ADVANCED META-SYSTEMS THEORY FOR META-SYSTEMS ENGINEERS

Chapter 2 of the Anti-thesis

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None yet.

The Inverse Dual of the Concept of a System

In the last chapter of the anti-thesis we explored the foundations of systems theory in ontology and philosophical categories. In this chapter we move on to consider Meta-systems. The word "meta" is ambiguous. It can either mean *above*, *beyond*, or *sequential change.* Here we limit ourselves to the meaning **beyond** when talking about systems and we use a hyphen to indicate this specific meaning. A 'meta-system' is what lies *beyond* the system, i.e. its context, milieu, environment, ecosystem, etc. For the meaning of *sequential change* we use the term *emergence*. For the meaning of *above* we will speak of *meta-levels* or kinds of Being. So, by Meta-system we do not mean the meta-levels of Being, i.e. the logical meta-levels beyond the system, these are described in terms of meta-levels. And we do not mean by meta-systems what might be called meta-system transitions, which are described as emergent events. Different authors have chosen to use the term 'metasystem' differently from this. But here we will try to stick to this usage in order to avoid confusion.

By developing the meta-system as a focus of study we are attempting to describe the inverse dual of the system. The meta-levels of Being do not provide an inverse dual, nor do the metasystem transitions, or emergent events. The duality of the system can only be seen in the *beyond* meaning of 'meta'. We use the term meta-system for that dual only because our language does not provide a convenient term for this concept. That which spills over beyond the system, that which forms the background on which the system is seen, that is the inverse dual of the system. By inverse dual we mean that all the attributes of the system are reversed in the meta-system forming a duality. This is different from the sort of duality that exists when attributes are merely rearranged. For instance a system as a social gestalt is a whole greater than the sum of its parts. So a meta-system is a whole less that the sum of its parts. The system has a positive appearance as a perceptual or conceptual unity, While a meta-system is a totality that does not have the unity but forms the background on which the unity of the system is seen. The meta-system inverts the attributes of the system but also reverses them as well. A meta-system is a field of niches within which systems may fit. A meta-

system has holes just right for systems to fit into. It is a whole less than the sum of the parts, because the parts are systems and they have been withdrawn, so the meta-system is what is left when all the systems are taken out of their context, and the meta-system is the deconstructed, disunified, detotalized field that is left.

We have a hard time seeing meta-systems. It is a cultural blindspot for us. This blind spot is exacerbated by the fact that we do not have a word for the meta-system schema as we do for other schemas in the ontological hierarchy. So learning to see the meta-system by reversing and inverting the system, becomes a skill that we need to develop. This is a useful skill for systems engineers, because they are dealing with meta-systems all the time, as the ultimate environment that their systems must integrate into. Systems are valid only when they are integrated into the meta-systems to which they belong. For instance when we draw a context diagram for a system, then what ever is beyond the context diagram bubble that encompasses the entire system, is the meta-system. However, in our diagramming of the functions of the system, we do not tend to go beyond that to enumerate the functions, and resources provided by the meta-system. If we did explore what lies beyond that context diagram then we would find that the meta-system is disunited, and detotalized, and has a completely different kind of structure than the system. By reversal we mean moving from unity to totality. By inversion we mean moving from totality to detotalized, in the sense that Sartre gives to this term in Critique of Dialectical Reason. Systems are totalities and unites taken together and approaching the non-dual of wholeness. But wholeness can take a different from in which it is full of holes, like a sponge. This is the wholeness that is less than the sum of its parts which is the inverse dual of a whole that is emergent, i.e. greater than the sum of its parts. Meta-systems are de-emergent, they are deconstructed systems. We turn a system

into a meta-system by taking it apart, but leaving the parts laying out on the floor so we can see the tension between them that indicates the mode of reassembly. In other words parts of a system laid out on the floor have a certain order by which they may be reassembled, by the one who knows how to put them together, that field of propensities of the various parts toward each other is the meta-system, the deconstructed whole less than the sum of its parts that is ready for assembly into the system that is a whole greater than the sum of its parts. The parts laying on the floor looked at by the person that does not know how to assemble them does not constitute a meta-system, that is merely a plenum of isolated pieces. An assembly of a machine provides niches that receive each part in turn. The meta-system is the conglomeration of those holes that call to the pieces that belong in the assembly. In this way the inverse dual of the system is something fairly subtle which is hard to see if you are not looking for it. To see the meta-system you must ask where things fit. When you do that you see that the meta-system has an entirely different organization from the system. The meta-system is not a unity, nor is it a totality, but it is a whole less than the sum of the systems that go into it. Yet it provides these systems with resources, and it protects them, and it gives them an environment in which to be created, exist, and then which destroys them. Meta-systems are active media that self-organize around the systems to provide for their needs. But we make a mistake if we just think that they are higher level systems. Systems of Systems merely applies the schema of 'system' at a higher (or lower) level of abstraction. But meta-systems are made up of complementarities, or complementarities of complementarities. They are not unified and not totalities. Rather they provide the environment that the system needs to exist. They exist just beyond the interface of the system, either inside or outside the system. In other words the meta-system mediates between a system and its parts, just as well

as it mediates between the supersystem (system of systems) and its subsystems. The meta-system is the glue that holds the various systems together, but its nature is not like the system, it is in fact the inverse dual of the system in every respect. So in your own phenomenological experience of system, I suggest you look at them with an eye to identifying the meta-system as the inverse dual of the system. If you do that you will, I believe, start to see meta-system everywhere, because where ever there is a system there is a meta-system both inside it and outside it mediating between this system and all other systems ether beyond, or at higher and lower levels of abstraction.

Indications of the characteristics of the Meta-system

Here we will dwell on the characteristics of the meta-system, because this is a crucial concept, that everything else hinges on in our presentation. Meta-systems are invisible normally in our tradition, and so we have to go to extra lengths to make them as visible as possible. They are invisible because we design systems but then ignore their environments so they have unintended consequences that are many times negative toward the environment, toward other systems, and toward us. All those unintended consequences of systems design accumulate in this invisible realm of the meta-system until they bite us. A great example is the automobile. It was designed only with regard to its internal performance, and not with regard to the environment, so the omissions were not taken into account, until they accumulated to such a degree as to turn the air black, then omission controls were used to attempt to reverse the situation. The release of green house gasses were not considered at all when the automobile was designed, but it had this unintended side effect on the environment which accumulated as the number of cars grew and grew out of all proportion to what might have been expected at the beginning. The meta-system is where these systemic effects accumulate. It is the meta-system that we are ignoring when we design our systems. If we designed the meta-system as well, as we are slowly learning to do, then we would attempt to foresee these environmental impacts. Environmental impact studies are now becoming standard operating procedure in many types of civil engineering and development projects. But what is missing in this is the understanding that the environment is not just a plenum of random entities and relations between those entities that just happen to fall outside the system boundary. Rather, the meta-system as a projection has a kind of ordering of its own, it is ordered in terms of disunited and detotalized complementarities that cohere through orthogonal discontinuities between complementarities. It is like a mosaic or a

collage of complementarities in which different features come to the fore and impinge on the system at different points in time or in different ways. We actually project this different kind of order, as we do the unified totality of the system that tends toward wholeness that is greater than the sum of its parts. We project a detotalized, disunity which is less than the sum of its parts with a ordering of orthogonal complementarities. It is this tissue of projection that knits together environments, ecosystems, milieu, contexts, and other external elements and relations into something that makes sense to us as we look beyond the system. The meta-system is another template of understanding, or schema, that we project which makes things make sense to us which are not systems, forms or patterns. Meta-systems are indicative, as forms are proven, patterns are explanations, and systems are descriptions. Meta-systems indicate the niches into which the systems may fit. In other words, one of the problems we have with meta-systems is that we do not value the indicative understanding they supply. We know what type of understanding is supplied by proof, explanation, and description. But indicative understanding remains vague. It has something perhaps in common with intuition, with tacit knowledge[1] and with implicative[2] order rather than explicit order. So it forces us to enter a realm of understanding which is not well developed, or has been suppressed in our culture which adheres since Aristotle to the principle of excluded middle. The meta-system is precisely what is suppressed when you exclude the middle, say the middle between system and sub-system or system and supersystem. The meta-sytsem is glue that holds the various levels of system together. This glue is in the middle, as a kind of mass phenomena that runs counter to our reliance on count phenomena. Indicative understanding is what picks up on the hints

[1] Polyani
[2] Bohm

that certain side effects and unintended consequences might occur if a particular design is used. In other words the indicative is a subtle nudge to our intellects toward some insight into the consequences of interactions that are not direct and perhaps obvious. We value foresight into consequences of actions, but we really do not work to develop that kind of foresight in this culture as others have in other cultures, like China for instance, where subtlety is perhaps more valued, where indirection and implication is given a higher value than direct approaches. We infer the implications of indications from the meta-system based on our tacit knowledge and our understanding of implicate order. Here we enter the realm of that which cannot yet be described explicitly and concretely, but are vague and ambiguous hints and suspicions. No wonder this level of understanding has come under severe repression by the stronger characteristics of reason. But yet we learn usually the hard way that by ignoring these more subtle indications we pay the price later by the arising of unintended consequences and pernicious side effects which could have been avoided if we had just paid more attention to our gut feel about what will and will not work in a design when considering the interaction of system and meta-system. We said that the meta-system is a field of propensities where we see what fits with what. Well the gut feeling I am talking about is what does not fit, with what. The non-fittingness of the system into the meta-system is what is indicated by the decoherence of the interface between the system and the meta-system.

Describing the Meta-system as an anti-logocentric metaphysic

We can give a fairly precise definition of the meta-system even though from the point of view of understanding it seems vague and indistinct. This is because we now understand the relation between a Turing

machine and a universal Turing machine. This difference defines the difference between the system and the meta-system in terms of a systemism. The Turing machine defines computable algorithms and gives us a basis for understanding the incomputable. The universal Turing machine is a meta-Turing machine that operates other Turing machines like an operating system, reading them from tape and executing them and then off loading them back onto tape. The meta-Turing machine is to the Turing machine what the meta-system is to the system. With Turing machines the key question seems to be whether or not an algorithm can be created to figure out if an algorithm will stop computing or not. But a universal truing machine is what is needed in order to never have to stop computing. Algorithms that are meant to always work and never stop are different from those that are meant to stop sometime. One key type of such an algorithm is the operating system of a computer. Operating systems, i.e. "systems that operate systems" are really meta-systems in relation to the systems of applications that they run, give resources to and stop. Operating Systems are meta-systemic environments for the application systems that operate within a computer. Operating systems are an excellent example of the meta-system. So there is a duality in the computing sphere which is analogous to the more general duality between the system and the meta-system we are trying to describe. By understanding this duality between Turing machines and universal Turing machines, or applications and operating systems we can better understand the more general distinction between a system and a meta-system.

Meta-systems provide the arena for systems to come into existence, operate, and then vanish from existence. Meta-systems control systems by the provision of resources. Meta-systems act as filters that constrain systems to specific ways of operating and exclude systems that do not adhere to the proper protocols. So an application made for one operating system does not work on other operating systems unless specifically made to do so. Meta-systems provide orthogonal services to the systems that it encompasses. Systems talk to those services based on a specific protocol which the system must have built into itself. So systems must be well adapted to a meta-system in order to function in that environment. Through the meta-system systems communicate to each other, and exchange data and material. The meta-system is an active general media for the interaction of systems, as well supporting those systems, and protecting those systems from foreign systems that are filtered out by the meta-system.

System and Meta-systems are both illusory continuities and thus operate at the level of Pure Being. But when we move to the level of Process Being, i.e. to the level of essence, we discover that Systems and Meta-systems have different essences. The essence of a system is rules. The essence of a meta-system is complementarities. But because the essence of a meta-system is complementarities one way that the meta-system can be specified is with complementary rules. This is to say a meta-system can be specified with rules that act as constraints rather than rules that are determinate. Therefore we can use say the Gurvitch Abstract State Machine systemism to specify both a system and its meta-system. In other words the same systemism can be used to specify a system and its meta-system. The difference is that the rules are not determinate but are instead expressed as constraints, and the rules for the meta-system are the dual of the rules for the systems that they encompass. Just as the Universal Turing machine and the Turing machine may both be specified by rules, so to more generally the Meta-system and the Systems that are encompassed by the meta-system can be expressed in rules. These rules may be in the form of systems dynamic equations perhaps. In that case we would see that the system dynamics with negative feed back would

describe a system, but systems dynamic equations with positive feedback in either a positive or negative direction would express the nature of the Meta-system to contain runaway phenomena that the System must negotiate to remain viable. Meta-systems contain both blackholes and miracles. Blackholes are runaway positive feedback in the negative direction. Miracles are runaway positive feedback in the positive direction. Systems usually want to capitalize on positive feedback in the positive direction and avoid positive feedback in the negative dimension. But either type of positive feed back can destabilized a system contained in a meta-systemic milieu. So these are at least two possible types of formal representations suited to describing the dynamics of both systems and meta-systems, but they are almost always used to only categorize the systems and the meta-systems that are the dual representations are forgotten. Complementarities may be expressed as constraints and constraints can be represented as rules, and rules may embody systems dynamics equations. But in general the essence of the system is in its rules while the essence of the meta-system is in its complementarities, which may be complementary rules, but other forms of complementarity are also possible. For a system we have two really good examples, one is language and the other is the game. Both language and games have rules as their essence. But the meta-system of language is all possible languages. The meta-system of games is all possible games. These all-possible rulesets for systems are all expressed as rules, but they are made up of complementarity rules as you very the assumptions built into the rules. It is the same with say geometry, where Euclidian geometry was thought to be the only choice until it was discovered that there were hyperbolic and elliptical non-Euclidian geometries whose parallel lines cross. This complementarity, of crossing or not crossing of parallel lines, or of parallel lines crossing once or twice. The axioms are like rules, and

so by this example we see how very different complementary realms are generated by complementary rules. The way we explore the possible rulesets are by varying attributes to produce complementary configurations. So even though the medium of expressing the essence is a rule, when we go from one system to all possible systems, then it is by working out the complementary rules that the meta-system is generated.

Here I would like to discuss briefly Kripke's idea of names and necessity. He thinks that names are the same in all possible worlds. In other words if the name is the same then the thing is the same in all possible worlds. This is an example of someone not understanding Husserl's discovery that ideas and essences are fundamentally different. Names are labels assigned to Ideas. But essences are only seen in terms of category systems that specify genera and species of things. So if a name is a label for a category then it is different from a name of a specific individual thing. It is essences that remain the same across possible worlds, not ideas. For ideas are glosses. That means they are abstractions that leave out details in order to approach similarity and underline sameness in spite of difference. Thus ideas are not strong enough to differentiate worlds. The same idea can have very different content in different worlds. But essences as constraints specify the configurations of contents as attributes of the thing. As constraints it is possible to specify something that would be the same across worlds. So here we see the difference between the unity of presences and the unity of absences. We can specify a unity of absences across universes, but we cannot specify a unity of presences across universes. This is primarily because only one universe is present to us at a time. All others must be absent if one is present. So presences cannot be enforced across universes only absences may be so enforced.

Now let us try to apply this to the idea of the meta-system and the system. If we agree that

the meta-system is the inverse of the system, and that the system has both unity and totality tending toward wholeness greater than the sum of its parts, then we would expect the meta-system to be the inverse dual so it is detotalized and disunified and tends toward being a whole less than the sum of its parts, that is a whole full of holes. As such the meta-system must be disunited in terms of presences and detotalized in terms of absences. But we can also talk about the opposite, because we have said that there is a totality of absences which is the source or ache, and there is the totality of the presences which is noematic nucleus. Thus we would expect the meta-system to have a disunification of absences related to its noematic nucleus and a detotalization of its absences related to its source or arche. So what is the disunification of presences but an anti-idea, and the detotalization of presences must be an anti-essence, also the disunification of absences must be the anti-noematic nucleus, and the detotalization of the absences must be the anti-arche. In this way the duality of the System and the Meta-system is upheld. But it is left to us to explain what these things might be with respect to the meta-system and how they differ from these same aspects of the system. Let us start with the idea. We know from Plato that an idea is a unity of presences. This is to say it is a vision of the thing that brings it to presence in all its forms. Plato says that natural things are the highest form of these ideas, that manufactured things are next highest and that artifacts of artisans that imitate these other modes of thinghood are the most degenerate of the ways of bringing to presence the idea. The idea of a tree is a gloss on all known trees, leaving out the details that distinguish them and only keeping the outline of attributes and configurations of elements that make them similar. All difference is lost. We build up categories of things though this process of abstraction in which we build representations that can stand in for the various subsumed things in the categories. Or we use names to indicate

specific things. The name likely as not stands for the gloss of the thing that makes it stand out as unique for us. An anti-idea, i.e. a disunity of presences, focuses on the differences between things under the subsumption of the gloss. We might call them avoidances. We notice that meta-systems avoid being seen because they are always pushing systems to the foreground. How many people just stare at the desktop of the computer and never open applications. The operating system is managing the presenting of the applications and thus hides itself behind the windows that pop up. This continual hiding has a coherence of its own which is orchestrating the appearances of the ideas. If there were no anti-ideas then there would be no ideas. Anti-ideas rush out of presence in order to make way for the ideas to be brought to the fore as the unity of presences. We can say the same thing about anti-essences. An anti-essence is a disunity of absences. We know the essence is a constraint, which unifies absences. Constraints make demands on attributes such that they can only assume certain ranges of values. These can be expressed as rules with less than and greater than signs. But they are rules with variable names none the less where the content of the variable names is constrained. What is absent, i.e. the excluded, is unified by the ruleset that describes the constraint on the attributes. But what happens when this ruleset is itself disunified or scattered. That is an anti-essence where the absences are disunified. This may occur when all the constraint rules are not operating simultaneously, perhaps they are distributed and scattered, not always being in effect at the same time or changing. Anti-essences decohere the unity of presence and absence. It is not just a matter of showing and hiding. It is more a matter of coherence and decoherence. When the anti-essence is invoked it is difficult to get an overall view of the thing being described. And that is exactly the problem with the meta-system. Meta-systems are not coherent in the same way a system is coherent. They

are full of orthogonalities. All these orthogonalities prevent any of the systems within the meta-system from seeing the whole thing, they only interact with one orthogonal piece at a time. The meta-system always remains a mystery to those systems encompassed by them, it has a reason of its own which is not apparent to the systems encompassed. An individual Turing machine never knows what the universal Turing machine will run next, or for how long, or to what end. If we go on to the anti-noematic nucleus we see that as a detotalization of presences. A particular system within the meta-system can be seen from different views which all remain in sync with each other. All views form a totality and become interchangeable within that totality. But detotalization of presences means that some views are not accessible to other viewing agents. We know that in operating systems in terms of privileges of users. Some are administrators, some are power users, and others are normal users or guests. Views are controlled and kept separate from each other. This is the detotalization of views and it is intrinsic to the meta-system that its views are detotalized so that some agents will have access to more views than other agents within the meta-system, and the agents have no control over their fate in this respect. Similarly we can talk of the source of the system as the totality of absences, but the source of the meta-system is a detotalization of absences. Every System has an origin and a source. The origin is where it enters the spacetime matrix of the Meta-system, i.e. the arena. The source is like the template object in Object Oriented engineering. It is only when resources are given to it by a create command that the object comes into existence. So the source of the system is all the possible absent objects that can be created from the object template. The origin is when these instances become actualized by the operating system based on the source template. The destination is when the resources for the object are discarded. Between the origin and destination the system

object goes through its lifecycle. But the antipode to the livecycle of the system is its source, the template on which it is formed when created. But in the meta-system there can be many such sources, not just one, as for the system. So the absences are detotalized meaning the many different object templates are kept separate from each other and dealt with in different ways by the meta-system as it sees fit.

Not it is perhaps more clear how the meta-system is similar to the system yet the inverse dual. Sure there are unities of presence called ideas that systems may be glossed by, but this participates in a showing and hiding within the system, so that for everything shown there is something hidden, and thus ideas are balanced by anti-ideas. Sure there are unities of absence that are constraints on the essences of systems, but in meta-systems these are decoherent, the rules are not in one place or necessarily all active at the same time. This produces orthogonalities within the meta-system that make it very difficult for systems to understand because they only deal with a few of these orthogonalities at a time. Sure there is a unity of absences that is a noematic nucleus in a system, but in a meta-system views are disunified so agents in the meta-system do not necessarily have equal access to views, nor are they in control of the views they have. Sure there are sources for every system within the meta-system, but the meta-system itself has all these absences detotalized so that the various sources are dealt with differently and are not necessarily accessible in the same manner or at the same time. Our metaphysics of presence is limited, when we only think of the systems as its objects. But what about the meta-systems in which presences and absences are disunified and detotalized tending toward a wholeness less than the sum of its parts rather than the reverse. The meta-physics of presence has not really contemplated this type of inversion of its laws previously, but if we are to take meta-systems seriously, then we must contemplate

this sort of reversal, that goes far beyond that contemplated by even Nietzsche the most ardent opponent of Plato. Even Jung's reversal from focus on the unity of presence to the totality of absence does not go far enough, because we are still operating in the categories of Kant. But if we reverse the categories of Kant in relation to the aspect of Being, and we could have used any of the aspects, then we have a glimpse of the possibility of the meta-system as the environment or ecosystem in which the philosophy of presence operates. Sartre had some inkling of this in his Critique of Dialectical Reason where he talked about detotalized totalities. He should have also mentioned disunified unities, and perhaps unholy wholes. But be that as it may, it is clear that the meta-system is a very different kind of thing than we are used to dealing with. We can see how many of its oddities are controlled by an inversion of the Kantian categories, and we could extend this to all his categories, not only those to do with wholes and parts.

Because the meta-system is made up of complementarities we can begin to ask what are the major complementarities that control its form. We see the first of these as origin and arena. But these have their complements which are source and boundary. But further this set of four has its complementarities which are Negative Ramification, Positive Ramification, Singularity, and Catastrophe. And these eight also have their complements, although the author is not sure what these might be. We expect that there is an infinite bifurcation of these complements which as they are uncovered by symmetry operations would define the meta-system more and more precisely. Positive ramification produces higher dimensions. Negative Ramification produces deeper and deeper sources. Singularities are the unique points where topologies fold through one another producing catastrophes. Catastrophes are the other danger within the meta-system besides positive feedback. Singularities are like

blackholes where the laws of the meta-systemic environment are undefined or massively violated. This is necessary for the meta-system contains the Godelian statements that are neither inside nor outside the system. A good description of the Meta-system is found in the works of Bataille, especially as interpreted by Plotnitsky in Complementarities. Bataile calls the meta-system a general economy and distinguishes it from the restricted economy that most economists deal with normally. In the general economy there is waste for the sake of waste that pushes on production without end. Production gives us the accursed share, i.e. the part that is left over that has to be spent, that leads to pyramid building, potlatch, and war. Excess breeds excesses in an endlessly nihilistic cycle. Plotnitsky also cites the philosophy of Bohr as an example of the meta-system of complementarities which is a surface tissue with nothing beyond it. But if we were to agree with Bohm that there was something behind that surface of complementarities then it can only be an implicate order of which we have tacit knowledge. We see the meta-system in quantum mechanics and relativity theory, two duals that complement each other but are apparently irreconcilable. Heidegger's philosophy tried to reconcile them in Being and Time by citing the ready-to-hand beyond the present-at-hand as the realm in which spacetime curves even though it appears locally flat, and as what lies beyond the boundary established by the Copenhagen convention between Newtonian mechanics and Quantum mechanics. This segmentation of Being itself, is one way to explain the splits we find irreconcilable in physics. But these complementarities in our physics are merely ways of understanding the complementarities of any meta-system at the most general level. The meta-system may ultimately be seen as the matrix of spacetime/timespace because it is an arena. But it can also be seen as quantum mechanical because at its basis there is disunity and detotalization that allows

orthogonalities that make simultaneous possibilities an actuality behind the scenes of phenomena. Notice it is separation of views, orthogonalities, decohernces and separation of sources that are spoken of in terms of meta-systemic metaphysics and that these are the same things that show up in Quantum Mechanics and Relativity. In quantum mechanics we find that there are observers that effect experiments because when they observe it causes the experiment to go one way or the other depending on what is observed. So views count, but there is decoherence that occurs on observation, because simultaneous states that are held in orthogonal configurations collapse together, and in this way different universes are separated from each other. In a similar vein, there is in relativity theory, different inertial frames with different viewpoints of the spacetime/timespace interval. The matrix of spacetime and timespace are separated from each other, one creating relative position and the other describing causality in a relativistic container. In terms of separation of sources there are the separation of clocks in relation to the viewers and the objects viewed. Time is decoherent among the clocks. In general relativity the various local spaces are orthogonal in relation to the global curvature of space. The point I want to make is that both Quantum Mechanics and Relativity Theory are views under the rubric of physics of the meta-system. And as an aside I would like to connect this to the future topic of the Emergent Meta-system which is made up of seeds (sources), decoherent monads, separated views, and orthogonal candidates. In other words this reversal of the metaphysics of presence into the meta-system produces the substance of the Emergent Meta-system formation which is a model of the dynamics inherent in the meta-system. But that is a subject of some future essay in this series. We mention it here only to not lose the thought. The Emergent Meta-system has as its substance the same elements that Relativity Theory and Quantum Mechanics display, there are the elements to be

observed, the observers with their viewpoints, the sources of the phenomena, and the possibilities to be realized as actualities. In quantum mechanics the objects to be observed are the particles, the observers are the ones who can effect the experiment by bringing their consciousness to bear in observation using instruments. The possibilities are the simultaneous quantum states that decohere when observed probabilistically, but until observed are held in orthogonal simultaneously valid quantum states. In relativity theory there are observes in inertial frames that are observing clocks. They have different views of the spacetime / timespace (position/causality) interval, which are orthogonal local spaces in a curved global matrix. Different observers experiences of events in time are not coherent with each other. The emergent meta-system toward which this series of essays is building, takes these four elements and separates them completely. It places the sources in one realm, the things viewed in another realm, the viewers in another realm, and the candidate possibilities that are actualized in another realm. Sources give rise to monads that give rise to views that give rise to candidate possibilities that are actualized and return to sources. This lifecycle of the Emergent Meta-system is a pure form of the separation of the various disunities and detotalizations of presence and absence as well as the other aspects of Being, and Existence, which tends toward a wholeness that is less than the sum of its parts. This is to say that it embodies the inherent dynamic of the meta-system in which the various disunities and detotalizations of the aspects are separated and operate together in spite of that radical separation. Our goal is to step by step understand this dynamic and how it reverses the metaphysics of Being by entering into existence which is the opposite of Being. However this is a long road and we need to approach that goal step by step rather than all at once because it is a strange destination, yet part of that strangeness may be realized

by understanding how quantum mechanics and relativity theory are calling cards of that ultimate mystery of dynamic organization that is hidden in the bedrock of existence.

Once we realize that there are both philosophical categories and philosophical anti-categories and that these both interact with the aspects of Being or Existence, then we get some clue to the depth of this argument with respect to meta-physics, because there must be not just the anti-categories but also the non-categories, and it is these that combine to create the non-dual anti-non-categories, and this produces a series of standings. We call the anti-non-categorical standing manifestation and consider it the non-dual of Being and Existence, but we realize that there must also be not just the both and but also the neither nor that can be thought of as the anti-non-standing of the Greimas square, but also as the neither-nor element of the tetralemma. Somehow the Greimas square of contradiction and contraries of the deadlock of reason is coordinated with the tetralemma that indicates emptiness of existence. And so we discover the standings. Being is a standing in which there is projection. Existence is a standing in which projection ceases and we see what is there without projection. Manifestation is a standing in which we go beyond both Being and Existence toward a deeper non-dual. The forth standing is the extinction of manifestation. In religious texts like those of Meister Eckhart this is the Godhead, in Hinduism it is called Brahman. It is the infinitely deepest non-dual. But all this depth is generated quite effortlessly just by realizing that if there are anti-categories then there must be non-categories and then there must be the anti-non-categories which are manifest deeper non-duals that lead on to extinction, the deepest non-dual, the absolute. It is the tetralemma that produces the neither-nor of the standing of extinction in relation to the both-and of manifestation. Comprehending the standings allow us to understand the basis for the duality of Being and Existence which is crucial to our argument. The standings form a meta-EMS that ground our definition of the EMS.

One question might be why do we have to go so deep if our object is merely to understand systems and meta-systems. The answer to that is that systems and meta-systems are types of wholes, and wholeness itself is not whole, in order to understand the wholeness of wholeness it is necessary to posit not just wholes less than and greater than the sum of their parts, but the non-dual which is a whole equal to the sum of its parts, and beyond that an amorphous whole in which the parts are not differentiable, i.e. where summation cannot occur. The various standings are ways to get a perspective on these various levels of wholeness that allows us to see the wholeness of wholeness despite its fragmentation at the level of its essence. In other words wholeness is not straight forwardly whole, but only circumspectly or dialectically so. Sartre attempts to define the dialectic dialectically in Critique of Dialectical Reason. Here we must strive to do something similar, which is to build a basis deep enough rooted in non-duality that we can see the fragmentation of wholeness come full circle to attain the wholeness of wholeness despite its inherent fragmentation. But we stray from our intent here and must return to the step by step exposition despite our tendency to want to jump ahead.

Phenomenology of Meta-systems

Here we return to our phenomenological approach but with respect this time to meta-systems. Analogous to the system level there is a fourfold structure to the meta-system level. Opposite meta-systems at the noetic conceptual level are meta-processes which correspond to proto-gestalts and proto-flows from a noematic perceptual point of view. When we use the term proto-gestalt or proto-flow we are indicating the deeper background

for the system, just like the figure appears on the background to produce the gestalt, so the system is a new figure on the deeper background of the proto-gestalt. Similarly with the proto-flow that is the deeper background against which the flow and reference point is seen. The proto-flow is a river of many intermingling streams. Just as the proto-gestalt is a scene which includes many gestalts. That scene has a horizon just as the river has banks. And just as with the gestalt and flow, these complementarities always go together. If the proto-flow is in the foreground then the proto-gestalt is in the back ground, and they are complementary to the gestalt and flows which are a closer foreground that stands out on the deeper background of the proto-gestalts and proto-flows. The meta-system and meta-process are similar deeper backgrounds but at a noetic conceptual level rather than in terms of noematic perception.

One way to think about consciousness is in terms of this complementary organization between gestalt/proto-gestalt//flow/proto-flow on the one hand and system/meta-system//process/meta-process on the other hand. We are continually operating within the tradeoffs between these various complementarities. All our experience is organized according to them at a deeper level than that of forms and patterns. Husserl concentrated on forms because that was the central schema of our tradition. Patterns have always played a lesser role, because they adorn the forms and are considered superficial and inessential according to the doctrine of primary and secondary attributes. But Gurwitch extended Husserl's phenomenology to consider gestalts and to consider the vagueness of the horizons of consciousness. But we will need to augment Gurwitch by introducing a deeper background schema called the proto-gestalt/proto-flow which is the wider background in the context of which that gestalts appear, and the same with their dual the flow, and the same with their noetic

components the meta-system and meta-process. With each schema we add consciousness increases in its depth because each layer has its own unique organization that nests with the other schemas without interference as if they were Russian dolls, fitted seamlessly with each other. Thus it behoves us to begin to try to recognize the naturalistic differences between these different schemas, and see how they work together to elucidate phenomena that we project them onto. When we realize that they are projections then we can look for the anomalies in the phenomena that show up these schemas for what they are, projections, and that is the beginning of science, because through the anomalies we learn what is beyond our projections. We used to think that our projections of the gods were a magical and mythological reality. But slowly we disentangled ourselves from those projections, but in the meta-physical era, the era of the fleeing of the gods according to Heidegger, there is still a projection of schemas covering over the things themselves. We need to get beyond this new level of projection in order to focus even more clearly on the what the things beyond our projections have to say for themselves. If we do not recognize a level of projection we might think that the actual things were organized according to this schema. This is the fundamental Problem with Lawson's approach in Closure. He does not specify how material and texture of specific types are generated by the operation of closure against openness. Here we propose that it comes from the interaction of ontic physus and ontological logos in the form of schemas. We project specific schemas, not just anything that are built in to our ways of approaching things onto the ontic physus, but those projections do not fit completely, and it is though the anomalies, errata, and other misfittings that we learn to consider what is beyond our projections. It is the interaction of the organization of what is there beyond our projections and the organization of our projections that reveals the different layers of

closure that gives us specific supervenient material realizations with their own open texture. For Lawson this is an unanswered mystery because he hs creating an monolith of closure verses openness. What we are seeing instead are specific schemas projected against all the layers of actual external organization, which we learn about by watching for anomalies in our projections. This is the fundamental quest of science to eliminate those anomalies and thus get closer and closer to a good description of the phenomena, as they are beyond our projections, although we will never see the noumena themselves we can always approximate it by degrees. It is the organization of the things-in-themselves with the organizations we project on them that leads to specific closures with the production of material and texture that is emergent in each case. If we pick another ontological emergent schema and connect it with a different ontic emergent layer then we will get a different kind of material with its own texture. But there is a given palate of schemas and a given set of ontic emergent layers with specific organization before hand. Social construction does not start with nothing. Social construction starts with some basic schemas and a given physical world and marries these to produce specific closures, which could be undone and redone differently but within the supporting limits of the given schemas and the given ontic emergent characteristics seen through a glass darkly via the anomalies in the schema projections. Thus this explanation is richer than that of Lawson which is monolithic. Our explanation is pluralistic and dualistic. It is dualistic in that it posits the difference between physus and logos as a basic distinction embedded in the worldview. But it is pluralistic in that it sees different emergent layers of the schemas and of the ontic noumena. However it sees these two emergent sets of layers as loosely hierarchical or at least nested. Each supervenient layer produces its new characterisitics within the limits set by the

next lower level within the hierarchy. So the pluralism is a type of hierarchy of emergent steps with gaps between them. Yet this way of approaching things is also non-dual in the sense that it recognizes order as the non-dual between the physus and logos. So ordering is what these two realms have in common and we can sometimes discover the intrinsic order that allows us to crate mathematically based theories of physical phenomena thus building a bridge between the physus and logos. We might speak of the physiological and the logophysical as the chiasmic relation between these two duals. Order appears non-dually in the reversibility between these two phases of this interval. As Einstein said this was one of the greatest mysteries, how theories and physical phenomena can be connected through mathematics.

A similar thing may be said for the phenomenological approach. Without recognizing the role of the schemas in organizing consciousness we miss most of its internal structure, it seems amorphous and unorganized. Husserl only recognized one schema. Gurwitch tried to correct this by introducing another schema, the gestalt. For Husserl pattern was not a schema but merely content, but we need to realize that pattern is an organizational principle just as strong as form but different. And also the meta-system is a very important organizational principle as well that we must add to the mix. Heidegger on the other hand focused on the schema of the world which is entirely different than any of these lower level schemas. It is clear that it would be good to understand the entire nested series of schemas that we project as part of the ecstasy of our projection of Being. Yet this has not been an area that has been studied extensively, although schemas abound in the literature of science and other disciplines as organizational motifs. In the next chapter a general theory of schemas will be developed as a strawman, but here we merely call for further study of this set of organizational structures of consciousness, because it is

clear that by understanding these structures that we project we better understand our processes of understanding, and we suspend our belief that these structures are something out there in the world and rather see them as components of the wrorld. There is an analogy between the projection of gods onto the world in the mythopoietic times and the projection of schemas on the world in metaphysical times. As long as we think that forms, patterns, systems, meta-systems, and worlds are something out there in the ontic noumena, things-in-themselves, then we are deluded and confusion will reign in science. There is no objective science of systems. Systems science is a science of projections. It is a kind of psychology, or sociology before it is a kind of physics or biology. It is a reflexive study of ourselves and our projections. The same is true of the Science of Forms, or Pattern, or Meta-systems. Science proper is the interaction of ontic physus of things-in-themselves, i.e. noumena, and the projections. Without the projections we would see nothing, but if we believe them too much then we are blinded to the phenomena themselves which speak to us through the projections as if through a glass darkly. The glass has layers, and those layers are the kinds of Being, which are faceted by the aspects of Being. As we move from the ontological realm of the schemas which are seen as Pure Being we encounter Process Being, Hyper Being and Wild Being before hitting the limits of Existence. The thing-in-itself is the existent. As we approach it we encounter the strangeness of Hyper Being and Wild Being after we leave the safe haven of Pure and Process Being.

Set, Mass and the Non-dual

One way to think about meta-systems is in terms of count verses non-count ways of approaching things which is embedded in our language. Count approach is based on determinate and discriminatable things which participate in the logocentric metaphysics of presence. When we talked about ideas we were considering these determinate things being presented as natural objects, artifacts of craft, or objects of art as Plato discusses. But when we focus not on the abstract gloss of these things but on the attributes that they contain then we discuss the essence which is a unity of absences rather than a unity of presences. We also discuss these things with respect to being totalities of presences in terms of noematic nucil seen from many viewpoints or seen by many viewers. There is also the totality of absences that define the source, or arche of the determinate countable thing. But beyond determinate and discriminate things defined using set theory with functions as the mathematical category SET, there is another approach to things that sees it as stuff. Stuff is a mass term rather than a count term. Masses exist in our language with determiners for instances within a mass, like a blade of grass in a yard. Masses are less well integrated into our worldview, and we tend to avoid or eschew mass phenomena when we pursue systems theory or philosophy. However, many phenomena in our culture are best described as masses of stuff, like furniture. We say a piece of furniture when we want to talk about a single instance, but other wise furniture blends into the mass of things that support our bodies. What I want to point out is that although all flows are flows of masses we tend to push mass into the meta-system and use them to describe proto-flows, so for us the Ocean springs to mind as one of the ultimate mass phenomena, an all encompassing environmental mass. When we talk about masses at the gestalt and flow level we normally are talking about contained masses like streams and rivers, or masses like a bucket of water. But the ultimate mass phenomena is to confront the ocean, very large masses which we tend to think of as the ultimate exemplifications of the meta-system. So we have a bias that first ignores mass phenomena as messy and unwieldy and second we tend to see meta-systems in mass terms while we tend to see systems in count

terms. We think of the system as things and relations between them, not as masses that interpenetrate. Along with the mass and set categories, there are also corresponding logics. Mass logic is a pervasion logic such as that developed in India or in terms of G. Spencer Brown's Laws of Form. The Count logic is syllogism. We tend to use in the Western Tradition syllogistic logic that emphasizes count formations like sets, rather than pervasion logics that would call upon us to view things as masses. One way we diffuse the anti-category inversion of meta-systems and meta-processes is to interpret these meta-systems and meta-processes as masses, and one way we avoid thinking about them is by not recognizing the efficacy of any logic but syllogistic logic. But it is possible to see clearly that although this is a bias, it really amounts to a distortion because mass and count can both be seen to operate both at the system and meta-system level, and in fact that is why there is process and meta-process aspects of both of those levels. The processes and meta-processes relate to the mass phenomena and the systems and meta-systems relate to the count phenomena.

But here I would like to take time to describe the non-dual between set and mass which we will call a conglomerate. Set emphasizes difference while masses emphasize identity. These two root mathematical categories are in themselves extreme opposites and in some sense are nihilistic opposites. We see masses or sets but things are really something in between mostly. Sets and masses are reifications. For instance we can talk about the eventity as the non-dual between the shape and behavior, or between the system and the process, or between the meta-system and meta-process if we are concentrating on the relation between the thing and time, i.e. the spacetime nexus of the thing. But if we are concentrating on the difference between count and non-count or mass then to get the non-dual we would have to find something that has both identity and difference at the same time which we might just call the

conglomerate. The conglomerate does not specify how much identity and how much difference exists in the thing. Conglomerates are not all different particulars like a set, nor are they all identical instances like the things in a mass. If we look at the set and mass then we note that in the set the emphasis is on the differences between the attributes of the things that make them different from each other in their essences. No two entities of the same essence can be members of the same set, ideally. If on the other hand we concentrate on the mass then all the instances are expected to be identical except in terms of their spacetime location. It is the mass that has attributes and global operators, that relate to the whole mass which is made up of summations of all the locally acting instances that interact thermodynamically, or some other way which sums up to the behavior of the mass as a totality. Sets emphasize unity while masses emphasize totality. Sets relate their things to each other in terms of physics mostly, while masses relate throughout in terms of thermodynamics mostly. So with the set we are interested in the attributes of the things within the set while with masses we are interested in the global operations and attributes of the totality. With sets we relate these attributes to each other in terms of universals while in the mass we relate instances encompassed by the masses in terms of boundaries. Sets contain particulars that have essences. Masses contain instances that all are the same except in a few attributes like temperature, mass, density, or other primary attributes. So if we wanted to find the non-dual between the universal and the boundary we might call that the juxtaposition. If we wanted to find the non-dual between the particular and the instance we might call that the ipsity. So the non-dual between Sets of particular things with attributes that are related to each other via universals and Masses of instances that share primary attributes that together give emergent effects globally by acting locally within a boundary, then we might talk about conglomerations of juxtapositions of ipsity.

Such conglomerations can be seen as swarms so that it is from them we get the fundamental structure of the emergent meta-system which is a swarm like structure. The EMS has pods of seeds, swarms of monads, constellations of views and slates of candidates. In other words in each realm supported by its own hypercomplex algebra there are swarms of a different kind supported by the general idea of congolmerations of juxtaposed ipsities. Neither the Set not the Mass categories are adequate to describe the nature of these swarms of different kinds in each mode of the unfolding of the Emergent Meta-system. We can place these swarming conglomerates both between the system and process sides, or between the system and the meta-system. They are non-dual in both directions, and that is why the emergent meta-system can be seen as a non-dual between the two extremes of the system-process duality or between meta-system and system dualities. Something else is going on between the set and mass categories no matter how they are interpreted which indicates the necessity of specifying the conglomerations of juxtaposed ipsities that result in the definition of seed pods, monad swarms, viewpoint constellations, and candidate slates.

By specifying this non-dual position between set and mass as well as the distinction between category and anti-category we bring together two aspects, presence/absence and identity/difference as in the service of defining the nature of the Emergent Meta-system toward which we are striving. And it is only right that we introduce the Emergent Meta-system in the context of the Meta-system because the EMS specifies the inner dynamic of the meta-system. For instance we can see Being in terms of the definition of systems, so that existence is left as the meta-system of Being, and so we see then that the EMS is the inner dynamic of Existence beyond Being. We run into Existence when we try to approach the fifth meta-level of Being. It is what lies at the top rung of the ladder though Pure, Process, Hyper and Wild Being. We consider the unthinkable Ultra Being as identical with Existence, i.e. what lies beyond Being as such, i.e. as non-Being. The meta-system is construed as a model of Existence. And as such we tend to model it in terms of Masses where we reserve count as a way of thinking about Being. But this is our prejudice because we should realize that both count and non-count approaches can be applied to Being, and that a better way to think about existence is in terms of the conglomerated juxtaposed ipsity that is the non-dual between set and mass orientations. We posit also that the conglomerated juxtaposed ipsity has its own logic like that of the set and the mass. In this case we would call it a *logic of disconnection* such as that developed in my dissertation called The Structure of Theoretical Systems in relation to Emergence (LSE 1982). The conglomeration of juxtaposed ipsity with its logic of disconnection would take a non-dual position between set and mass, between syllogism and pervasion, between category and anti-category, between, system and meta-system, between process and meta-process, between gestalt and proto-gestalt, between flow and proto-flow.