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Guiding Patterns Of Natural Design

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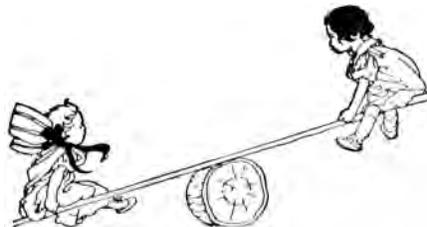
*[[Early draft 4/14/15 – Maybe for PURPLSOC July Conf paper,
Maybe to a book, and parts reworked for a paper]]*

Guiding Patterns of Naturally Occurring Design:

A Pattern Language Approach

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Back and forth, back and forth, engaging with your partner

ABSTRACT

Working with “patterns of natural design” is an inverse of working with patterns of “problem” or “solution” design. Common patterns of relationships and forces are found in the context to guide solutions needing to fit. They’re patterns that designers, scientists, or others would look for and use to guide their explorations, innovations, healing or repairs. The general teachable patterns guide the discovery of more local and particular patterns and their living qualities in the context being worked with, and in ways to respond to them for fitting design patterns to the natural ones for success. As interventions they prompt a reshaping of the living environment, as others have always done before, producing new living things playing out emerging roles. What Alexander’s pattern language model offers is a way to build a general syntax for discussing and using natural patterns of designs. Without that one might refer to the “circles of life” and be understood as making some loose poetic illusion, overlooking their quite material roles clearly seen in how every sort of living organism and culture makes its own home, so as to have a secure domain and retreat, with ready access to the world around it, as a principle pattern of natural design. Practical methods and examples of interest are presented, along with Robert Rosen’s modeling of scientific learning as going back and forth between subject and theory, as a pattern for linking other languages with differing perspectives on the same natural things.

Key Words: pattern language, natural patterns, exploration, innovation, healing, translation,

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MAIN BODY

I. INTRODUCTION

My recognition of Christopher Alexander's "A Pattern Language" (1977), as a powerful tool for defining and communicating recognized useful recurring elements of design, was curiously belated. Having come to study architecture following a degree in physics, with my own interest in what made such a wide variety of natural processes so lively, and non-deterministic, I was constantly questioning the patterns of change I observed. In architecture school at the Univ. of Pennsylvania GSFA¹ in the early 70's I recall being inspired by some of the things I was introduced to about Alexander's early thinking that fit that curiosity of mine. That was also years before "A Pattern Language" was published, and by that time I'd started a concentrated research on the recognizing the patterns of dynamic evolution by which designs developed over time, and his book wasn't on that. So I didn't notice how closely parallel our work had become, mine focused on universal patterns in how designs developed, and his on defining universal patterns of design intent. I didn't recognize the close connection till recently, in fact, after his pattern language had been translated for use in other fields, and introduced by a friend as something new.

So whether I'm able to convey a smooth way to both expand on Alexander's model for a language of design patterns, using my methods of identifying natural design patterns is the question here. and from their patterns of evolution Then it seemed easy to see the universality of the principles.

¹ GSFA MFA in Archt. & Environmental Design, 2003

The Approach

The principles of pattern language are often stated as by Jan Borchers (2001) saying “a pattern is a proven solution to a recurring design problem”, one that “pays special attention to the context in which it is applicable, to the competing forces it needs to balance and to the positive and negative consequences of its application”. When thinking about natural design patterns there are some ambiguities in that, like between “the context” is composed of language patterns or material patterns. The tensions created by the need for our semantic worlds of language patterns to connect our actions with our material worlds of natural patterns is, of course, ever-present. We’re often not good at articulating it, as that tends to treat everything as in a semantic context.

So my way of approaching those same principles sounds much the same, but employs a “dual paradigm” perspective, of reserving one language for semantic constructs and another for referring to naturally occurring ones. It’s nothing we don’t already do, but just being a bit more conscious of when we are turning our attention back and forth between what we can identify in naturally occurring designs and what we can say about or construct for ourselves semantically, somewhat like Robert Rosen models the general relation between science and nature (Rosen 2000, Henshaw 2014). To emphasize that “back and forth” between the natural context and the semantic one, I often describe design as a “learning process”, as for my 4D Sustainability design cycle (2007a), as the engine of a pattern discovery and adaptation cycle for working within a natural context”.

- I.  Internal relationship issues - the “design problem”
- II.  External relationship issues - the “design context”

- III.  Long shots - a search for wider connection
- IV.  Total Balance - for adding up all the accounts

We can also look at this in the terms of the 27 statements of principle in the “Detailed Table of Contents” Alexander offered in “The Timeless Way of Building” (1979). His final principle, titled “The Kernel of the Way”, saying “this ageless character [of living quality] has nothing to do with languages. The language, and the processes which stem from it, merely release the fundamental order which is native to us.” That also speaks of a dual paradigm, and the language used just releasing a native order. A simpler analogy would be that of using the language as a scaffold, for releasing a building process not controlled by it, and then removing the scaffold.

The idea can be rounded out a bit more using some ideas from Lou Kahn’s rather similar thinking about the problem, his speaking eloquently a design as looking for its own identity, as “what it wants to be”, and the need for the architect to reach beyond all writing for the answers, in saying that all design comes from “reading book zero”. It may feel like a strange use of terminology, but it’s also clear that buildings and their cultures also do in fact, just as businesses and their social cultures do as well, become kinds of autonomous entities with lives of their own, So, the “kernel” is that IF the right ingredients are there when the scaffold comes down, the living entity that is growing there will become a vital and thriving thing on its own. If not it may be hampered by conflict or neglect, which does indeed all seem to depend on someone caring enough to bring the right ingredients together.

So, as to the approach of this essay, it's a "collection of ingredients", grouped in five general categories:

Homes and Transformations, Recognizing Natural Patterns, Language for Natural Patterns, More Complex Homes, More Complex Transformations, Related Study Cards

It's important to notice how this approach differs from other pattern finding and using approaches too. It's really for learning how to recognize the patterns that nature demonstrates versatile ways of *building with*, not to find "rules of design" that nature seems to follow. The use of these patterns is for raising better questions in future situations, and finding greater freedom in exploring how things work. So the aim is to help with tapping the rich resources of the natural context, using the design patterns we can clearly describe to expose how they are or might be employed in other circumstances. We use our well spoken words for one thing as a lens for more clearly viewing others, opening our own way of learning about always more complex living relationships.

Learning to recognize, describe and use natural patterns for either design or exploring systems embodying them is like any other learning, much faster if following study with application. So just as a general suggestion for better understanding the natural patterns identified are really about here's a model exercise to try or alter. For any new pattern, or when you come across it again too perhaps, you might try to 1) think of two or three examples from your own experience, 2) try to define them in those contexts, and 3) look at a day later, or see if someone else studying this approach understands of the ones that matter to you, and 4) think making an edit.

One Starting Point

While still in architecture school in the early 70's I do recall Alexander providing an important inspiration for my later work, by way of what I now presume was a class or a lecture. It was on his early insight into how the design of the Piazza San Marco went through several changes over time that relied on its urban environment serving as an evolutionary memory recording echoes of prior changes lost². It seemed to show that environmental memory for elements lost, enabled them to be restored later with updated versions. It's not so surprising, really, that if one generation removes something that prior generations had liked, that the fabric of the city might contain reminders of a lost purpose of the city that needed to be restored when it became possible.

The idea that the repercussions of change in how people used their environment might themselves leave a permanent record of all past changes still seemed like a very daringly if also obvious possibility. To someone who had been noticing patterns of evolving change and wondering how they might appear to follow directions of their own, it fit right in. So I began to think about whether historical artifacts might offer reminders of discarded options from the past. Of course as soon as I asked the question I began noticing the clear effect of that in how my own and everyone else's design projects evolved on their drawing boards. Whatever is erased still leaves patterns reflecting having been in the design, usually to the very end. So the implication is that not only do things of the future have to build on the past, they also have environmental memories of what is removed in the past to inform later additions, however they may be made, as well. That really enriches the picture of how accumulative designs always reflect an environment of change.

² Alexander seems not to have published the work till many years later (2006)

There were two particularly exciting natural patterns that jumped out at me, though at the time I might have had difficulty describing them.

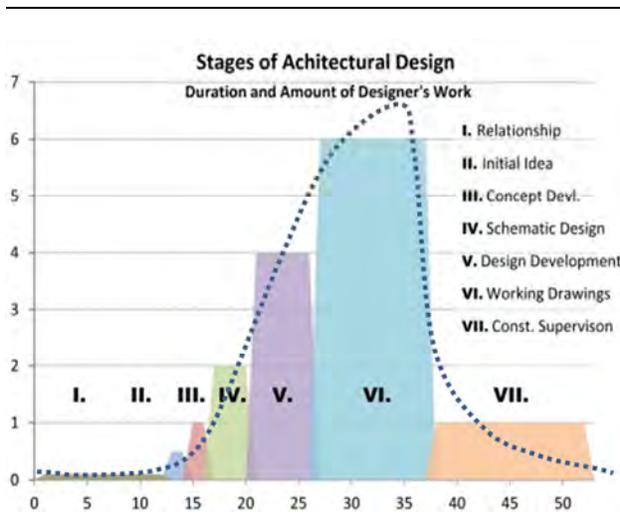
- a. A natural sequence of design, in how the designs develop by the same stages of increasing complexity and difficulty every time, 1) collecting and sorting information as you search for a beginning b) studying alternate designs for function and appearance c) doing initial design for all the working systems for a selected alternate, d) confirming the feasibility of all parts the design and systems working together, e) developing the drawings and details that would let someone accurately estimate the cost and carry out the work. Those are the “concept”, “schematic”, “development” and “working documents” phases, a strenuous learning process progressing from easy to intensely demanding as the design process generates a framework and then fills in the details.
- b. A mental process of leading to a sometimes fluid state of thinking about all the alternatives ever discovered at once, allowing small changes one place to ripple through a design as part of an integrated whole. At every stage the alternatives for more detailed ideas repeatedly test the basic ideas, and the intensity of the work tends to eliminate all distraction, so as designs progress designers tend to remember all their discarded experiments and how the discards also informed the retained ones, a kind of deep “environmental memory” guiding the development of the elements kept, that might in a way get simpler and simpler over time.

I’ve come to see these two patterns as reflecting a true universal pattern of natural stages of organizational design, different in every case of the same universal form, whether considering human designs or natural processes of growth and formation of environmental

organization and natural capital. As an economy invents a new technology, for example, a great deal of experimentation with “proof of concept” ideas occurs all along the way, from inception through establishing the framework ideas and environmental infrastructures. So as the new forms emerge there are still scraps lying around of both the thinking and the devices associated with the wide diversity of experiments.

The Natural Stages of Design

Stages of Design with Increasing Effort



One of the other patterns of design I first noticed in the course of watching how our designs progressed in the studio was a very predictable repeating succession of stages of design more or less just like forest succession works in nature. In evolving from a barren landscape to a climax state a forest goes through stages similar to those of any other kind of complex system design,

1. The general pattern of design

an industrial product as well, maybe described as going through stages of “hypothetical”, “infant”, “immature”, “adolescent” and then “mature” and “fully realized” design. Figure 2. is a diagram showing the usual shape of the workload of an typical architectural office project as it swells and subsides over the course of yearlong design and construction process. Product development cycles would show similar stages, as well as other project development and decision making processes of all kinds, beginning with searching for something to build then building it, with a crunch of getting the details right at the end.

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I.	New Client Relationship	Getting to know the client
II.	Initial Idea	Having the initial idea
III.	Conceptual Designs	Exploring alternate concepts
IV.	Schematic Design	Proving one for serving the need
V.	Design Development	Proving feasibility of building systems,
VI.	Working Documents	Details for builders to price and build it
VII.	Construction Observation	Watching over it as it is built

Table 1. Normal work stages of an architectural office project

The dotted line shows a likely curve of actual office expenses for completing the job. A design studio project might only take four or six weeks rather than , but student work follow a similar succession of types and scales of design effort, except for the review after the series of all-night crash efforts to finish on time being to sit and learn from the discussion of everyone's work. That this is also fairly typical as an example of a quite universal pattern throughout nature, as well as for projects in the office, for the series of "bootstrap" stages and escalating energy expenditures required, to start from scratch and by accumulative steps develop any kind of complete organized system that works as a whole, became the starting point of for all my later interests in how different kinds of organization in nature went through stages of changing how they worked as they developed.

What we see in this general pattern of design is how every design follows natural steps of development, steps in accumulating organization that serve as:

- a the design's "natural capital" for continuing with the rest of the design process,
 - a series of structures on which the next stage of design can be added,
 - it's environmental memory of work done.

As a natural pattern of natural pattern the accumulative building it makes design a progressive evolutionary process. Forty years ago as I started trying to describe it as a general pattern, I found other architects and designers discussing it in terms of their own work, but not as a common general pattern in the nature of design, both for both human and natural systems. When I went to talk to scientists in various fields, who might think about more general patterns of nature, what I found seemed to be was a total lack of any language for discussing them, the language of science being for describing deterministic processes and patterns of unguided development really only possible to discuss as autonomous processes. That discovery was made in the late 70's, and now I of course certainly wish I'd remembered that Alexander had made remarkable observations about autonomous processes of environmental design. I didn't see them in his book on architectural design patterns, though, so his methods didn't seem to help with what I needed.

Beginnings of a Language

This way of identifying universal patterns of design, started from recognizing universal invariants in shape, in the flowing processes of natural design processes, and in how natural transitions generally have graduated shapes, "S" curves, that correspond directly to the naturally occurring systems that form them. Later work identified a general physics of continuity in transformational shape, pattern invariants in growth, and algorithms that could identify those shapes in nature (Henshaw 1979, 1999, 2010b). Only one of those

references is published in an edited technical journal, as the work also exposed a problem of broad omissions in the languages available to discuss what these pattern invariants come from. The problem was and is that the sciences, and our culture in general, have a distinct lack of terms and ways of discussing naturally occurring autonomous systems as subjects, a large “blind spot”. That’s what these shape pattern invariants was letting me study. They are particularly useful for identifying out-of-control and potentially disruptive emerging system in time to respond to them is needed.

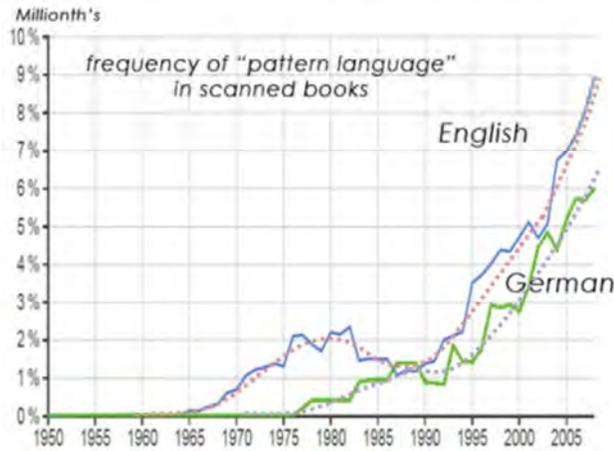
The absence of a language came out most oddly when I found if you talked to people about anything outside their experience, they would fill in a some familiar interpretation, and so not prompt any questions, like I’d stepped into “The Twilight Zone“. Eventually I found that people actually change their formal rules of language many times a day, for each “silo of relationships” they are part of. You’d have one way of thinking and speaking at the office, another to academic peers, others with family, at church or with friends, and still others with different community groups and in online chat rooms. How move between our many distinct silos of thinking displays a great “miss-mash” of inconsistency, from one to another, that we take so much for granted as if unaware, but also expertly manage, keeping them separate and almost never getting caught mixing them up. So it must be very natural.

The pattern I finally recognized to help with what to do was noticing how relatively easy it was to discuss interesting patterns of natural behavior and ideas about autonomous systems, when talking with most anyone at the bus stop. The bus stop seemed like a sort of a “silo free zone”, where no one spoke with one of their many private languages, just their natural language. I had needed to find a common language in which the words could take on the meanings of what they referred to in the natural world. That’s what natural

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language serves us wonderfully for, but gets put aside whenever we switch to any of our numerous private languages. It's also a natural property of Alexander's pattern language, set up to refer to commonly recognized patterns of design, for people to recognize a natural resources, for both understanding and working in the commons of all patterns.

The Emergence Pattern of Pattern Language



2. Growth of Pattern Language

So in this regard, I think the current emergence of “pattern language” represents a historic innovation in language, that will change how people visualize the world, how we share the meanings of life. I see it as offering a solid bridge between our two previously separated worlds, our awareness of the natural world in which we live and our

conceptual world in which we make up our own definitions for words and stories. We actually seem to be coming toward the end of a nominally 5000 year cultural experience of constantly struggling to understand the world in terms of conceptual rules and deterministic organizations, for expanding our control over each other and everything we could master on earth. Having now made our control systems on earth so successful their interactions at the limits of the earth have then become largely unmanageable, offering a natural motivation for finding a pattern language to help more clearly define the life questions and working relationships being we have to deal with, in a way more grounded in what is commonly observable.

The key difference between the use of pattern language and other languages is in how it both allows and requires you to give names to recognized recurrent design patterns in the complex systems of relationships our world is made of and we need to see how to work with. That then rewards you with a new kind of bridge between our semantic and

experiential worlds. It provides a careful way to attach words to recognized working patterns of life, defining the words we use by association with them. That makes it a kind of scientific systems thinking, not founded on abstract definitions, but one still retaining the ability to refer directly to the recognizable parts of the complex natural world system designs under discussion. The catch, in the view of some, is then being required to not just say your definitions of words come from some recognizable patterns, but also to offer a way for others to confirm and broaden the meanings from their perspectives of the observable pattern.

So pattern language has that added task, that of referring others to ways of making observations to confirm the essence of the stated meanings, and enlarge or adjust them. If what a described design pattern refers to was interpreted as more of a personal observation, rather than a truly recurrent and useful natural design pattern, others won't be able to confirm it. For example, management consultants may be heard saying "smart sounding" things, that are only useful if validated by the experience of the audience.

Seddon (2008) is known for saying "studying the system is what makes it work", sounding to some to seem "mysterious" perhaps. If you check to verify that as describing a design pattern, it will seem to mean precisely what is said. It's only people who study the systems they work with that learn enough to work with them, applying to organizations too.

II. NATURAL PATTERNS OF HOMES

Like getting to know a new town, when we study natural patterns you at first explore some of their neighborhoods, before getting into details. Patterns of natural design affect our lives and choices, like the shifts in what relationships will work from one business or culture of family, to another. Each has its own set of relationship patterns, that might well

affect our lives and choices. You can also think of them as affecting the choices of others, and for people from different walks of life or ages, or differently in different seasons. Those are all “neighborhoods” of natural designs and their patterns. Then you can consider any of those as organic system patterns of material relations, as well as many other kinds, aesthetic, political, financial... it looks like it could get bewildering.

That’s where the whole system view helps, that of natural systems very often found to have individual autonomy, a unique whole that can be looked at in all those different ways. Our own lives are the center of a whole network of relationships, external and internal principally. You can say the same for any life, that the evolution of its designs and relationships from some small beginning to its end is a whole. It’s also a “home” for the zones of its internal relationships, and base of operations for its external relationships, and the semi-permeable perimeter separating them its exterior.

Taken together these views broaden the meaning of the identifiable patterns you will find, giving them context, making it easier to discover what makes them either versatile and welcoming or unlikely to be, rich or poor in living quality. When we describe patterns based on such wide ranging thought the task is that of finding simple terms that are naturally clear and suggestive for the essence of the pattern and the richness of its world. You hope to identify what it is about the pattern that has some set of effects, that lets you understand it individually, as part of the nature of the place and circumstance in which you find it, and a possible model of the same elements one might find elsewhere.

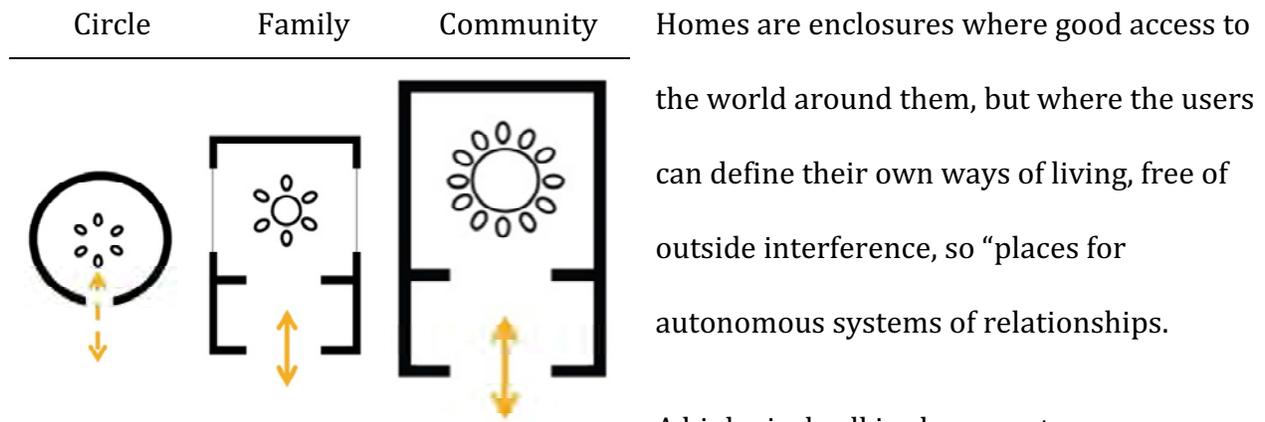
So, to do the exercise, what comes to mind when we think of the stories of ‘homes’, well mostly the human experiences of homes of course, though every kind of living culture is a home of its kind. We remember from early childhood the homes made for our own or

another child's toys, as places to fantasize a world of unto itself. In our homes we make places that are the homes for other activities, each corner of the house often a home for something else, each side of the yard. There are the neighborhoods that are the homes in each town for each separate community that establishes itself, both mixing and maintaining separations, according to their interactions with others, each "side" of town often speaking almost a different language within its bounds as to 'others'. There are the homes that groups of friends make, in the neighborhoods of every town, or their school classes, or in their place of work, some groups seeing the whole territory as their homes, others seeing just their exclusive zone. The sighting of any house is itself a task of giving it an autonomous place anyone who lives there will make their home.

Most personal to us are the homes of our families as wholes, the whole place and the commonality of what happens there, generally as places of truly equitable sharing. Most often homes are places of warmth, that kindle something of their own flame, and if a happy home bringing a highly individualized glow to the lives everyone who has the privilege of being accepted in them for however long. This same kind of exploration of how the natural well-working essentials of homes as natural centers of environmental organization can of course be repeated with the particular dysfunctions that arise. Two of the most important to consider today are how homes work when for people forming either family or community homes without sharing common cultures of origin. A more hidden dilemma today is for the exchange of trusts as products are traded between homes, the smile and thank-you when passing on the tokens and getting the products in any exchange of money for goods or services. It's needed for conveying the confidence of the rightness of the exchange between the parties in the common home of their larger culture. With the information on what is actually done around the world to deliver goods impossible to

record or convey, and the assurance of good intent in the smile during exchange the only protection from demands for delivering ever more with ever less departing from the common interest, the original collective responsibility relied on can evaporate, just as either real or symbolic “bricks without straw”.

Elemental forms of “Homes”



3. Shelters for Equitable Relationships

A biological cell is also an autonomous organism, with its internal operations largely sheltered from outside exposure, except for selectively controlled exchanges. It would be hard to count the differences between the autonomous relationships a cell develops to let it work smoothly, and that a family does, or a community, of course . There are distinct similarities though, like that at the center of the biological cell is its nucleus, and the work of the cell is organized around that somehow, the nucleus might even serve as a kind of map of the common culture of all the cells of the body.

Serving as the center for a family home is usually the kitchen or dining room table, not a central repository of information, but an open space, across which family members share a common culture. Each person maintains their own mental image of the culture the family lives in and in the family circle each person has the attention of all the others, and

witnesses all the communication between the others, for a self-reinforcing commonality of experience. That's not really possible except when gathered around an opening that both separates and holds a group of people together collectively. Much the same relationship exists when sitting around a camp fire, that the fire brings people together and holds them apart, giving each person an equal audience with every other.

How strong an unique a bond that naturally creates is not appreciated until you experience how the complete privacy of homes allows families to organized themselves in very different ways. What becomes the general rule to expect is that homes are made to contain internal worlds of relationships that are most often quite complex and uniquely individual. Even though it's family cultures are literally invisible to others who don't participate in them somehow, we come to expect that any home contains an inner world we know very little about whenever approaching from outside. As outside observers all we initially recognize is the signs of the enclosure, that tells us little of what's inside. Unexpectedly often we'll find we cross a boundary not even realizing there was an inside, only finding we have entered someone else's domain by realizing we don't quite know how to act.

It might be only after considerable study after recognizing some boundary and discover what it hides from view is some very different kind of organization than we're familiar with. It may look familiar on the outside, only to be found very different from what we'd expect on the inside. We recognize a boundary as our information, a house or a group of friends that keeps to itself, a consistent shape that separates something inside from outside. Conveying no hint of why there are also openings in the boundary, it may only be much later that we recognize them as allowing things inside to connect, their internal and external relationships. We may be walking down a street and see through a window some

family having dinner, but have no way to understand it. Think about it physiologically. Those relationships you're watching are between the people relating to each other. They are not between the bits of information you can observe. So the two information contexts remain entirely disconnected even open to view.

As children we first find other people's homes deeply mysterious, the homes of neighbors and relatives, full of special things that wouldn't make sense in our own, surprising us in how they live. As adults we frequently have new employees, new roommates, new partners, and of course new children who all surprise us by having such original lives and minds of their own. The first impression we get from the outside takes a long time to reshape for both the amazing talents as well as the upsetting complaints they often have hidden inside. Every culture is a "cult" in that way too, a way of life deeply embedded with ancient manners and practices, the subtle character of which may be hugely important internally, but to any outside observer would have too little context to even be recognized as meaningful at all.

As a result many of us if not most, find ourselves living somewhat "invisible lives", as what makes private lives so private in many ways is rather universal. We may also have grown up in one of the many more or less unnamed and so unknown "invisible cultures", that outsiders never seem to understand. So it's in the nature of homes to be private, for cultures to be initially at least invisible too, the complex of working internal relationships not to be understood except to participants, private both physically and organizationally. It keeps outsiders from understanding the meaning of even what is easily observed, until we take an interest in the why we all live such hidden lives and build a deep compost pile of observations about it to call up in new situations.

The Problem of Perceiving the Home We Live In

To briefly consider the bigger problems for perception that arise, before returning to our subject of pattern recognition again, consider how the complex way of living that develops in private homes may be clearly recognizable, but not really understood even by the participants. They may have clear bounds, but also exist as an organic whole, with deep cultural history within complex social contexts, with every little feature of each personality having its own place in the whole. The bigger problem arises with our having the same problem with understanding human minds, our own or anyone else's. Our minds develop their own complex internal world of relationships that are hidden from the outside, that we also can't quite understand ourselves as participants. It's a stubborn "lack of grounding" for all perception, leading naturally to our not quite knowing what we're doing in general. That in turn presents a need for finding more reliable guiding patterns of life, when possible, to help us find more secure ways of understanding.

Over the centuries how people understand the patterns of life has confusingly divided our ways of thinking between a focus on patterns of information we have, and recognizing the living systems identified in the patterns of information we haven't. What let me begin to study this was recognizing interesting patterns in how we alternate. To live in the modern world we find many conversations seeming to switch back and forth, between using perceptions controlled entirely by "appearances" (the information we have) and "relationships" (we are led to by hints of information we haven't). It appears possible for it to work fine, except for the traditions of deterministic, theoretical and authoritarian thinking that become so reliant on their own abstracted meanings for the data used to represent the world, they lack relevant questions about the worlds of natural organization, quite evident all around us, they have no data on.

The question is whether it would be helpful to know we live in this kind of world, full of deep secrets, because nature works that way. Would knowing how to recognize the signs of our acting toward others as if completely blind to what is meaningful to them be of any help, as for solving the great culture clashes that erupt all the time. It's a fairly universal difference between the insides and outsides of things, that all kinds of homes, on every scale, are defined by the common culture they develop internally, that takes place only within their domains, and so only has much meaning there. That's pretty disappointing to most people. It certainly has been to me time and again, that the way of living we grow up to cherish in our homes, just don't have the same meaning elsewhere. "Elsewhere" is still a wilderness, still an endless search for the values and practices that will give it working relationships work, and become whole.

It takes learning, of course, to recognize patterns in what does not appear as information to our senses to be perceptible at all... until one has built up a considerable life experience with recognizing lots of kinds of signs and signals of "what's happening". That would include the great variety of social movements as well ecological eruptions and disruptions, that we see as "emergent" but appear to be "emerging" from nothing at all. That's not the case of course. They are just developing organically in the normal way by the building of complex relationships naturally hidden from view, except in the patterns one notices of "something happening", that take a real effort to begin to understand as each and every one seems to be individually original and independent in origin. Educating ourselves to do that is perhaps about the last interest of the parts of society that became organized around using determined information about wealth and power to control ever more information. Learning to recognize the worlds of organic systems our lives depend on, but are naturally

somewhat hidden from view, is what habits of deterministic thinking, that seem to naturally come to control the hierarchical structures of wealth and .

It appears this tension arises from a real ancient break in human cultural traditions, an apparent historical “great transformation” in human societies from egalitarian to authoritarian cultural traditions, as early as the Bronze Age. The perspectives of three feminist historian/philosophers all seem very insightful, if perhaps early scholarship on the subject too, Riane Eisler (1987), Patricia Thompson (2002) and Vigdis Songe Moller (2002). Thompson’s approach is interesting for a way of tracing the rewriting by Roman historians of the history earlier home centered and democratic traditions of early Greece.

Circulation as the Centre of Natural Homes

The Circulation is an Organism’s Commons



4. Flows share the wealth of soil and air.

We tend to think of homes as static places, as the snapshot of information before us at any given moment. Homes are generally built for the growth of the living culture inside them, though, so they are also “events” in time, forever in the middle of changing. The “center” of an organism as a home for its cells is not an open space across which participants share their

interests, but a flexible pool of exchange. Plants and animals have no “nucleus” or central commons for holding meetings. What they have is a “circulation” system, a versatile “medium of exchange”, that gives every cell a direct role in the life of every other. For a plant the main circulation connects the roots and the leaves, moving resources and wastes,

along with passing on environmental signals, shared with every part. Every cell's outputs are put into the same common exchange pool that also supplies its needs, allowing a plant to develop everywhere at once.

Natural systems that organize around devoted "mediums of exchange" seem particularly prevalent in our world. It's a very easy way to link differently productive specializations of remote working parts. With a steady supply of resources to parts that benefit from their complementing differences, it allows the organism as a whole to benefit, become more adaptive and to smoothly change scale and form, where and whenever those linking differences take place. For a plant you see that in how its circulation connects its very specialized parts for connecting with its main environments, the sun and atmosphere for the leaves, and the soil for the roots. Those two external environments, in turn, become the mediums of exchange between individual plants and others of its own species, for its population ecology, and connecting through those mediums of exchange and others with other species and economies including traditional and technological human ecologies too, of course.

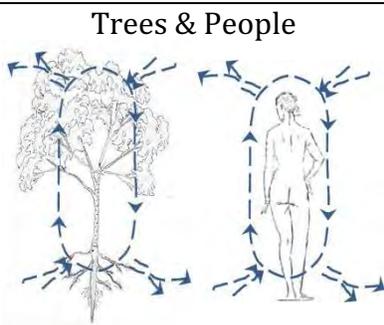
The details of how that works in a fresh water pond are nicely described by S. A. Forbes (1887). It nicely illustrates the ecological principals of complex organization in ecosystem design patterns, and raises a rather provocative question, concerning why these kinds of complexly interlinked populations are so apparently stable. In theory, if individual species tended to dominate then all food chains would be typically unstable, making what is observed in fresh water ponds seem as if the species are all programmed to cooperate. It's very much worth trying to see if you can notice the evidence of what's going on. If you closely watch what animals are doing generally it's *both* foraging and dodging, displaying

skillful and adaptive learning behavior. So given that it seems perfectly natural for competing species to be monitoring their common mediums of exchange for signs of *when* for forage and dodge, as well as all the other kinds of signals their lives must depend on (Henshaw 2008). It suggests that complex ecosystems systems may thrive sustainably even with intense competition, on the condition of using their mediums of exchange for both resources and learning about what to avoid in their environment too.

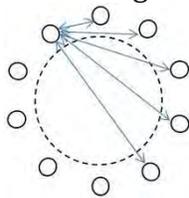
The cases where it doesn't work could be numerous, but would be much less competitive as systems. It would be the ones where it does work which would persist and thrive. One classical recurrent exception, and you might think of others, is the pattern of failure in human economic systems typified by "the tragedy of the commons" (Hardin 1968), in which ample information on dangerous competitive behavior is totally ignored.

Centers of Autonomy, Two Elemental Types

Circulating Flows & Common Connections



Markets & Meetings



There's also another important reason why this fairly recognizable design that nature uses to accommodate the most complex organizations of life goes unnoticed. and why the natural design of homes for life is not even studied in the sciences. Our usual way of making

5. Circulation & Commons as Centers

observations relies on our making up our own organization for what we see. We're not trained to look for nature's. The way to overcome that is to start by looking for patterns, like cells of organization, not just objects. You also look for the flows of change that reflect the presence of hidden systems of change. These and other patterns of natural

Guiding Patterns Of Natural Design

organization contain a vast amounts of “inside story” that “data” is completely missing, since the organization of “data” is made up by the observer, not nature.

*Medium of exchange as combined long and short term eco-system memory of what did and did not work
Words “emergence” = ‘emerge’ + ‘ence’. One Look root and suffix search*

Note: shifting views

I use shift viewpoints, to expose unexpected issues and open up lots of cool questions. Was reading Franz Nahrada’s “Commoning of patterns” article this AM. He used the idea of “the circle” as a model of reaching consensus, but as if an abstraction, though also a bit like Alexander refers to the idea of “center” without saying what it is. It struck me an actual circle has no openings, so not actually a symbol of creativity, as a “meeting of minds” certainly needs.

Note, When circle is not an enclosure

I thought about where, in practice, you find actual “circles”, and seem to find them in places also known as “centers”. It might be the shape of the table that people gather around, or how people sit around a hearth or campfire or a room. In those cases the circle is not an enclosure, it’s an opening in the middle, an empty space across which the communication occurs. Stepping the view out to see a larger scale for why it works you find the circle isn’t just a round table “out in the woods”, or room in the barn, by itself, but a) where people and resources come traveling from many directions, and b) “a shelter” where they can be undisturbed, with support services.

So, from considering the “working relationships” it may be the ideal concept of “the center” or “the circle” really refers to a “the opening within a shelter”, around which diverse travelers can come together to find new ways to fit.

2/28 Notes: Logic works by rules, Nature works by audiences and discoveries.

Hives

--a major source of confusion as we mistake the patterns of information in our minds for the patterns of nature we got the information from, and then rearranged in our own way, not nature’s

For example the relationship design of “a meeting circle” within a protected home for the gathering is not really the circular arrangement of the people. It’s really the relationships between the people provided by “the round empty space” across which they converse. So it’s the particular way they are keep apart that is so successful in cementing the bonds that keep them together, so the whole meeting is an audience for every member. So how we use the recognition of natural patterns of complex working relationships to then further study them, is also used to recognize gaps in what is being studied as we engage with an

environment full of natural organization that human culture is to a large degree not inclined to recognize.

patterns we create in our minds, and the patterns of nature our observations are somewhat responsive to, as much as a sketch artist does in making a drawing. The two are in fact always as extraordinarily different in natural form themselves, as the image of a mountain in a camera is from the mountain photographed in the distance. Mental patterns are located in our minds, made there by our mental processes, and environmental patterns are made by processes of the environment made by environmental processes. Science rests on finding ways of being consistent in projecting (measuring) from one to the other, and back, but a great deal is lost in translation every time.

The biggest reason mental patterns and natural patterns differ in form follows from their construction, that mental patterns are created to be self-consistent (to make just one pattern at a time) and natural patterns are assemblies of an extraordinary diversity of temporarily connected independent parts. They very fundamentally “differ”. What’s worse is that the problem of understanding how they differ tends to produce a different answer for every person who studies it, creating a truly profound mystery.

III. THE BASIC PATTERNS OF EMERGENCE

Life and daily events are full of patterns of emergence, fairly easy to spot, things working together in unexpected ways or new patterns of organization appearing without warning. Records of our ancient cultural understandings of them are recorded in the words of natural language, like:

Guiding Patterns Of Natural Design

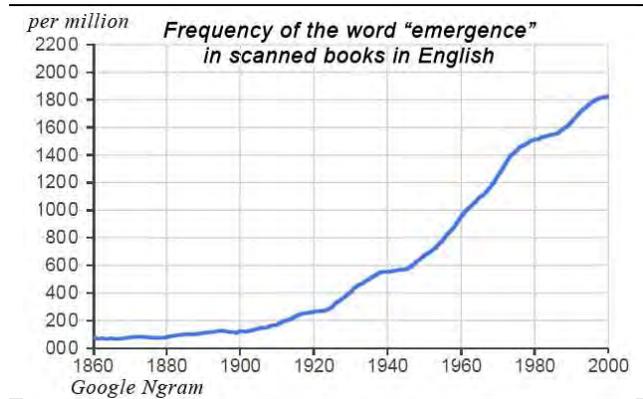
boom	burst	bloom	birth	erupt	create
form	flow	organ	ecology	system	culture
virulence	contagion	organization	integration	confluence	coherence

Table 2. Common words for things with emergent properties

They all refer to common examples of combinations of things exhibiting properties not apparent in the separate parts, that we might easily just refer to as kinds of “organization”, as what makes each so different as a whole from its parts. Technological innovation generally relies on discovering how simple combinations of parts will display altogether new properties, “wheel and axel”, “thread and weaving”, “arrow head and shaft”, “wall and floor”, “food and plate”, “bridge and stream”.

The way they are combined produces shockingly useful new properties. So understanding the patterns of emergence appears to have both to do with how the simple combinations of complementary opposites gives them quite new properties and about how surprised we are and unable to predict what in most cases seem to be such small differences in arrangements having such big changes in what they mean to us. We do seem to spend our lives organizing things to take advantage of their combined properties, and live in a world full of complex organizations that we rely entirely on for the combined properties of their parts, but it’s always such a surprise that we appear to somehow not be thinking about it.

Emergence of “emergence”



As seen in the Google Ngram here, there’s been a great 100 year swell of interest in discussing “emergence”,..... as a property of nature. models over the last 50 years With the development of, complex systems science and computer, have f years to test the theories, there has been

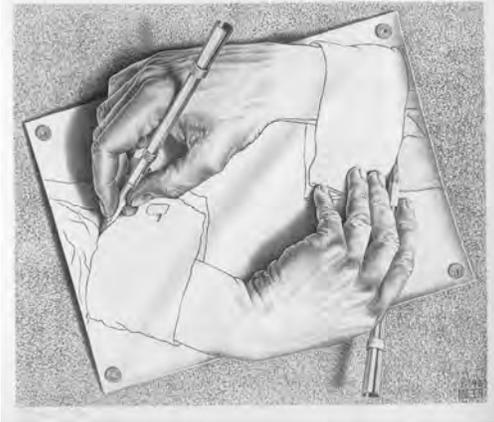
6. The hundred “breakout” fo ‘emergence’

an intense scientific effort around discovering the “laws of complexity”. It focused on kinds of repeating equations with strange properties like never repeating themselves, generating “bifurcations” in regions of “near chaos” in computer models. What it did do was give physics a new language and philosophy for discussing emergent (Goldstein 2012), on the expectation that advanced theory and modeling would uncover breakthroughs akin to those of quantum mechanics a century ago. Great progress was made creating emergent phenomena within the calculations of computers. Using the theory to discuss emergence as a natural phenomenon, however, seems to be particularly difficult to define, raising urgent calls for new approaches (Pines 2014).

As the difficulty for complexity science seems to be finding a better way to define the subjects to study, a pattern language approach for singling out recurrent working problem and solution relationships seems perfectly suited. Though the methods of the design and policy communities are quite different, the defining design patterns of emergence would seem likely to be the same whatever tools are brought to bear on them. It’s what pattern languages seem good for, defining patterns of organization independent of the methods to

be used for using them, one of the important features giving it such success when applied to software development (Tidwell 1999).

Theory and Nature Defining Each Other



The circumstance is a bit unusual, in that complexity science attempts to define physics principles by which language emerges, and a pattern language would be used to help define the subjects of complexity science, a bit as if each of two hands would be drawing the other. Who knows but the combined effect of joining

7. Emerging Patterns, Two Conversations

these dissimilar parts, might be transformative for both, and so “emergent”, or maybe just incremental. The pattern language for each would not use the abstract definitions for physics, of course, not if it’s to be “object oriented” independent of the platform used to apply it. It would be a more universal way of describing recurrent patterns of design for recognizing and solving problems of life in general.

Emergent properties of connection

Theory and Nature Defining Each Other



8. 'Bridge' combined with 'Stream'

The most elemental pattern of emergent design is perhaps the most commonly used and least recognized. It's the combination of things with simple properties giving them complex properties, a "marriage of differentiated parts", both materially as well as perceptually. It creates something altogether new while functionally

eliminating the independent properties of the parts. The deep scientific questions revolve more around puzzles like why does water 'flow' and have so many other complex behaviors, when it's simply $H_2 + O^3$. Lacking a real understanding of how the properties arise 'natural constants' are deduced to use in equations, to represent working relationships that are undefinable. There are huge numbers of them, with new ones found frequently. Pattern language works somewhat similarly, identifying some of the emergent properties of recurrent patterns of working relationships.

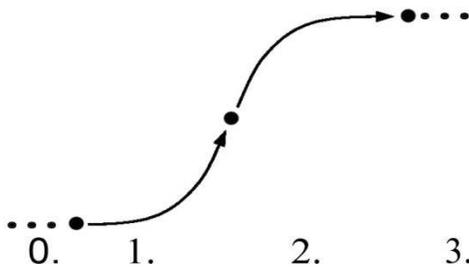
A bridge over a stream creates many emergent properties and possibilities that didn't exist before, while eliminating what the parts combined had been separately. The lid on a jar creates a "container", fingers on keys combine to make "writing", tools with materials combine to create "work". . The range of examples is too great to really categorize, principally it seems because emergent designs "create new categories" as well as new

³ eg: Properties of Water: https://en.wikipedia.org/wiki/Properties_of_water and The mysterious nature of water <http://www.rsc.org/chemistryworld/Issues/2005/April/TheMysteriousNatureOfWater.asp>

forms of organization, both for nature and perception. As our minds depend heavily on using categories for things, when nature or inventive designs create something new, perception starts from having no categories for it. So what a pattern language for emergent properties would be less for cataloging them but to, pick out those which seem most helpful for exploring the worlds of complex relationships that seem to define their own categories. So for example, in business partnerships a key pattern of success is the importance of having a “creative partner” and a “business partner” that see eye-to-eye. Similarly for any kind of multi-disciplinary teamwork having “boundary crossing individuals” to help translate between separately self-defining perspectives seems important. In either case, the importance to the social or business organization is like that for an automobile having a “transmission” allowing it to shift gears, translate the models and join different energies as called for.

The Energy Pattern of Economies

The implied alternating events and stages of emergence as milestones of change.



9. The “Energy Pattern” of Transformation

Recognizing the presence of autonomous systems is difficult because of their internal worlds of relationships tend to be naturally hidden from view. Even if they reveal little external evidence of their internal design and behaviors as discussed in Section II. they still rely on using energy in some proportion to their activity, like anything

else. Just as for a studio design project, business development or developing any other kind of organization, as discussed in Section I., it takes energy to build organization. To make a

successful chain of events it has to go through stages of development, roughly mimicking the energy use for them, and you can be sure of that not knowing what kind of organization is involved. That those stages of developing organization, generally hidden from view and not really implied by the pulse of energy use you might notice,, are really the main story of what is happening, is the important part of this “energy pattern”.

The main elements are the two periods of transformative growth “individuation” and “maturation”, and the three dots, representing events that begin and end those phases of progressive growth, the first the “start-up” process (like any new business needs to get right), its “graduation” moment, (as it switches its motivation from self-expansion to finding and securing roles in its new environment) and finally it’s “establishment” in those roles. What you will find surprising is that this generic pattern sequence for transforming complex relationships is so universal, it fits virtually every kind of enduring change.

The minimal stages of transformative change, assumed to begin within some finite period (0.) prior to observable change, consist of Initiating events 1, 2 & 3 followed by Developmental Periods of 1, 2, 3. I use two terms for each to indicate the range of things commonly observed to define either the innovation of process of development that follows from it.

Events of Innovation		Periods of Development		Notes
		0	Systemic Context (environmental potentials)	Fertile contexts offer resources for which there is no demand and states of calm in which delicate things can develop, or other kinds of open opportunity
1	Inception (Start-up/Seed)	1	Emergence (compound growth)	A seed of development needs to use energy to multiply its energy uses (introversion)
2	Individuation	2	Establishment	Separating from the start-up design to

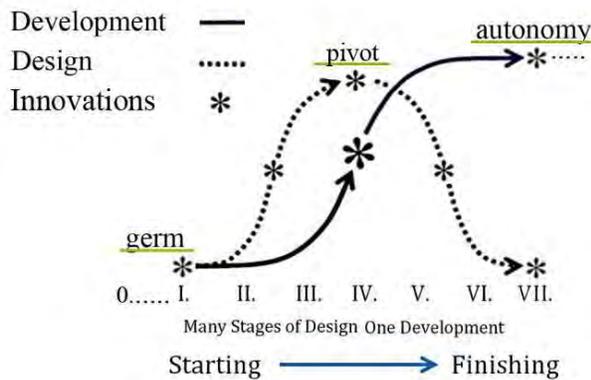
	(Independence)		(maturation)	find other roles and resources in the world (extroversion)
3	Engaging (Joining)	3	Living (fulfillment of growth)	Growth and Maturation have built a the natural capital for the roles the emergent system has developed.
Table 3. Table of Milestones for the “Energy Pattern”				

The associated physics theorem implies approximately the same thing, that developmental processes are organizational processes, is itself sort of an emergent property of combining the three basic conservation laws into one, the laws of conservation for energy, momentum and reaction forces. It's makes a general “law of continuity in change” (Henshaw 2010). By showing that infinite rates of change in energy use are not possible the implication is that that bursts of progressive (escalating) energy use are necessary. It's a separate conclusion that that implies the bursts of progressive organizational development to bring about that accompany the bursts of progressive energy use, given the tremendous supporting evidence of that, and that since nature can't use energy mathematically, leaving no other known way but the kinds of rapidly emerging organizational development often observed to do it. The other parts of this “energy pattern” of natural designs are deduced and confirmed by being very commonly found, reasonable to expect, and so useful to look for as you look for how the hidden parts of the system generating the emergent energy use work and connect with their environment.

How you might apply the energy pattern might range from learning to read the signals of “thriving” and ability to recover from small shocks, when caring for a premature infant, one having had a troubled start, and needing close attention to any sign of failing to develop. Because the pattern is of the *continuity of development* the very same kind of thinking might also apply to a fledgling political campaign, or to a business start-up also struggling to find its footing. You might also use the same sort of attention to details of development

for the exact opposite purpose to. You might be trying to stop the development of something, a spreading disease, cult intruding in your community or even a dangerous wandering from what matters in one's personal relationships or social world. Then you also want to be as clear and unassuming in one's observations, to be able to respond to signs that, for example, that suppressing something keeps making it stronger, as a common consequence on not really understanding the system you are working with.

Transformation combining different kinds of phases, innovations and pivot points



There are a variety of neutral mathematical properties and patterns of change, in addition to “developmental continuity”, that can be observed directly and very helpful to notice for learning what kinds of systems are behind an observed evidence of emerging change. I did an extensive research with good results on how to recognize transformational continuities

10. Design searches for what to add, Development incorporates it.

within noisy data, only to find no one believed it if understanding the algorithms was needed, whatever tests it passed. That said, there are lots of patterns in the progressions of change we can recognize visually when looking at recorded data and thinking about the organization of the systems behind it, world food prices for example, showing periods of progressively rising rather than recovering from natural shocks, that other systemic patterns like that. It's all a matter of building one's intuition for what questions to ask, and if patterns that might be systemic are noticed, being sure ask some probing questions about them. the answers might not present themselves, but that leaves “place holders” in

one's thinking for when some other point of view will may come along to show you the answer.

To test one's interest and ability to notice the properties of emerging systems, and create your own approach, you'd pick some transformative change to study that might really capture your interest. You should have enough familiarity with it to be able to ask good questions. It literally could range from something so simple as deciding to study "making breakfast", or something requiring extensive reading, like understanding the origin of the community you ended up becoming part of, or something complexly technical like "sending a man to the moon". They're all great examples of complex emergent designs, relying on long chains of combining specialized simple parts for their emergent properties, to build complex organizations. What you do first is to verify the procedure you'd use over and over, tracing the steps you can see from beginning to end, to see if that helps you find the hidden steps in-between you didn't know about before.

Where this all came from was my puzzling over why changes in natural shapes generally have distinctly "rounded" corners and intersections, with change over time so widely following "S" curves. It makes "graduated change" the most ubiquitous shape in nature, made more curious for hardly being scientifically discussed or studied. Nature appears to rely heavily on shapes of connection that science doesn't find useful to define. What I stumbled on that let me study then were the micro climates of homes, discussed further in "Air Current and Micro-Climate Formation" in Section VIII. That early study followed from my environmental design thesis on microclimates, in architecture school, and led to my first efforts to define a pattern language for it, as an "Unhidden Pattern of Events" (Henshaw 1979).

As I studied how these shapes developed, seeing how coherent, flowing and systematic the processes generally were, a pattern found in all growth processes regardless of subject area, it became hard to avoid wondering if the rules they followed might be hard to define because these systems were continually changing their own rules as they developed, doing it differently in every individual case, displaying nature being “inventive” not “irregular”. I later presented a more formal general systems theory in papers for SGSR (Henshaw 1985a & b) and in the late 1980’s began doing studies of the mathematically recognizable features in the shapes of natural of change, some getting published (Henshaw 1995, 1999, 2007, 2010a & b).

Innovate, Multiply, Reorient, Mature, Graduate, Life; Stages of Growth

Fulfilling one challenge leads to the next		
Innovate	<ul style="list-style-type: none"> • to get things going (create the starting pattern) 	At their start, patterns of developing organization in emerging systems seem to
Multiply	<ul style="list-style-type: none"> • to stand on their own (max immature growth) 	invariably be rather “tentative”, “nascent”,
Reorient	<ul style="list-style-type: none"> • turning to the outside (sighting a purpose) 	“immature”, “incomplete”, “fragile” and
Mature	<ul style="list-style-type: none"> • refining and diversifying (preparing for independence) 	perhaps “hesitant”, displaying all the signs of immaturity. You can read them as
Graduate	<ul style="list-style-type: none"> • ascending to new roles (join in the worlds of others) 	symptoms particular to under-development,
Life	<ul style="list-style-type: none"> • the real journey begins 	of not having fulfilled the potential yet, and
11. Alternating leaps and struggles		not having developed the robust features

and resilience a new system will later. The early stages of emergence when new forms of organization are incomplete, as plant seedlings, newborns of any species, capital ventures, new personal life relationships, architectural designs, even political or military campaigns, are always exhibit the patterns of being “immature”. It makes their early stages both

exciting and risky, and often fail, being relatively defenseless and unaware of their environments, and unprepared for changing directions too. That's a problem for sustainable development, that many communities around the world are already displaying long lasting inability to adapt to change, with increasing economic inequities dividing the fast and slow adapters

When working with environmental, social, political or business organization or international problems, these traits help identify separately originating and behaving sub-cultures, marking their boundaries of independently working parts having different experiences. Traits like these, that characterize the whole organization of parts that developed from the same seed of design, like people who speak the same language also sharing in the common culture that developed the language. So the traits associated with each phase of growth from a starting see, will be expressed throughout the whole system, and so can also be used to help separate what is and is not part of an emerging system.

The idea of "separation" is that the common properties original to one system are separate from those of another. Even if they appear mixed in one's information, original properties of different things aren't. So even the whole house seems disrupted by active children, the immaturity can be localized to them, and not a trait of the household though found literally everywhere. The immaturity of the parents would be unlikely to be of the same kind. Of more importance is that these developmental characteristics that are common to systems that develop from the same origins can help one separate the numerous societal "currents" of , politics, neighborhood culture, business and industry culture, media and even the sciences. The information we get is all mixed up, but the origin of separate societal currents are the innovations from which they developed, that get called "silos" of culture

when they develop strong individuality and separation. Whether loosely or rigidly separated, they all develop over time as sub-cultures with a common origin and many common traits. Sometimes it's good to recognize things "in the bud", and make a choice to either feed and care for them or have another response.

Often one has to know a system fairly well to know what its qualitative features mean, like what a person's style of dress has to do with who they are, or like only a gardener would know what changes in the soil they are working in mean.. There's still validity to the idea that if you deeply understand the qualities and complexities of one thing it's far easier to identify those of others. That's much of what pattern language is about, collecting a set of versatile that help you understand a wide variety of situations. Given how varied these complex natural design patterns also makes it clear that one needs to define models and indicators for them in a rather inclusive ways, to contain the essentials in a way that can be widely reinterpreted, as their meaning varies so much with actual contexts.

The need for traits with more constant definition is what the energy pattern begins with, the three development phases and organizational events that initiate them. You tend to find evidence of those in consistent records of quite unrelated things as evidence of something disturbing its environment. Doctors take your temperature not to measure anything, but to find disturbances to your body's normal energy use to interpret. So called "big data" is probably full of such neutral indicators, that might be helpful to identify systemic change. Changes in word use frequency is something I've found quite powerful, like the use of the word "complex" So the indicators used would best be "constant", looking for light in a dark room you might call it, its in in the , that can be recorded and studied in more consistent ways.

Counting the “graduations” that a growing system goes through, and the degree of struggle and confidence in overcoming them, is one. We all went through a number of graduations ourselves, before we took our independence and used it to invent the roles we’d then work with through our lives. It’s really the same phenomena as one sees in the long history of ecological successions, and like a forest goes through, a series of distinct stages of reemergence as it recovers from fire. Even economies have distinct periodic graduations, from working one way and then slowing to reorganize to work another, for that to be carried to a point that some better way starts to emerge, that we call “recessions”. As a natural pattern of recurring redesign they might be better called “retooling’s”. Once you see it that way one can notice how they are generally accompanied by somewhat helpless responses from society and government, as if always being taken entirely by surprise. The fact appears to be that as regularly as they happen, reaching the limit of the current stage of organization of the whole system, and the need to invent another one, general does take us all by surprise, though it shouldn’t somehow.

So in all these ways, the key is more a matter of learning to read the information you have for raising good questions about what the natural and cultural systems related to it are experiencing. It’s likely to be misleading to try to give numeric definitions to complex behavior patterns, like redefining words with rich meanings like “thriving” or “balanced” or “wellbeing”, and by giving them mathematical definitions reduce them to equations. What proves the better way is to define highly reliable and repeatable measures, easy to collect and won’t change meaning over time, and rely on them to raise questions about the changing worlds you are more directly concerned with. We really want to preserve and rely on the robust terms of natural language for referring to true characteristics of the complex systems that exhibit them. A great many observers do seem naturally quite

sensitive to recognizing these kinds of qualitative differences, some particularly adept, and if they can share what they notice in a way others can affirm for themselves, then the pattern language method for defining particular objects of design in complex relationships, to work with or toward, can develop.

Finding self-identity, then new roles



12. Growth turns outward in its steps toward independence and mastery.

causes that turning point, from attending to inward to outward relationships, as the first step to independently establishing itself. That principle turning point of emergence seems to inevitably come when its rate of growth is the steepest, but it's more that the rate of growth is always the steepest for exponential curves whenever the developing system turns its orientation to something else. It's not really coincidental, and as for systems that display ladders of redesign over and over, it can happen repeatedly, with long or short periods of maturity in-between. At any time at all along a growth path a system could perhaps pause to secure its gains in development, like family businesses are likely to do, as they choose which hurdles to mount, and which to back away from.

The principle design succession of emergent systems, generally following the "S" curve of their energy use, starts with a fragile and immature system growing rapidly. Then in the middle, turning its attention from immature things, to finding its place in the new environment it is approaching. It seems coincidental that the inherent shape of smooth transformation, the "S" curve, also

I hope I am successfully using a kind of casual mixed terminology here, as I really don't intend to suggest volition on the part of emerging systems that display behaviors that loosely suggest it. I'm relying on the reader to adjust the right degree of "metaphorical" and "concrete" interpretation to make, to correspond to the actual context and subjects being addressed, If that changes within a sentence or even more, the intent is to be working toward a "pattern language" where the recurrent patterns are available for discussion all kinds of sufficiently identified parallel circumstances.

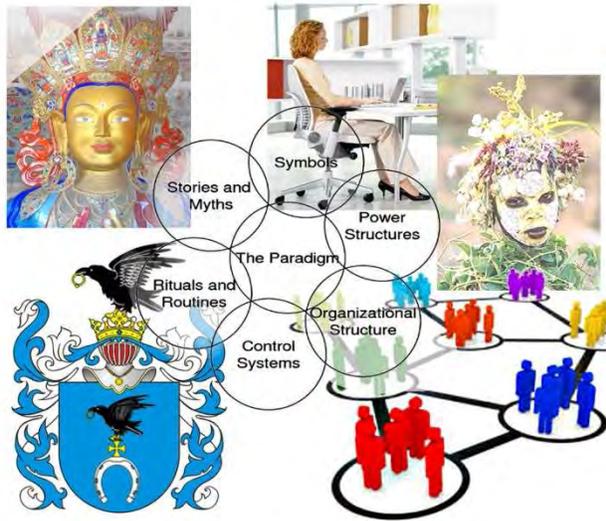
So far the main theme has been to introduce two readily recognizable great natural patterns that identify the development of autonomous systems in nature. One is spatial, in the forms of the homes that systems make for themselves, and the other developmental, in the successions of redesign they progress through as they emerge and become established. Many of the ways of recognizing them and how they work concern what kind of individual centers of organization they have, either located by 1) their closed boundaries as an indicator of where their hive of complex activity within them is, or by 2) the flowing shape of their transformational processes, observable in some measure developing energy use, that could be traced back to the center of organization driving it.

Recognizing one of those patterns in a context can lead to finding many others, as related aspects of the same thing, is the general idea. One may stare from recognizing other features, but as with the "six blind men and the elephant", any part of a system could lead you to many others, if you look for their connections. How to do it is left open due to the unpredictable starting points you might stumble upon, making any system's boundary and developmental patterns maybe the last rather than the first you notice. The boundary and development patterns are just two particularly useful ones, linking a system's "what and

how". Once a hint of an enclosure (maybe locating the hidden world of some active system) or shapes of developmental change (maybe produced by a system undergoing transformation), you then have a whole web of other implied features or connections to explore, tying together features of internal organization, its relationships with its environment and how both are or might be changing.

Complex Systems as Individuals, Designed by Developing

Natural systems that develop from a common origin retain their individuality



13. All parts of a culture share common traits

Perhaps the deepest mystery of how natural system designs emerge and sustain themselves is in how they 1) develop from a common origin as individual designs, without a model, 2) remain distinct as individuals during their life cycles, and 3) have traits that are present in all their parts. Human cultures and economies, of as well as ecologies and weather systems are often recognizable as distinct individuals that developed without

apparent pre-design, to display complex and persistent individuality that persists. It's as if how they first began to develop set a pattern somehow, making those particular circumstances a precedent for all their development in the future, somewhat like a snowflake propagating the geometry of its first crystal. Fortunately, if it's in looking for threads of confirmed evidence, we can follow patterns without really needing to understand them, just to see where they lead. You might be tempted to hire someone, for

example, wondering if they'll "fit in" having had experience with your business culture needing a particular type of person. You might have a discussion in-house to just raise your own awareness, as the solution. Lots of times you don't even need to know quite what you are looking for, as suggested by the idea "just studying a system makes it work better" (para) (Seddon 2008).

As to the main question, I don't really mean to suggest that the origin from which individualistic systems develop predetermines their future, as if a "genetic code" for their future. The real appearance of unity of design in individualistic systems does make them almost appear as if created by a single artist's hand and vision. In contrast, of course, is the another persistent trait of individualistic systems, that they develop by innovation, as hosts for new kinds of organization that builds on emergent properties, like economies and ecologies do, and social cultures also do, branching along lines of opportunities as their design process. Maybe the most plausible explanation is that as they develop, building on what developed before, individual innovations don't take hold unless they fit with the whole of what they are building on. We of course see that all the time in economies, new businesses that seem perfectly positioned to develop, but somehow don't fill quite the right niche and just don't take hold. If it matters, a hint of that might prompt a search for the unsatisfied relationships. That general idea seems consistent with what I know, anyway, of why strongly individualistic systems seem only able to work as a whole.

Granted, we're not culturally accustomed to thinking in such detail about familiar forms of organization developing by viral chains of innovation, their own growth processes, having no prior designs. They're patterns of "viral creativity" when looked at closely, that unpredictably become tremendously exciting sometimes, and other times become an

unexpected struggle, hard to tell. All sorts of common life events and changes can be understood much better looked at as building on continual creativity that way, as having emerging structures that form as their branches and interconnections develop. It's also helpful to pause and look back on a history of invention, "taking stock", say looking over the branching decisions made during an office project, or planning a family event, to validate and refresh the values that went it, pick up loose threads or reexamine things.

People also often use both organic design approaches and predetermined designs together. In architectural practice, as discussed in Section I., the design phase is generally divided into distinctly different periods of design that graduate to the next, each by a differently structured organic process, all completed, to produce the pre-determined design for the builder to creatively follow. The architect's and the builder's work each has its own full life cycle of ramping up, doing the work, and then finishing up. During design the capital product of the design, the "deliverable" is being continually accumulated by the design's organic growth process..

That idea of combining organic design processes and pre-determined ones to work together, of course has potential emergent properties, and is very useful to think about in other circumstances as well. One might have what seem like reliable rules to follow for parts of a plan, as an implied "pre-design" them. There would also most likely be places in any plan where, undetermined organic designs need to be invented, searching for and sifting through differentiated parts to find connections with emergent properties not previously imagined to rely on. To do that successfully people need to be comfortable with shifting from one focus to the other, and be ready to change plans even when hoping to follow set rules. It may sound complicated, but it's also something we all do, though often

unconsciously. Depending on one's goals and circumstance it may be more or less important to pay close attention to it. It's a bit like "working with a net", to have set rules to rely on for some parts of an effort, and only invest the effort in real creativity where needed.

Where we see organizational processes occurring in open environments it does seem unlikely that nature is ever "working with a net", of course, following fixed rules sometimes to simplify, rather than rely 100% on local innovation processes to connect all the hidden parts. At some level it'll be beyond our imagination in any case, so people don't need try to understand natural processes entirely, but just look for better ways to work with them. Still, it might be good to try the impossible on occasion, just to push one's own limits and feel how overwhelming it would be. In normal efforts one still hopes not to leave too many hidden worlds of important factors unexamined. So working with natural design patterns should always take a "wide view" of the hidden organic processes involved. We can't know, but it does appear that all the rules we know will inevitably rest on them, as well as the parts with complex and layered designs we can study at scale.

Weather systems, social systems and even economic systems all display the promise and challenge of recognizing the design patterns of organically evolving systems. Human cultures and societies as well (with the economies they contain included), all would appear to have developed from common origins and to retain those common traits as separate individuals. Their development processes, though hard to even outline, seem to display only chains of distributed accumulative innovation. It makes any rules we might represent them with our own shortcuts, used for describing what we can't understand. The designs of naturally occurring systems determined "opportunistically" rather than "deterministically".

In weather events, for example, channels for convection develop where their design at some small scale releases the most energy on a large scale, exhibiting design in the course of development. Lightning forms its conductive channels where the ionization cascades that open them find openings. Ecosystems add to the complex partnerships of interwoven species and niches as new couplings grow more strongly than, all building on long discovered chains of emergent properties.

On small scales the pattern is different of course, but in the formation of our own personal groups of friends, teams in our workplaces or in professional associations, the same kind of distributed accumulation of positive connections is seen, but often only recognized in hindsight. At a mysterious point with such acquaintances, they may seem to suddenly become a “group” or “circle”, having its own identity, way of talking, and habits unique to itself. It’s unlikely to have developed all at once, at the moment it was noticed is the scientific observation. On thinking about it one is likely to recall very small events occasions that started something going, germinating event(s) of little apparent importance at the time.

Those general features are also all part of the apparent natural design pattern one can use in learning to work naturally occurring systems and how they individually develop.

Looking for the expression of the patterns in practice can be a powerful assist for grounding for one’s own understanding on nature’s designs, but of course, only if you take back from your observations more than confirmation of the assumptions you put into them. That’s an essential as well for these natural patterns to become part of “language”, such that insights can be shared with others. One also need to be able to confirm and add to one’s observations when needed. The hardest part is likely to be the need of a language

for exchanging understandings that the recipients can also confirm, and can also supplement, with added observations of their own to be confirmed too. That is what I perceive happening when to people are “really communicating” anyway, a mutual validation of connecting some insight to the its roots in nature.

Just understanding that autonomously developing systems generally develop as networks of parts and relationships from a common origin, and go through their own stages of immature and then mature development, triggered by innovations in their design pattern , is a great place to start. That those properties also identify such systems as separate individuals with often dynamic behavior and reactions, also means that they continue to remain distinct even while strongly interacting. To validate those views we also need an insight into why the world doesn't look like I'm describing, really, more like a blur of overlapping systems that couldn't possibly work as individuals, that is perhaps until you've gone to a lot of trouble to identify what parts are all working together. In quantum mechanics there's a viewpoint that light is *both* a wave and a particle, as a way to deal with contradictions that are hard to explain. Well, for natural patterns, sometimes you can resolve the individuals, and sometimes you can't. The simple reason seems to be that most of the time we have very “mixed information” making it appear that the world is made of mixed systems. So the next level of insight seems to be that of realizing that having mixed information is like watching static on TV, it really doesn't tell you much. That of course also doesn't tell you much, but it can open your eye to looking form confirmable patterns where you wouldn't have done so before.

IV. PATTERNS TO FOR RECOGNIZING NATURAL SYSTEMS OR SYSTEM CHANGE

The sections below discuss individual examples of a couple of the following long list of “breaks in familiar patterns” that probably represent systemic change occurring.

Table 4. A Very Partial | List of Patterns for Recognizing domains of Natural Systems

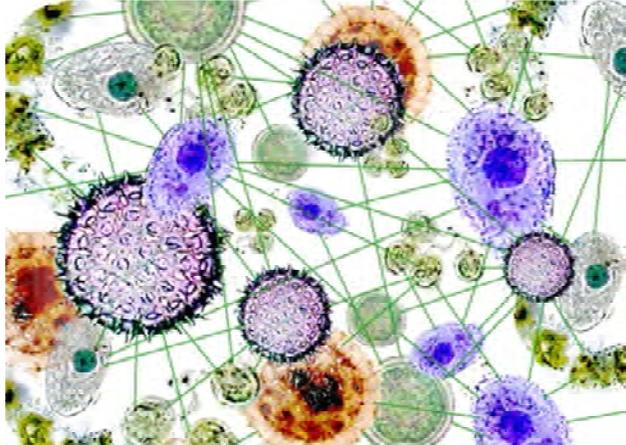
<p>Changes in Cultural Environment</p> <ul style="list-style-type: none"> • Shifts in media • Shifts in language • Differing “silos” of thought <ul style="list-style-type: none"> ○ (even crossing the room..) 	<p>Behavior Change</p> <ul style="list-style-type: none"> • Quiescence to Aggression • Aggression to Cooperation • Stability, Instability, Turbulence • Orderly calm
<p>Boundaries and Transitions</p> <ul style="list-style-type: none"> • Spatial boundaries and patterns • Kinds of energy use • Concentrations of diversity • Gradients, and Graduated Shapes • Blending cultures 	<p>Functional Patterns</p> <ul style="list-style-type: none"> • Economic (energy using) activity • Centers of diversity • Mediums or exchange w&w/o flows • Close or remote connection • Cycles, Hovering, Dodging, Tracking
<p>Rates of change</p> <ul style="list-style-type: none"> • Variable adjustment • Progressive divergence/convergence 	<p>Signs of Usage</p> <ul style="list-style-type: none"> • Patterns of wear or neglect • Patterns of readiness • Early or late responsiveness
<p>Events or Patterns Out-of-Place</p> <ul style="list-style-type: none"> • Behaviors that don’t fit • Crossing Boundaries • Local Departures 	<p>Scales of Organization & Belonging</p> <ul style="list-style-type: none"> • Overlaps between separate groups • Nesting of working parts

The Great Variety of homes,

Environments, events relationships and places,

Network Connections are for Hidden Cells

Networks



the general structure I find is that of innovations occurring within "hives" of many to many connectivity, as typified by communities and circles of like-minded friends, as well as biological cells and professional silos of language use, etc. Those nodes of creativity become the "hubs" for connecting larger systems, as their parts link across boundaries to other hives. It's the networks of hubs that Network science studies, and the animating hives of intimate relationships that seem to totally get left out of network science. That's apparently due to their reliance on studying only mathematically definable features.

14. Hives of Creativity are the Energizing Hubs of Economies

"there's a there there".

In my network theory lexicon I call "what's there there" in a "networked node" a "hive". In economics it is called "the firm" or "the industry", in sociology is called "the community" or "the society", in anthropology it's "the culture", in biology it's called "the cell", "the organism" or "the species". For CAUN it's "a commons", the general unit of ecological organization of mankind. Leibnitz struggled with a marvelous mystical definition for them, he called "windowless monads"! The general way to identify them in nature is concentrations of self-referencing connections that define a boundary between inside and outside, also generally developing by a self-organizing growth process.

Within a hive, like the relations between cells in your body, or between the families in a village, every sub-unit has direct relations with most every other, and so in network terms it is has relatively "uniform connectedness". In a peer-to-peer network for trading services without money, the network connections are less likely to be "everyone to everyone", as money is important to creating the markets through which anyone can trade with anyone. Peer to peer trading is still very likely to exist within a social network in which everyone connects with everyone.

What distinguishes a "hub" from a "hive" is that "hubs" have multiple external connections, with no inherent boundary. So a "hub" is a hive that develops lots of remote connections to others, as "server and client", like a city does or an trade group does. It's a really important feature of the ecological design of systems. I'm afraid there is no established common language for discussing it, though, but none the less important to think about for understanding how commons actually work. So in response to the question, I think "server" and "client" are great as technical words for the higher scale architecture of system networks. I've a few little things written on it, fyi

<https://www.google.com/search?hl=en&safe=on&tbo=d&q=site%3Asynapse9.com+hubs+hives>

the organization of intermittent connection.

- *Dynamic system memory. The processes themselves, and the environment where they occur, as the memory of the system*
- *Technologies and industries “flowing homes”, like the weather*
- *Each with its kind of natural capital*
- *Cultures as our memories of how to live*
- *Ecological organization*
- *Home and work, near environ of each*
 - *By alternating roles, working for everyone then enjoying the services of everyone*
- *Trans cells – temporary cells of activity with long duration as*
- *Permanent members of many definitely separate cultural centers or “silos”*
- *Missing roles, missing groups, time splitting natural and formal*
- *Social Groups, social networks, natural peers and companions, committees, professions, neighborhoods, parties, languages, nations, nationalities,*

2/3 notes: Circles include

- Homes of living communities
- Languages as distributed environmental memory of “how to know”
- Cultures as ancient records of a people’s knowledge of “how to live”
- Self-sustaining environmental designs for using energy
 - Fire, Storms,

Common properties

- Emerging from their own environments
- Developing by growth
- Built on adding on new pieces that extend the starting pattern

How does organization spread

- Reproduction, imitation/rediscovery, propagation,
- Seeds, compost

2/1 Notes Goethe’s observation

letting your mind be receptive enough to recognize patterns you’re not looking for in a way that’s well founded, reproducible, verifiable, expandable, responsive, is then the step people easily lose track of

learning observation attached to their subjects (like realizing the photo of the mountain needs to keep a connection to its subject, a time and location stamp and some contextual audio too maybe? The weather report and page of the news of the day the image was taken.

Neighborhood Design Diversity



16. Hives of Creativity are the Energizing Hubs of Economies

2/13 notes The milestone of birth is the point in a life cycle when individuation needs to turn to responding to the external world to reach its fulfillment, a natural shift in focus

You might recognize a type of natural system boundary and development as “a pattern”, for particular type of innovation maybe, say comparing how a) different kinds of immunization roll-outs worked or b) how different invasive species spread, comparing them for the above general characteristics of internal design and development. That would greatly deepen one’s understanding of their common traits and potentials. It’s even plausible that what is discovered as useful understanding of one would at least have metaphorical relevance to others, for exposing important questions to ask if nothing else.

Recognizing Economic systems

An economy is as culture of cultures of cultures of many kinds and scales, we sometimes don’t notice as we pour over the numbers that have come to dominate our cultural decision making ...

Where what people of one culture want from what people from another can do, to the degree that it’s reciprocal.

hives of diversely connected differences that move energy

families of creative connection that move energy

thriving collections of differences

Island cultures that contain a trade

Large and small, economies are cooperating cultures, not businesses

Every human economy is a connection of cultures, ancient accumulations of knowledge of how to live, and families living today, connecting their productive differences, and family members all traveling in different circles

Different people being productive for themselves have different discoveries to share with others.

Scales of economies, a spark,

Cultures are a larger scale of family



An “economy” is an organization that is productive because its members have different capabilities that are profitable to combine. So, that would include almost any kind of organization, benefiting from having organizers and followers with different understandings of the world and different connections in the community or in business.

17. Economies are networks of cultures

Every kind of system that develops by growth is organized like an economy, using resources it has access to expand its way of accessing more resources as a design for expanding its operations.

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3/22 notes – homes are bases of operation for sharing supplies and work for the family's needs to sustain the family's relationships, with all members generally using the products of the family work to go out for various family and individual needs, like to retrieve more supplies and discard left-overs from retrieving and using materials needed. Every home does that, and needs to be independently self-sufficient, until something brings different homes together in partnerships to combine different specialties.

That creates "an economy" by producing more valuable products and transferring products from where they are plentiful to where they are scarce, with the natural "emergent property" of trade, converting specialization into profit. All resources and products are still returned to homes of people engaged in producing them for their use, so all the benefits of trade and liabilities for excess still go to the producers of the trade.

When you introduce traders working for themselves the structure changes, it both greatly smooths the trade process, but puts the traders in the position of managing the partnerships producing what they trade, but without direct information on what enables them to maintain their complex relationships. So traders see nothing wrong with trading for their own accounts, and both wouldn't know how or see the need to use the profits they collect in the interests of the communities of partnerships generating all the emergent wealth. That seems to be the problem that sinks all economies, blindness at the point of control over the profit. As soon as the producers start getting more creative, the traders fail to see their natural fiduciary duty for managing the emergent wealth of the community, and see nothing wrong with creating extreme inequities that wreck the game.

3/21 from debategraph - The role of "trader" is indeed an important addition to the equation, but is usually seen as resulting in a larger system, with the smaller systems as "nested" within it, as the larger system's "parts". If the trader moves products from where they have low value to where they have high value they then need to decide what to do with the surplus value. The problem is usually that the surplus value seems like magic to the trader, being created by things the trader does not see, and so they end up misusing the surplus... and ends up harming the source of added value.

Stages of history and development

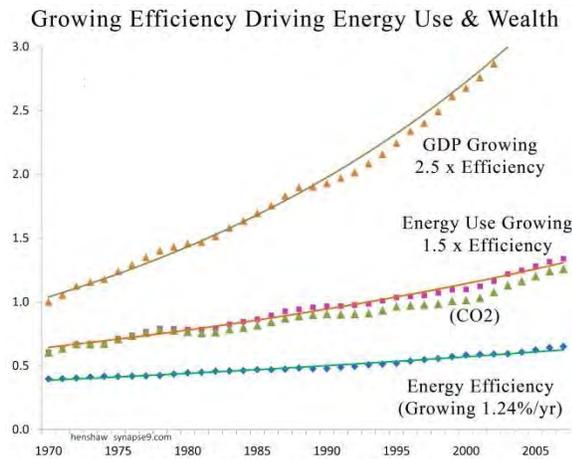
lack of development or excess competition, search for unmet needs elsewhere and changing character of internal and external relationships over time,

Because systems build themselves, understanding their changing environments helps you know what they are both building with, and contending with.

Think about

The data sources of how individual systems develop are remarkably scarce, partly because there still is no recognition in science generally that natural systems develop individually, or that what goes on inside an emerging culture of any kind is much more like what happens in the womb than what happens in an equation or computer. Living systems are born in nature's womb in that sense, always beginning with some seed of organization in a quiet environment it seems, and develop their own internal design and external relationships. Not having data collected for showing the details of how that works means you need to look for data that just happens to.

Coupling of Growth Curves



I have mostly uses economic data, though there's a frequent inconsistency between measures of activity for global businsses recorded only within national boundaries. It's important to use measures of the whole system being measured. I've also found numerous data sets that happen to display some whole system's behavior with partial data, like these growth curves for the use of

18. Patterns of whole system behavior

the term "pattern language" found in the Google Ngram database, of word and phrase frequencies from Google's scanned books⁵. Overlapping the curves for books in German and English shows a very interesting difference. The usage in German shows a fairly smooth growth curve from ~1977 on, for what appears to be only the later developing interest in pattern language, while the usage found in English books shows an earlier wave of interest that tapered off by ~1985. It's suggestive of the two shapes reflecting the use of the term by two distinctly different groups, and I think corresponds to the two main discussions, one earlier and one later.

⁵ Google Ngram, 2015. "Pattern Language" word frequency in scanned books https://books.google.com/ngrams/graph?content=pattern+language&year_start=1950&year_end=2008

V. PATTERN LANGUAGE FOR NATURAL PATTERNS

Natural Language

Notes – 1/23 to Helene

As far as why I feel a need to use general terminology:

- a) I'm really just trying to use normal language in a clear way. The idea of using natural language is that it
 - (1) it's what people know and is really very effective for making complex ideas easy to understand,
 - (2) has a much richer and more suggestive vocabulary, especially for relationships and organizations of things, giving a terminology that can be used to point directly to their actual patterns
 - (3) seems to have originally developed for that purpose, in fact, to let us refer to and discuss our experiences of natural systems and phenomena, that you can see in the structures of word meanings.
 - (4) it also needs to be used to connect more formal languages,
- b) We agree that formal languages, including the programming languages, are social conventions for groups of people who use them as tools. Organic design of languages divided into silos of social organization is important, as the contexts in which they have meaning. As far as the most formal languages, built around abstract definitions, my issue is less that they are "invented" but that they are "rule based", and so completely self-referential. I think that produces a great deal of misunderstanding, for numerous scientific fields redefining common language terms in abstract ways, and then forgetting to translate them back to real world meanings when trying to communicate to others. That seems to be the real cause for the complex organizations of the natural world
 - (1) to be called "externalities" for economics
 - (2) or for physics to be thought of as "equations", made to fit the data only with big enough "random uncertainties" in place of actual organizational, behavioral and developmental uncertainties that are the real source.

In a sense the "original design pattern" for working with the systems of nature was "observe closely", a "heuristic" that permits the mind to absorb the shapes it looks at again and again from different perspectives. It was passed on

- first just by the unskilled imitating the skilled, then
- actively conveyed
 - first by the gesture of pointing to what another needed to look at too
 - and then conveyed by a different grunt and nod perhaps
 - and then words and grammar and complex sentences.

Word roots that refer to patterns of natural design,

Pro – duct - iv – ity, Continu – ity, commn – icate, to find the meanings of word suffixes and prefixes read over the common words using them, entering "*ity" as a serarch filter in the "One Look"

http://www.onelook.com/?w=*ity&scwo=1&sswo=0 A collection of them for quick browsing on my resource file [Words End](http://www.synapse9.com/issues/WordsEnd.htm) <http://www.synapse9.com/issues/WordsEnd.htm>

Root meaning word search : 'emerg" + 'ence'

Root: 'emerg'				
Emerge	emergence	emergencies	emergency	emergent
To better understand the natural meaning of "emergence, compare w/ other words ending in 'ence',				

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like: “flu-ence” and “virul-ence” and			
Suffix ‘ence’			
Also try ‘ance’ to further understand what natural patterns of organization most often associated with these suffixes.			
(First 100 out of 275 common words found with http://www.onelook.com/?w=*ence)			
<ol style="list-style-type: none"> 1. abhorrence 2. absence 3. abstinence 4. accidance 5. acquiescence 6. adherence 7. adolescence 8. advertence 9. affluence 10. ambience 11. ambivalence 12. antecedence 13. appetite 14. arborescence 15. audience 16. belligerence 17. beneficence 18. benevolence 19. bioluminescence 20. bioscience 21. birefringence 22. cadence 23. chemiluminescence 24. circumference 25. clairaudience 	<ol style="list-style-type: none"> 26. clarence 27. coalescence 28. coexistence 29. coherence 30. coincidence 31. commence 32. competence 33. complacence 34. concrescence 35. concupiscence 36. concurrence 37. condolence 38. conference 39. confidence 40. confluence 41. congruence 42. conscience 43. consequence 44. consistence 45. continence 46. contingency 47. convalescence 48. convenience 49. convergence 50. corpulence 	<ol style="list-style-type: none"> 1. correspondence 52. counterintelligence 53. countertransference 54. covalence 55. crapulence 56. credence 57. decadence 58. decalescence 59. defence 60. deference 61. defervescence 62. dehiscence 63. deliquescence 64. dependence 65. despondence 66. deterrence 67. detumescence 68. difference 69. diffidence 70. diligence 71. disobedience 72. dissidence 73. divergence 74. divulgence 75. ebullience 	<ol style="list-style-type: none"> 76. effervescence 77. efflorescence 78. effluence 79. effulgence 80. eloquence 81. emergence 82. eminence 83. ence 84. equivalence 85. essence 86. evanescence 87. evidence 88. excellence 89. excrescence 90. exigence 91. existence 92. expedience 93. experience 94. faience 95. feculence 96. fence 97. flatulence 98. florence 99. florescence 100. fluence

Notes – 12/31/14 to H.

1/ I think natural language allows rather fluid shifts in attention between exclusive focus on and mixed references to: a) the innate forms of natural events and objects, b) the various experiences we have with them, and c) our personal and cultural associations with them too. That doesn't exist for formal languages, which rely on self-consistency and mutual definitions, as languages of symbolism.

*How I identify independent subjects of nature and distinguish them from my own imaginations is the same way one does when picking up a fruit in the market, looking to see if it is ripe enough and not bruised. You tune your mind to *being attentive*, using some past knowledge to scan for new information about something unknown you could not get any other way, and usually remain alert not just to what you're looking for, but for the unfamiliar too.*

In that case you have a somewhat pre-conceived idea of what you're looking for, and inclined to rule out everything else. You are still likely to notice something new worth trying that you weren't looking for. Sometimes a scientist will be looking for some new pattern to extend an old one, and search all over only interested in finding the one that fits perfectly, or they may wander about searching as widely as possible just looking for unexpected ways things connect, sensing they have a problem but not quite sure what it is.

Notes – Dual/multiple Paradigm

- Alternating between looking from your own reflections on the world, looking at the world without reflection

Guiding Patterns Of Natural Design

view, two different sciences interpreting the same subject, stretching their own boundaries to compare their findings

view - view the same subject for the range of probabilities (the equation) and for the pathways of continuity (the behavior) either past, present or future.

-The world as it works and the world as we think, why the latter is so persistent when not at all supported by the former.

- worlds of common information and separate confusions, that see each other as alien, breaking into cells of "windowless monads" of self-reflection.

- Image v. thing, Consciousness gives us very little reason to question whether our own images are what others also relate to.

- windowless cells that last beyond germination are dangerous, incestuous in feedbacks, developing blind.

- is it racist to expect others to earn our trust, or extend the benefit of the doubt or let you know why not, when you have.

- systems of nature v. systems of social relations, both tend to be clueless about each other, uncurling the lost dimensions of ancient thought, back when nature was still thought of as being real.

- inside and outside patterns, boundary zone, inherent differences

Generic pattern primitives

Basic pattern toolbox

- *Your several "homes" are your anchor in life, get to know them*
- *How different scales of design following the same pattern, will have different organizations of relationships, like a small business and a large one going from informal rules to explicit ones, and many other kinds of small and large changes in how they work*
- *Your natural language: Rich but simple ways of expressing complex relationships, the scientific way of using natural language*
- *Your stage in life, your stage in belonging to your homes, is what's happening internally*
- *The everywhere living world is what's happening externally*
- *Internal/external/long shots and total effect views*
 - *Spending your day,*
 - *Using your surplus*
 - *Observing both actively and passively*
- *Practices of creative search, productive rest and free imagination*
- *The design of tolerant joints, giving parts **reliable connections fitting in comfortably with others.***
- *The property of resilience for organizations that provide generous tolerances for their parts*

Generic Patterns of nature (primitives toolbox)

- *Pattern Search –*
 - *For extensions, for connections*
 - *Using a pattern, just browsing to look for centers and threads*
 - *Walking meditation, unfiltered openness and neutral reception*
- *Signals of ...*
 - *patterns out of place, that tell you to try a new way of looking.*
 - *exceptions that might matter*

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- *Recognizing thresholds heuristically, as progressive change in response from constant efforts, either decreasing or increasing difficulty and/or danger, from continued steps along a path.*
- *Dual paradigms – translation, hidden from view*
- *Living quality, empathy / holopathy*
- *Second sense for illogical things working as wholes,*
- *Resilience – the biggest story there is, the most mysterious property of systems giving them internal intelligence, distributed throughout*
- *Hidden system memory, layers of history*
- *Names mismatched to data*
- *Niche “fitting place” both “fit” and “freedom”*
- *Look Both ways*
 - *like both looking at what is found, and the world w/o it*
 - *long list*
- *Fitting parts with both firmness and tolerance in the fit*
- *The commons – the environmental order that is alive with joining fitting parts*
- *Mind uses reason, Systems need organization*
 - *Matching values v. complementary,*
 - *Conjoining, interconnecting roles, interactive fit, interlinked, co-responding parts*
 - *engaging interlinking interoperating*
- *:Planting seeds gets nature pregnant*
 - *leads to children to care for,*
- *Natural Information poverty*
 - *Internal view limited to “in-between’s” of outside world*
 - *Self-interests then undermine common interests*
- *Opening after individuation.*
- *Constant relation with “book 0”, germination of curiosity about life.*
- *Evolution – building from present, search for what else fits*
- *Blank mind at the start of any learning*
 - *Turn information into learning t*
 - *find at least three very different examples, describe them, and discuss them with others doing the same thing, and then describe how the exercise changed your thinking.*

Dual Paradigm view of natural subject and mental pattern – with the same name

- *Alternating between looking from your own reflections on the world, looking at the world without reflection*
 - *view, two different sciences interpreting the same subject, stretching their own boundaries to compare their findings*
 - *view - view the same subject for the range of probabilities (the equation) and for the pathways of continuity (the behavior) either past, present or future.*
 - *-The world as it works and the world as we think, why the latter is so persistent when not at all supported by the former.*
- *worlds of common information and separate confusions, that see each other as alien, breaking into cells of “windowless monads” of self-reflection.*
- *Image v. thing, Consciousness gives us very little reason to question whether our own images are what others also relate to.*
- *windowless cells that last beyond germination are dangerous, incestuous in feedbacks, developing blind.*

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- *is it racist to expect others to earn our trust, or extend the benefit of the doubt or let you know why not, when you have.*
- *systems of nature v. systems of social relations, both tend to be clueless about each other, uncurling the lost dimensions of ancient thought, back when nature was still thought of as being real.*
- *inside and outside patterns, boundary zone, inherent differences*

Search patterns and heuristics

Learning heuristics that open your eyes to the patterns of relationships in your environ, to build up rich varieties of perceptions to add to your compost of useful observations, and your ability to richly and accurately describe the working relationships in a few words.

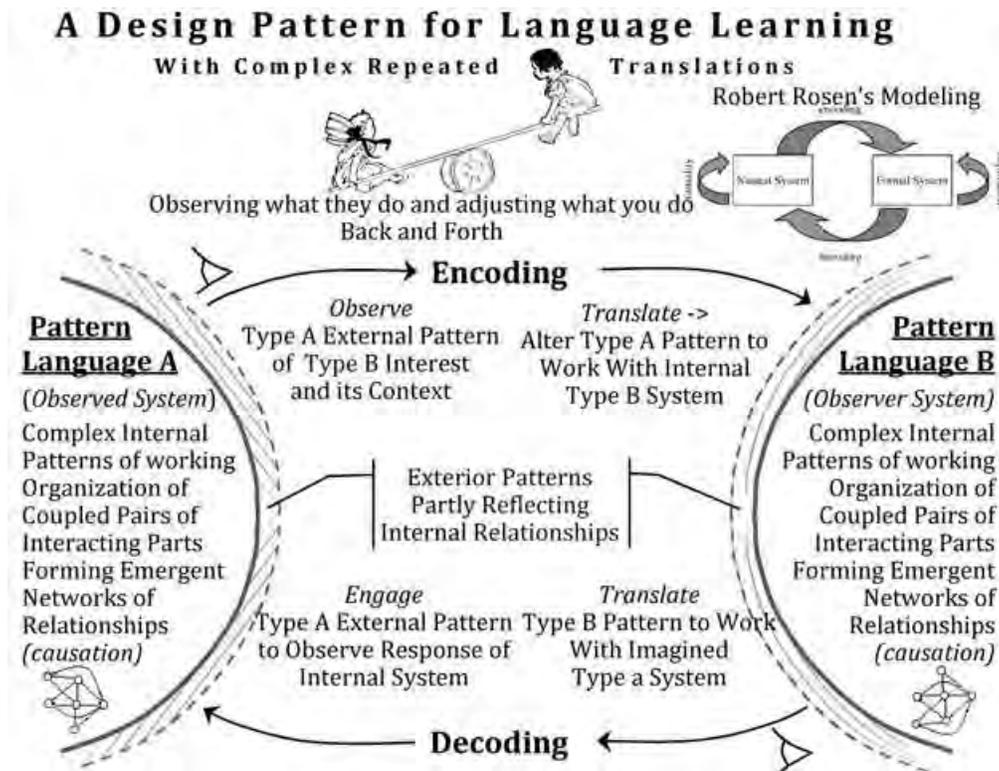
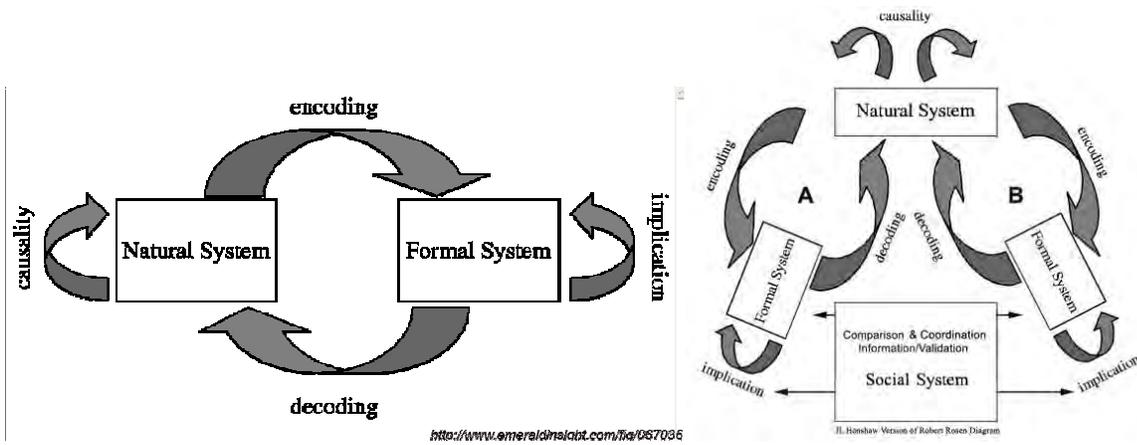
- Using a pattern to scan an environment for examples, as a search tool
- Look for both how the pattern describes the relationships and what relationships are lost in translation
- for what is working, what isn't, shifting from attention to internal to external relationships
- for the frame work and the accessories, the bones and the flesh,
- for what flows in and flows out, and how that alters those environments
- for how environments are mediums of exchange with other systems and their patterns.
- for how design patterns and their systems are made for their environment
- for whether the design is an accumulation of historical layers
- try to imagine the stimuli, and the responses, and where the action originates and ends up
- Exaggerate your view of some relationship till they no longer fit, to see what happens,
- Imagine ridiculous solution and then look for a place where it might work.
- Look at an environment as arranged for relationships of "competition", and also "avoidance"
- Look at an environment for how it is following a pattern and then also for how it departs.
- Be contrarian, seeing cases that fit a social ideal, and then find ones that don't, like when sticking with things as a path to success, unless what they stick with is causing their failure.
- Learn to "defocus" and simply remain open to the limitless complexity of life's patterns without any kind of discrimination effort, seeing as an artist sees, without interpretation

Notice how finding a pattern blinds you to what else is there

Formal Pattern Language and Translating Between Them

To have PL become a "science" patterns need to be "grounded" in experience outside the terms of language, and so have way to tell if the patterns of the language

- Are recognizable in their original environments,
- such as for recognizable roles or problems and solutions
- faithful representations of their original forms,
- connecting its patterns as a system (organization) with its process of change (development)
- arranged in a familiar form and to a sufficient degree of completeness
- accompanied by information on how to identify the shape of openings in the environment where they might fit, and on how to use them,
- having some proven success in application,
- having proven ability being using as a lens for discovering hidden behaviors
- hidden in the environment of the mental pattern,
- hidden in the mind space of the pattern
- associated with a diversity of other instances of closely related patterns of relationships in other environments, circumstances or scales
- and have built in "character of life" including having a "forgiving nature"



Robert Rosen's modeling of the relation between science and nature(2000) Or... "the six blind men and the elephant"

What tends to get lost in translation in creating formal languages is what to do when you need to implement them, to "undo" the oversimplification that invariably occurs. How Alexandrian pattern languages may often succeed in overcoming that problem is in the use of the formal language as a learning tool for exploring the environment of the application,

when some notes on what was being lost in translation before may well be very helpful.

Where design begins is really with sorting through the fruitful combinations of loose ends and differences from a formal pattern one may uncover in searching the context of a concern that begins to suggest what's possible.

3/11 note Rich but simple ways of expressing complex relationships, the scientific way of using natural language

Note: Helmut Jan 10:

Regarding design, my way of looking at it, is that design starts when things can be made in different ways (or can happen in different ways like in biological evolution, a peacock or giraffe is not a logical result of every evolution of every life-supporting planet in all existing galaxies). Patterns offer options for the next step of change/development/unfolding/creation/design. These options depend on the functional connections and how the related forces work out and display in a specific situation. So there is no possibility (at least no good possibility resulting in high-quality design) to side-step the designer in making individual decisions (there is not even a possibility in side-stepping the role of the JUDGE in legal systems, in the continuous design of societal justice, though the the legal rules are worked on for thousands of years). So design goes in parallel with the concept of "unpredictability" in the sense of breaking strict causality (like modern physics does).

Therefore, the main target of pattern theory is the "designer", the individual, to inform and enable her. One main proposal is: "Everybody is a designer". (Joseph Beuys overdid this imho only a little bit by his "Everybody is an artist". but you can also trace this back to Goethe and how he included art in science and how he suggested that all people should go about interacting with the world). Patterns and pattern languages are the main tools of pattern research (pattern theory, pattern thinking, lebendigkeit science) to support individuals, experts and laypersons alike, with their design tasks.

- **Note: J for Helmut – Mar 19**

As far as pattern language, n.patterns fit differently into the usual model design approach of "problem & solution" for d.patterns. An n.pattern as general as THE NATURAL STAGES, points to key elements of what nature has to do to bring about change, describing "nature's solution" not ours... What we can use it for is a "learning device", for helping us explore what nature is doing, and "problem finding" and "solution finding" more than "problem solving" more than "solving". Even after you apply a solution, d.pattern solution, it'll be up to nature to heal it into natural world to finish the job....

So learning to use n.patterns is like using the pattern as lens for searching one's working context to view and learn from it, to discover natural relationships and how they're changing. That would generally help people 1) find what they have to work with, 2) and what is and isn't working for their values and what it's connected to, and then 3) find potential solution parts only needing connecting, and 4) stay up on how conditions are changing, and other things like those. Why we can't use them as "solutions" is a little shocking to some people, but basically nature's inventions and environments are not located in our minds, so the only part of them we have control over is our own behavior, not what nature is doing.

So I see the role of n.patterns first as supplemental to d.patterns, for helping designers understand the context in which they are working. The habit of using n.patterns for learning about how things work and fit in the natural context can then be transferred to the use of d.patterns too, to make the implementation of d.patterns more effective, and more likely for the intervention to find a true home in the environment and take on its living qualities. So in that way I think it will help extend Alexander's conception, to help PL go "full circle" in a sense, as a search for solutions with living quality that will become integrated with the living qualities of the environment.

To consider THE NATURAL STAGES as a formal pattern is of course what I've been thinking would be understood. It's curious how you seemed not to recognize my intent. It seems only small differences in

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semantics can cause a break in the message sometimes. It's a very small example, does recall the need for a d.pattern for translating between PL's. How I'm describing the use of n.patterns above is part of the solution to the translation problem, I at least hope works in the end. That's for users of specialized PL's (all the sciences) to developing an ability to translate their meanings into natural language, referring to recognizable natural phenomena and experiences for demonstration, so the languages can talk to each other, as with the technical meaning of "logic".

I think "logic" also has a variety of other uses, so I generally rely on context to distinguish particular meanings. I think it's usually clear in context if a person is thinking of "axiomatic reasoning", for example, but maybe my usage was unclear. The word originates from the Greek word for "reasoning", and came to refer formal reasoning, but common phrases like "the logic of the situation" shows a much wider usage is common too. How I distinguish between the "hard and soft" forms of "logic" people use is according to the self-consistency needed for the reasoning to be valid, and on which a mental model might stand or fall.

For me that nicely distinguishes between reasoning which is defined only in relation to itself, and reasoning in terms of words and subjects defined as referring to things and experiences in the common environment. So I don't see the issue as a choice of one or the other, as we obviously need both despite their seeming "logically incompatible... ;-). I think that strict logic just needs to be tested, as the a natural pattern it is generally represented as being but may not be at all. Would that work for you?

recognize that separate formal languages have the patterns of nature that connect them, and the social meanings each develops for their common subjects to connect them at a higher level where their formal interpretation of experience is translated into meanings and behaviors for our common culture.

- **Note: from Helmut discussion – Jan 8**

Philosophically I do not see how the distinction "both for the organization we observe and the organization we make from it in our minds" can be made. I'm pretty sure that there is no observation that does not already contain some theory from our mind or sensory systems. E. g. native people wouldn't observe "an airplane" but a flying dragon or a god.

To reduce complexity it helps to focus on a single pattern language, that means one artefact that is modelled or designed. As far as biological systems are concerned, the conscious design is thought substituted by the evolutionary mechanism of mutation/variation and selection. Still there are certain organisms in the center, e. g. a tree or a bird, and we can see or assume problem-solution-pattern with it, e. g. the roots or the wings as necessary parts/organs. It's not that we directly see abstract meta-level-patterns for meta-level-instances like "natural organizations". If this would work, life could be categorized as having certain properties, but that doesn't seem to work.

I think, working with patterns changes the perspective of what one is interested as a scientist, maybe simply because one knows what can be achieved easily or not at all. All pattern application is based on a holistic views of systems, therefore the search for single game-changing key-patterns, kind of golden nuggets or silver bullets, that would allow to avoid the tiresome work of system detail, of researching the majority of patterns and describing them, is not typical.

- **Note: Jessie's Landscape for Helmut - Jan 9**

My use of Language is a little unusual, often rely on the most general meanings of words, so sometimes people react as if thinking "oh she can't mean all that can she?" or something. I happened to notice yesterday in reading CA's 1964 book, "Notes on the Synthesis of Form", his unexpectedly general use of the word "logic" caught me off guard. For me It comes from trying to use natural language to speak scientifically, and "avoid the tiresome work" of excess explanation.

So by "natural systems" I mean to refer to "all working organizations that develop naturally" whether I've noticed them or not. I let the phrase be defined by what it refers to rather than by my mental theories or categories. For molecules or galaxies you really can't observe much of anything about how they work, true. That doesn't mean that they don't work, though. It's also true that much is lost in translation when reading the design patterns in anything else, even when what you can observe is quite useful.

Like anyone I first need something to attract my interest, so I don't see things if they're "hidden in sight" for me any better than anyone else. So I try to be quite open to any evidence of design or of a process of a design developing, where to look for design patterns to help define what it is. That's rather general, and leads to

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a simple methodology, greatly helped by a fairly universal design pattern for developing systems. They first generally begin with a design of parts that multiplies, that transitions to a design of parts that converges. That's like you have at the beginning and then ending of any successful design process, taking off with small steps to then end in small steps too. Like [.,.•' -].

Yes, I agree entirely that there is "no observation that does not already contain some theory from our mind or sensory systems", but I split that into three parts, 1. the question we bring to the observation, 2. the impressions and record of forms observed, and 3. the remaking of what is observed to suite our way of thinking as we make sense of it. So to get the most faithful representation what you are observing into one's mind it takes giving it the least possible suggestion at each stage. That's also rather like how an artist learns to observe a subject to draw, commonly called "learning to see". There's a major threshold you need to cross, to seeing what's there rather than what's in your thoughts.

That it's possible to do something like that with studying complex systems does seem improbable at first, given how highly presupposing our minds usually are, and about literally everything we see. Carefully tracing how organizations develop, though is a tough discipline, of letting nature correct what you think again and again. As it yields important unexpected insights, it builds confidence with observing nature just like for an artist learning to draw finds they can convey the spirit of the living thing somehow. I think it's fairly similar to the observation technique that Goethe used, that he also had difficulty communicating. If you read his scientific writings it does sound a bit crazy, but now we have this big movement of people who are realizing that lots and lots of things have hidden designs.

Do you know other people who have innovative methods of observation, or references to techniques commonly used in the modern PL community? I do agree it helps "focus on a single pattern language", but a little unclear about what you add "that means one artefact that is modelled or designed". Is "that one artifact" what I mean by the "organization" or "natural system" or "development process"? My general approach is to go back and forth between considering the subject's change over time and its organization in space, and try to focus on its period of emergence as an individual subject. In looking for the organization of parts it starts with, I'm looking for how it alters its environment to progressively expand on itself.

For example an "envelope sketch" captures an image from which many versions for a design project can then be imagined without sketching, and a few picked seeming favorable to further explore. To proceed, steps of a concept->development sequence need to be repeated over and over, for the parts and then the parts of the parts, till it is packaged and handed over to some to build, and then passed to someone else to inhabit or use for its role in the larger environment. It's not dissimilar in sequence for many natural system designs. Why I focus on the emergence period is for how that connects to the data one can record of continuity of energy use. The energy invested in a design process will progress with those same design stages, and generally follow some version of the same "S" curve, [.,.•' -].

So what I'm doing differently is starting with an "envelope" of expected possible design stages. That helps me locate the particular "ladder of design developments" in a given case, and test my own guesses asking "is that really what's happening there". The "evolutionary mechanism of mutation/variation and selection" is often assumed to be what nature is doing, for example. Random change in a design is often not productive though. In many growth processes you see highly successful rapid reinventions of things going on, not seeming to take time to test every step. So I came to the view that in those processes nature is doing something more like what designers do, "searching from what fits, for what else fits" rather than blindly trying things randomly.

The scientific corollary to "what fits" is "what connects", or "continuity" of energy and causes. Modern science has oddly never really considered nature as having "designs" of its own, though, only "data". So science becomes limited in representing nature with the rules for data it collects, treating complex systems as numeric models of fixed definition, with no material part or shape of nature represented. So I've found it not at all possible to discuss that with scientists, in relation to science at least, though I've tried. I find similar barriers caused by representing nature as theory in most social and professional communities too. So finding somewhere to start with addressing that as a communication problem, that PL can contribute to, is a better way to state what I think Helene and I have been trying various approaches to.

So, I also look for "single game-changing key-patterns, kind of golden nuggets or silver bullets, that would allow to avoid the tiresome work of system detail". I find one of those to be looking for the period of emergence to identify the "pattern that multiplies", the "transition from diverging to converging designs",

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and the "middle point" where progression goes from expansive to convergent. It helps avoid a lot of tiresome work, and also parallels the continuity of observations one can make, leaving a record that can be branched off from and expanded on from any point.

We'll talk more about the "blind men" who convinced of their expertise tend to come to blows, thinking the whole elephant as some individual part of their interest, and proceed to stick with that interpretation to death it seems. Helene's example of the African "airplane cults" is a fascinating anthropological example we can look at with some detachment. Detachment may help, and her ideas for widening the net to include all the design languages at once may help too. There are the silos that professional cultures build to separate them from each other, that keep them from learning from each other too, like the walls between physics and economics or between business or cultural organizations. It's all the same planet we're trying to enjoy and profit from. I think the analogy is meant to extend to things like religion too, where all sides are clearly discussing the very same world, but come up with such different stories they act as if worth going to war over rather than learning from...

How to take that apart is not easy of course. I think those barriers have tell-tale features of "design" though, so seems likely to have design patterns that might be identified too. So if we can compare differing ways of interpreting the same subjects... it might help. Honestly it's not really clear how. I've had a lot of people become all the more devoted to their separations when being shown the connections... In ecologies nature does display a remarkable variety of ways for "disagreeing things" to perfectly "get along", though so it might possible.

- **Note: to Helmut Jan 17 – p theory, design p's, natural language p's, natural p's or Life p's**

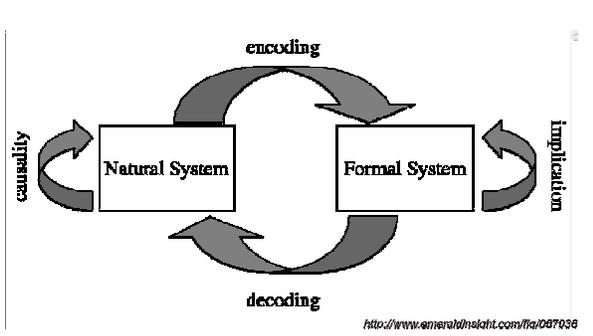
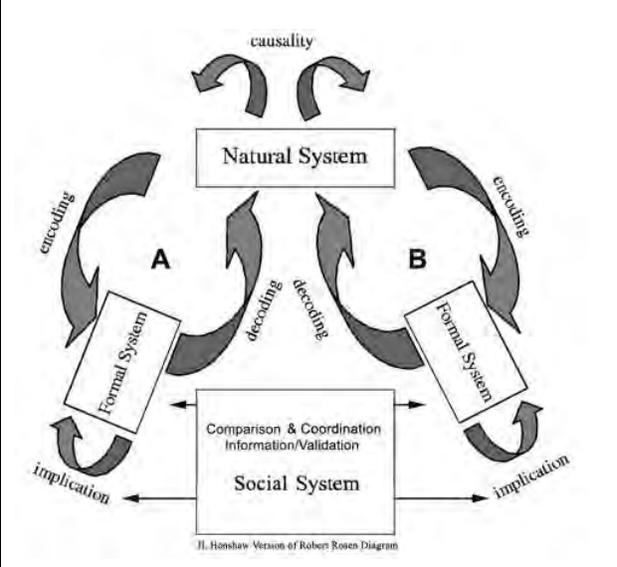
I think we share the same concern, finding a way of clearly making these distinctions to not lose people. The dilemma I struggle with is that "the listener always has the last word" and whether the subject being discussed is 1) pt.patterns or 2) nl.patterns or 3) n.patterns (the book of nature we read from). Attention may switch from one to another unexpectedly depending on how a reader is thinking. I see the relationships between them, from 3 to 2 to 1, as interpretations of the following one, each somewhat less specifiable than the one before, but having historically developed from 3 to 1, as our condensation of useful parts of the preceding one.

Mixing them up verbally still becomes a problem, considering both the novelty of considering #3 at all, and our generally rather loose way of using language. It'd be nice to "tighten things up a bit" without "excessively shutting things out", is sort of how I see it. I struggle with trying to use language for bridging the likely reading of audiences. My interest in PL is partly that, because of how much it seems to help for distinguishing numerous kinds of complex relationship subjects. I think why it seems to why it's gaining application, as a useful language for complex subjects generally.

Debate graph <http://debategraph.org/Details.aspx?nid=365553> (Henshaw 2014)

Title here	Title here
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 <p style="margin-top: 20px;">Discussion here</p>	
<p>19. Fig title</p>	<p>20. Fig title</p>

A) You may have physicists, economists, environmentalists and politicians all talking about the same natural systems, not realizing:

that there are big differences between the different formal languages they invent for their common subjects, that they have no consistent way of connecting, with no one paying much attention to how conceptual languages rely on self-referencing network of interdependent definitions to be logically self-consistent.

B) So... being logically self-consistent, then generally means:

speaking of natural systems as "deterministic"

in a different way by every self-consistent formal language for them

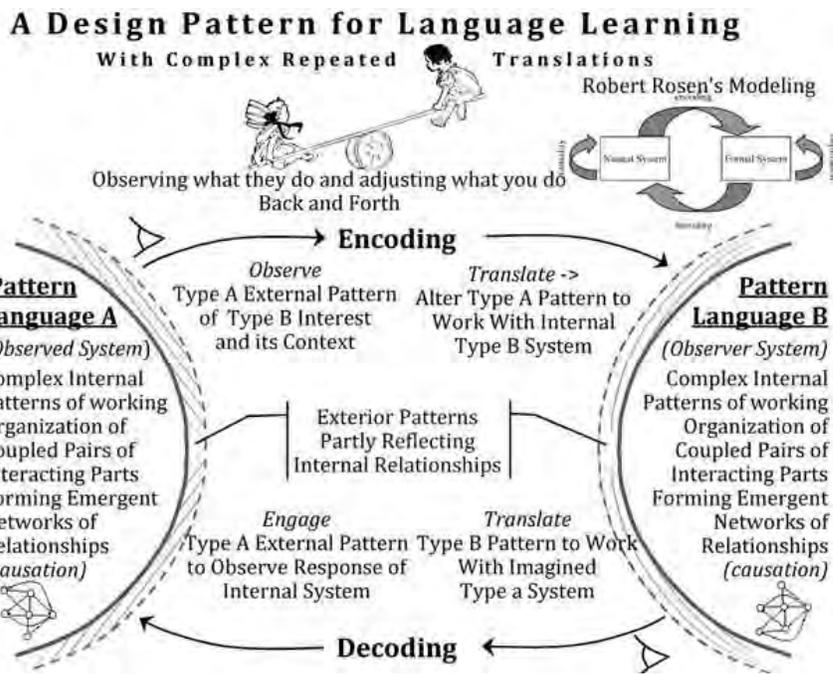
rather than "opportunistic" as the informal natural language all share tends to

It implies the intellectual world has a great need for "language learning", needed to "compare and coordinate" these important but quite inconsistent ways of all referring to the same thing.

A "deterministic world" is what self-consistent logics of interconnected definitions tend to present us with. An "opportunistic world", is what the natural language of the general public tends to portray, as ****its words are mostly defined by the individual natural subjects the words refer to****, rather than to the ****formal restatement of global consistencies in natural patterns, reduced to rules****.

Pattern Language

What pattern language does is pick out versatile system design elements in nature, discovered by designers and natural scientists for use in opportunistic systems, and so seems to constitute a "new kind of language for how to work with nature, without a formal theory."



Pattern Language Learning (PLL)

The graphic below shows a Pattern Language version on Rosen's Modeling for how science translates the patterns of natural systems into models. The main difference for Pattern Language Learning is concern with "encoding" and "decoding" through multiple layers of loosely related patterns. As you can deduce from the PLL model there is something lost in translation at every step, resulting in a loss of fidelity for the model:

What gets lost in Encoding:

the internal design patterns of the observed system don't show outside, so the patterns that do show reflect relationships largely not in evidence.

an observer picks from the exposed patterns of the observed system only those suiting their own methods and interests, to be taken out of context.

so it becomes important for the observer to note features of the context surrounding the main focus of their interests and abilities

translating the patterns of interest from the observed system into a pattern language of the observing system also results in a "mismatch in kind" to add to the great loss of pattern due to the natural limitations of observation, 1, 2, & 3

What gets lost in Decoding:

The test of the observer's patterns would be to see if the observed system responds as the observer's system has modeled it, a "mismatch of kind" as in Decoding loss of fidelity 4.

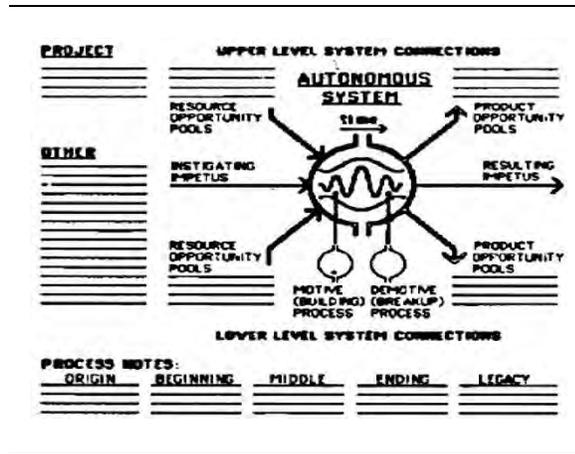
All kinds of things can go wrong testing a theory based on highly subjective observation and analysis, but less so if contextual issues are considered in both designing and engaging the test.

Most of the results of the test are likely to be misunderstood as the design of the test doesn't correspond to the design of the observed system, so without care little may be learned from it.

Combining good methodology, alert observation and good use of contextual information in making translations generally results in a useful model within understood limits. To complete the image of how the two domains relate, what was lost in translation is collected in a holistic image of the subject's own originality, synthesizing what's being left out as if by "empathy" (or "holopathy") to complete the model by returning its focus to its original subject.

Styles and Purposes for Pattern language

Image of Pattern Properties Table



“patterns of complex systems obtain their relevance and validity by giving us a pathway to reconnect with those systems to recover or expand our understanding.

To Helmut Jan 20 - So I agree democracy is important, and I'd love to see democracies develop a better kind of conversation. Getting people to free themselves from attachment to those worlds of tempting mirages that fill our minds is never easy, though.

- "timeless proven solutions" –
- “reference to well defined expert systems”
- “learning tools for life-tasks and life-pleasures”
- “a way to save democracy”
- “a way to recover the lost meanings of language”
- Others reviewed,

21. Simple Form w/ Extensive Expansions

(Alexander 1977, Leitner 2014, Erich Gamma et al. 1995, Jennifer Tidwell 1999, Schuler 2014, Denf 2011a)

Natural Pattern Property Categories	
<ul style="list-style-type: none"> • Title & Sub-title <ul style="list-style-type: none"> ○ Essence of simplifying solution to recurrent problem ○ Pattern type, level & index ○ Classify as regarding: <ul style="list-style-type: none"> • elements/systems • social/natural worlds • process/organization • professions/crafts/cultures • practices/values/beliefs • intended/autonomous • for changing/caring • of internal/external relationships, • methods/applications • standards/explorations • Recurrent Forces <ul style="list-style-type: none"> ○ Focus / Dilemma ○ Recurrent Problem /Symptom/Role ○ Emergent property/Concept • Description <ul style="list-style-type: none"> ○ Essence of recurrent solution ○ 4Dimensions’s Internal, External, Long shots & Total Balance 	<ul style="list-style-type: none"> • Recognition signs & features <ul style="list-style-type: none"> ○ In different circumstances ○ At different scales • Variants and Perspectives <ul style="list-style-type: none"> ○ Alternate views, Enriching Narratives ○ & links organized by Categories • Image(s) <ul style="list-style-type: none"> ○ Sketch, Model, Diagram ○ Poem, Picture • Context <ul style="list-style-type: none"> ○ Environment & circumstance • Object & living quality <ul style="list-style-type: none"> ○ Blind spots, Clear spots • Response <ul style="list-style-type: none"> ○ Use, indication, structures, procedures ○ Guide: exploring environ, learning from other environs, linking with others ○ Transitions, care, cautions ○ Alternate solutions & values, ○ related concepts, fields of interest, purposes • Validation

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<ul style="list-style-type: none"> ○ Living Qualities ○ Time and Circumstance sensitivity, ○ Boundaries and agencies ○ Examples , alt. levels & forms 	<ul style="list-style-type: none"> ○ Assurance & authenticity ○ Reflections on what was lost in translation and the approach interestingly omits

Notes – Helmut Jan 10

Pattern descriptions (how we communicate patterns) consist of atomic aspects, each describing a functional connection. This functional connection or aspect often contains a specific perspective or interest. Aspects need not be consensual, they can stand side by side, e. g. as pro-or-con arguments used by various groups or world views. This means that the patterns descriptions are able to hold multiple perspectives or world views, although up to now they are rarely used that way. We need not create a "consensus of viewpoints" at the pattern level (Maybe "A thinks x" and "B thinks y" instead of "x is an agreed truth") because decisions are not done on the pattern level but deferred to a holistic evaluation by the designer in the specific design situation.

Regarding design, my way of looking at it, is that design starts when things can be made in different ways (or can happen in different ways like in biological evolution, a peacock or giraffe is not a logical result of every evolution of every life-supporting planet in all existing galaxies). Patterns offer options for the next step of change/development/unfolding/creation/design.

Models –

I posted that pattern language for frontline firefighting by Sebastian Deneff (2011)

Notes- 1/22 to Helene

a) PL as both a collection of living patterns to work with, but also as guides to discovering the patterns of "how to work with living things"

(1) helping you understand where your work and your world are going

(2) helping you recognize the roles you could take and the effects you would have.

(3) a language for learning how to identify living relationships on any scale of detail, to overcome the impression that PL is "both too general and too specific", having the role of suggesting wonderful ways to discover living the shapes of living relationships.

(a) recognizing that also overcomes the impression that "patterns" are to be "applied", and should do the work for you, when they're really there to help develop insight into how to do things yourself.

b) Is "the science" of PL, in the need to have a way to know what design patterns are real? And actually work? And actually reveal the domain they apply to? And expose to us how different the patterns we imagine are from the ones of the natural world we study? How do we achieve "proof of concept" for a "learning tool"?

c) Making money is a "proof of concept", as making a new part that work in the complex real world.

d) Using energy is also "proof of concept" for having built a successful organization of parts to do it, also in a complex real world

Notes – 1/23 to Helene

My view is that it should be with a "table of properties" rather than set notation. It's not just that "set theory" for "semi-lattices" is perhaps not realistic, it's also that the kinds of useful properties I can think of to associate design patterns with include whether patterns are seen from differing viewpoints, like to distinguish "spacial" v. "developmental" patterns, or to distinguish "social" v. "procedural" patterns, etc. You might even classify clusters of design patterns as being for "working blind" or for "computer recognition", etc.

Another thing I hit on when thinking about it was that there's a need to preserve the "tags" people have assigned to their design pattern concepts already. So, I say definitely yes, to including "parent / child" links between patterns, and "nesting scales" too. The problem then becomes how to limit the number of check

boxes on the registration form and manage what becomes a potentially unwieldy process. You'd also want to assure that multiple people will look at how the properties are assigned, and to allow new input on it over time. So I began to think of it as more a problem of designing a searchable Wiki / database, and finding ways of keeping it fresh and authoritative. The goal then would be to include all the associations that meet some test of relevance, that people might want to search for.

VI. PATTERN SEARCH METHODS

How to study Natural patterns

1/29 notes: The real meaning of a relationship pattern one reads comes out when using it, as when framing its elements in relation to one's own context,

finding what seems to be the same pattern in your own sphere of interests and experience,

describing the pattern from there yourself, to someone else doing likewise for their own context,

discussing how the discovered instances fit with the original description,

as well as with the relationships of the context themselves.2/3 notes To learn a pattern use the typical to find some instances,

Pick three and describe them, •expand your view, •narrow your view, •blur your image till it changes, •sharpen your image till it changes, •find alternate descriptions from other starting points, •describe it without the fixed parts, •describe it without the moving parts, •study it as flows, •study it as steps.

Share descriptions with someone else doing the same thing, find how they understood them.

Look closely and find the features they were referring to

1/28 notes I tend to find it hazardous to discuss how we really put together our world views, so often they depend on picking up popular ideas with little or no basis in observation, just social affirmation. It's really ourselves too, as well as friends and strangers, who get so swept up in those things, and so many cultures visibly veering off track from them all the time too.

But is there any way around the Catch 22, that finding a basis in observation, even "learning from nature", will seem offensive if that's not a person's learning habit?

Look both ways – (at information)

M1

Look Both Ways

- Working relationships have “emergent properties” following common pattern of design, of “parts that fit together”
- Organizations build by connecting opposite shaped or acting parts, | cups & liquids | current & wire | male & female | floors & walls | walls & doors | home & work | buyer & seller |
|
... as “what works” is their combined properties.



Opposites that can work together:

To fit patterns of relationships together we need to look at inverse and inverted patterns to see what else nature is up to.

- | | | |
|--------------------------------------|----------------------------|-----------------------------------|
| • The gains and losses | • Left and Right | • Things done and left undone |
| • Actions and responses | • High and low | • And coming from near and far |
| • Fitting tight and keeping loose | • Inside and outside | • Your needs and others |
| • Getting things going and fulfilled | • At details and the whole | • Gained and lost in translation |
| • The separations and connections | • Near and long term | • Choices of purpose or innocence |
| | • Ahead and behind | • Working with trust and mistrust |
| | • In focus and out of | • What’s honored and offended |

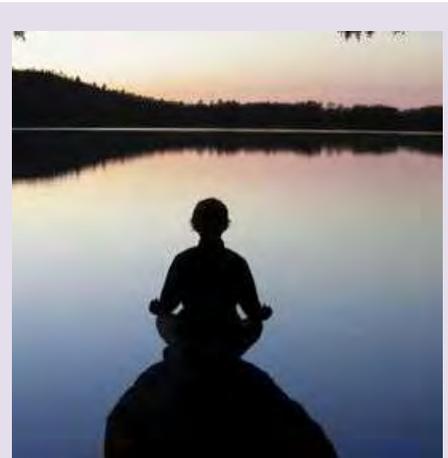
Look both ways – (at living relationships)

M2

Look Both Ways (at living relationships)

Becoming aware of the living relationships that work in nature, is what pattern language leads you to and is for. Like a deep meditation you can do independent of other things. It’s an “impressionability” not an “intent”.

- Consciousness presents us a world to “see”, of self-reflections, on our own experience, not very like the world we’re looking at.
- It’s a conceptual world, and we live in a natural world, where concepts may extend easily to infinity, but relationships don’t.



More opposites that can work together:

Guiding Patterns Of Natural Design

- The freedoms & constraints
- What's found and lost
- What we do and don't control
- Validated and left to chance
- Competition as friend
- Family and strangers
- The flesh and bones
- The person and the tool
- Ends and means
- The risks and the cushions
- Needs and wants
- strengths and resilience
- gaps and the connections
- the cup and the sive
- What does and doesn't change
- Always keeping the light within,
- Greatful to be free to learn

VII. MORE COMPLEX HOMES

Work and Home

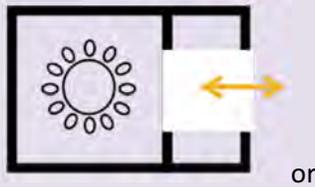
N2

Work & Home

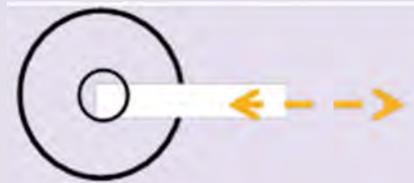
- Nature works with centers of organization, the things we come to see as most symbolic of “living qualities”, and we can learn directly from them.
- All living things make a home, their “niche”, as a place to have safe access to resources and a secure location for their cultures.



“Shelters with Gaps” for Connections and ‘Central Openings’ used for making connections Greek meeting temple with its Minoan hearth -Home, Niche or Cell, Basic Unit of Culture in nature

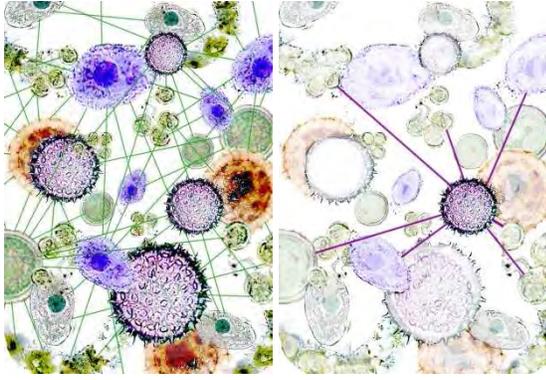


or



Visualizing Ecologies

Network ‘hubs’ are ‘hives’ of creativity



Nature makes great use of an exceptionally versatile form or organization, that allows every part to just mind its own business. It's even enduring if the parts find a good way of doing their business. One might recognize the pattern by noticing how all living systems show signs of building their own private homes, claiming a local domain. Human perception is generally

22. But anyone's own view is only their own hive and its links

blinded to that pattern, though, unaware that we are our own world views are a reflection of ourselves, and our interest in "the in-betweens", external to every other culture and how it makes its home.,

A hive is the kind of commons where every part is equally connected to every other, though they may have different roles,

3/15 A basic information problem that NP's provide enough information about to write algorithms to solve in an information display, if only the programmers understood the problems and the NP.

3/9 To Kathryn - I'm asking for a new way of thinking from people, for a new awareness of the world we are part of, [] dividing their thinking between the world of our minds as "what we see[with]" and the world as it works by itself, "what we look at".

Mostly people make no distinction. It's one reason for being "normal" in the sciences to describe nature as following our theories rather than the reverse... and so resulting in long (and often disastrous) delays in changing our favorite theories, when they've stopped following nature a long time ago.

So I'm asking for people to be able to look at those two worlds with equal detachment, and mostly they don't "get it", and if they do they mostly want to "run away"....

1/27 notes A culture as a living organisms that records the collective knowledge of life for a people, constantly evolving but with deep history in terms of layer upon layer of design from the root, like biological species are too, containing a kind of history of all their successful stages of evolution.

1/28 notes:

- 1. Everyone is honest... - but has different blinders*
- 2. And so have different information depending on where they stand and how their culture tells them to reason, and so **don't like their blinders pointed out***

like the territory that different sub-cultures stake out for themselves in village or city.

We're usually very alert to those, as they are zones where the whole culture of the

neighborhood changes, what's to be found, what's permitted, what manners are expected. Sensing and exploring them is certainly one of the greatest pleasures of walking in cities, but then also one of the great dangers if you sometimes don't know where you're walking. So as you walk you can ask yourself what it is that you notice that marks the transition, from some neighborhood's internal to its external spaces.

Notes 3/18

The imbalance in our information, easily results in a perspective that allows seemingly great success to lead directly to failure, letting you multiply the advantages we see while inherently multiplying the conflicts we don't.

Like the idea that everyone can multiply their share of the commons they control (only taking care of the problems we see) as if without conflicting with anyone else's interests, limited to a view showing us what is in "our" interests and not how that "ownership" is tied to and shared with the networks of relationships with others

Not seeing the collaborative nature of success causes people to not realize why taking power over others weakens the whole, particularly to misunderstanding why using wealth to and power to seek ever more creates swelling animosities rather than defends against them.

Notes 3/14 - So it could appear that for an investor to take the profit from one creative business to invest in competitors to replace it when that'd be more profitable, is the worst sort of exploitation of the creativity that generated the wealth. But to solve the puzzle you need the opposite perspective, that innovation leaves everyone to answer the question of where it is headed, as it always starts as a "run-away" contagion with no one's interest in mind. The reality is that if all innovation does is drive a surge of growth it's sure to be only a "flash in the pan", headed for nowhere. So that's how it becomes the investor's natural obligation to use the profits of others in their interests, that becomes fulfilling as an end rather than desperate struggles that amount to nothing.

Tweets

Unable to see inside, #ANYONE #ELSE's #BUSINESS, guarantees our efforts to #maximize our #advantages also #maximizes #hidden #conflicts!

So as long as the #growing #abuse of the #earth "#makes #money", for #people taking abuse, in #rulesforliving "just get used to it" is used!

It's a #great #blindness in our #natural #view hiding how the world works, linking all kinds #of #creative #centers we only see in-between.

Sometimes it's a wall, of course. An individual dwelling or business has as wall, sharply defining its interior and exterior, but then each will also have a "near environment", the space of its niche outside its exclusive zone. That's the real external sign of a living system, though, how it chose its home for its way of linking with the larger environment. When a living system builds its private space well it's likely you can't see in. That's the case for a business or a family and lots of other kinds of organizations identified by developing their

own unique ways of living largely hidden from view, also develop a niche in their surround ecology, a place where what they need is in easy reach without risking conflict with others.

As in an ecosystem the different organisms that interact to that creates its own home

It's also the case for cultures and professions as living systems without apparent "walls" defining their private domains, but define their exclusive space by the strength of their own organization, as much as any ecology or weather system, or for that matter any team that develops its own "teamwork" or any form of music or style of design is an expression of the internal language of a network of adept players who "get it". What one cannot see from the outside is what magic is occurring inside, only the outside hints of how it is interacting with its world.

In any case, what exerts influence on the rest of the world is still the organization that develops within that secure interior space of the home any living system builds for itself.

The point I'm coming to is that we live surrounded by a tremendous diversity of individualistic ways of living we know little about, invisibly hidden within other people's homes and cultures, the ways of thinking within other professions and industries, other social networks and parts of society, all also largely invisible to each other, limiting their interaction with the world around them to what they need to do to "get along", seeing the world in the image of their own language others wouldn't understand. That it also works so well as a system, where everyone figures out their own way to work without knowing each other's is a natural formula for success. It's what I think may best characterize what makes a "commons" work so well when it does. When the commons begins to fail though, there's a need for learning to expand across boundaries, to understand where the strains

are coming from, bringing out the stories, mapping the boundaries, understanding whose way of constructing their home culture is exposing some wider misunderstanding.

not just for everyone to check to see their own assumptions check out with their own assumptions. the So we tend to learn very little about what goes on inside the world of we were born into. The normal exceptions seem to be the range of special personal introductions we are all lucky enough or unfortunate enough, falling in love with someone from another world or finding your art takes you to another environment.

. , excerpt to learn the rudimentary ways of interacting , and cultures we rely on, is the elementary ways everyone develops to interact with others when we step outside our own domains. that an observer may have more of a vague sense of power and influence being exerted by something around them than any idea at all where it's coming from. So we Even the tell-tale-signs of how they relate to their near environment, the open niche in which they build external relationships, may take a while to recognize. zone through which the internal design of the system connects with the outside. One may wonder what a beaver builds those ponds for, but we don't see the clump of dead branches in the middle as having underwater entries that give it unfettered access to the forest When there are walls between it's a wall, there's no zone of transition, no "near environment"

Differing Patterns inside and out

Stages of Design with Increasing Effort



23. A Designs for Mutuality or Advantage

Understanding a whole pattern is not needed to recognize that there is one. We have lots of ways of recognizing that the language of relationships to be found within a family home is very different from the language of relationships in the larger society outside the home. The

same is true for the homes of small animals and the homes of large industries, that all establish secure places for their individually determined sets of internal relationships, and spaces around to mediate their relationships with the wider world. We may call the them the local “turf” or “niche”, “boundary” or “territory”, but they all serve a similar role in the design pattern of the internal relationships of something’s home.

Even though we don’t get to look inside the homes of others to see how they live, we expect to find what appears to be the general tradition, a carefully arranged separation of individually different roles, but arranged for the family’s mutual interests. Home is where everyone matters equally. One does not need to know why mutuality does or doesn’t work in any given circumstance to tell that the typical family’s language of mutuality in their private decisions and relationships is not generally found in the relationships ostensibly between homes in the public sphere. There we are much more likely to find the exact opposite, a language of relationships based on taking the maximum advantage of others, only really limited by what the advantage taker can get away with. How long that has been the dominant design pattern of human societies is unclear, but it’s not surprising if you think about it that a culture of taking maximum advantage of others would actually come to dominate for that reason.

That languages of mutuality and maximum advantage are so very different makes it seem a bit strange or even uncomfortable to refer to them in the same sentence or paragraph. The built in meanings of the words and purposes used are so completely different. What may be even more odd is how we can think through our normal day and notice that we jump from using one to using the other many times during the day, with a practiced manner as if there was no difference between them.

It's definitely not in our homes, but only in the public sphere, where it makes any sense at all for life to follow the "maximum power principle", though, that anything with an advantage should use it to take advantage. There would be no way to call that "home", would there? So when we find a boundary and notice a difference in design from one side to the other, we can use that to explore the meanings of it as a personal science project. If we ask about the boundary zones around our homes we find its social relations extending the reach of our private languages of mutuality, out into the dark and dangerous streets, at certain times of day, for school and neighborhood activities, for certain private networks of people, mutually choosing at those times and in those places to live very differently from the world of power struggles we live in the midst of in society at large.

What this shows is only some clarification on what we already know, or I think can easily confirm if we think through our familiar activities and situations. The view is of the design patterns of our most important personal relationships, that were fully exposed to view but we probably never thought to define verbally so we could discuss them before. It's kind of "home economics" really, that could be applied to any kind of home, of for any kind of family, and used for how we live personally too, for recognizing the common internal

patterns of our designs for mutuality, to then notice the variations, and better understand the of how we live both at home and abroad.

The City

A city as home to a cultural hub



A great many 'homes' for living systems don't have walls to separate inside and out. Species in an ecology live separately as a group by defining a secure niche, a way of living intermingled with other species by separating how they communicate with each other and how they use the environment, defining their separate identity as a system of relationships to match their particular

24. Homes without walls

needs for security and resources. To study natural design patterns we first need a way of directing our attention back and forth between the mental.

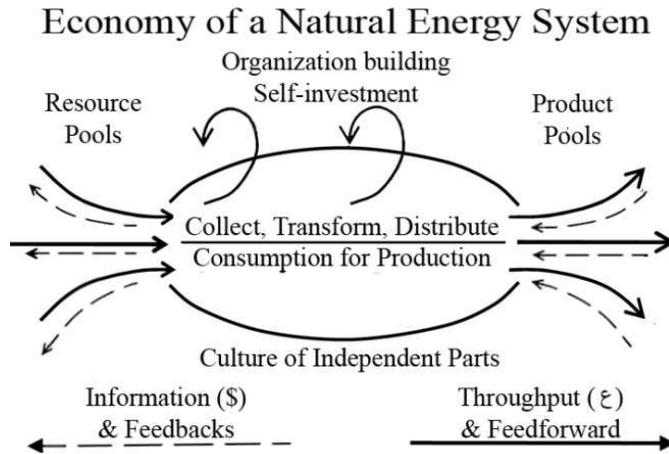
Measures of decision making impacts with the same boundaries as the measure. Need assurance of search for complete solutions. Responses for systems that vary according to their degree of maturity and stages of development

Our energy budget

The Net Energy System

intro

An Organism's Economic system



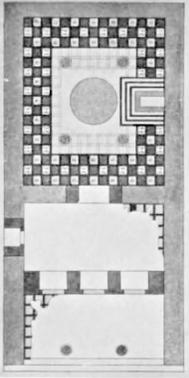
Temp But there are also many familiar

kinds of organization, say "storms", "organisms", "cultures" or "ecologies", that are based on forming reliable intermittent relationships between numerous separate things rather than self-consistent definitions like equations have. They also tend to exhibit quite variable but still clearly

25. Organism as a "home"

recognizable forms resulting from continuous processes of organizational development. Such complex natural systems typically also develop individually in uniquely individual ways, and also exhibit a degree of ability to search for how to work and fit in their environments.

Origin of Greek Architecture and culture in “the hearth”

Aegean Hearth Home	Formal Design	The Mycenaean Great Hall
Family Hearth and Temple	<p>- Low hearths in the center of the main space, no flues</p> <p>- As for meeting in the round tending low fires for Hestia, “guardian of the flame of hearth & home”.</p> <p>- ante-rooms center columns</p>	Public Hearth and Temple
 <p><small>Dinsmoor</small></p>	 <p><small>Tiryns: Plan of the Megaron</small></p>	

The earliest examples of the Aegean hearth home were found at the lowest level layers of the excavation of ancient Troy, seeming to represent a common family and public regional culture centered on the Aegean sea, at the dawn of the Bronze Age~3300BC., possibly earlier.

The design displays peculiarly refined and democratic features for settled living, stone houses with indoor hearths at the center, for maintaining the home’s perpetual flame and to gather around. Dinsmoor notes that the form disappeared to reemerge after invasions multiple times, and that their traditions of hearth and home as an egalitarian domain are the root of the traditions of modern Europe and the West. The architecture provided the model for both Minoan and Mycenaean public space designs as great egalitarian meeting halls, as well as inspiring Classical Greek architecture and the design of the public halls for each community as the centers of Greek democracy.

26. Bronze age Origin of Western traditions of Hearth & Home

The authoritarian cultures of the Mediterranean to follow also used the same architectural forms for their high temples, for symbolizing their supremacy

and all-powerful laws, though in continual conflict with the home cultures that continued to spread their egalitarian principles centered in the home and that remain the foundations of civilization.

Temp But there are also many familiar kinds of organization, say “storms”, “organisms”, “cultures” or “ecologies”, that are based on forming reliable intermittent relationships between numerous separate things rather than self-consistent definitions like equations have. They also tend to exhibit quite variable but still clearly recognizable forms resulting from continuous processes of organizational development. Such complex natural systems typically also develop individually in uniquely individual ways, and also exhibit a degree of ability to search for how to work and fit in their environments.

Note 3/18

The hearth home of Neolithic Aegean societies appears to be evidence of a rather enduring scientific way of living, that held on for around 4000 years, reemerging again and again after invasions from the north (Dinsmoor 1975). It may have been its short fling with real wealth, in the rapid growth of wealth in classical Greece, that was its undoing, after the ancient culture survived invasion after invasion before. The hearth home built for the great round hearth and meeting circle for equals at the center of the main living space, became the model for the great meeting halls of Minoan and Mycenaean palaces and then the model for the meeting places of Greek citizens as its democracy first flourished.

As wealth changed the world, hierarchical culture took over. The democratic ritual of the settled old culture, and a house for the meetings of equals,

VIII. MORE COMPLEX TRANSFORMATIONS

Air Current and Micro-Climate Formation

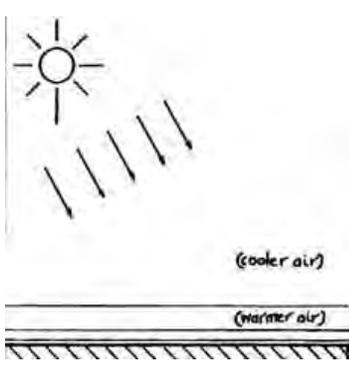
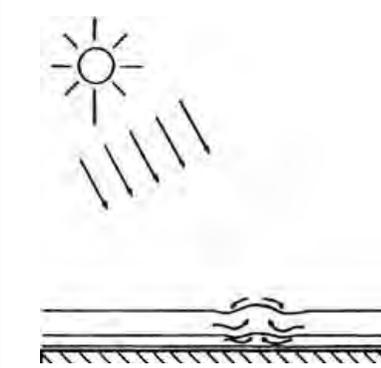
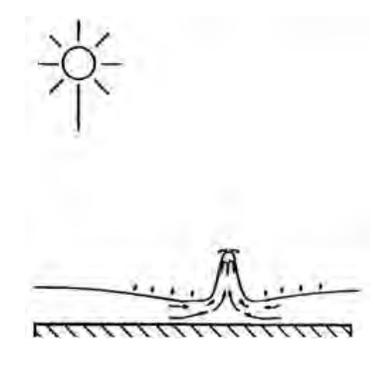
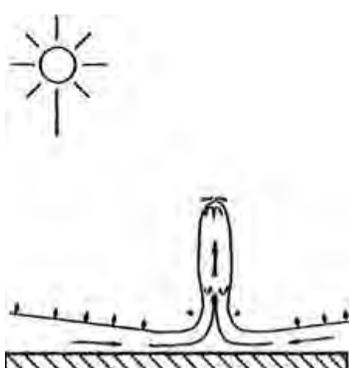
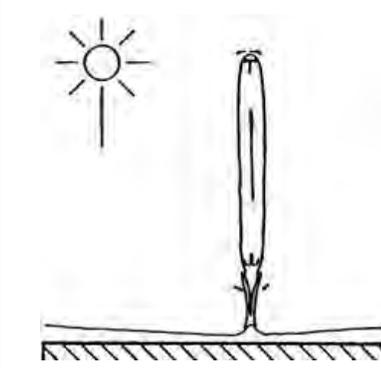
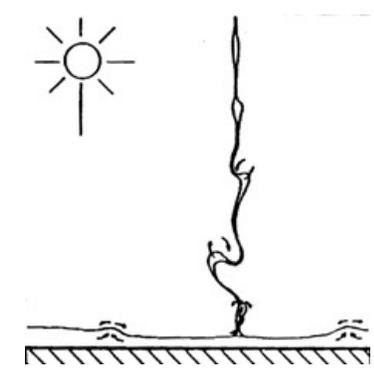
Real Air Current Shapes



27. Wide variation from the ideal

The figures show what careful observation of the eventful hot air currents often seen rising from warm surfaces led to, as they slowly became recognized as complexly organized systems for transporting warm air in packets, penetrating cooler air layers above. These highly eventful newly formed energy using systems appeared to never have been studied before, as if assumed to follow the universal

rules of convection and to contain no useful information. My evidence was a combination of just closely observing the shimmering refraction of light by hot air rising from surfaces such as the hood of a car, or the kitchen toaster, the use of smoke to help tracer air flows, chart recordings of temperature and visualization devices like “Schlerin” as well as various controlled experiments (Henshaw 1978a,b). This form of very simple whole “energy event” turned out to be a rather reliable reference model for the organizational stages that all energy events were found to need to go through. The first being some way to get a feedback loop of compound growth for the energy use started, and how the system changes when that growth upsets its own feedback loop, fig 4 & 5.

Six stages in the development of one kind of individual convection current.		
		
1. A thermal inversion and motionless calm	2. Vortex starts to emerge – spread at top, w/ rise below	3. Middle speeds up as top spreads to make channel
		
4 Inflow slows, and sides pull in to form Cell	5. Separation of the cell as inflow drained and necks off	6. Drifting trail left behind

Visualizing Transformative change

as kind of search that builds and builds, and gives birth quietly (as what is building turn its attention from continual internal expansion to continual improvement in external relationships), but from within the system how that’s approaching may not be visible.

Guiding Patterns Of Natural Design

If it's your job to manage its choices, though, you better have enough of a plan for bringing the growth to fulfillment to at least be able to recognize the signs to wait for and the needing to begin doing it.

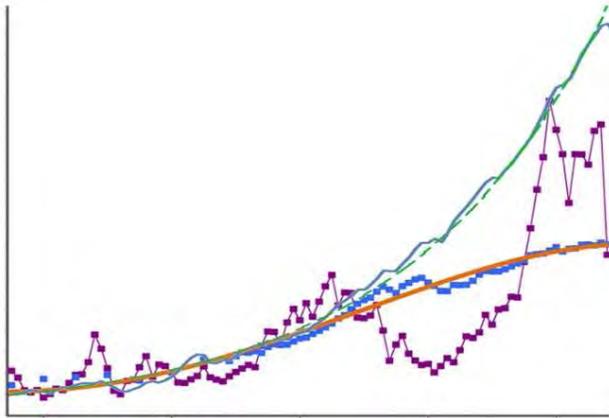
A plan to shift from expanding to becoming foundation on which others build .??????????

Naharada lists features of "transition", [but maybe only half a transition, unaware "transition" = "breakout + fulfillment", and lacking readiness for new roles in the new place also typifies the path to darkness)

Breakout and youthful energy (departure)

*1.Open source 2.Self organizing 3.Solutions focus 4.Iterative 5.Clarifying 6.Sensitive to place and scale
7.Historic 8.Joyful + 9.arrival 10.exploratory 11.accomodating 12.joining 13.new partners 14.
Fulfillment and greatness (arrival)*

Three measures of one system



Generally one uses these natural design patterns as templates, to help in looking for the natural designs of the part of the world you're working in. They help you find what to study to understand the working relationships you need to work with or against. If you start from recognizing a pattern of "flowing proportional change" (change that

28. Reading the system from its changes ⁶

accumulatively increases or decreases in proportion to past change, i.e., by adding %'s for example), it serves as a mathematical sign of "growth" or "stabilization" in some transforming system. One might similarly just notice a "step change" in the permanent change in circumstances, and just assume there must have been some progression of organizational changes somewhere to bring it about. In either case you then need to find it to learn from it, and find what its particular circumstances were and are likely to become perhaps.

Chic & Egg

- the circle that gets somewhere, which came first" the cycle of reproduction/evolution a cycle as an accumulator of things that fit, producing accumulations of natural capital

⁶ 95 years of indexed US economic data, national energy use and GDP, stock market values, saying different things.

Guiding Patterns Of Natural Design

- *the life cycle of an evolutionary step, small steps then bigger, then smaller again. As they emerge from one environ and engage in another.*
- *the adaptation by maximizing energy, MPP then MCP to remain thriving at the climax*
- a chain of accumulating steps can be highly varied, while still confined to the functional necessity of being able to make the next step from the one before, building the platform on new relationships creating the potential for first ascending then descending scale steps of completing any kind of work*

The typical kind of “counter-intuitive” evidence of such as yet unidentified emerging systems worth paying attention to is the frequent observation of parents when a gang of kids are in the house, that “it’s gotten too quiet”, recognized as “maybe a calm before the storm”. It’s often a good parental signal to see if the gang would like lemon-aid, as a way of interrupting what’s developing in secret, in case that is needed.

That eruptions of change do often seem to come from places of particular quiet is common folk wisdom, but with much more truth than might be expected. Generally growth begins with a fairly long period of very small things developing slowly. So it’s most often simply not noticed until it has gone through several successive redesigns internally, and expanded in scale and speed of change that seem to suddenly jump out fully formed, though it didn’t, That growth generally comes from a place of calm is also my general conclusion, as I seem to also find implied in Alan Turing’s view of morphogenesis (1952), implying that truly emergent systems generally come from states of calm, not disturbances, as places of sufficient stability for very delicate things to arise undisturbed. One could interpret my proof unifying the conservation laws in a general law of continuity (Henshaw 2010b), as a second line of proof for a very similar proposition, that any finite energy using process needs to begin with a divergent process of transcending scales that requires additional information to be resolved, as also identified by Robert Rosen (1996) as a key omission from the convergent mathematics of the sciences. Turing, I’m told, was apparently mistaken in his equations on many particulars of cellular chemistry, but I sense his motive

was really just to construct a model of *organizational instability* in an calm and undisturbed environment. That's also what is shown as the first frame in the individuation sequence of convection currents, (Card NP-A.), that a starting condition of calm is needed for the emergence of the new order and new forces coming into existence, not a sloshing around of unstable air masses reverberating with old forces as they are running down.

More important here is the suggestion that working with natural patterns to search for natural systems to study, and respond to, is itself a fairly creative kind of search. Often enough when something "seems to have come from nowhere", you might look where there seemed to be nothing happening at all to find it, is the odd implication. It's a peculiar "rule" isn't it? It also illustrates how unexpected the appearance of emergent systems can be, as nature's way of inventing something completely new and, well, unexpected. So, not "all bets are off" as to what to expect, but it's not safe to expect you know what's coming, and so need to stay alert. Even your assumptions about how emergent systems develop would need to be in suspension, until you notice the continuities of development that reveal them. One's assumptions about what modes of evolution are likely when trying to give nature a little help may be entirely mistaken, like guessing the design of office space or the secret to rewarding thriving creative groups, when it's also fairly likely to be something that develops in an undisturbed place unnoticed.

If you find signs of an emergent growth process, perhaps for an emergent social culture like a new scientific, religious or political revolution, you can expect it to have a lot of the characteristics of an emergent economic revolution too. Because they all are cultural systems, building from small beginning through successive stages of reorganization, they all follow somewhat the common "ladder of innovation". It's the way they collect and use

energy that tends to become the most predictable and visible thing about them, as their smaller stages build their bigger ones. As they grow their intrusion in and control of their environments increases until they all also reach their moment of ascendance, when they lose their “up-start” status and take on the role of “standard bearer”, and like a graduate from school find they have no choice but to shift from accumulating knowledge and talents, to find their own purpose in using them.

Growth is inherently intrusive, like a seed pushing up soil, to claim territory, a process by which an emerging system intrudes on and consumes ever more resources from its host environment, at explosively growing rates. It’s also internally intrusive, a process of inventing a chain of ever more disruptive innovations like we see anywhere rapid economic change is occurring, or in pregnancy with cellular organization changing again and again, as its consumption of and claim on space in its host increases by a factor of nominally a trillion. Running out of room in that circumstance is part of the trigger for the explosion of the newly formed individual, to start the next phase of maturing to become able to take care of itself.

This pattern of emergence, by explosively growing disruptive innovation, is not only helpful for discovering how to “connect the dots” in those few circumstances where it has already been studied. It’s also a key to recognizing other perhaps unexpected circumstances. It’s a common pattern that occurs in so many forms, one finds the metaphors familiar in one circumstance may well have useful parallels in many others, anywhere an interest in the same kind of radical organization change arises. When one finds a location where the emergence of a new kind of organization seems to be occurring, an important confirmation is to 1) find parts of the chain of smaller and simpler forms that

are repeatedly replaced by larger and more complex ones, and 2) find how the growing system is increasingly shifts from being responsive to internal signals to external ones. That would invariably include running out of room or resources or adaptability or something else essential for multiplying in scale.

That shift from internal to external responsiveness is what precipitates a transformation in the emerging system's generative process. That shift from working one way to working another at the system's birth may also present a "butterfly moment" of high risk, when very small differences stand to cause very big consequences later. It's the "first test" of the new system and often the result can't be taken back. It's when most small businesses might fail, right off the bat, when they have spent their start-up funds to get ready to produce and to present themselves, and probably need a quick positive response from their untested market to continue. So these are general conditions to look for in the broad pattern of how nature begins any new energy use, needing to build up an organization with small units for building bigger ones, and then to respond to the new environment they come into scale with.

The Pattern of fulfillment

The turn home... lots of examples

I've tried every way I know how to raise discussions of how any "positive sum game" leads to either "zero or negative sum games", but find the way I present it, or the situations I present it in, people see that as "self-defeating", as if so attached to "believe the dream" they wouldn't consider "moving with the times".

Missing from the usual view of innovation as fulfillment

From 3/13 for H. on PLAST proposal

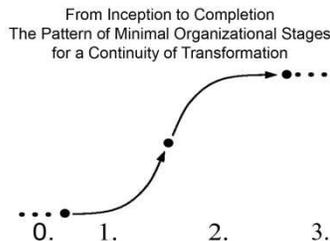
- A nice article in ZQ, "A Systems View and Your New Toolbox" Spring 2014 p95 offers a good example of writing that mixes those two kinds of thinking and language while making classic omissions, by leaving out important features of natural complex systems and relationships that nearly every logical thinking person initially leaves out. So here are two little pattern descriptions of them.

1) Living systems are described as "models" which leaves out how living systems have an "autonomy of parts interacting and exchanging through open environments", so it's unclear if "inputs and outputs" mentioned

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are really for something working as “an economy” or working as a “machine”. There would need to be discussion of how far the machine model can apply to the organic economy of the actual system if that was what is meant.

- 2) There's a phase 2. of any organic transformation process missing from the discussion, during which wonderfully disruptive innovations need to heal, recovering from that explosive phase 1. in which innovations multiply, that is also not found. That phase 2 is necessary not self-evident, but discovered, and for responsive innovation follows reliably, just because the general “pattern of transformations” universally begins with “little things multiply up hierarchical structures”(p.9) as an explosion of change that simple demands response from something. That sustaining a multiplication of that kind is something that seems possible in a deterministic world, and so departing from it left unstated, the need to depart from it is generally left out. For a “living plan” though, whether it seems to multiply short term profits or not, it's a temporary phase that “needs healing” for the system it builds to become sustainable.



Notes – 3/20 the “takeaway”

So the natural starting view of the world is of what you have information on, made sense of with you at the center of the world. Then with becoming mature the view changes, to recognizing that the world is composed of many other centers too, most of which you have close to no information about either their internal or external relationships at all.

Failing to recognize that, and not break out of the immature view that the world is one's information, then precludes discovering that the fulfilling purpose of growth is in building a suitable home for a new form of life, like any other, from which its can secure and care for its place in the world. It's not to endlessly expand its encroachment on all other living things.

The evidence –

The “S” curve is an ubiquitous shape found through nature and throughout theory, but representing starkly different forms of organization and behavior in each... So... it's a bridge between them, between deterministic models and the complex organizational stages of living systems.

The main elements are the two periods of transformative growth “individuation” and “maturation”, and the three dots, representing events that begin and end those phases of progressive growth, the first the “start-up” process (like any new business needs to get right), its “graduation” moment, (as it switches its motivation from self-expansion to finding and securing roles in its new environment) and finally it's “establishment” in those roles.

What you will find surprising is that this generic pattern sequence for transforming complex relationships is so universal, it fits virtually every kind of enduring change.

Above the period 1. was referred to as “innovation” and 2. as “healing”, such as applies to the necessary stages of any policy intervention one would use a systems “tool box” for, basic task, first start the job then finish it.

3/20 – another pattern

So there's a possible appearance that a pattern language approach, oriented to recognizing working relationships, exposes fundamentally different patterns in nature than the scientific method of representing nature with the certainties of mathematics that could be discovered, as if that approach was so reductionist as to leave out quite important patterns.

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3/20 notes

Natural patterns aren't really for telling you what to do, as in most cases you couldn't mimic the complexities of the environmental processes doing them.

They're for giving you a starting image of what nature is probably doing where you see signs of the same pattern, so you can mine the world of life patterns from the source, as part of learning what concerns or options you may have.

It's the ability of the n.pattern that to help you open your eyes to what's going on in your situation that actually gives the pattern meaning.

The Design Cycle

the forces of architectural design , the demands of starting and finishing anything,

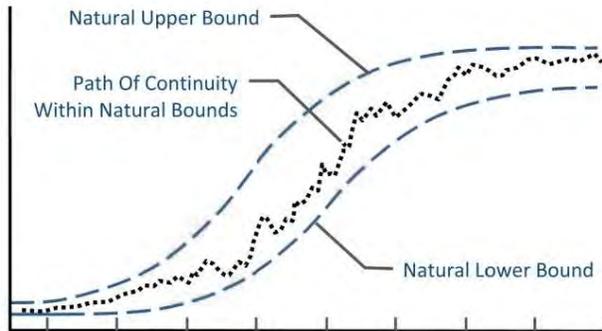
search for what works - That's the pattern of emergence of new technologies, when "found objects" are reused in a whole new way. The question is what do leaders lead if what takes off in the end are things they never could have imagined.

growth as a ladder of learning contexts, as degrees of mastery, from" immature to novice to fledgling to candidate to graduate to leader and teacher to.... to reshape learning styles

, Impetus, first idea, first development, researched development, implementation design, implementation

A Path Within Natural Bounds

A system finding a path within limits



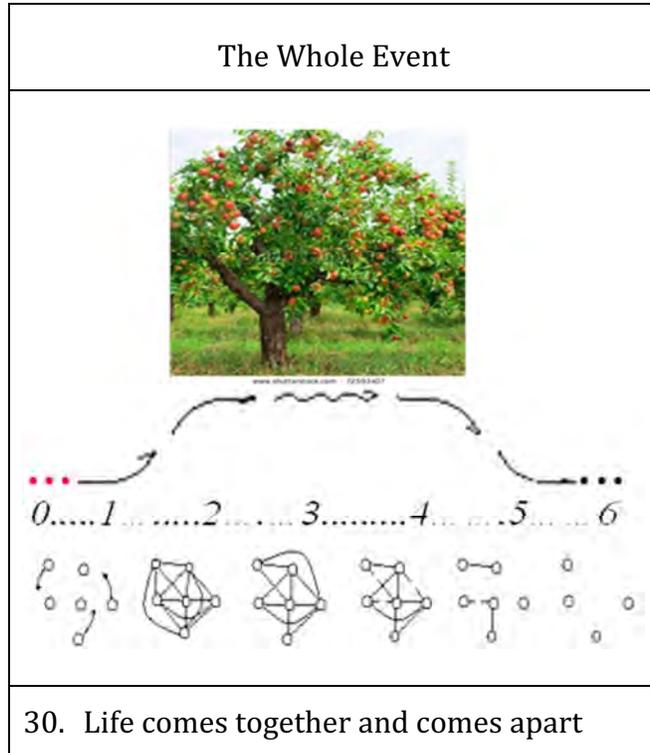
The irregularity of an individual development path may not look like the continuity of its limits. The organization of many separate things proceeds irregularly is all, while being generally accumulative. It both works as an advancing construction adding one level to support the nest after another, and also

29. Fragmentary Record of Emerging Development of Environmental System

as an increasing labor of energy needs and complexity. difference helps you understand what options do and don't exist for the development to find a path within the envelope of its limits. So for complex organizational systems Because organized systems need energy and a continuity of "Pattern Languages" are collections of quite general design patterns for either understanding or altering the organization of natural world systems of all sorts, described for versatile connectivity and application. My own view of where it came from as an important emerging new art and science it would seem, combines what I know of the environment of bold new ideas the past 50 years, and the history of how the work of architect Christopher Alexander⁷ developed in it. His early ideas are recorded in his 1964 book, "Notes on the Synthesis of Form"(A.,C. 1964) published at a time when many architecture schools were renaming themselves "Schools of Environmental Design". from my experience. He was the first to use the name and collect lists of versatile design principles presented in a style for communicating them still used today.

⁷ C. Alexander Wikipedia entry: http://en.wikipedia.org/wiki/Christopher_Alexander

Seven Stages and Six Events of Transformation – A Whole Event



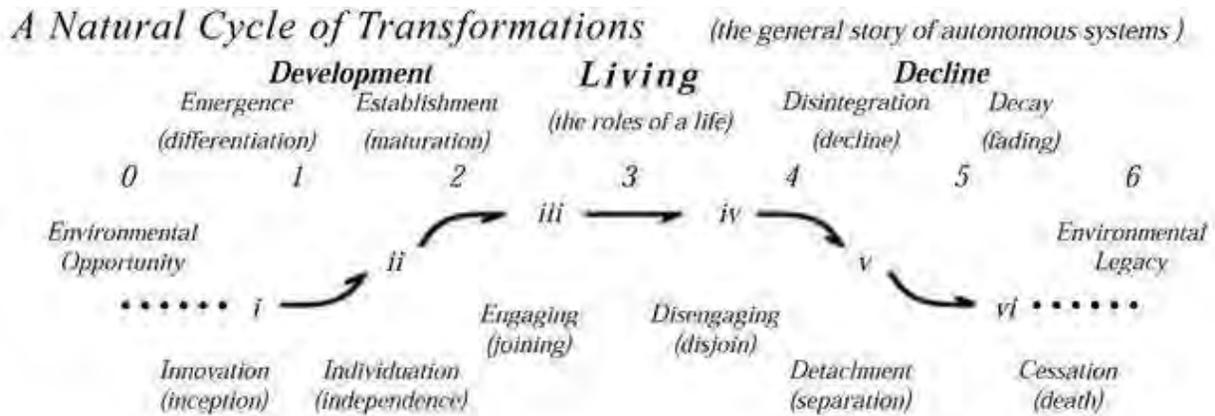
Each of the seven stages in the full lifecycle of any system of organization in nature, naturally limited to using energy within its own organizational limits, implicitly then has to go through all the great stages of natural transformation, each ending with its “graduations” to the next stage of relationships

The stages of succession, the series of “graduations” from one stage of life to the

next, are so ever present in the issues concerning us, both professional and popular culture have stopped noticing how things begin and end, and what happens in-between. So it’s somewhat “the pattern of all patterns”, idealized here, but as you learn to recognize it , it’s also a sound and useful “positioning system”. (Henshaw 2015)

- A quite place in the birth environment
- Accelerating growth
- Growth toward fulfillment
- Living, mastering role, Bearing fruit,
- Releasing one’s place, passing things on
- Decline toward the end
- Legacy

A More detailed version, as 11 Milestones



Revise

What we find very frequently in nature if we look for where things came from is that complex organization, like how growth creates a human from the fertilization of an egg or how a lightning strike appears to race across the sky, all “come out of nowhere”. Invariably one finds they come from beginnings that we may theorize all we like, but no one can actually observe. So from an information view, at least, nature definitely creates “something from nothing” all the time, in innumerable ways, giving us a universe that appears to work by pure magic.

I think what is really going on is that you have pre-existing stuff changing into “some information from no information” as the better way to say it. What is “conserved” in nature and never created or destroyed is the energy. It can be transformed into all sorts of things, given the right process, so what is “not conserved” in nature (and can be created or destroyed) is the *organization of the energy*. So the NATURAL STAGES with 11

milestones is about the LIMITS ON ENERGY USE as NEW FORMS OF ORGANIZATION using pre-existing stuff EMERGE AND DECAY.

So, the basic answer is that complex natural systems, like humans or lightening, are just temporary forms of energy,... that had to go through a developmental process to appear from invisible beginnings. Making logical sense of it involves finding and filling in gaps in one's understanding. That would include finding why energy uses need to develop from imperceptible beginnings. The basic reason "the conservation of energy", and how it prevents the organization of things from changing instantly. The conservation of energy does make it clear why you can't have "something from nothing" generally, but it leaves a tiny little exception I discovered in how small processes could operate to build up slightly larger ones, using energy close at hand to create new organization at larger and larger scales, from invisible beginnings. So that's the exception that the theory uses to "hypothesize" that all new uses of energy need to include the 11 milestones that define the model of NATURAL STAGES. Then the use of the model to help find where those stages can be observed occurring, and better understand how and why, which makes it useful.



IX. DISCUSSION

The Scientific Novelty of Pattern language

A way of developing scientific terms for discussion that are defined by nature is peculiarly novel, of course, so novel to the sciences at least, the promise it holds might take a while to fulfil. The traditions of science have always celebrated somewhat the opposite, the representation of nature with abstractions. From Plato's ideal geometries and Aristotle's ideal qualities to the modern world of science that explains the natural world with complex algorithms and systems of equations, the laws of theory were treated as the laws of nature. It resulted, though, in highly self-consistent theories for a future based on past performance, notably lacking any way to refer to systems that naturally change form over time, that are by definition indefinable. The problem of "shifting foundations" arises, if what past theory was founded on is changing, then there's also no way to recognize the "externalities" to that foundation that arise, and one may remain as strongly convinced of a theory that has ceased to apply.

It's one of the great hazards of abstract belief systems as the world changes and they invisibly become detached from their original foundations. There has been a lot of intense discussion of this over the past 50 years since T.S. Kuhn (1962) observed and many people have puzzled over, why scientists very generally don't accept the new conceptions of science that science produces. There are many practical and social reasons as well, of course, but that it appears belief in any theory results in the information that would bring it into question to be undefined, like "the emperor's new clothes", the new circumstances that should prompt regular rethinking of theories to be invisible.

Given the tremendous power of abstract sciences their inability to refer directly to natural forms may have been only a small inconvenience. Defining nature with theory also freed any reader/listener from responsibility for validating what they heard being said, so long as the rules of the theory were followed, a something that we shall see how a pattern language based science would handle, potentially requiring people reader/listener to validate what they hear from their own observations. That's very different. When thinking of the world as a conceptual theory, if you think you understand the rules of the theory being discussed, all that matters to a listener/reader is what they understood for themselves, and no observation to verify it would ever be required.

Of course, as we look around to see where some languages rely on the invention of abstract rules and others rely on defining terms by reference to recurrent natural relationships and designs we do find lots of both. We also find as a pattern that people develop all kinds of languages and jump back and forth between them. For example, every family more or less has to develop its own "science" of relationships, its own unique model mostly of often clearly understood but non-verbal understandings of the exercise of mutuality, and what attentiveness is, and all those good things that perhaps never attracted a bit of scientific attention before for being, in abstract terms, utterly indefinable. We all know that in natural language terms, that those kinds of most essential elements of personal relationships are not indefinable at all, and from a pattern language view might see them as simply subjects that fit into the patterns of a particular inner world, and take a different way of defining terms, and using a different language.

Thought leaders

As an architect, in a top school at the time Alexander was developing his methods, I know that architects were not crying out for a tool like Alexander's pattern language, really not at all. He became famous as an

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intellectual, not for providing a way for architects to know what good design is. Architects really mostly thought they already had a perfectly fine way of conveying good design, with drawings, pictures, models, talks and traveling.

I include myself among the architects who just didn't know that the architect's complex way of thinking about form and design, that Alexander simplified and made systematic as defined patterns of working relationships, was needed by the rest of the world. It's not even clear to me that Alexander knew that. What architects were and still are all crying out for is not the knowledge of how to do it, but the money and inspired clients that are both necessary for letting them do good design.

The people with the big need for it, who did not know how to describe good working relationships in their field, and were becoming desperate to have a language of design suitable for their purposes, were the software developers... or so it seems. I'm less aware of the history than you, but I wonder if that's an overlooked factor in the renewed success of pattern language. What seems to have succeeded is its translation to other fields, the offering of a mobile language format. Is that what actually brought out its new purpose and potential as a language?

What do you think? Does that mean anything for facilitating societal learning or the potential for "thought leaders" to lead? My reason for asking is that where the big advance came from seemed to be where no one was leading... an explosion of independent new little life forms.

That's the pattern of emergence of new technologies, when "found objects" are reused in a whole new way. The question is what do leaders lead if what takes off in the end are things they never could have imagined.

..... a deeper sense of time and place, something fulfilling to do to...

X. CONCLUSIONS

XI. ACKNOWLEDGEMENTS

I have occasionally thanked people and organizations from the distant past for their great contributions to my work, but I'd like to mention a few again. Of course my current involvement with the new pattern language community, with PURPLSOC and the friend who introduced me, Helene Finidori, who I met through lobbying the UN to adopt a "commons approach" to the earth have are what gave me a language for discussing my long years of work, and this writing would not have happened without. Back at the start I went to a small college with a wonderful physics department, Professors Peckham and Rohmer at St. Lawrence, who encouraged my odd inquiries into how experiments misbehave.

When architecture seemed a more welcoming field for an interest the liveliness of events I the Univ. of Pennsylvania GSFA and great inspiration of Lou Kahn gave me both wonderful

intellectual tools and a way of searching for deep meaning in design. I'd be remiss in omitting my dad, Clement L. Henshaw, whose interest in teaching physics was as a way of learning from observation, and introducing me to his friend Ken Boulding and his student Al Bartlett who both contributed a great deal too. One may overlook mentioning one's family heritage, as simply "part of the woodwork", but mine really served me particularly well. I came from families of common sense scientists, educators, engineers, farmers and business leaders, all perfectionists family life, maybe ahead of their times or way behind as you may view it... that gave me a frame of reference for noticing what modern streams of thinking were noticeably leaving out. I was also greatly moved by a number of personal friends, giving me new eyes on the world again and again to my surprise, who are mostly gone from my life now except for what they allowed me to see. I'm most grateful too, for my friend John A. Blackmore, who from high school on shared with me his engaging curiosity on every subject we could think of talking about, in later years sharing with me his depth of knowledge of philosophy and the social sciences, while all along we keep each other's thinking in check and totally saved from boredom.

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NOTES

Macros: AppendNote Ctl-Shift-3, Appendate? Ctl-Shift-2, Prependate Ctl-Shift - 1

WORD PATTERNS

The most elemental pattern of emergent design is perhaps the most commonly used and least recognized. It's the combination of things with simple properties to have complex properties, materially as well as perceptually, a "marriage" of differentiated parts. It creates something altogether new while functionally eliminating the independent properties of the parts.

*1/20 notes **Every** positive sum game overshoots, to reverse the sum, ... unless you use the positive sum more wisely*

Building materials

People have multiple intelligences, but it's combining the right ones to work together as a whole that makes an organization able to do what no individual could

Mated, mating, joined, joining, connecting, wedded, complementing, complemented, complementary, unitized, matching, combining, binding, opposing, apposing, juxtaposed,

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