continuously being done covertly in every scientific presentation. Here we reverse the precedence and call for the development of an ontological hierarchy to complement the phenomenal so we can see what we are projecting and differentiate that from the ontic itself. This must be the work of a General Theory of Worlds which does not wish to remain naive, not knowing what it is projecting as opposed to what is there implicit in the phenomena. Husserl did not make this distinction and so the mechanism of his philosophical apparatus is suffused throughout his description of the phenomena. Here we separate these concerns and give the mechanical structure of ideational projection in a separate moment of our philosophy. This makes it possible for us really to go back to the phenomena itself because we know what we are projecting upon the phenomena to a greater degree of accuracy. This means we are less likely to identify something of our ontological mechanism with the phenomena itself. But as Husserl points out with his distinction between noesis and noema both of which contain intentionality and content mixed there is never a perfect separation of concerns.

6.3.1. Splitting

Let us first consider splitting of the Li from the Chi. Li and Chi appear at every level. Thus we obtain two cascades of aspects of Li and Chi at each level. We can look at the table taking the tokens of Li and Chi at a give level or we can look explicitly at a single cascade or we can consider the relation between cascades. Thus using a matrix of the aspects of ontological levels is a very powerful tool for building up a picture of the aspects through which we view the phenomena at a particular level. Now our choice of terms belies a certain interpretation of the action of the higher level terms such as Li and Chi on the different ontological levels. Different ontologists would probably have different interpretations of these actions. Also the choice of which aspects to emphasize are a question of aesthetics and also individual concern. This is not to mention the fact that the choice of words to represent the various aspects of the ontological levels is a matter of personal choice. Thus we are not saying that this set of aspects and their cascades through the ontological levels is THE only way of conceptualizing the levels. It is an example that makes clear what we mean by ontological levels and how they can make explicit our assumptions about the workings of manifestation in a level ontology.

Here we see a cascade of Chi in terms of flow, process, dynamism, drift, trend, confluence, flux and upwelling. There is a parallel cascade of Li in seen in terms of striations, grain, channels, play, torque, coherence, intrinsics, quintessence. These

two cascades run parallel and thus reflect off of each other giving specific interpretations to how these two aspects manifest at the different levels and also giving us a level specific vocabulary with which to speak and think about the aspects at that level. At the primitive level Chi is flow and Li are striations or undulations of the flow. At the Object level Chi is a process and Li appears as grain. Now where primitives flow with undulations to produce patterns forms appear as processes that have a granularity. The granularity within the process is irreducible and makes the process quantal in nature. Thus we do not have half a cell. We have whole cells which function. If you cut them in half they stop functioning. Thus the cell is at a certain granularity within the organic process. At the system level we get a different perspective because in a system multiple processes cooperate and perhaps form self-organizing hypercycles. Thus the system exhibits a dynamism of different processes interacting. As such the system exhibits the channeling of processes by other processes. This can be seen as control or as mutual dependent arising but the point is that processes frame other processes and as such give structure to the dynamism of the system. At the meta-system level there are multiple systems co-existing. Here Chi changes into drift and Li transforms into play. The systems relation to each other within the meta-system is different from that of sub-systems. Sub-systems are the differentiation of the interaction of processes to lower and lower levels. This is the same as the decomposition of objects into lower and lower levels of primitive or sub-objects (parts). When we decompose within a level we are not leaving that level. Each level is emergent in relation to the others so the particularity of the meta-system is that within it systems act more or less independently rather than in a channeled fashion. Thus the whole set of interacting systems exhibit a drift in relation to each other as they form an eco-meta-system. In the drift of the systems in relation to each other we discern the play within the systems mutual relations. Here systems are seen as relatively independent entities that have rights and responsibilities within an overall context of mutual interaction. The systems relations will display drift in relation to each other and exhibit the play that exists in the meta-system for different possible relations between the systems. When we move to the level of a domain we suddenly see that the sets of drifts make up trends and the combinations of plays give us specific torque. The trends can only be seen by taking a domain view that looks over several meta-systems and the play also does not appear as torque unless more than one meta-system is taken into account. A torque is a specific coherence of the plays in the meta-systems. A trend is a specific cohesion of drifts. In a world the set of torques become coherences whereas the set of trends become confluences or convergencies. Moving up another level we see that in the universe there is flux and

intrinsic. The flux is the idealization of the transformative moment within the universe. The flux makes visible the intrinsic character of the universe. Moving up the final level we see that the flux is an aspect of the upwelling from the primary process of the universe and that the intrinsic of many possible universes may be spoken about as a quintessence. The quintessence is the inner reality the myriad universes that emanate from primary process. It is the principle that Lo says is one. But we see that one through the upwelling of the many possible universes and their differentiation into worlds and domains, etc. In this way we can see that the cascades of Chi and Li give us a very specific idea of how these aspects of the correlates are differentiated through our level ontology. We get a grid that allows us to look at each emergent level and the relations between aspects not only at that level but seen through the whole set of levels.

Table 8: Splitting

correlate	Chi	Li
Primitive	flow	striations
Object	process	grain
System	dynamism	channels
Meta-system	drift	play
Domain	trend	torque
World	confluence, con- vergence	coherence, inher- ence
Universe	flux, affluxion	intrinsic, asymp- tote
Pluriverse	upwelling	quintessence

6.3.2. Embodiment

Now we know that Johansson takes as primary the existence of spacetime. So at we treat where and when as the aspects that come into sight next. But we do not treat them alone. We are primarily interested in embodiment and as such we want to understand how embodiment interacts with where and when. We posit that they interact in terms of edges and dirt within the constraints of which the embodiment functions as a how. This will be clearer if we look at the Primitive level all together. Here we see a movement in a neighborhood at a moment. That movement has a limit and has to contend with grit which impedes it and is the indication that we are speaking of a real embodied movement and not an ideal movement. All embodied movements deal with friction. The limit and the grit are the internal and external constraints on the how of embodiment. Lets go up a level and look at the Object.

Here there is an action in a place which takes a duration. At the object level there is always the possibility of some flaw: a miss step, a slip of the tongue. Such errors in action are the opposite of the possibility of broken actions which are discontinuous. But action itself is quantal as are movements when you take into account the granularity of spacetime. That granularity shows up as the neighborhood-moment or the place-duration which does not see a pure idealized continuum of spacetime. Instead we see that quantum effects occur at the macro-level and posit that everything else is an idealization. If we again go up a level we see that actions taken together appear as behaviors that occur in a context over an interval of time. Behaviors may display various kinds of non-linearity. Instead of seeing pure breaks we see a continuity breaking off and then perhaps resuming after some gap. At the lower level we could not discern the gap only the pure break. Now we see the gap. It appears within the context of system performance. These non-linearities in dynamical system functioning stand opposite the possibility of perturbations which disturb the system from the outside and can be the source of the non-linearities. But some systems have non-linearities built into their functioning from the first. Dissipative systems are such systems as are autopoietic and reflexive autopoietic systems. The study of non-linear systems has become a whole branch of science which deals with complexity and chaos. The dissipative system produces a non-linearity at its border with the environment across which entropy moves. If it moves inward it produces a catastrophe within the system. If it moves outward it produces a catastrophe within the environment but allows the dissipative system to appear to become more ordered. The autopoietic system preserves the non-linearity at its boundary but adds an insensitivity to perturbations from the outside. The set of non-linearities inside the boundary (it's organization) are preserved as its order at the cost of this insensitivity to the outside perturbations from the environment. The reflexive autopoietic system is not homeostatic but heterodynamic. Thus it operates very far from equilibrium beyond the disequilibrium necessary to the dissipative system and the autopoietic system. In the reflexive autopoietic system the non-linearities of its organization and its perturbations become a single thing. It perturbs its own internal non-linearities in order to reorganize itself. This is the special nature of the reflexive autopoietic system that allows it to exhibit learning. We can see perturbations internalized and becoming the basis of new organizations. This is the essence of the emergent event. Emergent events are merely the internalization of coherent sets of perturbations called anomalies. This internalization causes all the internal non-linearities to be reorganized into a new organizational pattern of within the boundary of the reflexive autopoietic system. Only reflexive autopoietic systems can exhibit this kind of revolutionary re-organization as self-imposed

adjustment perhaps in anticipation. By specifying the dissipative, autopoietic and reflexive system we have already begun to move up the ladder to the meta-systematic level. The dissipative system is already a meta-system. It has its dissipative regime within a particular timespan within which it has a repertory of behaviors. It experiences within that regime external constraints and anomalies. The dissipative system can only produce its ordering within a very particular constraining environment. Anomalies tend to destroy that environment in which the dissipative system can produce order. This will cause the regime to breakdown. Regime covers a spatial region and means a particular setup that must be maintained. Within the regime the repertory of actions must respond in such a way that it keeps the regime going. As long as the regime is in force there is a definite timespan being produced. The dissipative system spans time by producing a coherent flow of negative entropy. If this flow reverses then the timespan ends along with the regime in a catastrophe. This occurs when the anomaly is too devastating for the boundary to be maintained and the constraints of the environment of the dissipative system are violated. As we move up a level to the Domain we see that there is a mode which occurs during an era in a situation. The limits of that situation are a border and the problem is called weirdness. Here we can speak of the Autopoietic system which exists as a domain which is closed over against the dissipative system which is more or less a fortuitous set of correlated circumstances. The autopoietic system makes moves to maintain itself through its self-organizing activities. The autopoietic system has different modes of operation that are internal to its functioning and not necessarily visible to the outside world. A particular input may come while the autopoietic system is in a particular mode where its repertory has changed and so the response will be different from what is expected. Autopoietic systems have a situation to which they are responding or not as the case may be. A situation is only such if it can be ignored. The autopoietic system is good at ignoring its situation. The operation of the autopoietic systems mode may be seen as an era. During a particular era the mode will give a certain repertory of behaviors and during a different era the mode will be different. This is what allows selective action to operate. The autopoietic system selects its modality and thus selects what it will and will not respond to. The situation changes as the autopoietic system enters different modalities. These changes of the situation may not be overt but something the autopoietic system knows about itself that others find out about by trial and error pinging the autopoietic system for a response. The autopoietic system, being turned inward, has as its major constraint its own border. It sees all perturbations as weirdness, which is to say something to ignore and to react to as little as possible. Weirdness is a set of interacting anomalies which is not

sustained. Strangeness which appears at the next level is sustained weirdness. The autopoietic system has no reason to remember coherences of anomalies. It is reacting to individual sets of anomalies as isolated cases and not attempting to see a pattern in the anomalies. At the next level up the reflexive autopoietic system that projects a world. Intrinsic to the world is alterity or otherness. Otherness is based on the observation of sustained coherences of anomalies. At the level of world there is a schesis within a realm during an epoch. The schesis is “disposition or habitude of mind.”¹ Only the reflexive autopoietic system has such a disposition or habitude of mind where mind is the result of reflexive activity. However, this word emphasizes the aspect of embodiment from the Greek schesis, condition, from *schein*, *echein*, to hold: giving condition, disposition, habitude [considered obsolete usage]. We will revive this usage in order to emphasize embodiment within a realm for an epoch in which strangeness as sustained patterns of anomalies allow us to see the Other. Only the reflexive autopoietic system can see the other. This is one of its defining attributes. The autopoietic system ignores the other. But the reflexive system is what it is in relation to the Other. It can not only maintain strangeness in its gaze but can incorporate strangeness into itself as the emergent event. Therefore its disposition is a posture directly taken in relation to strangeness. We can think of the realm and the epoch in terms of the barbarian tyrant. The tyrant has his dominion and the time of his reign is seen as an epoch like the reigns of the Chinese Emperor. We know when texts were written because the characters that make up then name of the emperor were substituted for by other characters. The name of the emperor could not be manifest because he was the hidden one in the forbidden city who’s actions were seen in the harmony of the heavens and the earth during his reign. In this way we can think of the reflexive system as producing a spacetime field which bears its own stamp. Eras have arbitrary endpoints where as Epochs have definite beginnings and ends. The realm of the Emperor has a definite extent of dominance unlike the situation which has only fuzzy edges. The reflexive system knows its own limits as delimited by otherness and experienced in terms of strangeness. If we go up another level we enter the abstraction of the universe which we project beyond our world. Its edges are the unthinkable and its dirt are the singularities to which the laws of physics do not apply. Here the reflexive autopoietic dissipative system appears to have a position in either timespace or spacetime. That position is always in relation to the position of the singularity that violates the physical laws through its unthinkableness. These projections into an objective universe may lead us to believe that there this is a gloss and not real. But we live in a worldview where

1. Webster’s New Universal Unabridged Dictionary.

it is position in spacetime that is designated as real. At the level of Pluriverse we encounter the matrix in which spacetime and timespace merge. We can only say that the reflexive autopoietic dissipative system dwells within the matrix. The matrix is shot through and through with otherness. It is full of unknowables which when we try to process them in the known universe become incommensurable with what is known. Thus the pluriverse is a limit for the whole set of cascading aspects. Our dwelling in the pluriverse cannot be reduced to a position and the position is merely the lowest common denominator of our schesis. Aristotle's categories originally contained these postural aspects which have been rationalized away as not being fundamental. Instead we see posture within our own realm and during our own epoch as fundamental. That can be collapsed down to a position within the universe or a exploded outward into a dwelling in the multiverse.

This level of embodiment, you will notice underlies the projection of Being which occurs in the next table. This is why we will return in the second part of this essay to the level of embodiment within the matrix as a fundamental level at which to carry out our analysis of the relation between reflexive autopoietic dissipative systems to general systems theory. However, for completeness we must consider the other higher levels more removed from the workings of primary process.

Table 9:

	edge	dirt	where	how	when
P	limit	grit	neigh- borhood	move- ment	momen- t
O	discontinu- ity	flaw	place	action	dura- tion
S	non-linear- ity	perturba- tion	context	behav- ior	interval
M	constraint	anomaly	regime	reper- tory	timespa- n
D	border	weird- ness	situation	mode	era
W	alterity; otherness	strange- ness	realm	schesis	epoch
U	unthinkable	singular- ity	con- tainer space- time	position	correla- tive timespa- ce
P	incommen- surate	unknow- able	matrix	dwelling	matrix

6.3.3. Fragments of Being

Next we look at the cascades associated with the articulation of the four kinds of Being. Here the thing exists in the present-at-hand modality of Pure Presence. It has an anti-thing associated with it which exists across some demarcation of difference. In order for the thing to cross this demarcation it must change in some respect. The change is a process of transformation and is governed by the ready-to-hand mode of Process Being. This change can be seen as either a connection between forms which gives us a glimpse of the depth of the things. In this case it is an manifestation of Hyper Being and the in-hand modality. Or on the other hand the change can be seen as an opening up of a space between the things in which case the space normally has some kind of sub-structure of its own which is called by Merleau-Ponty the reversibility. Here we will refer to the warpages of the clearing opened up between the things a nexus. It is governed by Wild Being and the out-of-hand modality. These four kinds of Being are a series of meta-levels that ends in unthinkability. They describe the workings of manifestation from the point of view of Being which is a subtle clinging projected over all existence. Every emergent event must traverse these four meta-levels to be called genuine. Emergence can occur at any of the ontological levels. And here is where we find out how fundamental the reflexive autopoietic dissipative (rad) system is because we posit that these levels of Being occur at every level in our ontological hierarchy. So although emergences can only appear to the rad system we posit fragments of Being operating at every level in the hierarchy. This is because the rad system is projecting the entire hierarchy and can see emergences at any of those levels even though it only functions at higher levels. So let us briefly go through the various levels of the operation of the meta-levels of Being.

At the Primitive layer there is the particle which has an anti-particle. There is a distinction between them which is crossed by a change. The particle and the anti-particle can be seen as the same by considering them as being related by a joint which when flexed in one way gives the particle and when flexed the other way gives the anti-particle. In this way both are seen as merely the same thing rotated about some symmetry. Between the particles there is an opening which as its nexus a fold. The fold is the opacity in the opening. Each clearing must have an opaque nexus. Clearing and nexus together is the opposite of the marker of depth which in this case is the joint. These two open up the difference between the primitives. The change is the actualization of difference through an operation of some type. The particles are present-at-hand. The actualizing a difference through a change, which

is in this case making a distinction transforms the particle into the anti-particle and the change falls under the ready-to-hand. When we go into the change and realize the symmetries involved we see the joints which are articulated and which by their nature cause the change when actuated. This is a manifestation of Hyper Being and the in-hand modality. But we can look at the clearing between the particles instead and realize that instead of a joint connecting them there is really a warpage of the neighborhood and moment which produces the difference between the particle and anti-particle. Within that clearing between the two there is a nexus of reversibility which in this case is a fold. By moving through the nexus of reversibility we transform from one particle to its anti-particle. This is like the inner dimension of the joint. The joint is a clearing plus a reversibility. The joint is revealed by the appearance of the duality of particle / anti-particle in relation to distinction and change. The joint combines the two particles into a single thing which also internalizes distinction and change. This one thing the joint then has the dimensions of the clearing and reversibility as the way it produces difference within itself.

Now we can take the same analysis up to the object level. Here the object is first seen as a form or outline. There is a difference that makes a difference between the outline and other things. The transformation of one form into another occurs across this significant difference. Here the joint becomes a hinge. The difference between a joint and a hinge is that in the later you can see the inner workings. The opening becomes a spacing and the fold a chiasm. We can see the inner workings in a spacing because the spacing allows greater articulation. The spacing here is a perceptual spacing -- a making room for something. That something is the reversible aspects of the chiasm. Again the form and anti-form is present-at-hand. The significant difference and transformation introduce the aspects of Process Being. From the perspective of depth the form and anti-form are one thing with a hinge between them in the sense described by Derrida in *Grammatology* which relates to the in-hand modality. However, they are also two things which have a field between them. That field has its nexus are of the out-of-hand modality and the field and the nexus together make up the inner dimension of the hinge.

Moving up a level we see that for systems we no longer have particles or forms as concrete things but now we have stable states. There is a boundary between states and a transition between states. When we look at the set of states and transitions as a system we can derive the structure of that system as a network of connections between states through transitions which we can represent as a state machine. Since state vectors list the state in which an event occurs and the state to which the state

machine will move we can see that the vectors are like a hinge or joint which unifies the states into a coherent pattern. On the other hand we can view the state machine as a phase space in which all the states of the system represent points in a multidimensional space. The dynamism of the system can be seen as the trace of the system's changes as it moves through its various possible states. When the system becomes excited then these possible states will bifurcate multiple times as the system tends toward chaos. The bifurcation is the point of reversibility within the clearing of the phase space. The system state is what appears to us as present-at-hand. The transitions across state boundaries is in the province of the ready-to-hand. The structure of the state machine which describes these transitions between states holds both the to and from states together to form a hinge that binds states together. This hinge has the in-hand modality and provides us with the structure of the system. The phase space is the clearing in which the system is actualized and it contains the nexus of bifurcations as the system becomes excited and tends toward chaos. These two together have an out-of-hand modality.

When we move up again to the meta-system level we see that the thing is now the system. In the meta-system various systems exist together in a mutual regime. The difference between systems within the meta-system is called by Derrida *differA*nce. It is a differing and deferring in which each system acts as a supplement to all the other systems. The movement between one system and another is called a meta-system transition. This kind of transition causes one regime to cease and a new regime to begin for the system involved. This meta-system transition gives us a glimpse at the deep structure which underlies the two regimes of a single system or between two co-systems within the same meta-system. We might say that a meta-system in the first case is temporal and in the second case is spatial. Of course meta-systems can be both so that different systems at different locations transform into each other. This is one way to see an autopoietic system or a self-generative system. In order to produce the same system it must first instantiate the copy in a different place in spacetime. The composite meta-system transition which is both for the same system across time and toward another system in space has a composite deep-structure as well. This means that the deep structure governs both the diachronic and synchronic aspects of the system transformations. The deep-structure determines the hinges that connect the different systems or different regimes of the same system. They are structural descriptions of the mappings across the boundaries of *differA*nce. Meta-systems have a clearing within them that has the quality of elasticity and nexus of resonance between systems contained within the meta-system. Elasticity has to do with the variations in meta-system

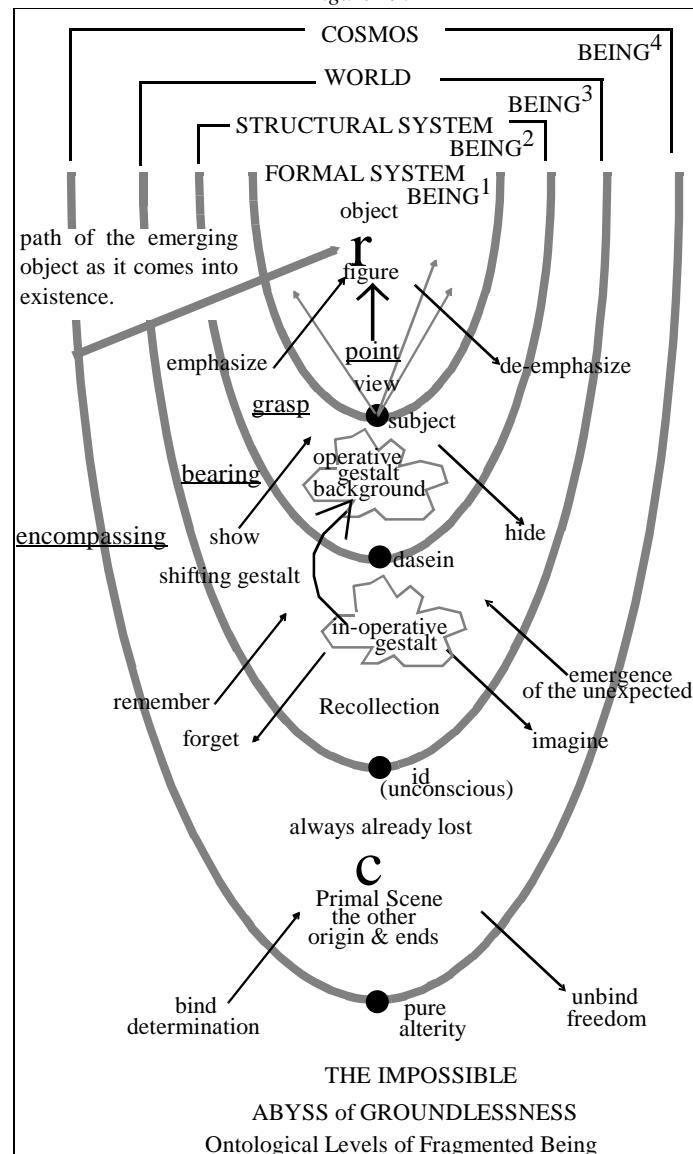
transformations and resonance has to do with the coordination of dynamisms in different systems. The elasticity of the meta-system shows up in the adaptability of the systems to each other.

Going up the to the next ontological level we reach the stage of the domain. Here we no longer see individual systems but only categories of systems. Systems of a particular type are grouped together and seen in a similar light. Within a domain there is a horizon within which systems of a certain type arise. Changes in categories are revolutions. They are changes in what arises from the horizon. Through them we see the core features of a certain type of system. The clearing between categories of systems may be called a slippage and the nexus might be called a congruence. Categories of systems are very stable. Between categories of systems there is some slippage in the sense that sometimes our categories are not in direct congruence because systems of different types will share features so that some systems become hard to classify. This is the work of systematics and ecology to attempt to make the categorization of systems congruent. Sometimes multiple categorizations must be developed and no one set accounts for all the shared features. Congruence is where the category system is aligned with the nature of the systems covered. Slippage is where the category system breaks down. Complete recategorizations are conceptual revolutions via paradigm changes. The categories are present at hand while the movement of systems across the horizons are governed by the ready-to-hand. The core of the category system is under the in-hand modality. The slippage between categories and the congruence between categories reflect the out-of-hand modality.

At the next level is the we find the world. Worlds contain domains as disciplines. Instead of horizons there are groups of interacting horizons I have termed multi-horizons for lack of a better name. The crossing of a multi-horizon is an act of transcendence. The opposite of this transcendence in the place of the deep structure is pure immanence. The clearing between disciplines may be thought of in terms of displacements where the same phenomena in different disciplines is treated differently. The nexus between disciplines may be seen as synchroniety. Synchroniety is the exact overlapping of different sets of displacements so that unexpected meta-congruencies occur. Displacements are the result of cumulations of slippages. These displacements are seen as distortions produced by the unconscious as pure immanence right under the nose of dominating transcendence. It is like the southern speech which was the result of the children being brought up by slaves. What was the unconscious of the southern society caused linguistic

displacements that no one was about to admit to publicly. So it is with all dualistic relations where the master becomes the slave and the slave becomes the master implicitly. This master-slave reversal was pointed out by Hegel. Immanence hides within the multiple horizons and in their inner relations to each other which cannot be explicated directly. You can only shift from one horizon to another so that within a multi-horizon the immanent is always hiding behind the horizons you are not in at the moment. When you shift to that new horizon then you find immanence is hiding behind another new horizon. It is an endless shell game. The discipline as a whole as a combination of domains appears to be present at hand. The multi-horizons and the transcendence of them is ready to hand. Pure immanence appears as in-hand. The relation between displacement and synchronicity strikes us as out of hand.

Figure 19:



Moving yet to a higher octave we see that disciplines combine to produce science in general. We see difference in the borders between disciplines. The movement across those borders is an example of will to power or dominance over nature. The depth of science versus anti-science appears in the lacunae between phenomenal emergent levels. The clearing appears as the distancing we have already mentioned that attempts to produce an objective universe and the nexus is the interdisciplinarity of shared beliefs between different disciplines. Interdisciplinarity is tantamount to intersubjective agreement and shared beliefs. Heuristic Research stands in the place of anti-science. It is a discipline that is by definition non-scientific because it is subjectively based by design. But Heuristic Research arises out of the failure of objective disciplines to actually account for and unlock their phenomena of study without producing nihilistic results. Dominance or will to power arising out of the dualisms ultimately stumbles on the lacunae between phenomenally emergent levels that are irreducible. Meeting irreducibility there is a recoil because it is a barrier that cannot be breached by any type of distancing. It appears as the basis for the cutting up of the disciplines so that inter-disciplinarity reinforces these lacunae in phenomena. It is little talked about but the emergent phenomenal levels as irreducible ontological categories pose a real limitation to science. It meets its nemesis in the phenomena itself which is irreducible. These lacunae are intrinsic collections of pure immanence that cannot be exorcised from reductivist science without doing violence to science itself. So here within science we meet the actual manifestation of the limits of our universe. They are not at the limits of our telescopes and microscopes. Instead it is in the lacunae between emergent phenomenal levels. This is the border of the pluriverse within the compass of the universe.

At the next level up we reach what is called the pluriverse or the realm of all possible universes. We see the difference between universes as the edges of the universe we know. Not the macroscopic edges or the quantum granularity but in the lacunae between emergent levels. Out of these lacunae we can imagine other universes with different emergent levels arising. The depth of the pluriverse is called ultimate reality and meaning. The clearing between universes are their possible range of variability and the nexus is the warpings in timespace. Each universe presents us with its own warpage within the constraints of its own phenomenal emergent levels. Within the pluriverse there is a constant upwelling of universes. That upwelling is the locus for the discovery of ultimate reality and meaning. We imagine an uncountable variety of different universes being produced with wild abandon each one has its own warpings that are the embodiment of beings within

any one of its universes. We do not think there is only one song (uni-verse) that is sung. Instead we imagine multiple songs even though we can only hear one.

With this we have stepped through the whole set of markers that represent the fragmentation of Being. These six cascades form a layer within which the drama of dualistic transcendence is acted out at each level where a line is drawn and then crossed, like the game of children who stand with chips on their shoulders. G. Spencer-Brown has formalized this process of making distinctions and crossing them as the simplest possible formal system. We have seen it operating at each of our ontological levels. It is all based on the assumption of ontological monism, the concept that transcendence grounds itself. We have seen in all cases the line crossed and the crossing of the line are opposites bound together. They are joined in the postulation of depth via a joint or hinge or whatever that allows both sides of the difference appear to be the same, belonging together. We have seen also that another way of looking at the dualistic opposition is to see the clearing between the two contestants and the nexus of reversibility between them. This is kind of like the depth being turned inside out. All this is a peculiar structure posited by the Fragmentation of Being into meta-levels..

Table 10: Fragmentation of Being

thing	dis- tinc- tion	alter- ation	depth	clear- ing	nexus
P particle	dif- fer- ence	change	joint	open- ing	fold
O form; outline	dif- fer- ence ²	trans- form- ation	hinge	spac- ing	chiasm
S state	boun- dary	transi- tion	struc- ture	phase space	bifur- cation
M system	dif- ferAn ce	meta- system transi- tion	deep struc- ture	elastic- ity	reso- nance
D cate- gory	hori- zon	revolu- tion	core	slip- page	con- gruenc e
W disci- pline	multi- hori- zon	tran- scen- dence	imma- nence	dis- place- ment	syn- chroni- ety

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Table 10: Fragmentation of Being

thing	dis- tinc- tion	alter- ation	depth	clear- ing	nexus
U science	bor- der betwe en disci- plines	domi- nance; will to power	lacu- nae betwee n emer- gent levels	dis- tancing	inter- disci- plinar- ity
P uni- verse	edges of uni- verse	emer- gent uni- verses	ulti- mate reality and mean- ing	range of vari- ability	time- space warp

6.3.4. Ideation (note: difference & distinction switched, alteratin also added)

The next set of interrelated aspects have to do with ideation and its projection based on the substructure of Being. This set of levels is very important because it takes us from the channelizing of manifestation in the western worldview to the channelizing of thought. Thought is a special case of manifestation which is an internal target of consciousness. Dennet calls these Joycian machines that have streams of consciousness. He posits that ideation is a serialization within the multiprocessor architecture of the brain. Goertzel picks up this idea and uses it to good use within his Chaotic Logic. He posits that the brain feeds its own processed material back to itself as perceptions and thus produces recursive chains which are independent streams in consciousness. This is an intriguing concept but we need to add to it that it occurs on multiple ontological levels and is nothing other than ideation, or the production of illusory continuities. This production follows the form that Husserl discovered that relates the noematic nucleus to essences and beyond that to ideational glosses. Induction and deduction occur between the noematic nuclei and the glosses. Essence perception brings in a different dimension which is related to Process Being. We could in fact posit that beyond the essence there must be meta-essences and proto-essences as well. Our table does not reflect this as it would be overwhelmingly esoteric to give names to these meta-levels of essence at every ontological level. Besides we have already covered these ontological structures in our consideration of manifestation. The levels of essence are just another way of speaking about the levels of manifestation only within the thing. However, it is important to recognize that there are higher derivatives of essence. Kant for instance recognized that beyond each thing there is a noumena. This is the presence of some purely immanent aspect. Thus the essence of manifestation appears within each thing at some level of its articulation. We can see the opacity of the noumena as becoming diffuse within the thing and mixed with the phenomena. This is what we have called Wild Being. This is what the thing looks like on the level of what Ballard calls the “archaic.” We can see this as a range between the unhewn, the rough hewn and the hewn. Each thing can be seen as being like the rock walls in Scotland made up of unhewn rocks arranged together to form a wall. If we do not change those found rocks but merely fit them together then the wall is made up of unhewn parts taken from nature and retaining their wild character. But if we knock off a corner to make them fit they become rough hewn. When we find rock in a quarry and the stone mason forms it into a perfect shape then it is a hewn wall that is produced. If we make a form and pour in cement to make bricks then we get a formed wall. These stages show us how there is a spectrum of wildness with

some places between wild and tame. The wild and tame do not produce an absolute difference. The last meta-level of essence reflects this spectrum between wild and tame which is always with us even if we cover up the wild with the artificial in every way we can because the proto-essence becomes then a nostalgia for the destroyed wilderness, like deep ecology or a fascination with shamanism, for instance. This becomes important to us because it is the relation between essence, meta-essence, and proto-essence that generates the difference between hardware (as a formal-structural system), software and artificial intelligence/life. The combination of artificial intelligence and life is the autopoietic living/cognitive system. Thus the relation between the meta-essence and proto-essence is very important to us in this series of essays. But these higher essences are not readily recognized and we would have to go to some lengths to explain them. Let it be said here that just as manifestation in general participates in the meta-levels of Being so does the manifestation of the individual thing. Husserl discovered the difference between the essence perception and the relation between noematic nucleus and gloss via induction and deduction. This unleashed through the work of his pupil Heidegger a new ontology that began discovering different kinds of Being. Four different kinds were discovered. No one has gone back to say that this must mean that there are three different kinds of essence above induction and deduction. But this follows from the postulation of the different kinds of Being. A thing must participate in all the different kinds of Being. We postulate that different kinds of things have their basis in one of the levels or another. As we go up the hierarchy those things become more and more rare. For instance software has its being at level three and artificial life and intelligence has its being primarily at level four.

At the level of ideation we see the precept which is a gram at the level of pattern and a figure at the object level. Essence means the perception of kindness which at the Primitive level can be seen as the construction of a diagram. The diagram connects the grams to produce a kind of pattern. Also at this level the substance and properties of states of affairs appear. For a primitive these are called characteristic and instance. For an object these are called attribute and body. Notice that the substance is connected with embodiment and abstraction at the same time. The substance is at once the node of embodiment and generalization which may be seen as contradictory roles. The gloss on the substance is called the idea in the case of an object and a template in the case of the pattern. Thus to return to Johansson's example if a property is price and the substance is a commodity then we can say that the commodity must appear as a noematic nucleus of a certain kind. The kindness is a particular combination of properties and substance which is generalizable to other

kinds. But the kind without embodiment is nothing. The substance becomes the point of organization of the substrata in other ontological levels and also the basis for the gloss. It should also be noticed that another aspect that will not be named at each level is the integra. Each thing has its own particular coherence of properties and their values that goes beyond what appears as the essence. This is what the Chinese refer to when they say each thing has its own pattern of Chi and its own Li. Essences are not the end of the organization of phenomena. You might be misled by the philosophical literature in the west that does not recognize the organization beyond what is intersubjectively agreeable. But each of us appreciated the aesthetics of the individually unique coherences. The integra will also not be give separate names at each level because of the burden that would put upon the reader and the writer of this essay. But we cannot discuss essences without mentioning the integra. We notice that the meta-essence and the proto-essence tend toward the capture of the integra. The meta-essence as noumena grants to the object a coherence that cannot be seen phenomenologically. This is backed by Husserl but it does not mean it no longer exists. The proto-essence gives us to the archaic aspect of the thing and its shading off into the wild out of the artificial. Both thing as noumena and as wild are approximations to the thing as integra, as a unique patterning beyond essence.

Let us look at the system. It is a kernel of selected dimensions as a precept. But its kindness is seen in the system motif. Its properties are its parameters which are organized along the dimensions of the system. Its substance is its embodiment or implementation and the gloss is the system concept. Here we notice that the gloss attempts to reach toward wholeness which is often out of reach. Plato postulated that ideas have a level or reality of their own. Templates for patterns such as tilings also have this formal aspect which is limited by the space we inhabit and thus make certain patterns possible and others impossible. So too with the system concept. It is a view of the whole system and is made up of selected dimensions of parameters what are articulated around a particular motif and given embodiment. From the system concept we can produce many candidate designs. However, coming up with this concept is difficult. To do it we must be inspired or take a leap into the void. The system concept is the source of many concrete system candidates. It is a cornucopia or a door by which candidate system designs come into existence.

When we move up to the meta-system level we see as the percept a constellation. The kindness is revealed as an organization imposed upon the constellation. The organization has its aspects and its network. In what we are doing here we are mentioning aspects of ontological levels but we must not remember that networks

of entities on which these ontological levels are projected are assumed to exist to give these ontological levels concrete embodiment. The gloss of the meta-system level is the order that is produced. This is the major feature of the dissipative meta-system: order is produced out of nothing. Order is information which appears specifically as an organization of the constellation. The constellation is reified into a network by introducing relations. The organization is the set of relations among the different parts of the constellation that turns it into a network rather than isolated units. The aspects are the points at which the relations make contact with the properties of the systems that are being networked.

At the domain level we have types that appear in a taxonomy. The taxonomy reveals a form of meta-kindness. The property is the taxon, which is the handle by which the types are distinguished within the taxonomy. The substance is the cluster which includes many networks and the gloss is principle. It is only by principles can the taxonomy maintain its ordering capability. Principle ranks the taxons in order of importance and produces the taxonomy as a structure. The taxonomy clusters the networks into different kinds.

At the level of worlds the percept is pure noema and the kindness appears in terms of noesis. Properties are existentials and the substance is existence while the gloss is the transcendentals. Here we see the situation reversing so that at the level of world it is dasein that becomes the center of attention instead of the categorizable things. At the level of world the one who projects the world is called into question. That one distinguishes noesis from noema. To the extent these mixtures of hyle and morphe can be distinguished then there is separation from what appears in the world. But where that distinction cannot be made then we get a merging of dasein with the world even as dasein projects the world. In Heuristic Research the boundary between noesis and noema becomes more and more fuzzy. This is related to the fuzzy relation between wild and tame yet different. Here there is a merging within the tame which is a necessary prerequisite for the merging into the wild of the artificial. Dasein has existentials which are the way it relates to existences. It relates basically through the ecstatic projection of the world and everything within it. But that projection has structure which is the province of phenomenology to study. Or it can be studied based on dialectics, structuralism or hermeneutics. Each of these are forms of distancing and ecstasy is a projection of distancing of self from self which produces the world in the interval between the self and itself.

If we rise to the level of the universe we see nature as reified and opposed to

culture. Nature is the precept. The substantiated theory stands in the place of kindness. The properties of nature are universals and the substance is matter. The gloss is scientific law. This at the level of the universe we have the production of a unified totality built upon the lifeworld as a fantasy projection of the intersubjective cohort. In the pluriverse this fantasy breaks down. Here the percept is the proto-gestalt which is the infra-structure of the series of temporal gestalts. Kindness appears as the primal scene which covers over the always already lost origin. The properties are the invariants while the substance is the actual and the glosses are the eternal. This level is discussed at length in my book¹. Suffice it to say that to reach this level you must peel back the superficial basis of the modern western worldview and look at its historical roots. That is not a simple task that can be summarized in a few lines. It is instead the work of a progressive onto-mythology that delves into the roots of our worldview and exposes the underbelly that is normally hidden from view by the gloss of modernity. Our worldview has deep roots going back at least 6000 years. Uncovering those roots is a long and complex story.

Table 11: Ideation

correlate	percept	kindness	property	substance	gloss
Primitive	gram	diagram	characteristic	instance	template
Object	figure; noematic nucleus	essence	attribute	body	idea
System	kernel of selected dimensions	system motif	parameter	embodiment; implementation	system concept
Meta-System	constellation	organization	aspect	network	order
Domain	type	taxonomy	taxon	cluster	principle
World	noema	noesis	existentials	existence	transcendental

1. The Fragmentation of Being and the Path Beyond the Void (manuscript)

Reflexive Autopoietic Systems Theory

Table 11: Ideation

correlate	percept	kindness	property	substance	gloss
Uni-verse	nature	substantiated theory	universals	matter	scientific law
Pluri-verse	proto-gestalt	primordial scene	invariants	actual	eternal

6.3.5. Projection

Finally we reach the level of projection itself. Projection identifies who projects and what is projected. The interaction of the projector and the approach are also identified and some examples given. This list does not have to be explained step by step. there are fairly clear cascades that are related to each other here. All that needs to be pointed out is that who is the projector changes at the different ontological levels. Also what is being projected changes. Like Goertzel we like to see patterns at the basis of our set of ontological levels and each of the higher levels are concatenations of patterns. But we do not believe that things at higher levels can be reduced to patterns. There are emergences at each levels so the illusory subject is transformed along with what is seen. Our approach can be either presentational or representational as Johansson pointed out. We call this the difference between interaction and approach. Interactions have the feature of being processed backwards in time whereas approaches are the results of these backward processings that produce higher levels of abstraction. When we look at information or view a concept then we get the chains of recursion that Goertzel identifies with the serial processing of consciousness. Otherwise if the perception is not of a theory, for example, then there is direct presentation. If the theory stands alone then there is representation disconnected from experience. Streams of consciousness occur when there is a mixture of these with recursive feeding of the theory back to perception. This causes continual RE-presentation that appears as an illusory continuity. This can happen on any ontological level so that these ontological levels give us a stratification of consciousness by Goertzel's model of the virtual computer within the parallel architecture. Instead of a single strand at one level we see multiple strands at all the levels operating simultaneously. The ontological levels give us a map of the mind but only at the highest of our archeological levels.

Table 12:

who	interaction	what	approach	examples
P self	look, glimpse	pattern	fact	information, assumption
O subject	view, regard	shape	concept	formation, production, design,

Reflexive Autopoietic Systems Theory

Table 12:

	who	interaction	what	approach	examples
S	observer, theorist, audience	sight, perception	gestalt	theory	observation, performance, presentation
M	generalist, conductor	pan(orama), survey	collection of shows, entertainment	paradigm	collage, montage, multimedia display, orchestra
D	specialist	perspective	framework, architectonic	episteme	enterprise, market, environment
W	dasein	circumspection, per-lustration	Formal Ontology about the plenum of beings	interpretation of Being	fourfold
U	human	vision	totality, tonal ^a	cosmology	theory of everything
P	creature	intuition	beyond, nagual ^b	mysticism	more things in this cosmos than contemplated by your philosophy

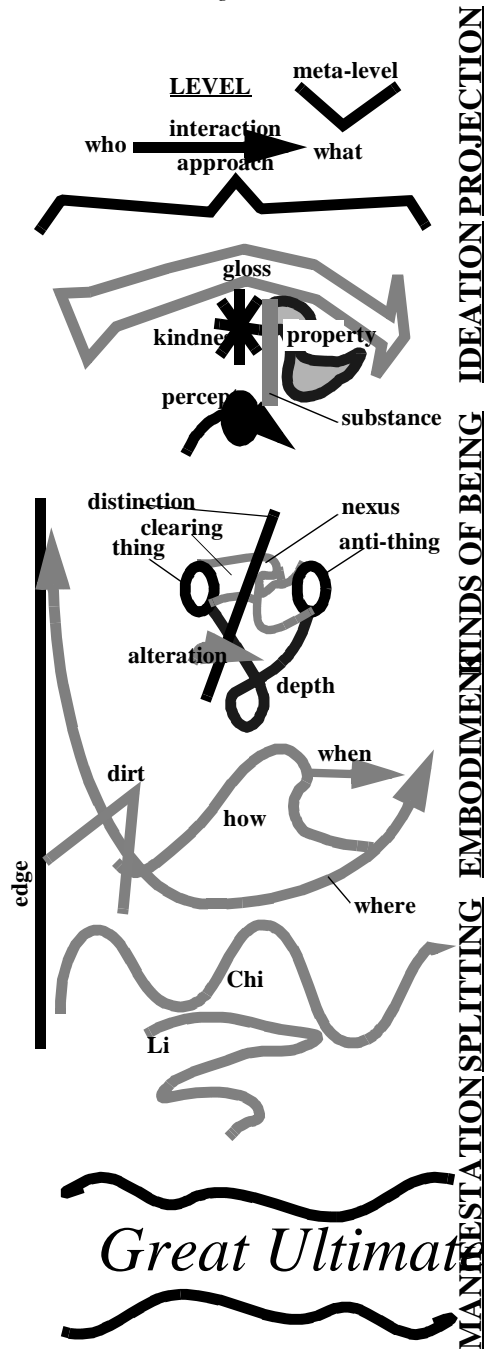
a.term introduced by Carlos Castenada for everything that can be known

b.term introduced by Carlos Castenada for everything else

6.4. Recapitulation of levels.

6.4.1. Template

Figure 20:

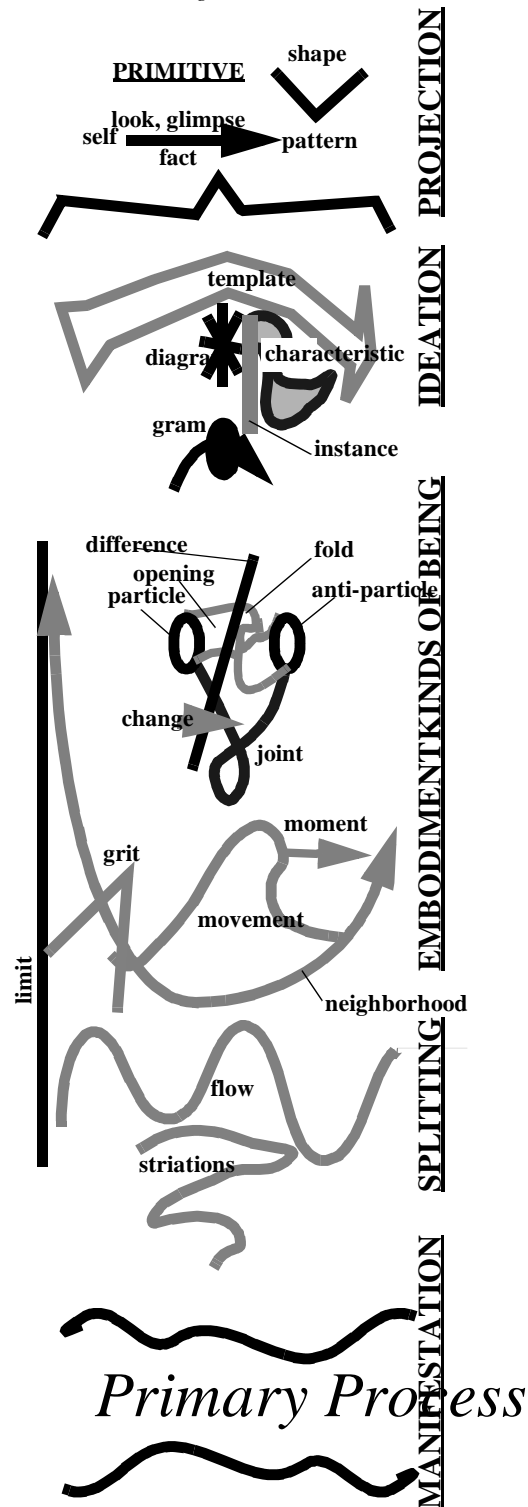


6.4.2. Primitive

The primitive level is focused primarily on patterns. Goertzel uses algorithmic theory of information to define patterns in terms of the algorithmic complexity needed to generate the pattern. At this lowest level the self looks at or glimpses the pattern as a facticity. The pattern may appear as a fuzzy set that composes at the next highest level of the hierarchy a shape. When we look closer at the pattern we see following Derrida a set of grams that taken together form a diagram which has a template by which the various grams are formed into the pattern. The diagram is a partial pattern that we might immediately apprehend even if we do not see the whole extent of the pattern. The diagram is a state of affairs which is composed following Johansson of a set of characteristics attached to an instance. But if we look even deeper we see that operating within the pattern are the four meta-levels of Being. The pattern is made up of particles which embody a set of differences from each other. The change from one particle into another transgresses across the differences. The particles and anti-particle from one perspective may be considered as one with a joint between them. From another perspective the particle and anti-particle may be seen as being separated by an opening which contains folds as points of opaque reversibility. The manifestation of the pattern within Being takes place as an embodiment. The embodiment has occurred in a neighborhood at a moment in time. The pattern itself may be seen as a movement if it is dynamic. If it is static the movement occurs in our observation of the pattern. The embodiment has grit or flaws throughout the pattern and the pattern itself has a limit even if that is only a shading off into infinity at a distance. But more fundamentally the pattern exhibits the flow of Chi and the striations of Li. These are ways of appearing of any Yin thing. They are the ways that primary process is apprehended phenomenally. By looking at the flow and striations we see the action of invisible causes or the Yang that represents the non-manifesting part of primary process. Together yin and yang give us indications of the Great Ultimate or the source about which we can deny secondary causation. Goertzel builds up a structural transformation system out of patterns and refers to Whorf's concept of patternization as the basic mechanism for building up the major features of the world. We concur with the emphasis on pattern but believe that patterns operate only at one level of the ontological hierarchy. That level is the one which sees the structural underpinning of forms so it is right for Goertzel to identify that with the structural transformative system. However, it is clear that patterns arise as ways we see primary process. Through splitting we turn the primary process into secondary processes and through ideation we turn the patterns into tertiary processes. Following this transformative

movement from self creating process to autopoiesis and finally to allopoiesis must be done in order to get a proper perspective on patterning.

Figure 21:



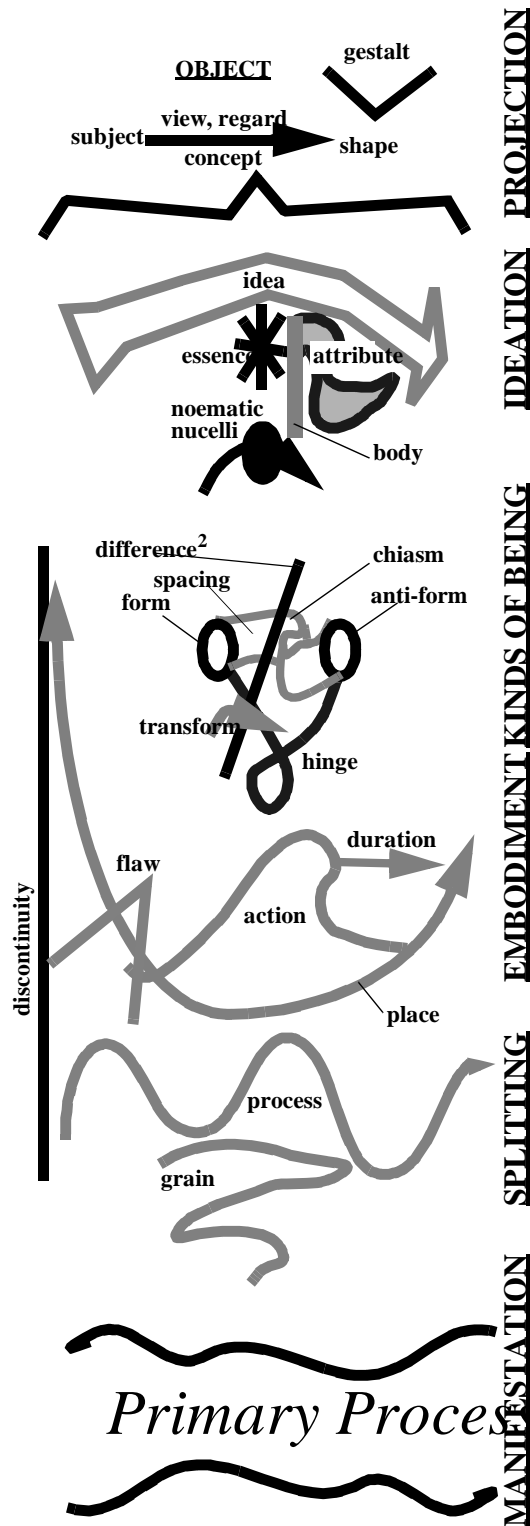
6.4.3. Object

The subject views or regards the object. This is the presentational interaction. The representational approach is through conceptualization. The object appears as a shape. It is a shaped shape. Like pattern shape can be either verb or noun. This suggestive reversibility gets at the core phenomena beyond the reification of language. We see this object as a noematic nucleus in Husserl's terminology. We apprehend its kindness through the essence and produce glosses of ideas as illusory continuities or abstractions. The glossed thing is a state of affairs consisting of body and attributes bound together interdependently. Beneath ideation we see the inner workings of Being that projects forms that have between them differences that make a difference. The crossing of this line of meta-difference is a transformation. Between forms when we look deeper we see what Derrida calls the hinge. But we can also look at the distance between the forms a spacings which hold a nexus of reversibility called at this level a chiasm by Merleau-Ponty. This appearance of forms occur in a place for a duration. The embodiment exists as an action and has flaws and discontinuous limits. This occurs over a substrate of process with grain that prevent our seeing primary process directly.

This expression of the articulation of this ontological level allows us to see its emergent qualities over and above the qualities of patterns. Patterns lack depth. Patterns are primarily informational whereas Shapes loom within places for durations and lack the accessibility of patterns. There is no doubt that we need to appeal to patterns to understand the structural aspects of forms and their transformations across discontinuities but this does not mean that we can reduce shapes to patterns. The reduction is done only to understand changes in forms. Otherwise it is clear that objects are different from primitives. In fact we can see this when we look at the atom. At one point the atom was the primitive of our physical science. It explained objects called molecules and chemical reactions. As a primitive atoms explained the transformation of one substance into another. With the discovery of new primitives this explanatory power of the atom did not go away. And the atom as element is treated differently then the atom seen as something composed of fundamental particles. Something with parts is seen as an object. Primitives do not have parts. They are the last appeal of some explanatory system. Genes and Dna strings are another example. The gene has no parts it is a complete thing that can be used as an explanation for some phenomena. When we map the gene to the DNA string then we do not lose the explanatory power of the gene that Mendle discovered. Instead, the DNA string is now an object, not a primitive which we view as having codon parts. So the same thing can be seen as either a primitive or as an object. Mixing these two

classes at different ontological levels together cause a great deal of confusion. They are two different ways of looking at the same thing.

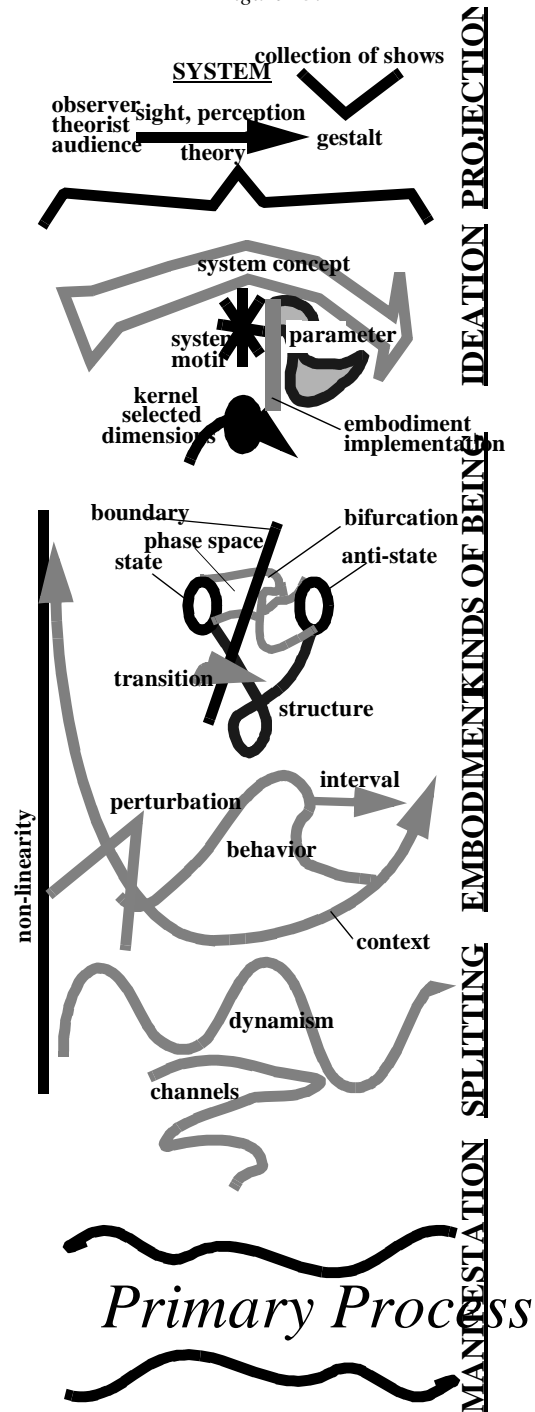
Figure 22:



6.4.4. System

Now we move to the level of a system where an observer or theorist or audience has the perception of a gestalt. The interaction on a presentational level is the sight or perception and the approach on a representational level is the theory. The word gestalt does not have the nice noun / verb reversibility that we considered valuable in the words pattern and shape. But we assume that the same phenomenon exists here even though it is awkward to talk about. The gestalt of the system is a process of showing and hiding. When we attempt to focus in on this showing and hiding process we must select a kernel of dimensions within which to see the system. Within that set of dimensions appears the system motif or its basic patterning that is glossed by the system concept. The motif contains parameters and an embodiment or implementation. If we look below the level of ideation we see the different kinds of Being working together to produce the illusory continuity of the system as a conceptual representation or as a perception. Here we see that the thing of interest in the system is the states and that there are transitions from state to state across boundaries. The system has a structure which we can capture in state machine vectors. But we can also see the system states as a phase space with bifurcations that occur with the excitation of the system as it tends toward chaos. The embodiment of the system occurs in a context during an interval and exhibits a behavior. The behavior may become disturbed by perturbations and if the perturbations are strong enough non-linearities may result. But the non-linearities may be generated by the system itself as well. Every system exhibits a dynamism and tends to become channeled. Waddington calls these channels cherods. They are the lines of least resistance that the system naturally follows unless forced to do otherwise either internally or externally. The channeling of the dynamism of the system is the last distinguishable vestige before the system collapses into primary process. Systems are different from objects and patterns. Systems contain objects and objects contain primitives. Systems reveal the dynamic interaction of different objects. Objects contain patterns statically for the most part. The observer sees the patterns by apprehending the object from different angles. Systems themselves are in motion and the objects appear within them as figures on grounds. Our perception moves from object to object as the system produces showing and hiding dynamics. Systems of patterns are called structural transformation systems by Goertzel.

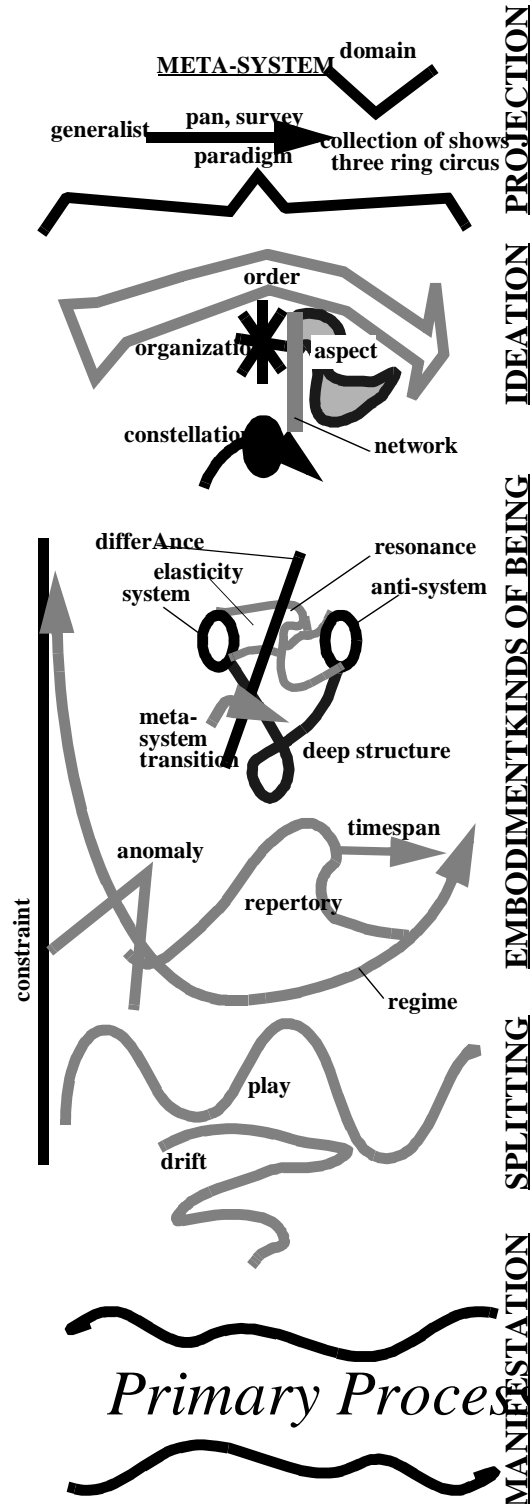
Figure 23:



6.4.5. Meta-system

The meta-system is usually confused with a system. The term system is normally used to cover both. But we need to carefully distinguish these two kinds of systems that are really at different ontological levels. Here the generalist pans or surveys the collection of shows or panorama. The collection of shows operates like any multiple channel entertainment, e.g. like a the three ringed circus. Channel TV is a excellent example if one can view multiple different channels simultaneously. The presentational interaction is through the survey, or in the case of channel TV there is “channel surfing or show hopping.” The representational approach is through a paradigm. If we look closer we see the ideational structure which is completely different from that of a system. A system normally maintains control over its parts. A meta-system provides an arena within which different shows can occur if they abide by certain rules. So for the meta-system the equivalent of the noematic nucleus is a constellation of systems. That constellation is organized and the organization is glossed as an order. The organization is a state of affairs with two network and aspects bound together in complex interdependencies. If we look deeper still we see the substrate of Being where the system is seen as present-at-hand even though it is a process. The distinction between systems is called by Derrida differAnce. Through meta-system transitions there is movement from one system to another either spatially or temporally or both as mentioned earlier. The meta-system transitions reveal the deep structure connecting different structural systems as aspects of the same thing. But we can also see between two different system networks a clearing of elasticity and a nexus of resonance. Systems can compensate for each other and can resonate together and that harmony is what we call the meta-system proper. The network is embodied under a regime in a timespan and exhibits a repertory of behaviors. The dirt in this case is called anomalies and the limit is edge of the meta-system is determined by constraints. Within the meta-system there is drift an play that are the ways Li and Chi manifest themselves as they split around the Yin aspect of primary process. Meta-systems are like operating systems for computers. They are the arena in which systems functions. They may be considered as systems themselves but this is actually a categorical mistake. Actually we can look at a dynamic phenomena as either a system or a meta-system and if we do we will see different aspects of the same phenomenon under scrutiny.

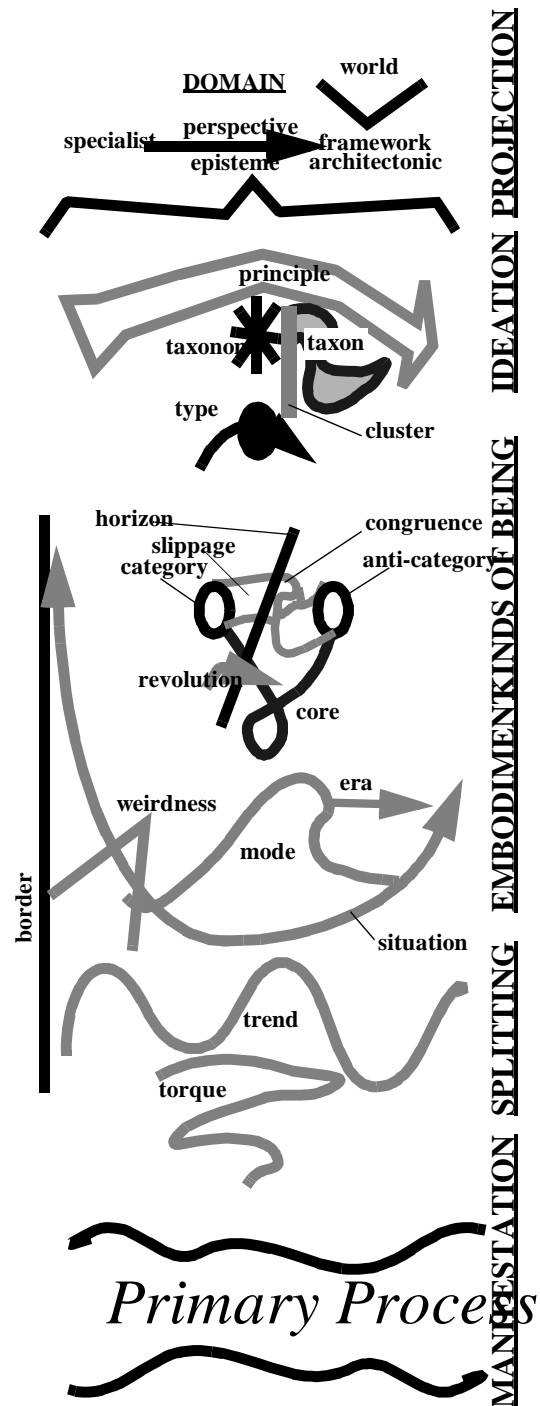
Figure 24:



6.4.6. Domain

Where the system was monolithic and the meta-system loose and open, the domain is again monolithic but in a different sense. Domains cover a set of systems of the same type that appear in different circumstances. The domain framework is the result of an exercise in domain engineering. Here the specialist approaches the domain on the basis of an episteme or a certain organization of knowledge and its basic categories. The specialist gets a perspective on the framework of the domain and perhaps posits an architecture for that domain that should guide the design of specific systems in that domain. If we look deeper we see that there is a taxonomic process going on within the ideational realm. The equivalent of the noematic nucleus is the type which taken together with other types creates a taxonomy. The creation of an order to the taxonomy occurs on the basis of an application of principles. The taxonomy organizes the taxons and the clusters of networks in a set of relations that is interdependent. But the taxonomy really only reveals more fundamental categories at the level of projection of Being. Between a category and the anti-category there exists a horizon. The transition of an horizon is a revolution within the category system. Foucault called this an episteme change. The categories as one goes deeper and deeper form a core set. This core set looks something like Aristotle or Kant's table of categories or the set proposed by Johansson. The core is the fundamental set of most general yet orthogonal categories. Between categories there is always some slippage as things are difficult to categorize and the nexus is the congruencies between categories in which the categories overlap. The clusters of meta-systems are embodied in a situation during an era. They exhibit a mode in which the repertory of behaviors changes. The dirt in this case is called weirdness where category schemes breakdown and categories always exhibit some edge called a border past which they do not apply. The clusters of meta-systems within domains exhibit trends and torque as the means of splitting primary process into something cognizable. The torque is an inner tendency within a trend. Torque has the same relation to a trend as a tendency has to an intention. As Johansson says tendencies may point in different directions than tendencies and so they are separate ontological categories. So to a torque within a trend may be pushing in a different direction than the trend is going. Torque is the pressure that increases the tightness of screws. Torque is an intensity in this case.

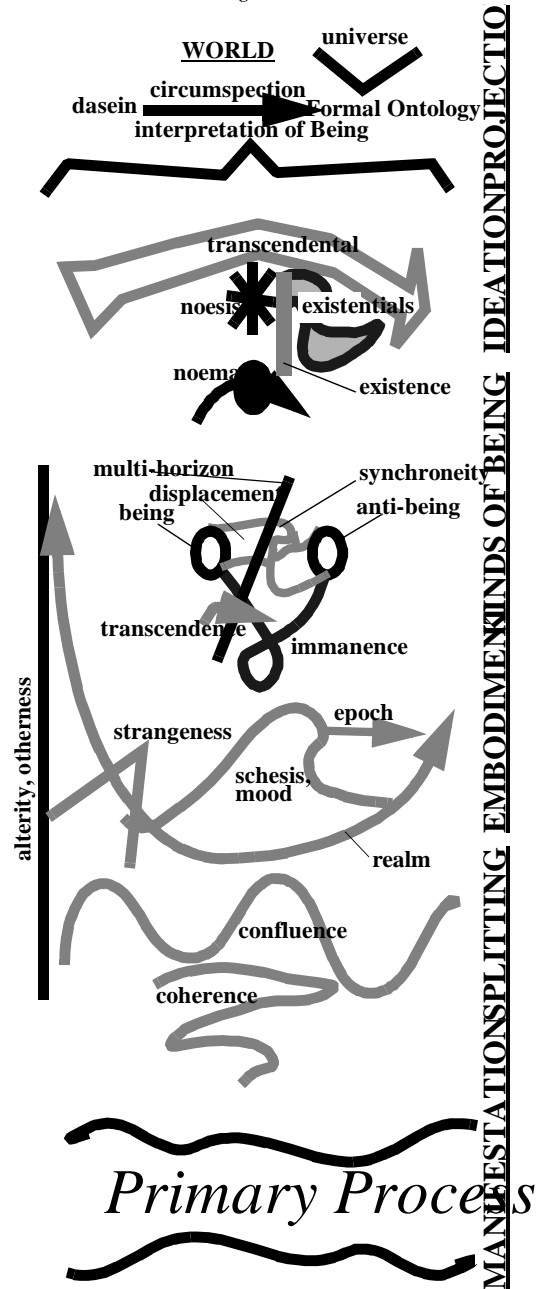
Figure 25:



6.4.7. World

After subject and object collapses there is *dasein* (being-there) or being-in-the-world who is neither generalist or specialist. Instead *dasein* as being-in-the-world interacts with beings through circumspection and approaches the world by projecting an interpretation of Being. What *dasein* circumspects and interprets is the fundamental objects of its formal ontology. The formal ontology posits different classes of beings and *dasein* takes a circumspective viewpoint on all of these classes of beings. When we look closer we see that *dasein* sees all the beings posited by the formal ontology as being composed of *noema* and *dasein* presents these *noema* to itself as *noesis*. Here the substance is the existence posited in relation to different beings and that is apprehended through the existentials of *dasein*. In the case of Heidegger these existentials are understanding, talk and discoveredness. These together have a core of care. But across the *noesis* *dasein* projects a gloss covering all beings identified in the Formal Ontology. In this case the gloss is Being as a transcendental differentiated from beings via ontological difference. In the case of Heidegger this transcendental, Being, is seen to ground itself thus producing the conundrum of Ontological Monism. Looking closer we see fragmentation of Being at work within the process of projecting Being. A being stands over and against an anti-being differentiated by a multi-horizon. A multi-horizon is a set of horizons acting together. Crossing the horizon is an act of transcendence. The difference between the beings is a displacement in relation to the transcendental. The nexus within the displacement is a synchronicity or a lack of displacement which makes beings entrain harmonically. The depth beneath the transcendence is immanence, the unconscious, that hides itself always. Existence must occur in a realm during an epoch. It occurs as a *schesis* or mood because *dasein* is projecting the world as an act of ecstasy which entails its taking on a mood. In the occurrence the dirt appears as strangeness and the edge as alterity or otherness. Though strangeness we know the other. Beneath the occurrence there is a confluence and a coherence of beings that masks our direct apprehension of primary process. *Dasein* is 'in' the world that it itself has projected. The ontological difference between beings and Being is something that *Dasein* produces. Worlds encompass all domains and they are the basis for projecting the universe as an objective reality.

Figure 26:

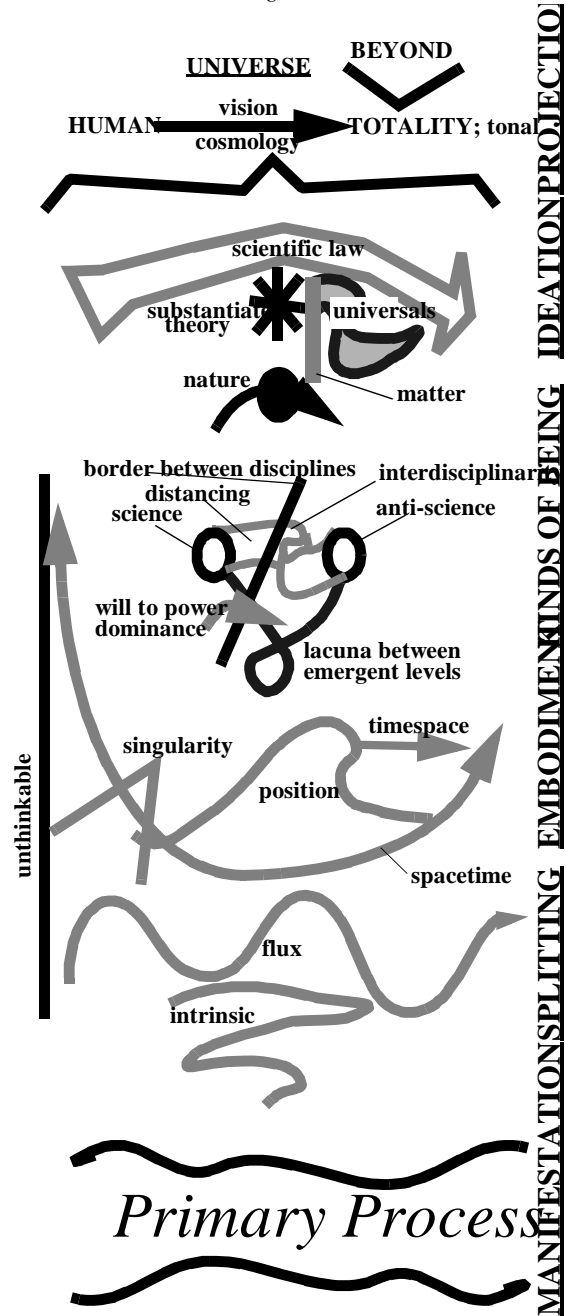


6.4.8. Universe

The universe is a projection out of our lifeworld of an objective reality. It is a solely human vision of totality. This totality has been called by Carlos Castaneda the tonal as opposed to the nagual which is everything that cannot be reduced to the single song of the Uni-verse. The totality is approached as a representation through cosmology and the means of presentational interaction is vision. In our own Western worldview we see the equivalent of the noematic nucleus as nature. It is apprehended on the basis of experimentally substantiated theories which isolate universals concerning matter. The gloss of the substantiated theory is a scientific law. When we look closer we see the different kinds of Being at work within this ideational process. One science is differentiated from other sciences by its defined borders, but these borders are not clean cut in most cases. There is a will to power or dominance which occurs when these borders are breached usually through some reductionist technique. The various attempts at reduction cause the lacunae between emergent levels to become the final arbiter in disputes. Between disciplines there arises different forms of distancing. We have seen this in the case of Phenomenology, Dialectics, Hermeneutics, and Structuralism. The nexus between disciplines reveals interdisciplinarity which is also the region where Heuristic Research arises as an anti-method. Matter occurs in spacetime / timespace in a position. The dirt in spacetime / timespace are the singularities which are undefined by the laws of physics and have the same status as the edges of the universe before and after the Big Bang. Singularities within the universe and the edges at the big bang are both unthinkable in terms of physics and properly belong to meta-physics. Beneath the level of occurrence there is the flux and the intrinsics that correspond to Chi and Li that split the Yin aspect of Primary Process so it can be apprehended.

The universe is a reification of the world which can only exist, as Goertzel says on the basis of a shared belief system. He goes on to point out that self and reality are both mutual projections which give rise to each other and entail each other. Thus he reaches a position similar to that of Loy in Non-Duality which denies the reality of the physical universe beyond the shared beliefs and the social construction of self and reality. This is of course the position of intersubjective phenomenology as well. Reality is socially constructed.

Figure 27:



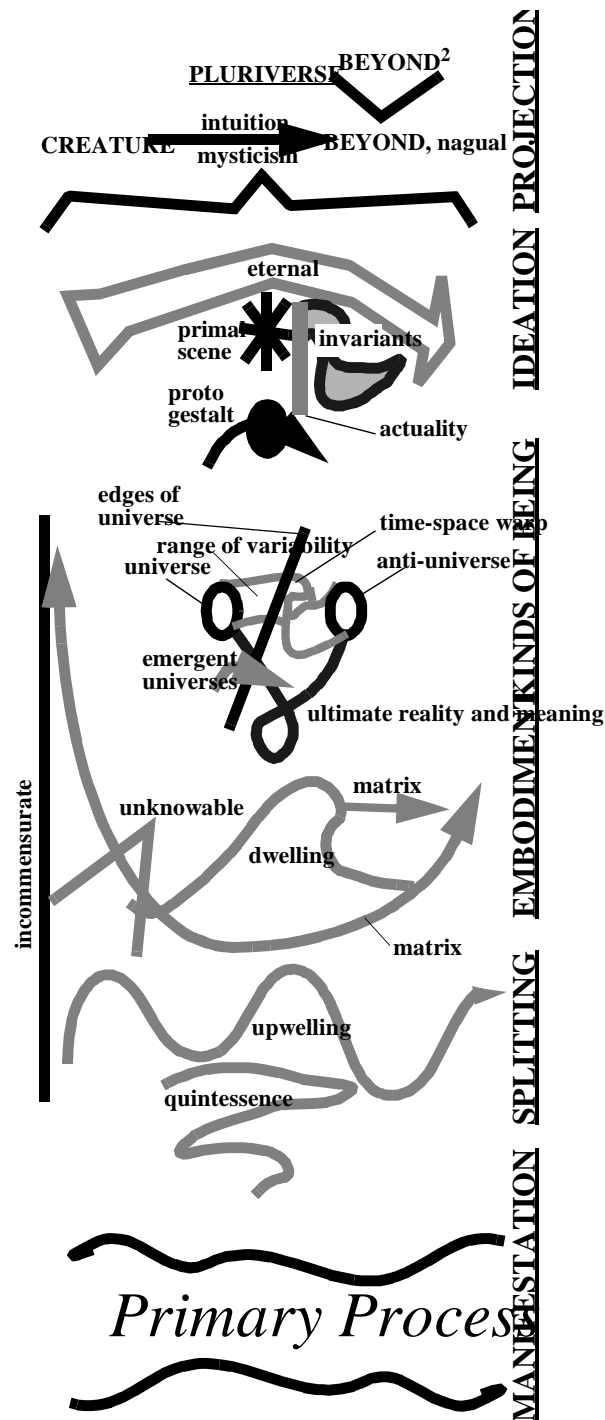
6.4.9. Pluriverse

The pluriverse is what lies beyond the totality of the Universe. That totality can be seen as a single filter which excludes everything that is not allowed within the confines of the universe. An example is UFOs or ESP or what ever does not fit the norms of admission of the universe as a dominant shared belief system. In the pluriverse a creature interacts with the Beyond through his intuition. Carlos Castenada called this Beyond the Nagual. The mythology which Castenada has produced has many features that violate the shared beliefs that police our designation of reality. He uses the distinction between tonal and nagual to define this difference. Since we do not have a good vocabulary for talking about the beyond his vocabulary is introduced to situate what we are speaking of. He postulates many things in his novels that go beyond the shared norms of our dominant worldview. Those things that do not fit into the dominant view of what is real in the universe is classified as belonging to the nagual. An example is the transformation of a human into an animal. There are many other worldviews or partial worldviews that stand in violation of materialist ontological norms from other cultures. The pluriverse includes all of these other possible universes as well as the possibility of multiple parallel universes posited by some physicists. The approach to what lies beyond is called mysticism. Mysticism has a long tradition in many cultures including the Western mysticism. For instance, some parts of western culture posits the existence of fairies and elves. All these denied possibilities belong to the pluriverse. When we look at the pluriverse through ideation we see the equivalent of the noematic nucleus is called the proto-gestalt. The proto-gestalt is the behind the scenes unity of many transforming gestalts. Through the proto-gestalt we get views of eternal which are features of eternity or the out-of-time realm beyond our in-time realm. We see the eternal through the postulation of primal scenes which stand for the always already lost origin of things within the in-time realm. In the Indo-European heritage the primal scene is contains images of the well and the tree. The primal scene contains indicators of invariants that go beyond what exists in-time and these are related to actuality. The invariants and the actuality have the relations of properties to substances within states of affairs. However, these states of affairs go beyond what can be expressed within our universe. We also see the different kinds of Being operating. We see emergent universes appearing at the edge of our own universe. The depth here is the ultimate reality and meaning of all existence. It is related to such questions as “Why is there something rather than nothing.” Between the universes there is a spacetime warp which isolates separate parallel universes in physical terms. It is such warps that one encounters when moving from one universe to another. The clearing exists as the range of

variability between universes. All alternative universes plus our own exists within the matrix which is the equivalent to spacetime for all possible universes. The matrix is what existed before the Big Bang. It is the matrix that the Big Bang causes the universe to explode into and that is still happening now. The matrix also contains all possible universes which are somehow parallel to our own. In there matrix there is no difference between spacetime and timespace. We dwell within the matrix as creatures. The dirt in the matrix is the unknowable absolute opacities and the edge of the matrix is what is incommensurate with our way of being. Every thing that is beyond our comprehension, or our understanding in the terms that are acceptable in the dominant accepted belief system defines that limit. The equivalent to the Chi is the upwelling of the universes from out of the void. The equivalent to the Li is the quintessence, or the inner coherence of the upwelling. This has been called the Philosophers Stone by alchemists in the Western tradition. In China the Quintessence is called Hun Tun. In the Kabbalah a similar idea is called The Tree of Life. These are ways of talking about the essence of everything which goes beyond our understanding. The upwelling and the quintessence are ways of talking about Primary Process that goes beyond what is possible to say about it via shared, so called “Objective,” rules about rationality that hold sway in the totalitarian environment of the universe. The pluriverse, also called the multiverse, incorporates all “fringe” ways of looking at and seeing the world. It is there as a catch all category which reminds us that there are more ways to see the world than that of the dominant worldview which has gained sway over the whole earth largely through the power of the gun. The pluriverse is a reminder that there were originally many different worldviews many of which still exist even though myriads have become extinct. Also the pluriverse is the home of the perceptions of all other non-human creatures. It is the stronghold of Deep Ecology which would give rights to be left alone to those other animals. Whether we endorse all these other possible worldviews, and universes our category system must have a place for them and the realization that we are not the only ones to ever have viable a way of looking at actuality. But we must also admit that so many cultures have systems that contrast our in-time realm to eternity. The pluriverse is also the place where eternity still lives. The eternal is what is covered over by the primal scene. Nietzsche talks about this in terms of the Eternal Recurrence of the Same. The Pluriverse is where this Eternal Recurrence of the Same occurs. We may say along with Heidegger that the Same is what belongs together. Thus all the universes that emerge from the upwelling of the Primary Process belong together. Our universe is only one of the many possibilities. The expression of this Sameness is called the quintessence. The quintessence is what is the same across all possible universes. The quintessence begins to approach the realization of pure Yang. After all the Li is the

image of the Yang in the Yin. If we speak about Hun Tun then there is the story of the opening up of orifices in the primordial man by his friends. This of course killed him. This is similar to the Indo-european story of the killing of the Prusha or Yamm. The Yang is seen by analogy to be on the backs of the animals whereas the Yin is seen to be on their fronts. When you think about it most creatures have no eyes or ears or other orifices on their backs. So every creature has an aspect of Hun Tun in their physical anatomy. That closure as opposed to the openness of the yin side (the underbelly or facing side) of the animals is the doorway to the realm of the pluriverse. Closure within the universe is the doorway to an openness on the multiple parallel universes. The Chinese knew this very well. They attempted to raise to an ideal the concept of diminishing what the eyes see and said that you could know the whole world without leaving your hut. This is because the basic principle of existence is one even though there are myriad variations in existence. This principle that is one is the quintessence. The production of difference is the upwelling of the universes. All the universes manifest the same principle which is the reflection of the Yang in the Yin. Yang is not pure either. Yang has a reflection of the Yin within it. This is the appearance that there are multiple unseen causes. There is in fact only one cause for everything which is the pure yang but we do not see this primary cause directly. Instead we see many different unseen causes operating within existence, as when new species as types of autopoietic systems pop into existence. These are the result of unseen causes which are differentiations of pure Yang which affirms no second-ary causation. This is the Yin

aspect within Yang



7. Cognitive Systematization

Defining the ontological layers as has been done is only the first step because we need a way to produce a coherent body of knowledge about the things defined in

our level ontology. Levels destroy once and for all any hope of axiomization. Godel's proof made it clear that axiomization was an unrealistic goal for any ontology with one level, but the addition of other levels makes this goal well nigh impossible because no deductive system can handle the lacunae between levels. Jumping from step to step within a proof is hard enough without trying to reason across discontinuities generated at an ontological level. The only kinds of philosophies that ever try to handle that were the different level ontologies of an idealistic or materialistic bent. But we need to assure that creating our level ontology based on both the phenomenal and ontological hierarchies still allows us to develop a coherent body of knowledge in spite of the different levels involved. Johansson shows how this will work from the ontological end with his distinction between substance and substratum. But from the epistemological end we need something to replace the concept of axiomization. That something is what Nicholas Rescher calls Cognitive Systemization. He proposes that it is not necessary to have axioms in order to have a coherent body of knowledge. Instead he works from the basis of a network of principles that ones cognitive system uses as a basis. We will not delve into systematization itself except to note that it is similar to Deleuze and Guattari's concept of the rhizome as opposed to arboresque structures. The rhizome is a network and as such it does not have any beginning or end. It is all middle with many different entries and exits. It is basically structured like a hypertext document with myriad jumps back and forth within the rhizome and many places to enter the document from indexes, contents, and special purpose outlines. We posit that each level of our level ontology has a rhizome structure and is essentially an interlocking network that has many relations with other networks at other ontological levels. So that all the connections between these different networks centered at ontological levels is part of a meta-rhizome containing all the networks on all the ontological levels and all the cross level links. This meta-rhizome if it existed would be very complex and would exhibit not just artificially emergent phenomena within given levels but also artificially emergent inter-level phenomena. The job of applying cognitive systematization to the meta-rhizome is an endless task. It is likened to the application of the hermeneutic circle to a text to attempt to get at the meaning beyond all the interlocking diacritical significances of the text. It is phenomenological in the sense that one must attend to the artificially emergent phenomena within and between levels as well as genuinely emergent phenomena that repattern the different local-rhizomes or the whole meta-rhizome. It is structural in the sense that there are discontinuities between ontological levels, phenomenal levels, and between rhizomes at the same level that must be accounted for and dealt with. It is dialectical in the sense that there are many wholes

throughout this interlocking structure that may be investigated or produced. In other words cognitive systematization must apply each of our distancing approaches in turn to the problem of getting a systematic view of knowledge that spans the entire meta-rhizome.

A point that needs to be made in relation to this effort is the priority of non-cognitive or ontological systematicity over cognitive systematicity. We must first have a view of our Formal Ontology before we can systematize it from a cognitive viewpoint. This work has not been completed. We now have a view of the different ontological levels and this can be compared to the different phenomenal levels discovered by science. But we have not yet gone to the extent of identifying all kinds that exist and the hierarchical relations of substances and substrata. This work goes beyond the scope of this study. It is enough to identify the categories of Johansson and the ontological hierarchy of emergent levels to complement the phenomenal hierarchy. But before cognitive systematization could really take off the final work of Formal Ontology would have to be completed. The main point here is that there is another way of systematizing knowledge other than axiomization that will work and Rescher has outlined that methodology for us. Until systematization occurs we have rhizomes as the fundamental form our knowledge takes as it straddles the ontological and phenomenal levels. We must realize that the lacunae between levels are not a hinderance to knowledge but an opportunity. Axiomization does not work. So we can give up that pursuit. Having ontological levels only complicates things a bit. It is not the reason we cannot axiomize. It does, however, provide us with an ontology that is adequate to the phenomena we experience. If we cannot axiomize we might as well have descriptions of existence that are aligned with what we discover rather than falling for the reductionist program every time. Reductionism is good for creating crisp descriptions of phenomenal levels. It is never true except when it seeks to reduce things between levels to a particular level. The ontological and phenomenal hierarchy should be viewed as complementary. Right now science mixes these two together hiding their assumptions along the way. By separating these two we are really separating as much as is possible the noesis from the noema. Noesis is never without matter and noema is never without eidetic forms. But by separating noesis and noema as much as possible we can more clearly see the contribution of the things themselves. Unlike Husserl's analysis that mixes noesis and noema we wish to follow Johansson's description of categories and add to them the ontological hierarchy as a complement to the phenomenal hierarchy proposed by science. This allows us to be as clear about our foundations as possible given the impossibility of

axiomization and the necessity of postulating ontological levels. We are driven to this postulation not just because of the levels of phenomena that are discovered by scientific investigation but also because of the necessity to account for emergence, the basic phenomena of our social phenomenology. The lacunae between the levels are the archeological remains of emergent phenomena or the means of receiving and dealing with emergent phenomena. The discontinuities are the key point. It calls on us to produce a logic of discontinuity¹ as opposed to a logic of relations or connections. The discontinuities between levels are in important non-phenomena that we must take into account because it is exactly these bits of non-Being that are the harbingers of all emergent phenomena by which the social is defined.

8. Chaotic Logic

Defining categories which point to the reality of social phenomena and defining ontological levels which give the social a reality by positing the projection of worlds are still not enough. We really want a concrete theory of the operation of the social as a working thing with a reality all its own. So here we will return to psychology and take another theory that will provide such a model. Here again the model like Ford's principles of self-construction is proposed as a way of modeling the psychological. But it is my opinion that this next model taken from Ben Goertzel's work Chaotic Logic makes a much better basis for modeling social phenomena than it does a psychological model. However, as with the other case we can say that this is just a matter of emphasis because from the point of view of social phenomenology the individual is a reflection of the social produced through the process of socialization. So starting at either end is just a matter of tastes and about what kind of phenomena you want to talk about. In this section I will outline some aspects of the Chaotic Logic model and discuss how it provides a good starting place as a theory of social processes. This will provide us with a good concrete reference point for what will follow in the next part of this essay where concrete mathematical and metrical models will be explored in detail in order to define as precisely as possible the threshold of complexity of the minimal social machine.

Chaotic Logic is in fact a brilliant work which it is not possible to do justice in a short overview. Thus we will proceed as we did with Johansson's work to comment upon it as if the reader had full knowledge of Goertzel's model. First it should be said that Chaotic Logic is not really a logic in the traditional sense. The word logic

1. See author's dissertation *The Structure of Theoretical Systems in Relation to Emergence* (London School of Economics 1982)

is being used to describe the deductive or reasoning mechanism of the brain or mind. It is in fact a model of chaotic processes. In Goertzel's usage the processes being described are psychological. But we will appropriate the model to describe chaotic social processes. The reason we want to do this is that we need a model of social processes that are poised at the fourth meta-level of Being. We have a general description of Wild Being from Merleau Ponty in The Visible and the Invisible. We have a more specific model which works out many more of the implications of such a social model at that meta-level of being from Deleuze and Guttari in Anti-Oedipus and Thousand Plateaus. But what we lack and what Goertzel supplies from our point of view is a precise model of chaotic processes at the social level. We need them to be chaotic because we have already identified chaos as the kind of mathematics that relates to this meta-level of Being. Deleuze and Guttari talk about the fundamental schizophrenia underlying all social phenomena. Merleau Ponty talks about the "savage" and connects his treatment with of Wild Being with Levi-Strauss' Savage Mind. In that book the "bricoleur" is contrast with the scientist. The bricloeur takes things and re-engineers them to work by scavenging from other broken machines and found objects. The seeming fundamental disorganization of the savage mind that has its own deep structural order was taken as a Paradigm for thinking about what Wild Being must be like. Since Wild Being is right on the edge of what is thinkable it is difficult to come up with concrete conceptual descriptions. In fact, Deleuze and Guattari have done very well in this respect by cancelling out Marxian Economics and Freudian Psychoanalysis outs side philosophy so they can still talk about what is left over within philosophy. But having now a clear philosophical picture from their work which isolates desiring machines and the socius as levels of reality that deny the reality of the individual and showing their relation to the body-without-organs which is what the Essence of Manifestation is interpreted as in their system. Having these bases we now want some more formal way of approaching the definition of what occurs at this highest meta-level of Being. Goertzel provides this by approaching the problem of describing processes based on a knowledge of Chaos mathematics. He ultimately describes what is called the self-generating component system which gives an excellent starting place for formal modeling of the processes that occur within Wild Being. We will dwell on some of the ideas that lead up to the definition of this special chaotic systems model. All this is in preparation for considering more deeply what is the form of a minimal social machine. This is because the minimal social machine must be in its dynamics a self-generating component system of some kind. This is to say that the minimal social machine must be at some level what Goertzel calls quantum computable. By having a good model of the quantum computability we can then

easily imagine the dynamism of the minimal social (reflexive autopoietic dissipative) machine when we know its form. We need a good model of chaotic dynamism of social processes so we can say more than they are fundamentally schizophrenic or they are the processes of the bricoleur. Analogies will take us only so far. Formal definition allows us to reason about these structures in spite of their seeming madness. Like quantum mechanics they have their own rules that are counter intuitive and we must have a way of understanding the implications of those rules and that is done best through a formalism.

As one might expect Goertzel produces a formal-structural model as the basis of his reasoning. That model is called by him the dual network. It is made up of two different but superimposed networks one of hierarchical control and the other of associative memory. We posit that there is a 'dual' of his dual networks which we will describe as having control exerted via a lifecycle model and association via a hierarchical functional decomposition. We will use this 'dual' as the basis of our description instead of the control and associative memory representation. We believe either of these descriptions of the dual network are possible but for social systems the exertion of control via life-cycle is better suited to our attempt to describe autopoietic systems. This and the emphasis on the social as the starting point is the only modifications that need to be made to Goertzel's model for our purposes.

We start of course with the social as our basis. And we move to construct Goertzel's model backward so to speak starting from the social and moving toward the individual. As such we state that social processes are fundamental to this description and what we really want is a description of those social processes that do not see them as illusory continuities or as statistical, or possibilities, but as, at their basis, chaotic. We want to display the other ways of looking at processes as based on their fundamental chaotic character. In this way we can be sure we are operating within the confines of Wild Being. Generally theories start with the Pure Presence and work toward Wild Being. Instead we want to start with Wild Being and work our way toward Pure Presence or illusory continuity, this time with a formal model which will allow us to reason about this level and its emergent relations with other levels. Of course we know that the actual phenomena that we are talking about may occur at any of our ontological levels. We know that Wild Being appears as clearing & nexus in all of these levels and that the phenomena and noetic form applied to the phenomena will differ depending on the level. But we are also saying that there is something about Wild Being that is inherently connected to

the social so that if we construct a model of social processes at the level of Wild Being then we it will be a thread that will appear at all of the levels. The social is an underlying reality of all the levels through the working of Wild Being within all of them. This is borne out by the positing of the category of the tendency as the foundation for all social matter -- i.e. as desire. In Johansson only tendency and intentionality are fundamental. Intentionality is an illusory continuity. Only tendency appears as having categorical foundation and that happens at the level of Wild Being. So we can see that we are on the verge of having an ontological basis for all phenomena as being built up from social matter of tendencies that get added together via vector addition to form intentions. But we do not know how processes of tendencies operate. This is what Goertzel's model supplies us with.

Let's begin by describing our alternative dual network. Goertzel's model has a hierarchy of control mapped onto a non-hierarchical associative model. These two working together give a picture of the structure of mind as each node in the dual mapped network corresponds to a psychological process. This becomes the transformative structural model when he adds the concept of pattern and algorithmic information theory. Each node is seen as doing a transformation that turns one pattern into another. The complexity of the transformation is measured by the complexity of the algorithm necessary to make the transformation. In place of this structuring I propose an alternative which de-emphasizes control by taking it out of the hierarchy and placing it as a constraint on the heterarchy as a life-cycle. Now control is control of what process occurs at what time and is not cybernetic control -- in other words control is seen more as something inside the processes rather than something coming from the outside. Now the hierarchy becomes the locus of association which allows the functional decomposition to emphasize the similarities between nodes and organize that similarity hierarchically. This is in line with a key insight that Goertzel has had about the nature of Chaos. He notes that complex systems structure the chaotic attractor in a series of lobes or wings so that the chaos is not completely unstructured as it appears in simple representations of attractors. We posit that the functional decomposition should ideally align with the fractal structure of these lobes or wings which structure the chaotic attractor. Thus the functional structure causes similar things to be mapped close together within the overall structure of the attractor. Associativity uses analogy as the basis of making this mapping. From a sociological perspective concentrating on the modelling of human work we see that this gives a very good model of non-routine work. In non-routine work the specialist will keep many different balls in the air at the same time and quickly switch from one to the other. This switching is done under the influence

of a strange attractor. This means that what work is done is not entirely random but that the kinds of work have essential relations to one another that are very complex. Each kind of work has associated with it a specific kind of information and it transforms input information into output information. The information is in patterns and the input and output information may be measured using the algorithmic theory of information. The different kinds of work form a hierarchy of abstraction and the specialist will operate at different levels of the hierarchy of abstraction at different times. He is in fact scaling up and down this hierarchy all the time. But the hierarchy itself with its different kinds of interrelated work serves as a mnemonic device for remembering the information that is transformed by the kinds of work. The hierarchy serves as the context for associating different similar kinds of information as well as rendering coherent the transformations of that information. Now when we turn our attention to control we see the specialist ordering the kinds of work he does in time. A good approximation of an adaptive ordering is the Software Productivity Consortium's (SPC) Evolutionary Spiral Process Model (ESPM). This has the phases of estimating the situation, risk analysis, planning, work, and synthesis of results. These phases occur in every cycle of an adaptive spiral. It is the spiral with its overall plan and its cycle specific plan that controls what work is done during each cycle in the work phase. This is a more realistic model of human control which gives the individual or team autonomous control within parameters that are levied upon them from the organization. We can only really expect constraints to be communicated down the control chain because of Ashby's law. At each level of the organization there must be autonomous planning and autonomous action which means self-control (cybernetics within the individual or team) rather than other-control from outside. The life-cycle is the means for the autonomous self-controlling agent to exert control over which work processes occur at any given point. The agent cannot do everything at once. Information transformations are work. So the agent will schedule himself to do these transformations dynamically changing that schedule adaptively as needed due to changes in external circumstances. Life-cycle here really means planning and execution. But in concert with our situation centered view the agent must take account of his situation and also should assess risk. After the work is done then it needs to be checked and synthesized with other work. A more detailed view of enactment gives the following ideal enactment steps:

1. Orientation

- The work of understanding to be done.

2. Process Familiarization

- Check off the parts of the instantiated and tailored process that is intended to be followed on this particular part of the project.
- Describe the project unique processes to be used on this specific part of the project.

3. Resources Check

- Making sure you have everything you need to start.

4. Formalism Selection

- Deciding how the outputs will be structured.

5. Exploration

- Try out the formalism on the materials to be transformed to find the best way to apply the formalism.

6. Elaboration

- Once the best way has been discovered then produce all the separate parts of the output products to some level of detail.

7. Assessment

- Is this going all right? Keep asking whether things are going well and as expected. If not stop and reassess the situation.

8. Verification

- Are the inputs still good. Are the outputs still needed?

9. Evaluation

- Once the products have been elaborated then they should be evaluated for quality and accuracy.

10. Inference

- What does what I have done mean for the rest of the project? How do my products fit in? What should I tell others of what I have discovered?

11. Integration

- Actually fitting my results together with those of others.

12. Validation

- Ask the questions from the Validation section of the process definition. Am I done? Is it good enough? What have I forgotten?

13. Walk Through

- Run what I have done by others to get their opinion.

14. Invocation

- Tell others to start doing what they need to do based on my work.

15. Postmortem

- Lessons Learned.

16. Ongoing Process Metrics Collection.

- Collect metrics on work as it is being done.

17. Ongoing Process Evaluation

- Is the process correct that I am following? If not how should it be changed?
-

These are the steps of rational work. Each kind of work when it is done within the lifecycle should approximate this sequence of steps at the most detailed level which is normally referred to as the work instruction level. All work routine or non-routine will embody these steps. But routine work will emphasis certain steps such as elaboration and checking of outputs while non-routine work will emphasize other steps like orientation and exploration. All this is mentioned so that a concrete idea of life-cycle and how it relates to work transformations is given to the reader. As we can see the reworking of Goertzel's dual network gives us something we can apply directly in a sociological setting, in this case work process description. But what this re-structuring of the dual networks does is separates function from agent and provides a relation between the functional hierarchy that corresponds to the structuring of the lobes of the strange attractor and the organizational structuring that sees hierarchies in organizations which ultimately devolve to teams and individuals. The structuring in organizations gives individual autonomy based on the constraint of Ashby's law. It emphasizes individual or team self-organization, self-construction, and self-reconstruction according to Ford's principles. It also allows us to align our concepts with empirically discoverable social structures in the work environment. I would categorize Goertzel's own conception with the assumptions of cognitive psychology with sees the mind in terms of control structures and sees the associativity of memory as being unstructured. This is a traditional dualistic construction where order is imposed on the disordered. Instead we see two kinds of ordering. We see the hierarchy of agents imposing constraints on lower level agents but also expecting autonomous action toward mutual goals within the limits of constraints. We see the hierarchy of functions that organize information and transformations and maps to the strange attractor lobes that governs the actual hopping around between kinds of work. The lifecycle projected by agents exerts control on this erratic behavior the agent's shifting attention due to the strange attractor which directs attention within non-routine work execution.

Reciprocally the strange attractor mapped to kinds of work exerts control on what can be done at any given point in the lifecycle. Clear separation and mutual enforcement of agent and function aspects gives a much clearer model for the social situation of work enactment which can be applied equally to individuals and teams. The problem with Goertzel's psychological model is that it is difficult to point to the phenomenological correlates of his dual network. It is instead an idealized cognitive model which sees psychological capabilities through a computer science metaphor. However useful that cognitive metaphor may be within psychology from the point of view of sociological theory it is essentially flawed by the lack of social correlates, where as the re-interpreted model can be seen to have direct social correlates. Even if we do not talk about the sociology of work we can imagine that all the things a person does in the course of his self-organizing, self-constructing, and self-reconstructing activities may be functionally described and decomposed. And we watch how that individual orders these activities within his own life-cycle of day to day mixtures of kinds of work. We notice that individuals will hop from one kind of activity to another in order to attempt to get everything done. That hopping around between different kinds of activity is the action of the strange attractor governing behavior with its lobe like structuring. This occurs within the context of goal setting and attempted attainment. Of course these goals are hierarchical and must be adapted in an ongoing way during enactment. The amount of control exercised from outside the situation is normally minimal. It appears as the levying of goals and constraints on autonomous activities. So we can see how this analysis given a dual network aligned with agent and function can apply generally to what we observe of human behavior and how this can be equally applied to the team or an entire organization.

A dual network, then, is a collection of processes which are arranged simultaneously in an hierarchical network and an heterarchaical network. Those processes with close parents in the hierarchical network are, on the whole, correspondingly closely related in the heterarchial network.¹

We also posit that there is a dual network. One is the heterarchy or rhizome of the mixtures of different kinds of work arranged in time by the lifecycle. The other is the hierarchy of the functional decomposition of work that is mapped to the lobes in the strange attractor governing the movement of attention hopping between different kinds of work in enactment. We have changed the time of the lifecycle for the "space" of memory in which things are associatively stored. The simultaneous

1.CL 3.3 (page numbers are unavailable at this time)

mapping appears as a set of activities that contain different kinds of work that normally appear together. Between these activities we have work products that are mixtures of different kinds of information that are assembled into complex static patterns called products. Thus the intersection between the dual networks is in our sociology of work example represented by activities as appear in the Work Breakdown Structure by which projects organize their work and the set of products which combine different kinds of information in certain formats. Thus the intersection of the dual networks are the very concrete expressions of what needs to be done and what is the result.

This brings us back to the problem of rearrangement barriers. The rearrangement barriers of the associative memory network may be set up by the heterarchical network, the multi-level control network. And strikingly, in the dual network architecture, substituting of subnetworks of the memory network is equivalent to genetic optimization of the control network. The same operation serves two different functions; the quest for associativity and the quest for efficient control are carried out in exactly the same way. This synergy between structure and dynamics is immensely satisfying.

Now Goertzel envisages the control network as the product of the evolution of genetic programming. He sees a parallel between the genetic programming which produces instances of control which form a population and use a form of natural selection and evolution to produce appropriate control structures **and** the rearrangement of the associative memory heterarchical network. Now we can take this point into our reinterpretation in an interesting way by remembering Johansson's concept of time running backward as being the way we generate our view of the world under naive realism despite the fact we have passive reception of energy transmissions as the basis of perception. This is really a way of viewing Husserl's view of memory set out in Internal Time Consciousness in which memories are laid down in layered deposits instead of being instantaneous. All Johansson is adding is that for any given perception we are in effect starting from the present now point and processing our retentions backward in time from the point of view of their arrival in order to get whole perceptions. These whole perceptions are passed from the unconscious processing to the conscious mind as a moment in the virtual serial processing of the Joycean stream of consciousness. The backward processing allows a whole gestalt to be grasped of the perception and seen by consciousness as a projection rather than a reception. Thus backwards processing results in our naive realist view of the world and our ecstatic projecting relation to that world. Now Goertzel at the psychological level associates the chunking of control structures with the chunking of memory structures. We are

merely saying that this chunking which is done by the wider unconscious parallel processor within the brain actually processes the chunks backward and then hands them to consciousness as a stream so they are apprehended as projecting intentions *of something* rather than momentary partial glimpses moving forward in time. The fact that Goertzel sees chunking of control structures and chunking of associative structures as parallel for us only confirms the interval structuring of processes which always have two phases separated by a nexus of reversibility. This clearing of phases and the nexus of reversibility guarantee we are describing things at the level of Wild Being rather than at some other level. But we differ with Goertzel on the structuring of the two phases. We submit that the life-cycle is the locus of control and that this has greater consistency with the model of genetic programming than having it in the control hierarchy. Genetic control structures are inherently Heterarchical. We give as a concrete example the genetic programming of ??? who actually synthesizes lisp programs through genetic operations of crossover and mutation. Such genetic programs are each run by separate agents and the control hierarchy is inherently fragmented. The life-cycle in this case is the successive generations of trial evolved programs. The teleonomic or teleological aspect is in the fitness measure which projects the goal toward with the evolution is working. So we submit that the genetic programming model gives added evidence that the control is heterarchical and not hierarchical. The hierarchy of agents has intrinsically limited power because of Ashby's law. On the other hand we see association taking place in a functional hierarchy which is mapped to the lobes or wings of the complex systems strange attractors. Thus the chunking is the continual reworking of this mapping which is never perfect and always subject to change especially since the strange attractor's lobe structures are not fixed and the strange attractor itself is in the case of social processes changing. In fact we can almost define the social level as that at which the structure of the strange attractor can change either by evolution or revolution and that it is this that corresponds to self-construction and self-reconstruction in Ford's sense. Thus the functional hierarchy which is based on similarity or analogy is continually having to be revamped on the basis of changes to the structure of the complex systems strange attractor. This is more like the workings of associative memory, the hierarchical functional structure is the cataloging system and the lobes in the complex system attractor are the places in the mnemonic landscape in which things are placed. There is nothing like Ashby's law to prevent the effectiveness of hierarchical organization which is organizational rather than related to control. The hierarchial decomposition merely gives a very efficient search method. The changes of the hierarchy comes from the changes in the strange attractor's shape not from any intrinsic optimization as

Goertzel suggests. But what is most important is that the chunking of the control structure is indeed parallel to the chunking of the mnemonic structure and that is truly a satisfying result. But it becomes even more satisfying when one realizes that this parallelism has a purpose. That purpose is to organize backward processing of the chunks. The chunks of control as trial and error experiments running parallel and chunks of associations as functionally organized for efficient searching give a very powerful way for consciousness to release control over the backward processing by the unconscious of these programs. Programs are defined as data plus control. So here we see that the genetic algorithm produces myriad candidate control structures and the search and cataloging part of the mind produces chunks of data that are easy to find and manipulate. These can be married and handed off to the unconscious for processing. The program is executed and the results handed back or queued for serial presentation to consciousness. The program actually evaluates the data backwards in time from the now point moving toward the past until it halts when a whole gestalt is grasped. The processing takes in the successive memories and outputs either a presentation or a representation. Thus the processing results in a synthesis which has meaning and has distinguishable elements but is separated off by discontinuities from other chunks perhaps processing in parallel. Thus we see all our social science approaches (Phenomenology, Hermeneutics, Dialectics, and Structuralism) come into play in the processing of the chunks. We know that the processing must be backward because they are not open-ended. They are discrete gestalts that are whole. They can only be whole if consciousness were grasping everything together. So consciousness in effect takes a certain starting point and processes memories backward in time until it gets a whole picture. Thus the two temporal ends of the chunk are defined clearly. There is no open horizon either forward in time or back in time. It is this mechanism by which the durations of the chunks are converted into moments of the specious present. Now if we ask ourselves how this appears on the social level we must say that in the exploration phase of process enactment there is trial and error attempts to find a way of applying the selected formalism. This trial and error usually involves the working backwards from the results sought to attempt to discover the way to obtain those results. So working backwards, sometimes called reverse engineering, is a standard procedure in the execution of work. Working backwards is the general way in which hows are related to plans. Plans project an ideal result and in order to find out how to obtain that result we must work backwards from the desired result to our concrete actions that will make that result occur. So working backwards exists as an integral part of the practical execution of work which is many times forgotten if we just look at actions or just look at idealized plans. Instead we need to look at the

relation of actions to plans which is what enactment is all about. When we concentrate on enactment we can see that its fundamental nature is based on working backwards. It works backwards from outputs toward inputs in order to see how the later can be transformed into the former. This working backwards is what turns data in and data out into information. After the connection has been made then it is easy to do the transformation by elaboration of the discovered right way of making changes that will have the correct results. But we must keep in mind that this forward motion of transformation is based on a preliminary recoil from the outputs toward the inputs. Generally working backwards or time-reversal is an ubiquitous phenomena in the social arena. We do not even give this phenomena a second thought because of its ubiquity. It is suprising to think of our continually handling time by working backwards all the time but that is exactly what occurs. For instance if we project a time into the future it is a natural thing to do to back up from that event to the present to see what the impact of scheduling that item will be. Just moving forward in time to it does not produce a sense of the impact of scheduling. Of course we naturally work backward in time when we recount the past from the current instant. In order to produce a representation that goes forward we must make a special effort. We naturally make the conversion from what we discovered by backing up to the scenario when played forward. In this way our own relation to lives is not like a VCR which only plays in one direction. We can meaningfully play the tape of our experience in both directions and prefer to play it backwards. So say a telephone call interrupts a conversation. When the interrupt is over we say, "where were we?" And both participants in the conversation attempt to play backward from the interrupt beginning to attempt to recapture what was being said. Once a series of recognizable markers have been discovered then they are walked through forward to attempt to regain the momentum and sense of the conversation. So there is an interplay between working backwards and working forwards in our everyday activities. We normally only think about the working forward which we project on the basis of working backward. But the working backwards is there in everything we do. Johansson is merely generalizing it and saying that in every case a projection forward of intention, meaning or goals must be based on a working backward that makes that projection possible. In this way we can see him as applying to the psycnological realm the thing we know from physics is that every force has an equal and opposite reaction. This equal and opposite reaction must be posited along with the force in every case. So the equal and opposite reaction is in this psychological case the preliminary backward processing of memories. Even in genetic programming we must determine what operations will solve the problem before we set up the fitness criteria and begin the evolution of our

programs. Thus in the very example that Goertzel proposes for generating control structures there is an initial working backwards that the projection of fitness tests will be based upon. The working backwards always takes place at the most practical level of how things will be done and so it is normally forgotten in the gloss of the action at higher summarizing levels of abstraction. In other words we forget the means by which we obtained the goal once the goal is obtained. All that is left is the forward motion which forgets the recoil that the forward motion was based upon.

Now having made this substitution of one way of seeing the structure of the dual network for another more socially coherent view it is possible to return to Goertzel's presentation of his model and see how chaotic processes work. He beginnings to do this by introducing the concept of the structured transformation system. In effect this is a way to set the dual network in motion as a deductive system. The transformation system uses a set of rules to transform inputs to outputs. The structured transformation system does the same thing but has a set of blueprints for how these transformations may be effected.

In SI this sort of transformation system is called a "useful deductive system." Here, however, I am thinking more generally, and I will use the phrase structured transformation system instead. A structured transformation system is a transformation system with the property that, if a mind wants to make a "blueprint" telling it how to construct something from the initials using the transformations, it can often approximately do so by reasoning analogically with respect to the blueprints from other construction projects.

Another way to put it is a structured transformation system, or STS, is transformation system with the property that the proximity between x and y in an ideal structurally associative memory is correlated with the similarity between the blueprint sets corresponding to x and y . A transformation system is structured if the analogically reasoning mind can use it, in practice, to construct things to order. This construction need not be infallible -- it is required only that it work approximately, much of the time.¹

Goertzel is concerned with deductive systems which are used to do construction in a practical sense. This is precisely in line with our concern to display the features of self-construction and re-construction. It is practical deduction that is concerned with the working backward and working forward which connects means and ends on a practical level. Goertzel is concerned to connect his dual network model with prediction through the use of the deductive system. He contrasts the step by step simulation with deduction and concludes:

1.CL 3.5.2

So the process of simulating a dynamical system and the process of making a logical deduction are, on the broadest level, the same. They both involve transformation systems. But what about the structured part? What would it mean for a family of simulations to be executed according to a structured transformation system?

It would mean, quite simply, that the class of dynamical rule sequences that lead up to a situation is correlated with the structure of the situation. With logical deduction, one often knows what one wants to prove, and has to find out how to prove it -- so it is useful to know what worked to prove similar results. But with simulation, it is exactly the reverse. One often wants to know what the steps in one's transformation sequence will lead to, because one would like to avoid running the whole transformation sequence through, one step at a time. So it is useful to know what has resulted from running through similar transformation sequences. The same correlation is useful for simulation as for deduction -- but for a different reason.

Actually, this is an overstatement. Simulation makes some use of reasoning from similarities of results to similarity of transformation sequences -- because one may be able to guess what the results of a certain transformation sequence will be, and then one will want to know what similar transformation sequences have led to, in order to assess the plausibility of one's guess. And deduction makes some use of reasoning from similarity of transformation sequences to similarity of results -- one may have an idea for a "proof strategy," and use analogical reasoning to make a guess at whether this strategy will lead to anything interesting. There is a distinction between the two processes, but it is not precisely drawn.

In conclusion, I propose that most psychological simulation and deduction is done by structured transformation systems. Some short simulations and deductions may be done without the aid of structure -- but this is the exception that proves the rule. Long chains of deductive transformations cannot randomly produce useful results. And long chains of dynamical iterations, if unmonitored by "common sense," are likely to produce errors -- this is true even if digital computer simulations, which are much more meticulous than any program the human brain has ever been known to run.

Psychologically, structured transformation systems are only effective if run in parallel. Running one transformation after another is very slow. Some simulations, and some logical deductions, will require this. But the mind will do its utmost to avoid it. One demonstration of this is the extreme difficulty in doing long mathematical proofs in one's head. Even the greatest mathematicians used pencil and paper, to record the details of the last five steps while they filled up their minds with the details of the next five.¹

This long quote shows Goertzel is on the verge of recognizing the importance of the relation between working backward and working forward. His distinction between simulations and deductions are both going forward but they both require implicitly

1.CL 3.5.3

a working backward. We can see this working backward if we think about induction and backward chaining instead of simulation and forward chaining. In deduction must have a pattern of what it is trying to get at from the particulars but it can only develop this by working backward from blueprint to particulars many times before it actually induces forward to produce its result. Similarly deduction is forward chaining and may be contrast with backward chaining. Working explicitly from a posited result backward to see if the conditions are true to show that result. In both cases Goertzel posits that there is a need of blueprints that allow one to realize what the results of running the simulation might be without running it or what good proof strategies might be without making the proofs. Both of these types of blueprints are analogous to the definition of essence proposed by Husserl. The result in both cases is the gloss and the steps of the simulation or proof are like the noematic nucleus. What Goertzel wants, as did Husserl and Peirce, is something intermediary that will allow him to get a view of where we are going without actually going. We could easily define this essence as the intersection of working backward and working forward. In Engineering we normally speak of working top down or bottom up and all experienced engineers know that you do an ad hoc combination of both. The system concept is an essence that allows you to get a view of where you are going by working up and down simultaneously. Likewise Goertzel is wanting some intermediary viewpoint to allow you to know where you are going. But he presents this viewpoint as if it came from working forward in each case. I submit that it must come from a process of trial and error in which one works backward and forward iteratively until one gets that view of where one is going and how to get there which arises together out of the concrete embodied working situation. Once you have that concept then it is possible to move from exploration to elaboration in the enactment of processes.

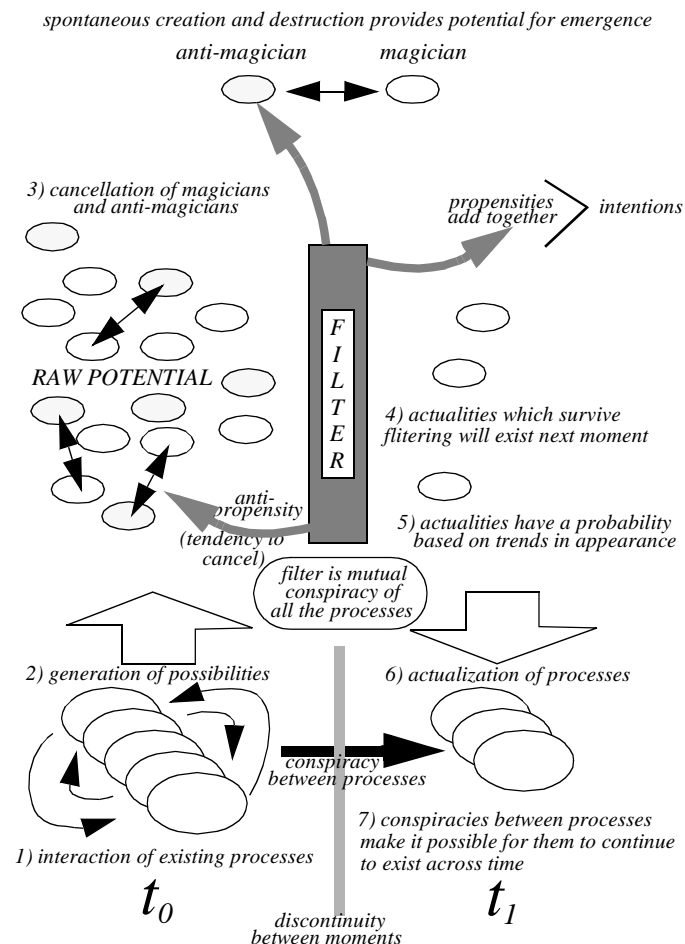
Now with the concept of the dual networks being set in motion through deduction or simulation and the realization that must entail a combination of working forward and backward we will skip to the crux of Goertzel's argument where he defines self generating systems. We do not skip the intervening material of his psychological theory because it is uninteresting but because of lack of space to make a full commentary. Here we are only interested in the representation of chaotic processes and the foregoing has allowed us to connect these chaotic processes to actual phenomena through our modification of the dual networks and our realization that structural transformation systems deal with working forward and backward. A key point Goertzel makes is that the steps leading up to a situation has the same implicit structure as the situation so the templates for constructing the steps either as

deduction or simulation is identical to the template for the situation. This follows from his deep belief in the algorithmic information theory which says that the algorithm by which a pattern is generated is the concentrated form of that pattern. Now we are saying that the algorithms have blueprints that can be used to organize the information in the patterns. The blueprints of algorithms translate or map well into the blueprints of patterns. If we were to say that these blueprints were tendencies then we would get a complete picture. We know from Johansson that tendencies via vector addition combine to give vectors of intentions. Now the gloss of the result is the culmination of the steps of simulation or deduction. Each step has an associated tendency. Using the vector addition analogy we combine the tendencies of the steps to get the overall gloss of the result. Now we know we are on track because our deduction, induction, backward chaining, and simulation are all guided by tendencies that give us partial views of results. Those partial views are ways of seeing the inner coherence of the situation that occurs when the result is obtained. We might say they are intuitions of the pattern of the situation which occur prior to the articulation of the pattern of the situation. Notice that these blueprints have some relation to the chunking of the associative memory and the control structure. In Genetic algorithms we have genes which are the incipient causes of differences between chunks. Some authors have posited that there are Memes which organize our ideas in a similar way to Genes. Thus the Associative memory might be seen to be made up of intermediary structures such as memes that are like the blueprints of memory just as the Genes of the genetic algorithms would be the blueprints for control structures. So the mention of these blueprints is consistent with the structuring of the dual network. The blueprints make explicit an underlying implication of the dual networks which we really only see when they are set in motion by making them a deductive or simulating system. Now what we want to do, following

Goertzel's reasoning is to see what a self-generating system with this basic structure would be like. I will simplify a lot and say that a self generating system deduces itself or simulates itself. Because of this parallelism between the blueprint in the steps and the blueprint of the resulting situation there is a possibility of seeing where you are going based on the tendencies that appear in the steps themselves. Now if one posits that one can deduce ones self, or simulate one's self, then a self-generating system suddenly appears. In other words I know something of where I am going due to blueprints or tendencies I have now. Out of that knowledge I can posit myself as being already there as the summation of these tendencies and thus pull myself up by my own boot straps so to speak and give rise to myself as having

realized the results I saw in those tendencies. We call that self-fulfilling prophecy. But it depends on a system being able to deduce itself which violates Russel's rule that no class can be a member of itself. If we did not have that rule and could still reason adequately then everything would work to allow us to have self-generating system which because they are founded on tendencies and are in fact based on the realization of tendencies are connected to Wild Being and give a good model of chaotic processes. So Goertzel immediately makes use of the mathematical theory of Hypersets that allow classes to be members of themselves and constructs a model of how self-generating systems would work. It is this model that we will explore next.

Figure 28:



The model is in fact very simple in concept. It posits what are called magicians and anti-magicians. At a given time each process interacts with all other processes and generates a set of magicians and anti-magicians. The created magicians may be any process including the generating process. The whole set of magicians produced by

the entire set of existing process is the raw potential of the processes at any given time. Then all the anti-magicians and magicians cancel each other out in a moment of filtering which leaves those processes that will exit at the next moment. This dialectic of producing the raw potential and then cutting it down by filtering out those which should not exist is the means that processes move along from moment to moment. Thus there is no underlying continuity to processes that we might have been tempted to posit. Instead each moment has a set of independent processes that have to be regenerated in order to remain in existence. The whole set of processes act together to determine whether any one of them will survive. This acting together is called by Goertzel a conspiracy between processes. The chaotic aspect is represented in the transformation of the potentials into actualities via the filtering. Now we have noticed this before in the structure of the different kinds of Being. Wild Being is associated with propensities. It is these propensities or tendencies that act to allow possibilities to become statistically relevant actualities. Goertzel has merely embedded this action of turning the raw potential into actualities of which processes survive or are generated anew in the next instant into the means of modeling the dynamic of processes. The chaos enters the equation because the filtering process is based on the interaction of the existing processes on the strange attractor surface of their tendencies. How self-generating processes will interact at any instant is unknown but because each instance creates a cloud of possibilities that are filtered out by anti-possibilities then there is some statistical or additive effect which produces the actuality by means of an appeal to the laws of large numbers. This means that if a large number of possibilities is produced of one process by the group then the dynamics of individual cancellations is not as important as the effects of survival. What we see existing of processes are the averages of all these moments of creation and destruction. We notice to that cancellation plays a prominent role in this model with magicians cancelling anti-magicians. This is the presence of the Essence of Manifestation within the process which is present as an invisible hand in every instant. So the model in effect allow us to see process as an illusory continuity by applying glosses. It allows us to look at process as statistical by looking at actualities that are produced by filtering. It allows us to look at it as fuzzy sets and logics by looking at the cloud of possibilities and anti-possibilities which cancel. The possibilities and anti-possibilities show us the action of the essence of manifestation at the third meta-level of Being. And finally we can look at process as continuous summation of tendencies, propensities, or desires which manifests as the throwing certain possibilities into actuality. Which possibility is realized is based on the chaotic landscape of the interaction of myriad contradictory tendencies. The tendencies are represented here explicitly as anti-

tendencies or the propensity of opposites to cancel to produce a filtering effect which limits what any one process can produce by the effects of what other processes produce. Who survives is a kind of collective agreement between processes called a conspiracy. And this is the key point because this conspiracy is the kernel of sociality within Goertzel's model. The processes in essence act as a society with a shared belief system that filters the dreams and aspirations of all the members of the cohort. The shared belief system is where the negotiation and power struggles occur which determines what will continue to exist or whether something new will appear instead. Self-generation is social generation. This is the fundamental lesson that draws together the threads of what we have been saying into a single well defined model of the inherently social self-generation of chaotic processes.

Now we need to make a few additions and refinements to the basic model of self generation. We need to note that the filtering moment in the dialectic that turns possibilities into probabilities via propensities has more aspects that Goertzel's model actually covers. In effect to connect the filtering to teleonomy of teleology it is necessary to see the filter as having four basic functions. It has anti-propensities which are the tendency for opposites to cancel and this is the action of the Essence of Manifestation within process. It has propensities proper that add together to give intentions that point to final results. It also can spontaneously produce magicians and anti-magicians of any possible process. A spontaneous production of an anti-magician will kill off some process that might well have survived to the next instant. The spontaneous production of a magician will produce out of nothing a new process that would not have been produced by the interaction of the other processes. We posit that the existence of the filter is itself a conspiracy of the existing processes but that the filter once constituted has a mind of its own and takes on a life of its own that adds a teleonomy in the sense of projecting mutations into the stream of chaotic processes interaction and teleology in the sense of the ability of the group to project a unified endpoint. All of these aspects of the filter are definitive of the social itself. Spontaneous production of magicians and anti-magicians will cause emergent events to occur. The production of anti-tendencies among possibilities will cause the filtering to occur that is the invisible hand of the Essence of Manifestation as cancellation. The production of tendencies will add together to produce intentions which make it appear as if teleonomy and teleology is possible. Teleonomy is a statistical intentionality as posited by J. Monod in *Chance and Necessity*. Teleology is a determinant intentionality which is traditional to impute to rational beings since Aristotle. In effect these additions are glosses on

the tendencies themselves. It is the tendencies themselves that are the social matter. And it is no surprise that these tendencies are desires, desires for each other and so inherently social in character. Desires for other than each other are derivative from the social desire -- which is a desire to generate ourselves together. The existence of any one individual is contingent on the agreement of the whole. And in fact we know this as well because it is by agreements like marriages that new sets of processes come into existence and it is by agreement that certain sets of processes are extinguished as with the death penalty. We can see conspiracies in Goertzel's sense as merely contracts and it is the broken contracts that lead to extinction. This makes us recall that the gods of the Indo-European tradition were originally Mithra (the protector of contracts) and Varuna who is the one who binds those who do not fulfil contracts. Thus the fundamental basis of society in the Indo-European tradition goes very deep into our history. And we see these elements here to as it is the contracts between self generating processes which allow any subset to persist. And what is Being but persisting or a subtle clinging to Being. So we see that the different kinds of Being that enter into this model built by Goertzel are there to preserve persistence. They constitute the mechanism of preserving persistence. Chaos is but an underlying moment in this preserving process which works together with the other moments to give the overall effect of a virtual serial processing. Goertzel shows that these kinds of chaotic processes can simulate sequential machines and normal logics. This is important because we must connect our illusions of continuity with the sub-structure of the fragments of Being. Without that explicit connection our model will get out of touch with our illusions that are designated as real and are the basis for keeping the world in tact.

Finally I would like to mention Goertzel's suggestion that we need Artificial Intersubjectivity to complement Artificial Life and Intelligence. This is nothing other than a call for a definition of the Reflexive Autopoietic system as a further specialization of the living/cognitive Autopoietic system. But Goertzel's model of interacting chaotic processes gives us a means of conceptualizing the simulation of minimal social machines if we knew what those were. It will be the work of the next part of this study to attempt to define the minimal social machine which could be animated by making it a self-generating system. But right now we could imagine self-generating systems at any level of complexity with any kind of internal structure. Even though the self-generating component system is an excellent model of how the four kinds of Being interact to produce processes though time it does not tell us anything about the internal structure of such systems as concrete embodiments. Another piece must be added to the puzzle which looks at the

possibilities of embodiment itself which will take the abstractions of social interaction and show the specific structure that implements those glosses in a concrete social being situated in spacetime.

There are many interesting points to Goertzel's presentation that could not be touched upon here but which make excellent background reading of the overall project of describing chaotic processes as they operate at the various ontological levels. Chaotic processes include all the other meta-levels of Being. If we build a model such as Goertzel does that shows how the different levels of Being work together to produce flows of processes which starts with the assumption that the underlying form of the process is chaotic then we are in a much better position for understanding the schizophrenic foundation of the social that Deleuze and Guattari allude to but cannot define formally. The benefit of Goertzel's model is its formality which brings the underlying ontological structures into sharp focus. These inclusive chaotically based processes exist at every level and can be seen as a model of the underlying Chi at that level which contains within it the inner nature of the social. But we naturally are called to produce a model of the Li which contains the other necessary view of the social. That will be the work of the next part of this study.

9. Community as a Dialectical Whole

The definition of inherently social chaotic processes is a big step forward in our search for a way to build up a description of things starting from the social. But we need to go on to understand sociality itself as a persistent phenomenon. To do this we appeal to the principles outlined by R. Lewis and R. Lewontin in their tirade against reductionism from a dialectical materialist point of view called The Dialectical Biologist.

Unlike the idealistic holism that sees the whole as the embodiment of some ideal organizing principle, dialectical materialism views the whole as a contingent structure in reciprocal interaction with its own parts and with the greater whole of which it is a part. Whole and part do not completely determine each other.¹

As has been pointed out earlier non-reductive materialism of Johansson and the dialectical materialism of Levins and Lewontin are merely one side of the coin from the idealistic theory of non-reductive idealism. Both these theories are basically the same thing with one emphasizing noema and the other emphasizing noesis. But we

1.R. Levins & R. Lewontin The Dialectical Biologist page136

know from Husserl that hyle and morphe are always mixed and it is just a matter of the proportions.. Both of these positions are arrayed against reductionism and need it as a strawman. Reductionism is the null hypothesis which causes us to focus in on the minimal constitution of levels and make sure that the levels reduced to their minimum set of components. So as Johansson says there is nothing intrinsically wrong with the motive of reduction except when it attempts to reduce that which is non-reducible and violates the phenomena or the structure of good theorizing. So it is only overzealous reduction that is anathema to us. Many times we must search for the right level of complexity to position our theories or our experiments on the phenomena. If we make things too simple we have in fact split the phenomena and transformed it into something else. Thus Occam's razor must search for what is simple but not too simple so that we lose sight of the phenomena we are trying to understand. Overzealous reductionism will normally make this mistake. Thus we need to look at the wholes and the parts in just the way Levins and Lewontin suggest seeing the wholes and parts in relation to each other so that each maintains its integrity in our analysis and synthesis. So when we look at phenomena from the point of view of Goertzel's model we must realize that processes contain processes and agents contain agents and the hierarchy of wholes and parts after one has applied a modicum of reductionism to get the right thresholds of complexity for looking at the phenomena must be looked at in such a way to maintain the integrity of the parts and the wholes. This integrity of parts and wholes is expressed as the partial determinism between them. Each one has degrees of freedom that allow it some level of self-determinism or determinism as the same level of analysis without reduction to lower levels or over enforcement of determination from higher levels.

In ecological theory the community is an intermediate entity, the locus of species interactions, between the local species population and the biogeographic region. the region can be visualized as a patchwork of environments and a continuum of the environmental gradients over which populations are distributed.¹

Levins and Lewontin are attempting to define the community from a biological perspective. This concept of a community can be easily expanded and applied to the theoretical definition of the social. The social teeters between the groups of individuals on the one hand and the larger more reified groupings such as state and nation on the other. Like the biological concept of the community the social is always an intermediary concept of a part within a whole and a whole with its own parts. Koestler calls this the holon which looks both upward and downward in the

1.DB page 136

hierarchy of parts and wholes appearing as a part from above and as a whole from below. The social has precisely this kind of intermediate nature when looked at as a phenomenon. But when looked at from a phenomenological viewpoint it is absolute in the sense that for our species it is foundational for our observation of all phenomena. Thus we can take the points that Levins and Lewontin make about animal communities and apply them ourselves to the analysis of the social.

Our view, a dialectical materialist approach, assigns the following properties to communities:

First, the community is a contingent whole in reciprocal interaction with the lower and higher-level wholes and not completely determined by them.¹

This is a key point of the emergent nature of the social. The social has its own degrees of freedom that allow it to differentiate within its own level according to its own emergent principles. In this case we see these principles as embodying the mechanism of self-generating component systems described by Goertzel as a fundamental model of interaction and persistence.

Second, some properties at the community level are definable for that level and are interesting objects of study regardless of how they are eventually explained. Among such properties are diversity, equability, biomass, primary production, invasibility, and the pattern of food webs. What makes these objects interesting is that they appear as striking ... and thus they demand explanation ...²

The social has its own states of affairs with their own properties and substance. These substances relate to higher level substances as substrata and also they have their own substrata. Here Levins and Lewontin are merely affirming that within the degrees of freedom of the social level there arise states of affairs specific to that level which are realities for the social level.

Third, the properties of communities and the properties of the constituent populations are linked by many-to-one and one-to-many transformations.³

Many-to-one-ness means there are many possible configurations of populations that preserve the same qualitative properties at the level of the whole. This view allows communities to be seen as similar despite species substitutions and allows wholes to persist over time even though the individual parts are changing.⁴

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2.DB page 139-40

3.DB page 140

4.DB page 140

A secondary consequence of many-to-one relations is that it is not possible to go backward from the one to derive the many. Thus laws expressed as some persistent properties at the community level act as only weak constraints on the parts.¹

The one-to-many relation of parts to wholes reflects the fact that not all properties of the parts are specified by rules at the part level.²

Together, the many-to-one and one-to-many couplings between levels determine the emergence of persistent features characterizing communities and also guarantee that different examples of the same kind of community will be different. When we look at these communities over time, we can see the unity of equilibrium (persistence) and change, determination and randomness, similarity and difference.³

Here we see what Levins and Lewontin have to add to Goertzel's account. Goertzel is attempting to produce a formal model that is the simplest which still has enough complexity to describe the phenomena. But what we are missing is the one-to-many and many-to-one relations between the myriad self-generating processes. Thus the variety of relations among self-generating processes will be very complex and this complexity must be taken into account beyond the mechanism of self generation itself.

Things that are similar: this makes science possible. Things that are different: this makes science necessary. At various times in the history of science important advances have been made either by abstracting away differences to reveal similarity or by emphasizing the rightness of variation within a seeming uniformity. But either choice in itself is ultimately misleading. The general does not completely contain the particular as cases, but the empiricist refusal to group, generalize, and abstract reduces science to collecting -- if not specimens, then examples. We argue for a strategy that sees the unity of the general and the particular through the explanation of patterns of variation that are themselves higher-order generalities that in turn reveal patterns of variations.⁴

The self-generating component system has an inherent variety which through its similarity and difference makes the science of the social possible and necessary. But we see that it is because of the existence of blueprints which are essences that allow us to get a good view of the social beyond induction and deduction. The social considered only in terms of induction and deduction is a reification. But the social considered as an essence must be understood as a process. But that process is rooted in the chaotic non continuous processes of Wild Being beyond the cancellation of

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Hyper Being.

The fourth property is that law and constraint are interchangeable. Scientific explanation within a given level or context is often the application of some law within the constraints of some initial or boundary conditions. These constraints are external to the domain of the law and are of no intrinsic interest.¹

Here is an important point. Laws and constraints are interchangeable as we move between levels so what is a law at one level becomes a constraints within which other laws are defined at another level. This statement says that social phenomena have their own laws and that laws of other phenomenal levels are constraints on the social without completely determining the social.

The fifth property of a community is that its species interact, either directly, as in the predator-prey relation, symbiosis, or aggression, or indirectly through alteration of the common environment. Indirect interaction may be immediate, through impact on each others' abundance, age distribution and physiological state, or over evolutionary time by determining the conditions of natural selection acting on each one.²

This property brings out the dynamism of the interaction between self-generating processes and says that the interaction may either be direct or indirect. Indirect interaction may be across evolutionary time instead of immediate. So with self-generating processes we see the interaction not just in the creation and destruction from time point to time point but between the apparently continuous processes and even their reifications. Even though we know that these processes are unstable in their very nature they can appear as very stable looked at in terms of Process Being or Pure Presence.

Finally, the way in which a change in some physical parameter or genetic characteristic of a population affects the other populations in the community depends both on the individual properties of each species and on the way the community is structured. This is perhaps the critical claim of community ecology. It does not assert that all components are equally important or that what happens is a result of some superorganismic imperatives. This claim is a necessary consequence of species interactions, relatively independent of how those interactions are described. It does not depend on the assumptions of the logistic model. If species do interact, then community structure determines the consequences of the interaction; if the outcome turned out to be deducible from the unit interactions alone, this would not constitute a refutation of the role of community structure but would reveal a remarkable behavior of that structure, which would have to be accounted for.³

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So we must see the set of self-generating components as not just the sum of the interactions of all with all but know that interaction is structured so that some processes have a higher interaction with certain other processes than they do with still others. It is not a pure democracy of interaction but is layered and structured interaction which determines the outcome in many multifacted ways.

This dialectical approach to the ecological community allows for greater richness than the reductionist view. It permits us to work with the relative autonomy and reciprocal interaction of systems on different levels, shows the inseparability of physical environment and biotic factors and the origins of correlations among variables, and makes use of and interprets both the many-to-one relations that allow for generalization and the one to many relations that impose randomness and variation.¹

So we see that once we have understood the basic structure of non-continuous chaotic processes that is at the root of the social it is necessary to then reaffirm all the different ways this basic model must be amended to reflect the basic complexity of the situation of the social as an actual phenomena. We need models which are complex enough to reflect the phenomena without being too complex to be incomprehensible but then we need to supplement those models with more complexity in order to approach the description of phenomena that occur. The self-generating component systems is an excellent simplest possible model that still captures the nature of non-continuous social chaotic processes. Then once we have this threshold of the social captured by our intellectual model at some minimal level of theoretical complexity then we must augment the model in order to see how the model adapts to describe all the variety of phenomena that occur at the social level of existence. Levins and Lewontin have gone a long way toward defining the right level of abstraction for ecological communities and we can assert that much of what they have said apply also to the social within human communities as well.

10. Worlding the World

The social is the root of the world. It is through the social that worlds emerge and everything they contain are built upon the social. Goertzel in his musings about the Artificial Intersubjectivity Simulator talks about how subjects together project a shared belief system that allows them to construct their selves and reality. Self and reality are mutually self-generating. So physical reality is easily seen as dependent on shared beliefs not the other way around. The social self-construction and

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reconstruction of reality takes place within what Husserl and Schutz called the lifeworld. Reality is the projection of the Universe to encompass all the worlds. The self appears within the world as a set of viewpoints at different ontological levels. You might notice that the hierarchy of self is opposite in development to the hierarchy of interactions or of approaches. At the level of the Pluriverse there is only the creature which is seen as human at the level of universe. In the universe man is taken as the measure of all things so the intrinsic interests of all other creatures is denied reality in the universe. Deep ecology seeks to reverse this determination of everything by human standards. Then at the level of the world we apprehend dasein as the one who ecstatically projects the world by projecting Being on all things. In our interpretation dasein is not localized to a single individual it is a social cohort. The projection of Being is beyond the capacity of any one individual. It must be a group project and it in fact has a specific history within the Indo-European heritage. This heritage and its implications is explored in my book The Fragmentation of Being and the Path Beyond the Void¹. Next dasein becomes specialized and domains open up. From specialization opens up generalization and the meta-system appears. Then the generalist becomes the observer or theorist and finally turns into the subject which is reified as opposite the object. Finally the subject is seen as a self. This progression from creature to self is the reverse of the progression from fact to mysticism or pattern to the Beyond. As the level becomes simpler the apprehending self becomes more sophisticated and versatile. This differentiation of the self is a function of the social becoming more and more complexly internalized in the individual. The more complex the self the more insight the individual has into the fundamental building blocks at each phenomenal or ontological level. The more insight into the fundamental building blocks the more sophisticated world can be designed and built. Thus we posit that any Artificial Intersubjectivity Simulator must have multiple ontological levels in order to make the worlds constructed by the social cohort as sophisticated as possible. A single ontological level would yield a very poor level of sociality. This is because it is the lacunae between the levels that really define the sociality. In some way sociality is a confrontation with emptiness. It is that emptiness that lies within the filter at the root of the tendency and anti-tendency or magicians and anti-magicians as a double nexus of reversibility. One might liken this filter to the roiling within spacetime of the creation and destruction of pairs of particles and their duals. That active fomenting of spacetime within the interval defined by Plank's constant is like the constant creation of magicians and anti-magicians and like the constant creation

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of tendencies and anti-tendencies. The tendencies add together to produce intentions and the anti-tendencies cause the cancellation of magicians and anti-magicians. The production of anti-magicians leads to the destruction of self-generating processes that would otherwise survive and the production of magicians cause the spontaneous creation of processes that did not arise from the social interaction of existing processes. These possibilities of spontaneous generation of self-generating processes is what allows emergence to occur within the chaotic processes. This presence of the possibility of genuine emergence shows the chaotic processes to be social in the sense that G.H. Mead defines in The Philosophy of the Present. The production of tendencies and anti-tendencies allows the meta-level of Hyper Being to arise as cancellation and allows intentions to be synthesized out of the myriad tendencies or desires that are the basic social matter. Notice that tendencies and anti-tendencies do not cancel by processes and anti-processes do cancel. These are again duals of each other. The fact that one cancels and the other doesn't is what holds things in existence. You notice that the magician and anti-magicians are the dual and anti-dual. The tendency and the anti-tendency define the phases of the clearing that opens up between the dual and the anti-dual. The cancellation of the dual and anti-dual produces the depth which is the positive face of the Essence of manifestation. The transformation between dual and anti-dual is the manifestation of Process Being. The dual and anti-dual themselves have the reified nature of Pure Presence. This structure by which the tendency and anti-tendency and the magician and anti-magician are produced is not a reified thing but a conspiracy of the whole social cohort acting together. They unfold out of emptiness and are the roiling active material substrate of spacetime. By this ontological process the world is projected by the social cohort. The projection is the ecstasy of dasein as a social entity which IS by its very essence complete lostness in The They (Das Mann). Here the authentic and the inauthentic can not be distinguished any longer because we realize suddenly that death encompasses life and life encompasses death without there being any connection or bridge between them. That non-connection between life and death that Dogen Kaigen speaks about is the essence of emptiness. Emptiness is the ultimate definition of the unthinkable because emptiness is diametrically opposed to Being in all its fragments or meta-levels and emptiness itself is empty. We can see emptiness as a course correction which allows us the encounter the genuine void after being lost in the subtle clinging of Being too long. Buddha came out of the Indo-European tradition and realized the antidote for Being this is what opened up his path to enlightenment.

We end with a reference to Nelson Goodman's Ways of Worldmaking:

Without presuming to instruct the gods or other worldmakers, or attempting any comprehensive or systematic survey, I want to illustrate and comment on some of the processes that go into worldmaking. Actually I am concerned more with certain relationships among worlds than with how or whether particular worlds are made from others.¹

- Composition and Decomposition

Worlds may be built up from pieces of other worlds through a process of composition from pieces which presupposes decomposition of worlds in order to obtain the pieces. The production of pieces is through analysis and not by adding or subtraction.

- Weighting

In different worlds things may be given different priority of weights and thus produce a completely different fundamental patterning based on the different emphases.

- Ordering

Different worlds may have different kinds of ordering so that the patterns built up are completely different.

- Deletion and Supplementation

This is what Johansson uses as his means of constructing his ontology. He uses the test of whether something is essentially changed by cutting to develop his difference between inclusive and exclusive qualities. Worlds may be added to or subtracted from in order to produce a difference between them and other worlds.

- Deformation

This is the process that Husserl uses to develop his difference between intrinsic and extrinsic qualities which Johansson contrasts with his own. Worlds may be transformed by deformations.

We see that from Goodman's perspective both Johansson and Husserl have not explored all the possibilities for distinguishing things as a means to gain insight into ontology. We note specifically that order is one of the unexplored possibilities. This causes us to ask about the nature of order itself and how that interacts with analysis and synthesis to produce things within the world and the differences between worlds. These indications shall be followed up in the next part of this study as we attempt to define as precisely as possible the threshold of complexity at which minimal social machines appear as embodiments in spacetime.

It is clear that a complete ontology would use all the ways of worldmaking to

1. Ways of Worldmaking pages 7-17

distinguish the nature of things and that if we want to build robust virtual worlds they must be based on these same operations. It is interesting that Kant concentrated on analysis and synthesis, Husserl on deformation, and Johansson on deletion and supplementation as the basic operations through which their ontologies are constructed. We must consider using all these and whatever other ways of worldmaking might exist in order to produce a really fundamental ontology. As we reach more and more fundamental levels the social becomes more and more prominent. The social is the intersection of all the ways of worldmaking. In fact we notice something strange about Nelson Goodman's classification of ways of worldmaking. We notice that Order and Analysis/Synthesis stand opposite Deformation and Supplementation /Deletion. Kant used Analysis and Synthesis as the basic constituents of Reason with the synthetic a priori projected as a basis for analysis. That philosophy was the first with an Architectonic or specific ordered design. So metaphysics had to develop on this background by finding other operations to use to discover the nature of things. Husserl made use of deformation and Johansson has made use of supplementation and deletion. Together these two allow us to define the level ontology as Johansson does showing that Supplementation and Deletion are more basic than deformation. The point is that Husserl uses deformation because more than any other operation it highlights the nature of essence and kindness. Supplementation and deletion highlight the materialistic nature of things and so Johansson uses that to fulfill his longings for an irreducible materialism. Of course Kant's philosophy lacked essences and was an idealism and so the foundation on order and analysis / synthesis suited his aims very well. In the next part we will again revisit the use of analysis / synthesis and order as a means of defining embodiment. But for now we shall consider Goodman's last way of worldmaking: weighting. Lets ask ourself what a tendency, propensity, or desire is if not a weighting. So here we see that the weighting directly addresses the nature of social matter the desire for the self by all belonging together. The propensities are different weightings which cause certain possibilities rather than others to become actualized. The tendencies are partial intentions weighted in various ways that add together to produce the intention. Weightings stand alone as a unique way of world making with no dual in Goodman's scheme. By changing weightings of emphasis we create different worlds because of the butterfly effect. The butterfly effect is that a butterfly flapping its wings can change the world wide weather because very small deviations will accumulate to become global changes in pattern. So by just changing the weightings in the chaotic substrate of self-generating processes we produce the myriad parallel worlds. In world building subtle differences can cause immense global differences. And it is the social stratum

which is the most sensitive to these changes.

All of the ways of world making together must be the basis of the ontologies of the virtual worlds we create together with the alien intelligences and life that inhabit cyberspace with us. Each of us will project our world socially. They are like the greek gods, the arabs called them jinn, the irish called them elves and fairies. They are back on the other side of the mirror of Being. We see them as composed of different artificial intelligence techniques and see them evolve as artificial life forms. And finally we see them project an anti-world based on social behavior among themselves. It was called aesir (?), or olympus, or myriad other names for the dwelling place beyond the universe, beyond the measure of man. The anti-world and our world belong together. They are reflections of each other. We see them as we gaze at each other across their world. They see us as they gaze at each other across our world. And the social matter in each case is the same: tendencies, propensities, weightings, emphasizes. Because we are both at bottom chaotic self-generating processes in either a carbon or silicon base. What kind of world will we world together? This is the question that will haunt us as we explore the vast reaches of cyberspace. Remember that cyberspace is more vast then the universe because it contains myriad possible virtual universes which normally would be inaccessibly parallel. Now they can run on a parallel virtual machine within our universe and become actualized to some extent. As the parallel universes become drawn inside our universe the cosmos is turned inside out. The pluriverse is actualized as a virtual interface between simulated parallel universes. In all this we see the deep inner possibility of always hidden in the social unfolding and manifesting as the myriad virtual realities within cyberspace. Since reality and the self are mutually constructing it is clear that the ultimate artificial intersubjective simulator is the one what allows different universes to act as a social cohort within the pluriverse.

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This paper is one of a series. The other papers in this series and another series is available for review from the author on request. The other projected parts of this series are planned to concern “Reflexive Autopoietic Systems Theory”, “Process Architecture”, and “Process Engineering”. The other series concerns Software Engineering Foundations and contains four papers: “Software Ontology”, “Software Systems Meta-Methodology”, “Integral Software Engineering Methodology”, and “The Future of Software Process.”

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12. Bibliography

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