SYMMATHESY -- A WORD IN PROGRESS: PROPOSING A NEW WORD THAT REFERS TO LIVING SYSTEMS

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PROLOGUE
PART I
The Word "Symmathesy" On The Page

Proposition:
I would like to propose a new word for "System" that refers specifically to living systems – that is, to systems which emerge from the communications and interactions of living vitae (another new term, one which will be defined later). The new word, and concept, for "system" that I propose is one which highlights the expression and communication of interdependency and, particularly, mutual learning. The existing word, "system", while useful for discussion of many kinds of systems, does not communicate contextual fields of simultaneous learning as is necessary for life. The inclusion of mutual learning in the terminology is specifically meant to preclude the models of engineering and mechanism that are implicit in much systems theorizing today. We have learned that when dealing with living systems, the many variables of developing interaction become untenable to consider in such mechanistic parameters. This change in concept should spark a significant shift in our work, in the sciences, applied professions, communication, arts, that addresses or depends upon our understanding of life and evolution. The discourse with which we discuss and study the living world should be representative of the living world, and should cautiously avoid connotations that imply or are derived from engineering.

The notion of systems as being an arrangement of parts and wholes has become a distraction from the new systemic vision, which we are trying to encourage, that sees life as relational mutual learning contexts. As studies ranging from cognitive science to epigenetics, social science, ecology and evolutionary theory, are increasingly showing, evolution emerges in interrelationality**, *not in arrangement*. Therefore the need is acute to create a differentiation between living systems and other systems.

Biology, culture, and society are dependent at all levels upon the vitality of interaction they produce both internally and externally. A body, a family, a forest or a city can each be described as a buzzing hive of communication between and within its vitae. Together the organs of your body allow you to make sense of the world around you. A jungle can be understood best as a conversation among its flora and fauna, including the insects, the fungi of decay, and contact with humanity. Interaction is what creates and vitalizes the integrity of the living world. Over time the ongoing survival of the organisms in their environments requires that there be learning, and learning to learn, together. Gregory Bateson said, "The evolution is in the context." So why don't we have a word for mutual learning in living contexts?

I want to put the Greek prefix Syn/ Sym (together) + Mathesi, (to learn):

Symmathesy = Learning together.
(Pronounced: sym- math-a-see)

Symmathesy -- A Word in Progress

A working definition of symmathesy might look like this:

Symmathesy (Noun): An entity composed by contextual mutual learning through interaction. This process of interaction and mutual learning takes place in living entities at larger or smaller scales of symmathesy.

Symmathesy (Verb): The process of interaction, in its multiple variables, that produces a mutual learning context.

Interdependency is vital to the health of any system. But, the interdependency does not sit still. All of biological evolution, and development of culture and society, would seem to be a testament to the characteristics of contextual multilayered shiftings through time. Nothing stays the same, clearly. So could it be that change is a kind of learning? If a living entity transforms, even slightly, some of its contextual interrelationships, it is within that shift that a calibration change is revealed. The same kind of tree in the same forest does not necessarily grow to be the same shape. One may have higher winds to contend with, or grow with a thicker density of flora around it. The trees in these contrasting contexts live into their contexts by receiving the many forms of relational information they are within, and responding to them. Thus they grow to be different shapes, to metabolize at different levels and so on.

Our conceptual understanding of the living world can be elevated with a new terminology that better describes the processes we are referring to within it. The viability of this new term is a step toward a clearer understanding of the way we describe the difference between what we can "control", i.e. in material terms, and that which requires another approach, i.e. interacting with the complexity of evolving living systems.

What is the difference between learning and life? None.

When is something living NOT learning? Never.

The concept I have begun to seed in the following pages is my attempt to provide what I hope will be a useful fusion of ideas. I invite the reader to recognize its combined sources in systems theory, (including complexity theory and developmental systems theory), as well as the theory of MIND, presented by Gregory Bateson in his book *Mind and Nature*. While both of these bodies of work have provided the roots of our work today in developing new forms of research for the International Bateson Institute, I have found that within those vocabularies I habitually need to clarify the terms, so as to incorporate the transcontextual and ever changing variables of life. This has become a task that invariably accompanies our studies of complex life. The explanation needed to differentiate the characteristics of a living system from a mechanical system seems to necessitate a repeated listing of the processes of interrelationship that currently must be tagged onto every discussion. Equally distracting is the explanation needed to differentiate between Gregory Bateson's ideas of MIND as life, from a related contemporary idea which it is connected to, but not reducible to,--"neuro-cognition". While for me MIND is much closer to being a usable concept, the tendency in our culture to confuse 'mind' with 'brain' creates for many people a rabbit hole of misunderstandings around the notion of immanent MIND. This tension between the concepts Bateson developed and called MIND, and

systems theory, has provided a base from which I have begun to play with the idea of mutual learning as the basis of life.

Mutual Learning Contexts:

The International Bateson Institute was founded in 2014 with the mission of developing a process of inquiry that would begin to take into account the many contexts that any particular field of study exists within. It is difficult if not impossible to find a subject to study in the living world that is definable within a single context. Transcontextual research offers multiple descriptions of the way in which a 'subject' is nested in many contexts. This information provides descriptions of interactions that seem to erase the boundaries of what we might have previously considered to be parts and wholes. Medicine is entwined in culture, food, environmental conditions, education, economic stability, and more. Economy is formed through culture, transportation, resources, communication and media, education etc. To study the biological evolution of a pond it is imperative that other contexts in which the pond exists be included in the study. These might include the geological history of the region, human interaction (including food culture, sport culture, economics of tourism etc), chemical balance, weather patterns, concentrations of various species. Research without the study of multiple contexts renders the information about a given subject as though it were isolated from the many systems it is within, and therefore a great deal of data is not visible.

Inquiry that stretches multiple contexts has begun to reveal that the interaction between vitae provides more information, and a more integrative set of possibilities, for interaction with the complexity of the "subjects". Any symmathesy, such as a person, a family, a forest, a nation or an institution, can be viewed or studied in the hope of revealing the way in which it has learned to form itself within the contexts it interfaces with. Like a great living puzzle whose pieces morph into compensatory responsive shapes, living systems require that we develop a language to hold the conceptual multiplicity of perspectives. We have to be able to consider the variables at a higher order. Transcontextual research brings us discovery of new interactions and provides a wider angle lens.

Right away we see that there are a host of questions and fleshing out of this concept in multiple areas to be addressed. Is it a noun or a verb? Is a living entity a thing? Or is a living entity part of a relational process? Can a living entity be both? To incorporate a comprehensive base in our syntax of this theory, I believe we will need to stretch even our understanding of grammar.

In this paper, I am merely introducing the term. The development of the conceptual arena for symmathesy, and symmathesies will continue over time and with multiple scholars, artists, and professionals. But there are a few considerations that need to be addressed as they fold into the definition of what a symmathesy is and what the symmathesy process entails.

As a word, "symmathesy" is part of a family of terms of description of the relational characteristics of the living world. Other terms in this family include "symmetry," "symbiosis," "sympoiesis "and "system." Each of these terms includes a prefix indicating 'together', sym, or syn—followed by focus on order, growth, pattern and

more. Symmathesy is potentially a newcomer to this family of concepts and attracts attention to mutual learning.

The tendency to think in terms of functioning parts and wholes is misleading for our future inquiry of living, co-evolving systems.

Metabolism, immunity, cognition, culture and ecology are all examples of living interactions. Within these examples, perception, communication and learning are observable as open-ended interchanges in and between a tangle of varying perspectives. In an attempt to address the increasing mix-ups in our inquiry of living "systems" as they are differentiated from mechanical ones, a new vocabulary is needed. It has now been more than half a century since the Macy Conferences which marked the emergence of cybernetics, yet we still are not able to properly refer to the living world with anything more articulating than this one overarching term: "System". The primary downside of the word "system" is its invocation of "arrangement" (inherent in the Greek prefix "sys").

The way in which we have culturally been trained to explain and study our world is laced with habits of thinking in terms of parts and wholes and the way they "work" together. The connotations of this systemic functional arrangement are mechanistic; which does not lend itself to an understanding of the messy contextual and mutual learning/evolution of the living world.

Reductionism lurks around every corner; mocking the complexity of the living world we are part of. It is not easy to maintain a discourse in which the topic of study is both in detail, and in context. The tendency is to draw categories, and to assign correlations between them. But an assigned correlation between a handful of "disciplinary" perspectives, as we often see—does not adequately represent the diversity of the learning fields within the context (s). The language of systems is built around describing chains of interaction. But when we consider a forest, a marriage, and a family, we can see that living entities such as these require another conceptual addition in their description: learning.

If systems are comprised of parts and wholes, what is symmathesy comprised of?

Shifting our understanding of the make-up of the conglomeration of interactions that form a living entity so that we are not defining parts and wholes is the first step in our understanding of this new term. After all, the "parts" in a living entity are also learning from each other within the context of interrelationship with the external environment. As such they are hardly distinguishable as "parts".

How can we assist ourselves in this thinking? The paradox of looking at the context or 'whole' as produced by its components or 'parts' is confusing since not only the outline of the context is scalable, but the idea of parts is blurred. I am not suggesting that that our inquiry should be only in terms of wholes. Obviously there are boundaries. The boundaries of our own bodies, cities, or the oceans, are easy for us to see as 'parts' of the world. Often our drawing of these boundaries is based upon arbitrary lines that are convenient for our description.

The habit of conceptualizing in this way creates confusion at another level…the level of how to see the interactions and interrelationships. If we perceive that the functions of living ecologies are the effect of processes taking place between parts and wholes we become prone to assigning agency to "parts". We divide the ecology in order to label it and specify the "functions" of the processes that give the ecology life. The drawback with this approach is that the focus centers on the bits and their 'roles' while losing sight of the contextual integrity. Agency infers that parts can be separated from wholes and exert individuated action. In symmathesic thinking, the notion of agency does not apply. This is because the formation of the ecology in question is necessarily evolving within its context, not its parts.

The context is not inside any of the parts but is created in the interaction. Where is the culture of a city? Is it in the history? In the language? In the religion? In the environmental constraints? It is not findable in any of these 'parts', yet all of them are integral. In hopes of finding new clarity around our inquiry into what takes place interrelationally, we need to change our terminology away from a language of "parts." As a habit of thought this 'parts and wholes' tendency pulls us back into a mechanistic model. We might do better to employ a word that invites us to think in terms of the "parts" being alive, and not simply cogs.

At the same time the "whole" is best thought of as another interactive symmathesy at the next larger context. In the example of the human body it is habitual to think of our organs as parts of the whole, but each of these are in fact contributing to a contextual interaction. The "function" per se of the "parts" is indistinguishable from their interaction (the "whole") that is always learning. Their mutual interaction in turn becomes the immanent viability of the entity in a contextual evolution (learning).

Defining life in terms of "parts and wholes" quickly slips into thinking in terms of arrangement and mechanistic function. The upside of that genre of thinking is that it provides separated subject boxes for us to study and arrange our studies within. It has leveraged our thinking into all that we know as science and technology at this time. But the downsides are that arrangements of "parts and wholes" blind us to the developing interactions that take place in life. The "parts," like members of a family, organs in a body, species in a jungle, etc. are inside evolutionary processes. These living "parts" do not "work" in the way that an engine works, not even a very complicated engine. The difference is the compensatory relationality and communication. Through complex cybernetic entanglements of interaction living entities become vessels of communication.

Instead of "parts" and "wholes", let us think of boundaries in symmathesy as interfaces of learning. We will refer to these interfaces as "vitae" (a term derived from the Latin vita, meaning life)

Multiple Description and Interfaces:

In our research with the IBI (International Bateson Institute) we have engaged in a research process that has as its mission a search for relational data, or what we call 'Warm Data." The IBI aims to devise and design research methodologies that use multiple description to illustrate how interactions in complex systems interlink. These multiple descriptions increase our ability to take into account the integrity of

multilayered living systems, to think about multilayered "interactions", and to engage change at a contextual level. Revealing the inter-weavings of complex systems requires a research method that can encompass the many contexts in which the system forms interdependency. Therefore these studies are also transcontextual.

The complexity of this sort of inquiry is daunting. If we are to study, for example, the way in which food impacts our lives, a multi-faceted study of ecology, culture, agriculture, economy, cross-generational communication, media and more must be brought to our study in a linking of interfaces that together provide a rigorous beginning place from which we may better understand what is on our plates. From that beginning position our inquiry into eating disorders, poverty and hunger, and the dangers of GMOs, can be approached in another fashion altogether. How do these contexts interface with another?

The delivery and reportage of our inquiry of IBI research is necessarily presented in multiple description. It is within this process that we became acutely aware that in our multiple description of living ecologies the notion of parts within a system broke down. One reason for this breakdown in the use of this existing terminology is that when we engaged our multiple descriptions of either the "system or the parts" we found we were limited.

We need not look further than our own hand for an illustration of how multiple description increases the visibility of the necessary shift in our way of defining what a part is. Is a hand the thing at the end of your arm? What is a hand? A violinist has memory and ongoing learning in her hands. A sculptor has another sort of learning in his hands. We each have handwriting that is almost but never quite consistent. We know the touch of our partner. A deaf person uses the hand to express language. We gesture, we stroke, we sense, we know, we learn through our hands… So what is a hand?

The hand is a "part' but it is alive, and integrated into larger contexts of living and learning, or symmathesy. It is important to the use of the concept of symmathesy to think about the boundaries and "parts" of living things as interfaces. The outlines we draw are useful to us as arbitrary separations that conveniently contain our study within limits we can manage. However, these outlines more aptly serve as indications of areas of interaction, transmission and reception of information. The skin of our bodies provides what looks like a boundary around the self, but the self extends well beyond the container of our flesh, both biologically and socially. But touch, temperature, expression, health, embarrassment, and so much more information is transmitted through the skin. The same can be said of the edges of a forest. It may look like where the forest ends and another landscape begins, but a great deal of interaction of animals and plants take place at the margins. The boundaries are in that sense vital interfaces for communication and learning.

This is a rigorous endeavor. The pull of our old thinking in terms of parts and wholes is difficult to move away from. However the vistas from which we can begin to view life anew with these concepts reveal possibilities of richer inquiry.

Models need remodeling:

A signature depiction of a 'system' as generated through system theory and complexity theory is the modeled imagery of boxes and arrows representing their parts and wholes arrangement. Sometimes these illustrations also include arrows to denote "process". But, from the 'symmathesy' perspective we see that there are dire errors which are made whenever we diagram living systems with the usual boxes and arrows textbook illustrations. In fact, I would go so far as to say that there is *no* model or diagram that can effectively illustrate the learning within the context.

Symmathesy does not fit into these descriptions; the mutual learning in the context is not visible through boxes and arrows or concentric circles or whatever geometric designs are attempted. In a push against the cultural inclination to utilize these engineering diagrams to discuss complexity of life, symmathesy must remain illustrated through either life itself, or through symbolic representation that communicates at multiple levels (e.g. art).

How will we illustrate Symmathesy?

Our existing forms of explanatory process and the meta-messaging of the "report" of those explanations contain repeats of the mechanistic patterns and the logic that is normative within them. For our purposes illustrating and expressing the presentational communication of symmathesy, caution is needed to avoid the traps of thinking in terms of blocks. Thing-i-fying in our studies will derail the ability to perceive the symmathesy. Consider the challenge of graphing one's own learning within language, culture, family, community and society, bioregion etc., the process is so multilayered and broadly spread through us all that description requires a wider language. Moving from our accustomed material and logical structures of thought into another kind of rigor in our theoretical description of contextual mutual learning requires the adoption of a new set of principles which we hope can perhaps become familiar over time. For now, we will start by avoiding boxes and arrows, and step-by-step solutions.

Art may be the only way to truly describe living complexity. Why? Because living entities exist in interaction over time. They are learning, and this frames direct communication as freeze frame in time and space. A direct defining of the "parts" of a learning context would necessarily be temporary, and likely obsolete by the time they were made. Even if the structure of the organism is kindred in pattern to others of its type, (like a heart, in the case of a body, or a reed in the case of a riverbed), the viability of the particular organism's survival is critically dependent on its ability to live vis-a-vis the other living organisms in its conjoinment. In other words they all have to change. They all have to learn.

PART II
THE WORD IN META-COMMUNICATION

The terminology we use to describe living things carries meta-meanings:

For decades the word "system" has done its part to communicate the notions we are now trying to describe. So why change it now? Our ability to increase the precision of our thinking in this realm is hopefully aided by this new distinction, in its metaphor, implication, and inferences. Words say more than they spell. Anthropologist Margaret Mead used to stick her tongue out when she spoke. I am told she claimed she was "tasting the words". People with synesthesia hear colors, see music, and feel sensations around words. The transfer of perceptions into each other like colors into music, tastes into words, emotions into smells and so on, provides a natural cross referencing of information. Numbness to the flavor and the sensation of words is common in what we think of as normality. Symmathesy, as a term, changes the flavor of the thoughts and theories we can generate about life, placing them inextricably in relation, and in constant learning.

Perhaps we all have the capacity to increase our synesthetic perceptions. I don't believe that anyone is really immune to the potions words spill. A word is more than a mere combination of letters and sounds. The potency of words reaches the substrata of all of us. Words carry culture, carry history; they form and confine our thoughts. Words matter.

To discuss the sort of things we want to discuss here—things like families and cultures, like ecologies and organizations-- we are going to have to care about the words we place on the page, and the words we shape in our mouths. We will live in them, and our stories will be furnished with their upholstery.

The intellectual and emotional acreage of our domain has a periphery of worded fences. They hold us as we hold them. To stand by our existing words, in systems and complexity theory, limits the development of our ideas; the words are inadequate. So often the word for something or someone is a box, an outline: a set of limits. A tightness that shuts the "subject" in isolation from its context. The vocabulary of this field of inquiry funnels us in, and hacks into our epistemology with sneaky inferences.

When we think of systems, what do we perceive? How do we describe what we perceive? How do we think?

Desperately we need to increase our understanding of the world we live within, of this there is no dispute. But how? when we are caught in a Mobius strip of information, communication, information, communication… and while clutching a culture with a proclivity for quantified, step by step, formulized, ossified, solutions? Those rigidities decrease the visibility of the "symmathesy". How can we describe life?

The patterns of the mechanistic lens have enchanted us through every aspect of our lives. Education, politics, medicine, business, marriage, parenting, and our relationship at all of these junctions to the biosphere we live within. The stench of machine oil is everywhere as parts and wholes are geared into "function" in clicking and clanging bits that leverage the pattern into position. It "WORKS". Or when it

doesn't we say, it has become dysfunctional… i.e. the cogs are bent, and the thing can't turn.

Perhaps the labyrinth of our epistemological errors has no beginning. People point to Descartes, but certainly Aristotle shares the blame. Before Aristotle there were probably others. The notion of tribal identity, religion, and even territory for animals may have provided the patterning that we are now contending with. The history of how we got here is rich and deep, and beautifully addressed by various scholars. For now, let us just say that there is no causal path to unwind us out of this habit. At this juncture the best course is simply to move on.

Mechanism has its place:
There is nothing wrong with thinking in mechanistic ways: After all, the productive innovations of humanity have largely stemmed from this approach. It has given us circuitry, engineering, technology, cars, much of modern medicine, a socioeconomic system, the makings of democracy and so much more. We as members of our socioeconomic infrastructure need this sort of thinking. We thrive on it. We are good at it. But we need another kind of thinking as well, without which we will probably destroy the ecosphere and likely each other.

PART III
WHAT IS LEARNING IN SYMMATHESY?

What is learning? Since the term symmathesy, as a description of living things pivots on the idea of mutual learning, it is necessary to consider carefully what is referred to as "learning." Here is a list of a few characteristics of learning in symmathesy.

Learning in a living context can be best thought of as a change in calibration. The use of the word "calibration" here is an extension of Gregory Bateson's cybernetic concept in *Mind and Nature* (Chapter VII).

The most common definitions of learning involve the acquisition of knowledge within a progression of stages of physical or intellectual development. But in our use of the term, learning has been stretched to include the entire living world, as a context of learning in and of itself, as a symmathesy of symmathesies. Learning has also been stretched to include much of what we think of as adaptation and even addiction. And of course the living world itself is made up of living worlds. In these ways, the term learning here is closer to co-evolution. Here are early considerations around this definition of learning:

1. Contexts: The characteristics of learning in symmathesy are contextual, even at the smallest scale. The interrelationality within which any living thing exists presents contexts of both internal and external interactions. For any person, for example, there are both the internal workings of their body, (the nervous system, digestive system, circulatory system and so on), which are dependent upon the external relationship that person has with not only the biological world upon which they are dependent for air, water, food etc.; and there are also the interactions in their personal lives. But these are not independent of each other. The 'loving' or 'mean' things that someone says at breakfast have

an effect on blood pressure, digestive process, and cognitive (implicit or explicit) understanding of identity within a culture. The same sort of interdependencies exist in a forest. Though the nodes of receipt and transmission of information may be more difficult to assign, the processes necessary to the continued "life" of the forest are woven into the contexts of the relationships between the micro-organisms, the flora, the fauna, the climate -- as well as the internal processes of each tree, the extension of its roots, the transportation of its sap, the photosynthesis in its leaves, and so on. In order to survive, in both of the above examples, the living organism must position and reposition itself within contexts of variables in their interrelationships.

Of course, all of the society that the person we are describing is also located within is shifting in a countless field of variables, as is the forest around the tree we spoke of. The contexts are variables that are learning together.

2. Calibration: Learning in symmathesy is an ongoing process of calibration within contexts of aggregate interrelational variables. This calibration does not require conscious involvement. The learning that any living thing must either continue within (or else become obsolete) is a wide-angle process receiving of information of difference from simultaneous multiple (countless?) interactions. Complexity does not divide itself and therefore life requires calibration within multiple streams of information and interaction. In order to do a simple task, such as walk across a room, a staggering calibration of information must take place. Not only does one have a reason to cross the room, like the famous chicken who crossed the road, but also perception both visual and tactile are in use, as are memory, balance, rhythm, language and more. Likewise our tree in the forest above calibrates the placement of its branches, the direction of the wind and sun, the pathways of its roots, and the context of the forest it lives in. These will be influential on the tree at every level, and even be visible to us in its shape. Learning is the process we are referring to here as calibration within variables of interrelationship.

3. Bias: The bias of the calibrating entity at every scale is the particular momentary integration of the multiple variables of interrelating information -- of the person, the organ, the tree, the forest, or even of the culture. The bias forms differences. The bias could be thought of in terms of the "epistemology" or the "Umvelt" of the symmathesy. As an aside, in the beginning of the field of Biosemiotics the term "Umvelt" was introduced by Jakob von Uexküll as part of a theory that proposed that each organism in an environment has its own perspective, The perspective of the particular symmathesy gives it an outline, an interface and an aesthetic through which to filter and frame, on an ongoing basis, the information it calibrates. Imagine there is a bowl of blueberries provided for a table of friends. It is our habit to assume that blueberries, are blueberries; that the numeric nutritional values and knowable recipes for serving blueberries are obvious. However, the bias of each person at the table presents a collection of understandings and filters through which the blueberries are 'known'. For one person at the table blueberries may be a reminder of summer, a family activity of picking the small blue orbs for pie

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from the forest bushes in Scandinavia, a social sweet spot. For another the fruit is a smoothie ingredient to eat after a workout, a symbol of health, a super-food, a virtue. For another person at the same table the blueberries are a visceral trigger of memories of a smell of blueberry pie being baked during a traumatic experience of being raped by a relative. These three associations and physical, epistemological understandings of blueberries describe the informational bias in the perception of the beholder. The numerical nutritional values of the blueberries are altered by this bias. The digestive system, the nervous system, the seasons, the conversation at the table... all of these alter the way in which each person incorporates the blueberries into their luncheon. So what are blueberries?

4. Stochastic process: While learning is a process of evolution existing in patterns that appear stable, the random inputs and the implicit variables between the vitae of a symmathesy are unpredictable. There is pattern, and there is also the random. There is structure, and there is process. My children, for example, are not born puppies, they are human and share the similar physical characteristics with me, but they are also nothing like me. They live in another context. The paradox that this combination forms is inherent, and unsolvable. The contingency for life and therefore learning is that the tangles of relation, communication, and information between all the vitae of a symmathesy are simultaneous. Both in pattern and in process.

5. Play: Practice, repetition and experimentation in communication and behavior around the edges of a bias are the frontiers of learning, evolution and change. The boundaries are "played with" when the kitten play fights with the other kittens, discovering the process, practicing the communication, and finding the edges of the game. Play is the combined discovery and opportunity to embody new ideas. As Jeff Bloom says, ""acquisition of knowledge" is really just a lower level learning, which has been raised to the top in our positivist/mechanist/boxist/quantitativist society. Acquisition of knowledge is a by-product of deeper learning." In other words, play is a process of learning to learn. It may look like games, humor, art, experimenting, fighting, attempting, re-organizing and more.

6. Boundaries: the interfaces of learning. In the discussion of contextual learning it is indeed a challenge to decipher for our studies and for our communication about our studies, where is the edge of the context? The boundaries: what separates me from you, or us from a forest, or the forest from a school—are seemingly real and true. The fact of their separateness is a fact of vitality even in the interaction required for life. A body needs a heart and lungs and a nervous system, the difference in these is as necessary as the unity of them. But, it should be noted that boundaries disappear, and at a wider view are non-existent. From the vista of the society, the functioning of one individual's heart is eclipsed by larger contextual patterns.

In hopes of clarifying this confusion there is an impulse to diagram the contexts within contexts as a set of concentric circles. This diagram, however tempting it might to be to illustrate in this way, would be wrought with errors.

Why? Because the boundaries are the differences, the areas of interaction, the communication interfaces that provide the contact, dependency and bias of the process of ecology. They are not static. As above, the boundaries present paradox. Such a diagram is a freeze frame, and lacks the inclusion of time. The inclusion of time will blur the lines; the contexts are interactive, and learning.

7. Time: Any living organism, or vitae of a living organism is revealed as existing within a context of mutual learning when time is considered. Time reveals that order is not static. A quest for the organization of life's process has been at the heart of the natural sciences since the beginning. Why are we here? Where are we going? How does evolution work? As the natural sciences have increased the ability to see the smallest details of our world, the mapping of life has become possible in new ways. The discovery of DNA, and the genome, and colliding particles has opened wide horizons of possible new research. However, with a shove in the direction of the quest for mutual learning in life, the organization of the pieces falls from the front of our studies, and instead the study finds information located most profoundly in how interrelationality moves though time. Learning together.

Communication, for example, is often described as an interaction; a process of signal and response between parts of a system. Semiotic process, in this simplistic view which is not typical of advanced semiotic thinking, is mere transference of information. But add time to that process and the interaction becomes mutual learning.

Order and Symmetry in a learning world.

Given these early criteria for learning and change in a living context, it is also important to acknowledge order and form. Surely, there is order and symmetry in the world. Anyone noticing a daisy or a language or in fact their own hand will perceive that there is structure in the world we live in. Our impression of order is embedded to the extent that it is often difficult with some forms of order to keep in mind the constant, if very slow, transformation.

The 'Pattern that Connects" – A phrase that my father Gregory Bateson used, is considered to be enigmatic in its multiple meanings. For some the pattern is "findable". It is a code that can be discovered and understood. But for others the 'Pattern that Connects' is taken as a permission to contemplate a world in constant change which takes place in ways that can elude our culture's customary styles of reasoning. This paradox of considering" The Pattern which Connects" as both process and form requires that we, as observers, expand our capacity to think about what order is. This is a paradox that we are not trained to accommodate in our thinking process, let alone in our research.

No matter how slow the movement, both form and process are in constant play in the living world. An accessible example of this is that a child may resemble their parents, but will not be a duplicate of them. Some patterns transfer and appear to repeat, while others do not. The form in this case provides recognizable similarities, like hair color

or even facial expressions. But the context in which the child is raised is not the same as the parents. Siblings who grow up in the same house even occupy different contexts and patterns of communication. They are alike, and different due to a combination of heredity and contextual responses.

An observer who takes the time to admire the structure of a daisy or a language or their hand might begin to see that these forms inform. What do they inform?

If we are able to see an organism, or a living ecology at any scale in its interrelationships our study of that particular "vitae", or symmathesy, will begin to include the relations. Let us look at the example of the hand, and take note that we might be tempted to think of the hand as a part of the body, but the hand is better understood in this study as a 'vitae' as discussed earlier in the paper.

The hand is an interface of human interaction. We cannot, I would argue, know the spectrum of this interfacing. My children's use of the iPhone is testament to applications, purposes, and processes I would not have considered 20 years ago. But let's start by saying the hand offers ways of interacting. Touch, signals, tools, skills, and countless other "uses" of the hand are relational processes that the form of the hand provides. Likewise, a daisy's petals are messaging interfaces with ecology that plant inhabits. Language too, is a form, and a process of interaction, it is a structure to find symmetry and definition within… but with variables and changeability. The outlines blur. The forms exist in time, and over time they change.

The shapes and characteristics that are recognizable and seem to repeat are languaging a sort of conversation – or contributing messages to a larger ecological conversation. This conversation is one we might call 'order'.

As a 'vitae' the hand is an interface in multiple contexts. The observer's ability to hold simultaneous contextual descriptions of the hand will offer deeper and more complex understanding. The definition therefore of the hand is more valuable if the contexts or sets of relationships are brought into the description.

Within the form is the communicative and information processes that enjoin contextual ecologies and provide the fodder for symmathesy.

PART IV
THE WORD IN THE BELLY

This transition in thinking is a personal, cultural, political, and academic dilemma.

To provide a credible account of the thinking shift here, I have given this issue its voice in formal prose, but it does not live there. The dilemma of how we change our thinking about "systems" is one which should be addressed at all its levels simultaneously. In the description below I have veered from the language of formal prose. To address the depth of these mechanistic habits of thinking is to go downstairs, and that requires other language. We give prose seriousness and credibility and consider this form of communication to be rational and precise. Words in prosaic syntax have gravitas in our culture. And while they appear to offer firm

conceptual stability, this is an impossibility that scientific and non-fictional discourse cannot account for. Descriptions in this form are still stuffed with metaphors, still wound around invisible narratives. In fact it is reasonable and responsible to ask whether life, love or culture can really be described with words. To discuss the patterns and processes of the living world we will need to open the form, open the genres of our communication.

Can we describe life? Can we even describe ourselves? When we try what are the cultural lenses that filter our perception?

We will not find the symmathesy if we do not name it. The word matters. Words are what we have. They are the best means we have to paint our thoughts into pages, and to house the resonance of voice in the horizons of conversation. They are the script we speak within, or perhaps step out of. Either way the playbook is always there as a pivot. What we say is measure of what we have not said. Words have salt. They are wise. They nourish and poison. They are our vehicles and our bindings. They are not located. They lie and in lying show us the edges of our honesty. A child's tantrum is a tone and stomp and twenty repeating words that roughly say, "don't tell me what to do". A lover's exit is too many words that try too hard to buy smooth departure and fail. Words are there for so many logistics, so much weather, a lot of "nice to meet you"… and sometimes the unspeakable pops through.

Patterns of industry are hardwired into us at a deeply personal level:

Again, this matters. We cannot adopt a professional voice as researchers, artists or philosophers without an (industrial) underlying understanding of the world leaking into our inquiry.

Deep inside, below the level I can monitor, my life is charted like a mechanistic production factory. The metaphor is ubiquitous; it is in our education system, our medical system, our economic system, our political system… even our ideas of birth, life and death. This is a personal, cultural and academic dilemma. There is a great need to point to this underlying lens we are taught to see though, so I offer a metaphor:

> ***Jam-jargon***; the world of mechanism has influenced my personal identity.
>
> Somewhere deep down, I see myself as a jam jar.
>
> *On the flickering screen of my life-plan I am haunted by an unnamed story: I am an empty glass bottle, cruising on a motorized belt. I get a dollop of raspberry preserves, then a label, then and a twist-on top. As I move along the assembly line of life, I am worked, and I am in the works, I am working. The "system" is working. I am packaged, trucked, and delivered to adulthood.*
>
> *And at each transition the more sophisticated jam-jars ask, " What are your plans?" I feel I should have an answer to this question so I point to the next slot along the clunking belt.*

The jam-jar phenomenon is a repeating story. We are all jam-jars in one way or another. I have been discussing this invisible sub-story, with groups around the world for a few years now. Enough to know that while the subjectivity of my own description is just that -- my own, the over all experience is a shared one. The mechanical metaphors are so deep that without realizing it I place the contours of my own life on the factory belt. I wish I wasn't a jam-jar. I wish I were able to place a patterned lens on my perception of the world that did not revert to a grid. Everything is gridded… and only sometimes can I see the symmathesy -- the learning context.

We find what we are looking for:

The difficulty of catching ourselves when we begin to apply mechanistic logic to living systems is not to be underestimated. I get lost. I can only occasionally see the edges. So intrinsic is this habit of assembling the blocks of life, and deciphering the cogs of its architecture, that the way I set out to make sense of things, anything—is to begin to figure out how it works.

The danger is that if I look at life in the natural world -- a forest or family, a person or an organization -- and I am trying to find an arrangement of parts and wholes within it, I will find it. I can probably put names to the parts and wholes, and even diagram them in a model. We find what we are trained to see; we find what we have named.

What I won't find with that lens is the interrelational communication, learning and contextual timbre.

What I won't find with that lens is what is holding the systems together through time and into its evolution.

Here it is, on the front page of our way forward. The term "system" sits like a shiny hood ornament catching the sparkle of the sun, and bug guts of this moment in history. Arguably, the fate of humanity is a measurement of our capacity to evolve beyond the destructive patterns we are now engaged in. I would suggest that this evolution rests in the possibility that we might see our world differently -- as a living process, not a mechanism.

We need an emblematic term for this idea base; something to share, to hold, to refer to – a tag so that we don't have to explain the whole of the living world's interactions every time we want to refer to them. But not "System." It has been shaped now by time and by its users. The word "system" is ironically as bound in thinking errors as the system to which we are referring. *Perhaps not explicitly, but implicitly the term has come to mean a mechanism. It means something over there, observable from here. It means something we can chart, graph, and diagram. It means boxes and arrows.*

The more complex the realm of mechanism becomes, the more imperative it is that we define life differently. The jam-jar metaphor is arcane, even by industrial standards, but still, it scoops us all in.

Symmathesy -- A Word in Progress

I grew up in a household in which a system was a living thing… alive in its swirl of interrelationships and intercommunications. A system was something I was always inside of. I am one; I live in one that is inside a bigger one, inside a bigger one – inside a bigger one. But there are not really draw-able boundaries between them, it's messier than that. There are too many variables that are varying their course. A system is hard to keep alive in this languaging. A forest is not diagrammable. Neither is a family. An ecosystem, a love affair, an organization, none of these are really "systems".

But in my household, unusually, a system was a warm thing.

"Warm Systems." As a terminology, that wording is perhaps an improvement.

In my own work I began to use this term. Warm Systems. To show that there is difference that makes a difference, as someone once said, in the way we use the term. I wanted so much to reclaim the word "system"; to give it back the dignity of its own complexity. A warm system is a thing of elegance, and grace, it should be noble. Warm, moist, fecund, lusty, slippery--- yes, a warm system.

But for me, the word "system" and its accompanying entourage of boxy models, cannot hold the gooey ecology of what the biosemiotics experts call the "semiosphere"…. Without this aspect of communication and mutual learning we cannot grasp the idea of the living world and the nature of life. The spicy richness of real inter-subjectivity is both flattened and bleached by the terminology.
In my work, I found myself with a mouthful of dry systemic language. Pasty jargon that is stuck to power points I have seen at conferences and snatched up into the audiences' attention. The appetite to get hold of these "systemic" things is a phenomenon in itself.

Google the word "systems", look under images… and you will not see photographs of living things. There is no art there. Not a single illustration of something in "relationship". Instead: You will see squares and triangles, and arrows and circles – all sharp with educated and earnest attempts to code-crack life. These graphics seem to me to be maps that lead us right back to the school of engineering from which the culture we live in first found footing. Gregory Bateson was suspicious of using metaphors from physics to describe the living world. The other way around is not so bad, he suggested. Without doing much harm one can pat a car's dashboard and praise its performance. But to attribute the language of physics to a living system is more toxic, because it infers "control"… it infers parts and wholes.

As systems research develops we find ourselves increasingly at a junction of what is disparagingly referred to as "linear thinking", and 'non-linear' thinking. While this is a step in the right direction it is important to recognize that non-linear thinking in a world that mechanizes our imagination often leads to a tricky masking of linear thinking dressed up as non-linear thinking. Additionally some of the early work focused heavily on models that were an improvement to the linear model, but have revealed their own limits. One such model is the circle as a visual analogy of ecology.

Symmathesy -- A Word in Progress

More than circular:

Circles have come to be the branded motto of recycling, ecology, and the cycles of living things. But for our work the model of circles is not enough. The cybernetic notion of circular communication, interaction and cyclical behavior was a big step forward from pre-cybernetic, linear descriptions of these processes. The value of that progress in our thinking is not to be underestimated. With respect for the fact that conceptual models provide potent impressions to our comprehension, metaphors matter. While circles are a popular visual metaphor for life, the limits of the circle as metaphor are overcome in the concept of symmathesy. The notion of a symmathesy and a learning context within other contexts does not define a field of variables in interaction that is two dimensional, nor does it return to where it began. A better visual might be the double helix, as the model of a learning system must have at least three dimensions. Four if you count time.

Gregory writes:

> "First, there is humility, and I propose this not as a moral principle, distasteful to a large number of people, but simply as an item of a scientific philosophy. In the period of the Industrial Revolution, perhaps the most important disaster was the enormous increase of scientific arrogance. We had discovered how to make trains and other machines. We knew how to put one box on top of the other to get that apple, and Occidental man saw himself as an autocrat with complete power over a universe, which was made of physics and chemistry. And the biological phenomena were in the end to be controlled like processes in a test tube. Evolution was the history of how organisms learned more tricks for controlling the environment; and man had better tricks than any other creature.
>
> But that arrogant scientific philosophy is now obsolete, and in its place there is the discovery that man is only a part of larger systems and that the part can never control the whole."
>
> Gregory Bateson, Steps To an Ecology of Mind [pp 443-444 University of Chicago edition]

Given that the tricks we have developed to "control the environment" have reeled into consequences beyond our wildest dreams, we would do well to humbly think about how we are thinking. The trouble is NOT that the world has gone to hell, or that we have no idea how to save the future for our children. The trouble is at another level. The trouble is that even do-gooders, by that I refer to the advocates for peace and justice, the ecologists, and the dedicated teachers, the therapists and the philanthropists, are still thinking in terms of parts and wholes. Even the ones that use the language of "systems."

People who have devoted themselves to the deeper practice of "systems thinking" will say this criticism is unfair, and they are probably correct. For a few, a system does not primarily refer to something arranged. But only for a few. So pervasive is the habit of applying the problem solving methods of the engineer that now the language of the

entire body of "systems theory" and "complexity theory" has become a container for slightly higher order reductionist thinking. At least that is my experience.

For several years now I have been a traveler into the groups of "system thinkers" around the world. Some have been psychologists, artists, ecologists, economists, politicians, doctors, biologists, educators, and coaches.

I will share with you my water test.
Ask the question: Does this thinker seek to make a plan? Employ a strategy? Find a solution?

…. Or interact with a context?

One type of thinker plots a trajectory into the future that can be controlled. Or, maybe, to be softer, manipulated.

The other does not consider control, but is sensitive to the aesthetic. Attempting a multilayered ecological shift at the level of context. This requires a rigor of intellectual, perceptual, and emotional multiplicity and sensitivity.

Tasting the words.

Developing rigor to hold variables in focus is not the same as romanticizing the blurry unknown. There is enough borderline new age material out there now to require that in this document I address the issue of the "unknown" and "unknowable". This concept has unfortunately become a catch all for a lack of rigor. Instead I would argue that the complexity inherent in living processes requires that we employ more rigor, not less. To take into account the larger consequences of our "actions" is to better understand the many facets of our interactions.

I am not suggesting that action cannot be taken in acute situations to address the emergencies quickly. To relieve pain, to avert a suicide, to eschew bankruptcy… Of course this is necessary. But the larger, longer, wider response is to be scrutinized at another level. Not either or, but both. Why is one way of looking "linear" and the other "systemic"? What if linear was not linear at all… just over-planned, and what if "systemic" was something more than an organic Swiss watch?

Delivery from the dilapidated state of the world now is not the providence of the mechanic. There are no parts to fix. No particular manuals to write, or scripts to edit. The poverty of our description of these living things we call "systems" will starve us from a future of juicy life. This concerns me. And seems so unnecessary. Perhaps a better description, inaugurated by the new term *symmathesy*, will give us the missing understanding we require to hold present in our thoughts the mutual learning processes of all living systems.

Do we reinterpret history and the knowledge of the past through the same grid/lens through which we interpret the institutions of knowledge now? What is the plumbing blueprint for the piping up of knowledge? What is information that has been through the jam-jar factory, stripped of its contexts, labeled, categorized and parceled into

jargons?

Symmathesy. I am one, you are one, we are within them. Learning together in context, at all scales.

> *"Now I a fourfold vision see*
> *And a fourfold vision is given to me*
> *Tis fourfold in my supreme delight*
> *And three fold in soft Beulahs night*
> *And twofold Always. May God us keep*
> *From Single vision & Newtons sleep"*
> *-William Blake*

PART V
IMPLICATIONS AND APPLICATIONS OF SYMMATHESY

Education, therapy, medicine, social infrastructure, interaction with the living environment, and personal life, are all premised upon our understanding of the world we live in. If that world is a world defined through mutual learning or symmathesy, here are some shifts in perception we might notice:

(Let it first be recognized that with symmathesy in mind—we will be disinclined to draw the distinctions of this question as I have done above. To define a separation between education, therapy, social infrastructure and personal life is a misleading fracturing of context. As a means of providing a glimpse into the possible benefits of this idea, I have listed these entities as separate because that is how they are depicted by our culture. But by no means do I see them as isolated facets of our lives.)

Education: an education in the world as a mutual learning process would look at the interconnections between what we now call "disciplines" or subjects. Forests are interactions, food is culture, and so on. The ability to study both the details (existing disciplines) and the relationships of learning between them will increase our students' ability to see and interact with a level of complexity that is necessary for future generations' survival. As it stands our "knowledge" often prevents us from seeing the interdependencies in our complex world, which we therefore disrupt -- to the detriment of our wellbeing and that of the biosphere we live within.

Therapy: If a living context is a mutual learning context then the way we approach a notion of "pathology" is radically altered. A symmathesy, as a person, or a family, is learning to make sense of its world. As their bodies, emotional, mental and interactional processes would all be included in their ways of calibrating their world (not necessarily consciously) -- all pathology is also learning. The way a symmathesy makes sense of its world is a learning process at multiple levels. But that learning is not necessarily positive or progressive in the orthodox understanding of learning. We can learn to be sick. A tree learns from its context that it needs to grow crooked.

Remove the value judgment from that process and we will instead see a remarkable feat of life to survive in whatever tangle it perceives. Think of an alcoholic's body: his skin, his metabolism, his liver, his family, his history, his communication with his friends are all revealing a mutual process of manifesting the way he makes sense of his world. Where is the pathology? And toward a response to that question: Where is the healing? In the learning.

Healing: If pathology is learning, then healing is also learning. The person, or family or other symmathesy, will make sense of their contextual existence in another set of calibrations to heal. What if healing and pathology are both expressions and possibilities of mutual learning? The approach then to our notion of health would be geared toward providing circumstances for calibration of multiple aspects of life to be cultivated for an individual, a family or perhaps even a society to generate combined realms of learning in order to shift. In our work with the IBI at Villa Miari in Italy we observed the work at the center for rehabilitation of paralysis and terminal pain.

The work being done at the Centro Studi di Riabilitazione Neurocognitiva in Italy (the CSRN), is a remarkable testament to another way of thinking in contrast to a world where the "solution" of a problem involves singular and direct treatment. In medicine, politics, education, economy and even our personal lives we measure our productivity in terms of action and reaction. It almost seems as though we have a script that runs through our culture that instructs us how to address trouble, which reads, "where is the problem and how do we fix it?" This linear questioning leads to a set of responses, which can only treat the problem directly, with therapies that focus specifically on the details of the symptoms as presented. At CSRN the therapies are designed to reach behind the visible manifestation of the crisis the patient is in and ask another sort of question. Their question is this: "How is this system making sense of its world?" The order of information and influences that the clinicians at CSRN find in the pursuit of their question is both qualitatively and quantitatively at another level.

The question being posed at CSRN, "How is this system making sense of its world?" reveals something like a stew of slow cooked cognitive, cultural, and relational processes that need to relearn. The "treatment" then stems from a recognition that the whole person/system has to find their way to re-understanding the world they are in. This involves the enormity of the neurocognitive system, as well as the patients' interaction with their environment and community.

 (** for more information on this please see the research with International Bateson Institute, "How do Systems get Unstuck?").

Medicine in this sense can potentially shift in its *modus operandi* toward becoming more a function of cultivating a learning context in which reorganization is possible and less of a tool kit for tweaking the parts of a system. Obviously both are necessary. There are moments when the short view is vital, but even emergency situations might be seen differently through this lens. What is the symmathesy calibrating?

An umbrella concept that addresses the living world as a learning context offers another window though which to see, analyze and interact with the complexity of life.

This conceptual frame furthers our research agenda, offering a wider basis of relational interaction into our notion of "subject" for study. The interactions within living systems and between them are many -- so many in fact, that it is a daunting task of the research team to draw an outline around what might be the focus of study. But is this rigor a hindrance? Or is it perhaps the next frontier of inquiry? The multiplicity of these interactions demands an inclusion of the crossover between multiple contexts in which new methods of inquiry can approach the rigor of zooming our lenses of study in and out on combined processes of continual learning.

Ecology of Institutions:

Much like the body in paralysis whose many systems for making sense of the world are interrupted and disorganized, the institutions of our civilization appear to be equally entwined in a holding pattern of dysfunction involving immeasurable interweaving. So interwoven are our institutions that instigating change, even for the survival of our species, seems to get stymied by a collective body of institutions that are self-preserving. There is, like in the patients' cognition systems, a pattern of permeated operational interactions within and between the institutions of our world.

Together we have a context of economic, social and cultural institutions that have learned to accommodate us as they do today even as we have learned to accommodate to them. If the question is shifted from "how do we fix the institutions?" to "how have we learned to interact with these institutions as a context?"—we may find that our set of "solutions" is significantly more productive.

The education system needs desperately to change to provide coming generations with support for their future, but the job market needs professionals that have individual skills, specialized in fragmented subjects. The economic viability of our global marketplace is hinged on an increase in production and a constant growth rate, which ties perfectly into the thrusting technological rush to invent and innovate new tools. In turn, the hurry created by these imperatives increases imbalances in the social realm that feed the need for more technology, whether this takes the form of apps for an iphone or advances in medicine. The political system must conduct itself to serve the tempo and demands of the market, leading inevitably (though not always intentionally) to the upsurge we can see in fundamentalism, economic inequality, and the privatization of social services. Meanwhile to support this ecology of institutions the ecology of our biosphere is being exploited. Alongside the precious diversity of our planet, the basics of our living needs like air, water and food are in danger of destruction. It is at least worthwhile to explore the approach that looking at this in terms of symmathesy may provide.

More research is needed, from another angle, with another methodology.

What if we look at the interlocking, interdependency of our institutions as an ecology in and of itself? Ecology can be loosely defined as a totality of patterns of interrelationship that form interdependencies. In this sense our institutions function very much like a forest or an ocean. The infrastructures of our institutions reinforce and balance each other, and our socio-economic system develops in patterns that fit the characteristics of any ecology. Are we not, in that case, contributing perfectly to an ecology that we live within? Perhaps humanity is not so un-ecological after all. *The*

difficulty we face is in the fact that the larger ecology of biosphere is at odds with the ecology of our institutions, and right now we believe we need both to survive.

How can this idea of *contextual rehabilitation* serve us to address the dysfunctional and stuck interrelationships within the ecology of institutions? As an approach, how can we address the context of these institutions instead of attempting to chase down the crises as separate issues?

This is team research. Many vocabularies are needed to begin to grasp the multiple contexts of knowledge within a single living organism, (including a thought). For this reason the approach to such research is best done with multiple minds in collaboration. Our work with the International Bateson Institute has been particularly illuminating. The unexpected gem of this group, its surprising outcome, is our shared language with which to discuss patterns, relationship, and learning. This language is the result of our individual studies of Gregory Bateson's work,(among others). Our respective professions give us depth in a diversity of fields, which is then articulated in integration with the language of our roots in Bateson. The jargon of our fields is then trumped by the shared overarching discourse of interconnection, interdependency, and interaction through relationship. We do not tend toward the subject fragmentation that many "interdisciplinary" studies funnel into, which is refreshing to say the least. Our projects have enjoyed remarkable leverage with this contrast and collaboration.

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