A Pattern LAnguage for Systemic Transformation (PLAST) (re)Generative of Commons
– Full Paper -

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Introduction

The purpose of this paper is to lay the ground for an open source pattern language for systemic transformation (PLAST) based on systemic interpretation. This pattern language will help change agents and practitioners on the ground make sense of complex systemic phenomena and dynamics so they can build truly transformative solutions and create greater coherence between disparate actions, thus leveraging and catalyzing agency and capacity for change wherever it may be found.

The end goal is to accelerate the transition to a sustainable and thrivable world, through the awareness and fostering of sustainable socio-economic dynamics regenerative of commons. Commons are understood here as the distributed factors of opportunity and renewal of the system, which need to be perpetually maintained to ensure the on-going sustainability and thrivability of the system and its components.

"You cannot understand a system until you try to change it" said Kurt Lewin. The pattern language and methodology of inquiry that we wish to build will be used to directly design transformative or 'therapeutic' solutions, and to evaluate and vet those that claim to be. This will provide a learning experience likely to enhance systemic awareness, critical analysis and problem solving capabilities, through an action research type of approach where analysis and practice, i.e. interpretation and intervention, are interlinked and recursive.

The numerous initiatives that are focused on driving change in multiple points of the system constitute an ecology for transformative action that wants and needs to 'self-coordinate', but fails to do so. The PLAST will provide the components and the methodology for change agents to become more aware of the dynamics they would like to influence, helping them identify the common logics that underlie their action and enhance mutual understanding and coherence as a whole.

The project is in its infancy. Our objective in participating in the Purplsoc workshop is to discuss both the theoretical framework of the pattern language, and its social applications, i.e. how it could be co-created, exploited and maintained as an open source project with and by the communities of practice that are susceptible of using it on the ground, linking theory to practice. In particular, we would like to examine how classical Alexandrian approaches and existing Pattern Language theory and practice can be complemented in order to better understand the inner workings of systems. And we would also like to explore how existing pattern languages for social change can complement each other and better serve the whole.

This is an ambitious project, but the interest it has drawn across disciplines and the possibilities we see in the work we have been studying so far makes us confident of its outputs and outcomes.

The work and resources we are gathering can be seen as the project unfolds on the Debategraph map we have created for it.
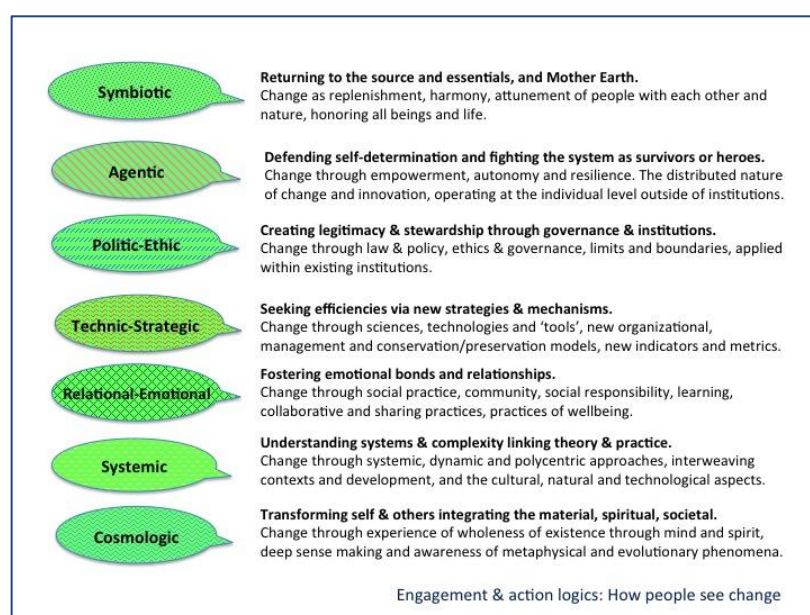
The Strategic challenges

The need for such a tool arose from reflections and conversations on systemic change and on the strategies that could bring about a 'great transition' or paradigm shift, held in various contexts for the past few years, which highlighted the complexity of the task. Here are some challenges identified and the questions they raise.

Gaining insight on intricate wicked problems and the hidden phenomena of the system
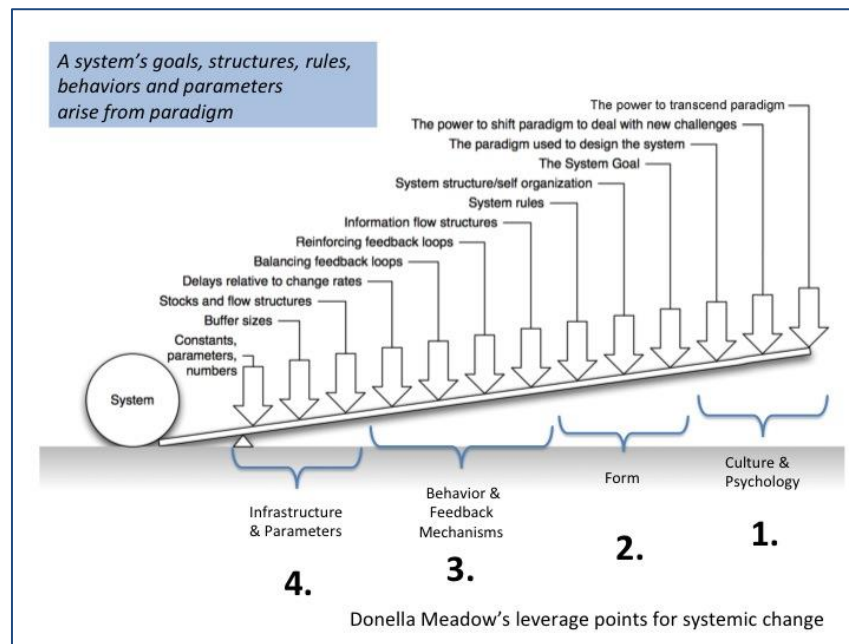
The situation the world is facing is the result of an intricacy of interconnected problems that result from interconnected emerging phenomena often hidden from view. These problems cannot be grasped as a whole because they cannot be formulated in a definitive way and there are multiple angles and points of intervention that cannot be encompassed into a single framework or frame of reference and to be dealt with linearly with set priorities. Rittel and Ackoff called these problems wicked problems or messes. They also pointed out that there are no right or wrong, true or false solutions to wicked problems; solutions may be contradictory and involve trade-offs; there is no history or proven practice and expert knowledge to refer to, data is uncertain and often missing; and the best information necessary to understand the problems is distributed in the contexts affected by the problem. The problem-solution approaches are limited when it comes to deal with effects that manifest at multiple levels and scales in the system.

Catalyzing and leveraging distributed agency

Agency is also distributed throughout the whole system. People engage into problem solving or advocacy and different forms of activism driven by a variety of engagement logics and perspectives of change even if they all in the end work towards a more sustainable and thrivable world. Major forms of engagement and action logics, which encompass values and the way people do things, are illustrated below.

Symbiotic
Returning to the source and essentials, and Mother Earth.
Change as replenishment, harmony, attunement of people with each other and nature, honoring all beings and life.

Agentic
Defending self-determination and fighting the system as survivors or heroes.
Change through empowerment, autonomy and resilience. The distributed nature of change and innovation, operating at the individual level outside of institutions.

Politic-Ethic
Creating legitimacy & stewardship through governance & institutions.
Change through law & policy, ethics & governance, limits and boundaries, applied within existing institutions.

Technic-Strategic
Seeking efficiencies via new strategies & mechanisms.
Change through sciences, technologies and 'tools', new organizational, management and conservation/preservation models, new indicators and metrics.

Relational-Emotional
Fostering emotional bonds and relationships.
Change through social practice, community, social responsibility, learning, collaborative and sharing practices, practices of wellbeing.

Systemic
Understanding systems & complexity linking theory & practice.
Change through systemic, dynamic and polycentric approaches, interweaving contexts and development, and the cultural, natural and technological aspects.

Cosmologic
Transforming self & others integrating the material, spiritual, societal.
Change through experience of wholeness of existence through mind and spirit, deep sense making and awareness of metaphysical and evolutionary phenomena.

Engagement & action logics: How people see change

Donella Meadows explained very well how a system's goal, and its structures and rules, i.e. its frameworks for action, derive from paradigm. It is the paradigmatic structures of systems that determine the logic of how they work, like the division of roles in economies or principles of causation in chemistry. This means that people's engagement and action logics affect the type of solutions they will put their efforts and resources into, and the type of actions they will prioritize. And these are not interchangeable. Each change agent holds a piece of the solution to tackle these wicked problems. Engagement logics define the point of entry into the change and the perspective from which subsequent choices derive. Systemic change itself as a whole is the emergent consequence of a diversity of engagement and action choices.

A system's goals, structures, rules, behaviors and parameters arise from paradigm

The power to transcend paradigm
The power to shift paradigm to deal with new challenges
The paradigm used to design the system
The System Goal
System structure/self organization
System rules
Information flow structures
Reinforcing feedback loops
Balancing feedback loops
Delays relative to change rates
Stocks and flow structures
Buffer sizes
Constants, parameters, numbers

System

Infrastructure & Parameters **4.**
Behavior & Feedback Mechanisms **3.**
Form **2.**
Culture & Psychology **1.**

Donella Meadow's leverage points for systemic change

Each worldview, context or organization has its own fringes and radicals. How can capacity and agency be leveraged across the board? How can the forces for change in each paradigm, and each framework of action be mobilized to accelerate change? How can movements, activists, social entrepreneurs on the ground relate to the 'piece of systemic change' they are dealing with in the context of the whole transition, better build their identity around it, and better transform things around them? This is the type of questions the PLAST can help answer.

Expanding views of reality and the whole system

Change agents gather in communities of practice, around frameworks of action by affinity (to people, place, objects of care, manners in which, or desired outcomes), forming clusters or self-directed social subsystems of cooperating, specialized agents sharing common values, visions and goals, and therefore able to agree on pathways, courses of action and roadmaps. As they further learn and interact together, and as they construct their own representation of reality, their shared meaning making schemes, preferred story and process narratives, and associated language, reduce the perceived complexity of their own context, and increase the focus and differentiation with other subsystems (Vanderstraeten 2001).

Each social subsystem has its own modes of operation, observation and interpretation, based on a reality that is only a partial vision of the world. Differentiation occurs in a similar fashion among scientific disciplines that tend to apprehend their environment only, as far as this environment is relevant within their own perspective. No theory or scientific discipline can explain the whole workings of the natural world and share a language to explain the phenomena that arise in it. Change agents as well as scientists often seem in competition with each other in terms of perspectives (not to mention resources), with an inclination to funnel the understanding and action of others through their own.

What type of spaces and tools can help change agents and communities on the ground achieve their own mission effectively, with a broader eye on the bigger picture and on what others may be doing to complement their action? What can be learned from experience in each social change context, and what methodologies can help bring these experiences together to expand the collective view of reality? These are a key practical goals of the PLAST.

Creating conditions for coordination

With such specialization and division of labor, communities can focus effectively on their own change endeavor and logic, but they are not well prepared to observe and act upon the effects that the system as a whole produces in its environment outside of their context of focus, which nevertheless affect it. The multiplicity of partial worldviews, and the potential competition between them hinder relational dynamics, and make coordination on inferences, observations and actions rather difficult, although coordination is critically called for. Disparate focus and action therefore fail to address systemic issues of a higher order.

Increasingly, communities swarm, in informal networks, around ad hoc calls to action on specific issues, such as mobilizations for climate change, trade agreements, reclaiming the water commons, or changes in internet regulations, practicing focused networked advocacy and protest. Others gather on the basis of broadly shared principles such as Occupy movements, or meet-up in wide-ranging conferences such as the Economics and the Commons conference in Berlin, the Global Citizens Movement Conference in Johannesburg in 2013 or the Degrowth Conference in Leipzig in 2014. In parallel talks about networks of networks, movements of movements, global citizen movement, great transitions, big-shifts are multiplying. Various surveys and research published lately show that activist movements and communities involved in change generally agree on the systemic nature of our predicaments, and recognize the existence of a 'cultural' dimension to deal with, as well as the need for coordination and for some form of transition strategy.

How can we 'join forces', unite in diversity, without renouncing our differences and focus is another key practical goal. How can we aggregate our dispersed power to counter status quo forms of economic, cultural and political power without having to compromise our ideas and 'water down' our 'local' effectiveness? How can we operate at all levels, while dealing with our contradictions and tensions, and our failure to 'see the whole'?

Generating coherence from disparate efforts

The temptation is great to think one can easily 'coordinate' global action across movements. "Just develop a shared vision" we hear often, "and build a plan from there". But how can shared visions be developed when the parties don't share similar views of reality and projections of the future and may be biased by their own assumptions? With no systemic center, no 'central logic', no 'global eminent position' or legitimate vantage point in the system that would allow some form of global view and a synthesis between logics, coordination is left to the various groups all acting as individual centers, to find coherence. The sense of commonality felt in many of the alternative or transition and transformation oriented gatherings or initiatives that bring diversities of actors together shows that there is a universal aspect to what drives social and sustainability movements across the globe, which could help connect and coordinate all these differentiated logics. But experience shows that this universal 'driver' struggles to be given a clear, a precise definition for everyone to agree upon, because differentiated views, logics and language as well as limiting assumptions come in the way. This is mainly because coordination attempts to be based on synthesis (dialectical reductions) rather than synergy (systemic coherence).

How then can communities build coherence from disparate efforts? How can they find their own identity and become more effective in what they are striving to achieve, and at the same time identify their position in the bigger picture of systemic change and carve a 'place' or space in it? How can they find points of convergence and overlap with others in mutual recognition? How can the 'vectors of individual action' be set so that the trajectories, rather than being aligned, can converge in awareness of the work of others and of the whole?

Fostering shared discovery and mutual recognition

Systemic coherence is achieved not just when everybody 'looks' in the same direction, but when everybody 'works' to 'add on' to the same 'grand oeuvre'. More than a driver or a vision, the grand oeuvre needs a glue, a scaffold onto which to aggregate disparate mechanisms and powers and onto which a diversity of projects and stories can attach and mesh to form an emergent and self-coordinated global endeavor and story. It needs a different kind of logic, one that underlies all other logics of change, which is not an 'overarching' or central logic that gives a direction and synthetically reduces all the others, but that enriches and grounds them, that provides the soil from which a diversity of seeds can grow, or the undertow that will lift all the boats at once. The 'universal driver' is necessarily systemic by essence, distributed in the many subsystems that act like individual centers of action. It has the capacity to coalesce the disparate efforts from each center into durable sustainable systemic change for the whole. It is more than just adding together the focus and functions of each group.
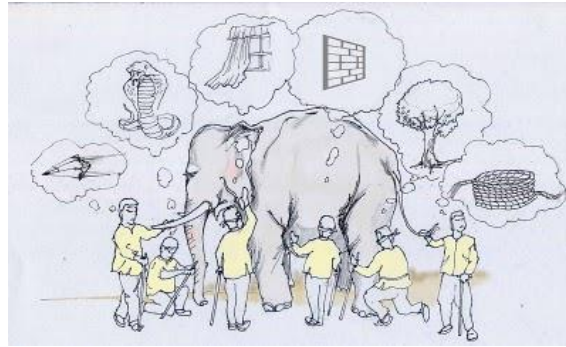
What kind of logic could help us speak the same language? And what language could help express a universal driver? In the example above, how can the reality or the possibility of the elephant be brought into each part, so that it is the elephant that materializes as a whole when all piece are described, and not a set of unrelated parts? Or in other words, what sort of logic and language could make it easier for communities working in differentiated contexts with differentiated logics and languages to 'decode' what is going on in the system, to share observations and interpretations of it, to compare and discuss solutions, and finally to work toward emergent shared goals?

Bringing the systemic (re)generative role of commons to awareness.

Rather than in the vision and values that communities hold and the mission or goal they assign to themselves, such driver may be found in the very existence and generative nature of what brings change agents and communities of practice together. A driver wouldn't for example be the abstract concept or representation of say, the moon. Rather, it would be the tide itself in its dynamic generative capacity.

Communities that endeavor for change gather around social objects, shared object of care that are embodied ubiquitously in the system in different forms as place, people, resource, structure, process, or outcome.

These social objects are generally oriented towards generating access, equity, caring, livelihood, thrivability, replicability or sustainability. The common thread is in the protection and in the nurturing and reproduction of the distributed factors of opportunity and of ongoing health and thrivability of the system that ensure its ongoing regeneration. These are what I call the distributed commons as archetype, the reproduction of which manifests as system goal in multiple forms and languages, through different action logics, understandings and symbolic representations, emerging into the whole commons.

ar•che•type [ahr-ki-tahyp]
n.
1. the original pattern or model from which all things of the same kind are copied or on which they are based; a model or first form; prototype.
2. (in Jungian psychology) a collectively inherited unconscious idea, pattern of thought, image, etc., universally present in individual psyches.

How can this systemic (re)generative role of the commons as pattern itself be brought to awareness in each of the centers and as a whole? How can it encourage systems driven

by generative processes and serve as a vetting system for the 'sustainability' of systemic change initiatives? This is another key objective of the PLAST.

Connection to Alexandrian patterns & sequences - Centers as essence of life

The PLAST has a role to play in the empowerment of communities of practice as centers of transformation, and nodes of embodiment of commons logic.

Christopher Alexander refers to "centers" (Alexander 2002) as the 'why/what for' determinant of the attributes of a design. Centers are the essence of life. "Patterns" are combined in 'generative sequences' to create/(re)design better "centers."

Seeing centers as essence of life, as nodes of embodiment of commons logic, sits quite well with the definition of commons as archetype: the diverse, multi-dimensional and distributed factors of opportunity and thrivability, the factors of livelihood and enablement, generative of abundance, that ensure the conditions for existence, to be nurtured, (re)generated, (re)produced.

Centers are constitutive of systemic health, designed or 'constructed' not as representation of a desired order in a state of homeostasis, but as generative systems, where generativity flows to where it is needed to provide on-going opportunity for thrivability and renewal. And the patterns, assembled for each center/social object according to its own internal drive or engagement logic would be aimed at 'bettering' the commons in whole or in part in all its forms and dimensions, in a dynamic manner.

Centers as nodes of embodiment of commons logic are not only commons as identified forms such as Ostromian commons or digital commons: a common pool resource, or social object managed by a community that builds its livelihood upon it (commoners), when they are associated to this management in a participatory way (commoning). They are systems that produce, nurture and protect the seeds of what ensures the thrivability and renewal of the system as a whole, and that aggregate into patterns of generative behavior.

The PLAST project

How the PLAST addresses the Challenges

The PLAST builds upon a multi-variable multi-layered design ecology, constructed around the notion of 'social objects' (i.e. the various attractors of attention and care, of engagement and focus, and of energy and resources) as "centers" or nodes of embodiment of commons logic, with their associated regenerative dynamics and the 'connective tissue' that bring various elements together.

It is a grammatized visual ideographic language that will help describe systemic phenomena in generative sequences/combinations of elementary components based on objects/agents, dynamics/processes and outcomes/effects.

It will help describe and compare observations of the present or past and visions of the future and possibilities in differentiated contexts and logics, and provide a basis for new types of narrative and stories.

The PLAST is an analytical tool as much as a learning and design tool. By allowing an on-going encoding-decoding back-and-forth between the observation of the reality at play and the interpretation of what is perceived, it will provide communities of practice of various types with the means to individually and collaboratively interpret, apprehend, discuss, and debate systemic phenomena and their effects as they perceive them from the places they are at. It will provide them with the means to construct and describe self-correcting and regenerative structures, models and solutions towards desired sets of systemic outcomes, and to evaluate and use the margin of maneuver or space for action at their disposal to intervene and monitor these outcomes and adjust their action, both in focused and in coordinated ways.

The PLAST will help facilitate discussions and exchange of experience. It strives to encourage mutual recognition of diverse logics of engagement and complementarity of action among communities of practice; it will foster cooperation in praxis across communities, in areas where they can find overlap.

The whole process will help bring to awareness and existence the generative dynamics that form the underlying logic of the commons, and help better embed them in the 'code' and practices of the system.

How we will build the PLAST - A Peer to peer project

The PLAST is a peer-to-peer open source project to be built with communities of practice. The idea is to constitute a network of communities of PLAST practice comprising communities that seek to change the system and researchers in associated domains.

A multidisciplinary task force will be gathered to collect information on systemic phenomena and patterns in existing disciplines and practice. This task force will comprise researchers and practitioners that can complement each other in the areas of systems dynamics and systems thinking, complexity & network theory, economics, organizational design, sociology as far as cause effects and systems behaviors are concerned, and in the areas of mathematics, algorithm development, linguistics, architecture, graphic design, as far as language components and sequencing are concerned –the distinction not always being very clear cut.

The first sets of syntax components and sequences that may come from theory and be sourced from communities of practice, will describe known dynamics such as systems archetypes, the dynamics of scarcity and abundance, or a few new organization models such as new forms of cooperatives or open networks, and explore the heuristics that can be associated.

They will be refined with practitioners, to be further interpreted, analyzed, criticized and polished.

The P2P approach should help us bootstrap theory and practice and build the language in an agile and flexible manner that can gradually increase in scope.

An Open source project:

As an open source project, we will want these patterns and the methodology to be hosted in a repository that could be forked and modified, but also to be merged back into the commons, i.e. to let the community at any time see who has been developing what and how, in order to grow the actual commons and knowledge base. We are thinking of something like Github or Small Federated Wiki with drawing and writing capability.

Building a Systemic Interpretation Language

Some background on the phenomena to explain

W. Brian Arthur describes economics as a vast and complicated set of arrangements and actions wherein self-directed agents adapt to each other's arrangements and actions, forming a massively parallel system of accumulating concurrent behavior that generate complex emergent phenomena. This is also true for human activity and interactions within the whole 'natural system' in general.

Complex emergent phenomena arise from natural phenomena and from intentional structures, and from the behaviors, dynamics and new structures that result of the combination thereof, which may or may not be controlled or influenced by human action, and the effects of which may vary with accumulation and time, building their own momentum. They cannot be understood only from the behavior of the individual constituent parts underlying them.

Aggregate patterns form from the accumulation of interacting individual behavior. And this individual behavior in turn responds to these aggregate patterns: there is a recursive loop of organizational development, with the forming of new structures, which affect the objects causing it. The process is organic and algorithmic, building itself step by step, perpetually in motion and perpetually computing itself. With new phenomena arising at each level of complexity that cannot be explained by the patterns observed at other levels.

To understand the inner workings of the system, it is essential to understand how effects build up, and to disentangle the variables at play in the complexity that unfolds.

The methodology for building and mining.

According to Jenny Quillien, the best patterns aren't actually 'designed', rather they are 'mined' and polished. Patterns already exist out there, ready to be discovered.

Jenny Quillien offers a methodology to 'Unravel Problems of Organized Complexity' by untangling the variables and the smaller segments that compose them:

> Progress in understanding *problems of organized complexity* comes from:
> *a*) First 'preparing for analysis,' where the concern is still with "*collection, description, classification, and observations of apparently correlated effects.*"

b) Identifying a specific variable—just as the biologist singles out, say, an enzyme, and then follows its relationships with other variables.

c) Making our observations in terms of the *behavior* and not just the mere presence of other specific (not general) variables.

d) Focusing on specific processes and, like Sherlock Holmes, seeking 'unaverage' clues that reveal larger patterns.

e) Realizing that these variables "*do not exhibit one problem which if understood explains all. They can be analyzed into many such problems or segments which are also related with one another.*" And, "*when the segments are separated out the behaviors of a variable when in the presence of other variables can be discerned.*"

The process of mining and finding patterns, of breaking them down into smaller segments, of probing their sustainability and trueness to purpose, of assembling them into sequences of aggregate patterns and of probing again, is part of a peer-to-peer learning process that will enhance general awareness and literacy.

The seeds of syntax

We will look at existing descriptions and explanations of systemic phenomena in disciplines such as complexity theory, network theory, economics, phenomenology, systems thinking and systems dynamics, game theory, biology, cognitive and behavioral sciences, sociology, etc. We will identify, compare and disentangle elementary behaviors, drivers, forces, momentums, processes, dynamics, algorithms etc, whether natural or artificial, conscious or automatic, intended or not, by recognizing them in these disciplines, and by comparing them to find those that share properties and may be recurring.

We will explore the effects of interactions between these forces, how they 'impulse' or 'feed' each other into processes or algorithms that may be hidden from plain view; the cumulative effects they may have over time when combined and sequenced, and solidified into structure; the conditions under which they can be combined to produce or temper certain effects in order to change the game.

We will derive from the above the heuristics that will enable the 'therapeutical' evaluation of effects, observed or desired, on the health and thrivability of the system, inspired by Stiegler's concept of the pharmakon (the cure can also be the poison). This includes the evaluation of thresholds beyond which accumulations and momentums that may have been beneficiary to the health of the system become detrimental, allowing for the perpetual adjustment of patterns and their sequencing. The inquiry will also help assess the powers that maintain forces in operation, and the margins of manoeuver to gather new powers for transformation, as power also follows its own laws.

Below are a few examples of laws and 'mechanical' effects that affect the system individually and in combination that we would examine closely:
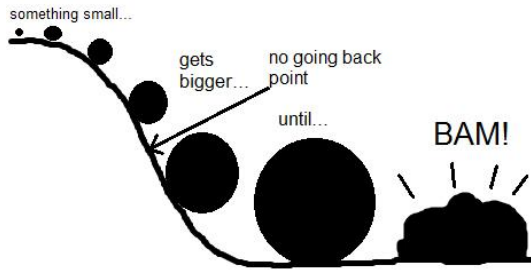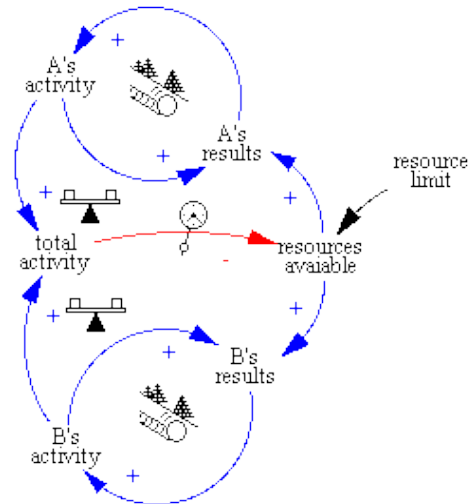
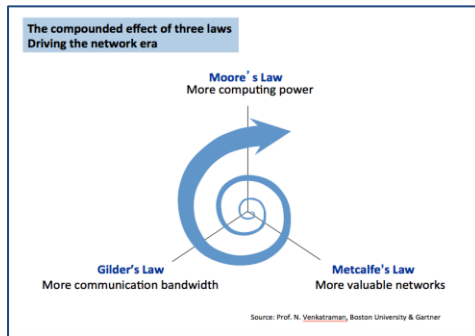**The Snowball Effect –** or Cummulative Effect
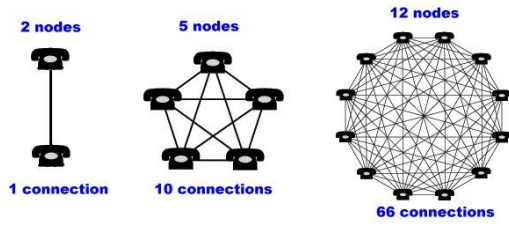
Metcalfe's Law – or Network Effect

Winner takes all – or Matthew effect

The Tragedy of the Commons –
Systems dynamics archetype - Source Systems Wiki.

The compounded effect of three laws
Driving the network era

Moore's Law
More computing power

Gilder's Law
More communication bandwidth

Metcalfe's Law
More valuable networks

Source: Prof. N. Venkatraman, Boston University & Gartner

Network value derived from the effect of three laws

New business or governance models, or economic theories expressed in words can also benefit from being expressed as sequences and patterns.

Exvestment for example, as defined by Dmytri Kleiner:

> Exvestments are *"...forms of spending which may or may not benefit the individual making the expenditure, but reduces the earning capacity of their class as a whole, whereas investment benefits the individual and the class.*
>
> *i.e When a company spend money to improve Linux because that company makes money running a social networking site, that company benefits from such expenditure, however it is exvesment not investment, because the capitalist class as a whole does not benefit since this reduces the market for commercial software by improving free alternatives and makes such means of production available to non-capitalist producers as well."*

This last example shows how important the nature and direction of flows, as well as the notions of seeing from 'inside' or 'outside', are, and how it is difficult to grasp in words.

The structure of the language

The PLAST will actually not be built on the name, context, problem, forces, solution, action format of classical pattern language. It will consist of something more fine grained, to parse and analyze systemic experience in order to solve what Jenny Quillien calls problems of organized complexity, arising from heterogeneous components interacting nonlinearly, giving rise to new behaviors. Jenny Quillien quotes Jane Jacobs and the need to identify interacting variables and to separate these variables in 'smaller segments' because they "*do not exhibit one problem which if understood explains all. They can be analyzed into many such problems or segments which are also related with one another."* And, *"when the segments are separated out the behaviors of a variable when in the presence of other variables can be discerned."*

A visual grammatized language provides good possibilities for discerning fine grain segments of behavior. In addition it provides good underpinnings for the writing of problem solutions type of patterns and the visual rendering of the dynamics of existing problem solution types of pattern languages. So it would enable the construction of both a priori and ad hoc contextualized problem/solution couples. In this respect, the PLAST is also a language for writing pattern languages.

A Visual language

The PLAST is a visual language, a combination of ideograms, glyphs, symbol, pictograms… that will help recognize, decompose and recompose observed or intended patterns into 'human computable' sequences.

We see the PLAST as a symbolic code to share intuitions and evidences of relations, effects and potentials, what we perceive and 'observe' in the logic of our own realities. Visuals allow direct representations of sequences and combinatory without the 'baggage', ideological, cultural etc, that words can bring.

Sequential images can represent or 'depict' functions and movement, impulses, relationships, dynamics or effects, transitions, and forces, directions of flows and actions, all that is generated, and accumulating, and the phases in the system better than sequences of words. Because the encoding-decoding is 'direct', done through 'scanning' rather than reading, which enables exploration of thoughts and ideas, it helps overcome the difficulty of expression of systems in words.

Grammatization

The PLAST is based on the 'grammatization' or in other words the breaking down of flows and movements into discrete elements - Jane Jacobs' 'smaller segments'-, which can then help reconstruct step by step 'computation' of what arises as it is observed or intuited and 'walked through' into aggregate patterns.

Grammatization helps describe how behaviors aggregate and propagate through interconnected networks of relationships, how flows circulate and accumulate, while interfacing with other types of components such as spaces, entities and events. It shows how effects can build up, in various contexts and at various levels of complexity. This walk through helps describe how transformation plays out, i.e. how new structures are formed and how this formation affects the objects causing it. In other worlds, it attempts to bring the hidden 'computations' or algorithms of the system out of the black box, and into awareness, in ways that make it as easy as possible to understand.

Grammatization enables simultaneous analysis and synthesis. It is analytic in that it differentiates and breaks down dynamics in elementary components, creating understanding by describing experience. It is synthetic in that it 'reconstructs' dynamics into sequences that can be probed, opening up possibilities.

The two together, in decoding-encoding sequences, are the two sides of interpretation, one inward looking, which strives to make sense of reality within specific contexts, the other outward looking that renders and shares meaning across contexts.

Grammatization provides a learning experience and possibilities different from those offered by closed models such as systems dynamic archetypes to design solutions. Cyclic processes are often illustrated by feedback loops. Actual processes however often involve independent events which become connected through environments where the

output of one thing are inputs for another, and so the loops follow *opportunistic* pathways rather than *deterministic* ones, especially for complex living systems.

There are probably no clear or even real beginning, nor end to these pathways. But the first thing observed or the first step taken is always a good step in that it provides a beginning for an inquiry.

Grammatization allows the possibility of starting points, and impulses, with discrete incrementation of behavior and provides the opportunity to form hypothesis and questioning at each step that can help grasp what comes next. Using hypothesis enables to bring the unknown into the 'reasoning' and to probe it, to 'bootstrap' it (Fauré 2009). This grammatized approach includes the heuristics that enable the assessment of margins of manoeuver for change or space for action, and the perpetual adjustment of patterns and their sequencing, including notions of limits and optima beyond which remedies become toxic or pattern become anti-patterns.
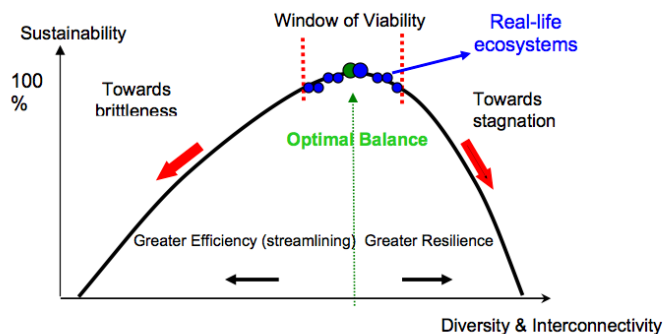
Figure 2: The "Window of Viability" in which all sustainable natural ecosystems operate. Complex natural ecosystems invariably operate within a fairly narrow range on each side of the Optimum point.

Source Lietaer & al

Syntax and semantics

In addition to linguistics, software programming and Alexandrian approaches, we will study symbolic and syntax from various disciplines such as process philosophy, phenomenology, genetics, physics, and mathematics.

PLAST will probably not be a strictly mathematical language, but it is very likely that we will be borrowing many elements from mathematics. In particular we will focus on elements 'computable' by humans in an interpretative and learning process. This is not about putting the universe into equation, but rather to evaluate the forces at play and the intended outcomes of various decisions by testing sequences.

Maths is the study and the symbolic representation of movement: flows, structures and spaces in formation and transformation. It not only measures quantity, but it also records quality. It seeks out patterns and formulates conjectures, which are tested through sustained inquiry. David Deutsch suggests that our perceptions are theory laden, and that theories are conjectures that can be tested with the search of 'hard to vary' explanations

through observation. He refers to rocks and finches, and dots on pictures or screens as evidences of evolution, the curvature of space-time and parallel universes. Although we may not be using the precision of the mathematic language, we will use the possibilities and rigor of the mathematical inquiry.

Laurence Victor writes: "I presented math as a family of concrete languages. There is no abstraction in math. Math has a concrete visual foundation – symbols (with well defined shapes) in very specific arrangement on a two dimensional surface. Or lines and curves in a space. Everything is concrete, visible, explicit, and manipulable. Mathematicians can often imagine these patterns in their visual imagery, and don't have to write them all down. Some can use their subconscious minds to infer the result of transFORMation sequences between concrete math forms. All mathematics reduces to (potentially) concrete, perceivable, and manipulable FORMS...

Representing observed natural phenomena (and later artificially constructed laboratory phenomena) in concrete, visible, manipulable math languages gave rise to PRECISION thinking – an essential tool for the future survival of humankind and Gaia."

Examples of syntaxic elements

Below are some first syntaxic components of the Systemic Interpretation Language. These will be refined and complemented as more people join the community. Sequences are under construction.
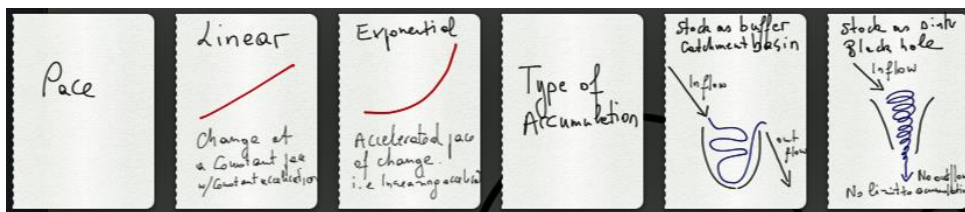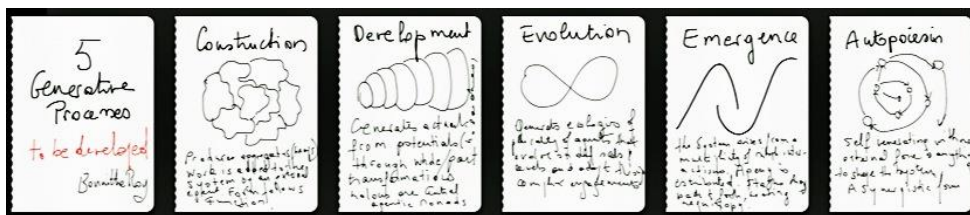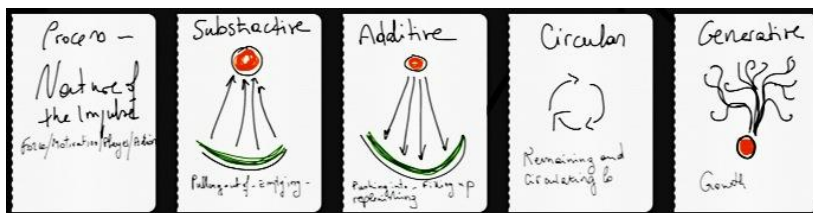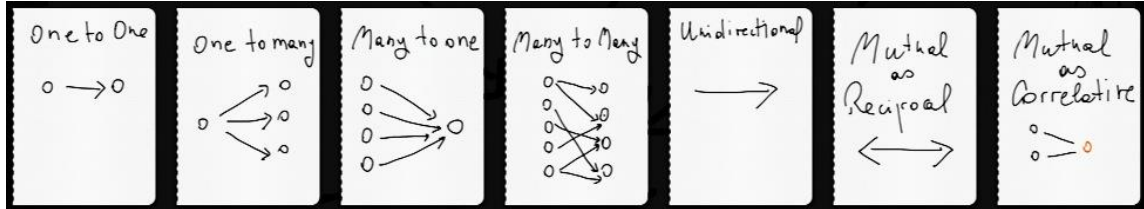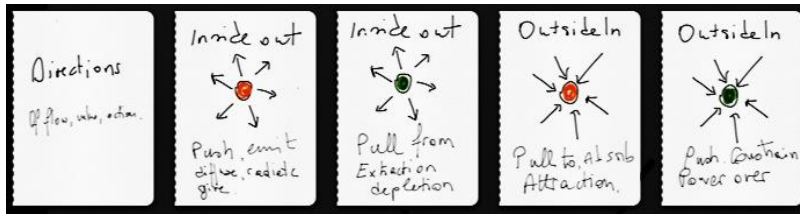
The PLAST in Practice

Collaborative interpretation and systemic coordination

The PLAST is built from and serves the collaborative interpretation of systems dynamics at various levels and scales. It helps probe and understand the impacts of decisions and how systems dynamics affect local functional systems and the system as a whole, providing means for meaning making across silos, clusters of action, centers of transformation.

Collaborative interpretation as we intend it is not an interpretation of each other's words and definitions, but rather the interpretation of reality and its phenomena that each person represents differently in their own words. It is the interpretation of the natural commons that our world and its inner workings constitute. This shifts the subject from the construction of consensual shared visions, to the observed but undefined workings of

nature, so that people with different views can agree on collaboratively re-constructing reality (in the sense of reconstituting its inner workings), rather than constructing it as an abstraction. This approach naturally leads to the mutual recognition of each other's presence and 'territory' of intervention within the ecology of transformative action.

H. Hinshaw Version of Robert Rosen Diagram
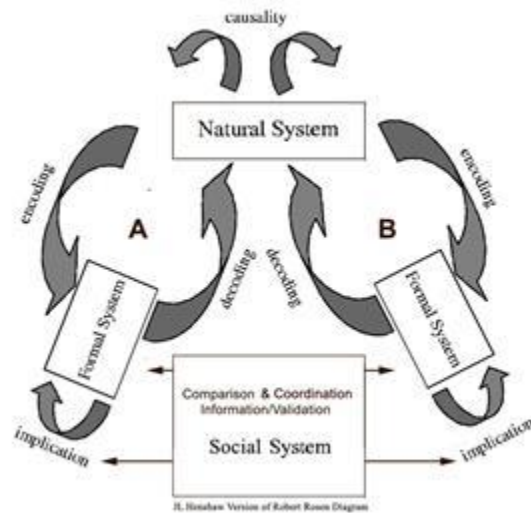
How the game is played

The game will be played as deconstruction, reconstruction of systemic phenomena, with inquiry to bootstraps reasoning and learning. This combination of perception/observation and heuristics to decode systemic effects and write systemic stories, can then be rendered in several languages and adapted for broadcasting in different media.

Alternative initiatives promoted into existence by activists and change agents usually propose new dynamics that break away from the current system. This means that they strive to replace old systemic patterns by new ones.

The PLAST as systemic interpretation language is a tool to help them recognize, interpret, express and assess both the old patterns they wish to move away from and the new ones they would wish to adopt as part of a peer learning process.

Because of its grammatized nature, the PLAST can be used to directly 'write' patterns by rendering what is perceived in terms of movement and change. And in particular it can be used to write systemic problem-solution patterns (both 'generic' and adapted to context), and to probe the 'systemic validity' of the solution as it is designed, i.e. 'visually written'.

In this respect it would be interesting to explore how the PLAST can be useful to the writing of context based pattern languages, how learning and collaboration patterns can be used to 'practice' the PLAST, and how visual recording could play a role.

Within communities of practice, the PLAST can be used for learning, innovation and decision making. In particular it can be used to describe and compare new initiatives and solutions in terms of their intentions or desired effects, and to monitor outcomes and perform gap analysis.

Communities are able to take the patterns and adapt them, because they can directly write the systemic stories that they can then 'translate' using various kinds of media in their own logics and languages, creating new narratives.

Communities would be able to contribute to the language by extracting and abstracting elementary components from their own experience and praxis and feeding them into the PLAST repository.

One can also imagine pluri-disciplinary spaces for interpretation, where situations and models and the associated dynamics and effects would be collaboratively interpreted and assessed, compared, criticized and readjusted in an appreciative approach. From networks of communities seeking systemic coherence, to public forums focused on maintaining the systemic interpretation commons.

The PLAST could also be used as systemic ontology to explore the ecosystem and existing databases of solutions to identify specific dynamics and combinations thereof through semantic query to discover new possibilities of solutions and possible partners, in automated as well as conscious ways.

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