

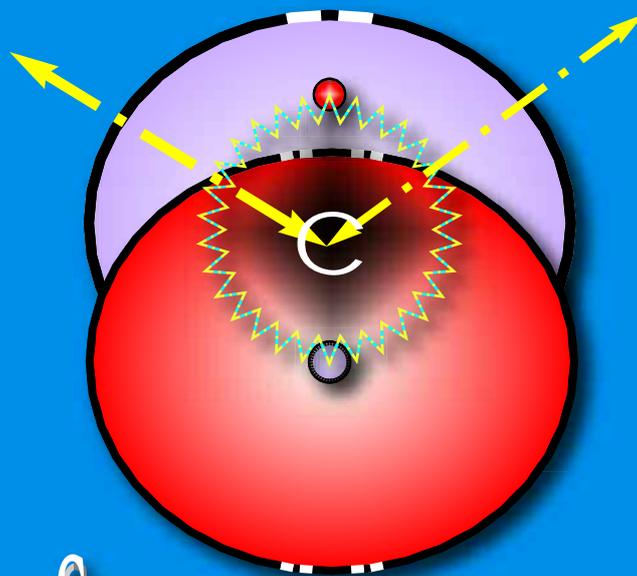


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VI,1/2015



# SYSTEMIC CHANGE



EDITED BY

HELENE FINIDORI



SPANDA



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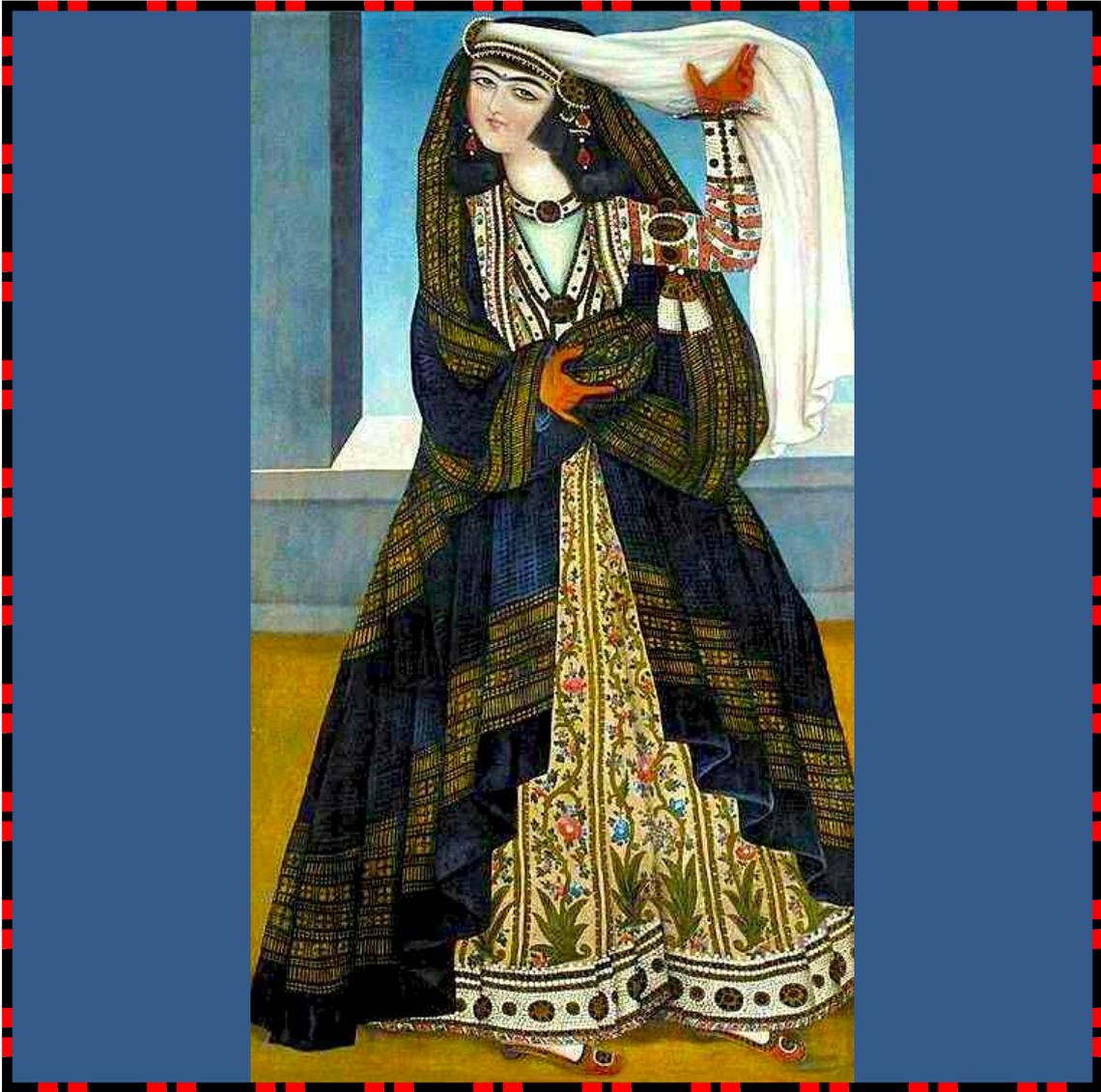


All works of art reproduced in this issue, unless otherwise specified, are examples of Qajar paintings style (romanised as *Khajar*) flourished during the Qajar dynasty of the late Persian empire (1785-1925).

The style is rooted in the stylistic features of the preceding Safavid empire (1501-1736) combined with the strong influence of European art realism channelled by the intense nurturing of the Qajar rulers with the European powers.

Most famous artworks are the idealised portrayals of Qajar royalty, drawn on the prestige of oil portraiture by masters like Rubens and Rembrandt, and the unusual depiction of women in Islamic culture, the whole imbued in a dark and reach saturated chromatic range.





YOUNG WOMAN WITH A WHITE VEIL

## SYSTEMIC CHANGE

**S**AHLAN MOMO'S INVITATION TO GUEST EDIT THIS ISSUE OF THE *Spanda Journal* is an honour. I chose the topic of systemic change to explore further, from a systemic perspective, with a variety of talented thinkers and doers, the theory and practice of collective intelligence and transformative action, which I had written about in the two previous issues.

*"How and where does systemic change manifest? How does it unfold? What are the leverage points, the forces and dynamics at play? What are the conditions for its empowerment and enablement? How do agency and structure come into the picture? We would like to look at the subject from various perspectives and disciplines, in research and praxis, exploring the visible and the invisible, space and time, unity and diversity, level and scale, movement and rhythm."*

This is the brief the authors received, with the mission to provide change agents working on the ground to make our world a better place with new practical insights.

There are two critical dimensions when considering systemic change. First, the actual systemic behaviours, dynamics and effects (as the produce of interactions between human action, the structures in place and natural phenomena) that generate or require change. Second, the human interactions in relation to change and the processes by which intentional change is driven or influenced (how we share, discuss, compare and assess practices and possibilities, and our language, communication, preferences and attitudes towards change). The second is key to understanding if not 'solving' the first, and the boundary between the two is often not quite distinct. Both dimensions are addressed here in their theoretical and practical aspects, with strategies, tools and methodologies that can help.

We start 4.5 billion years ago, with Rasigan Maharajh's perspective on how geophysical processes have shaped a living environment that enabled humans to develop technologies and the capability to domesticate nature and accumulate resources and surpluses. Maharajh describes how this has led to predatory practices that have separated humans from nature, and created imbalances between people within communities and between communities, altering the trajectories of life. For

Maharajh, revolutions have had little effect to redress this metabolic rift. Locked in institutional anachronisms and in our incapacity to model reality and to gain insight on our collective evolution, we have been unable to liberate ourselves from an irrational and unjust mode of production. Transitioning to a planetary civilization is within our grasp however, provided we acknowledge the relationships and interdependence of humans and nature, and our collective transcension to a shared commons.

Christiaan Weiler, with a socio-historical perspective as well, looks at systemic change through the evolution of urbanism and the social and spatial contextualization of production and work. Underlining that in 2050, two thirds of the world's population will live in urban areas, he notes the discrepancy between the pace of planning and construction and the rate of change in the contexts that must be built, in particular as far as demographics, and the evolution of industrial sectors and employment are concerned. He points especially to the paradox of context changing faster than planning and execution, while this change is however a slow-motion explosion, too slow to be noticed and allow correction... Weiler shows how these temporal discrepancies, the exacerbation of unpredictable cause and effects of urbanity, and the dematerialization and deterritorialization of economy got people to lose a sense of place, and therefore a sense of life. As a remedy, he takes an ecosystemic view of society, looking at new forms of production and exchange as a way to return to real space, reclaiming what has been abandoned to recreate life, hybridizing many dimensions of life and work.

Analysing how civilizations transformed, Michel Bauwens explores the concept of revolution in which he distinguishes two phenomena. One is a succession of identifiable events usually accompanied by fundamental changes in the organization of power, such as epitomized in the French or Russian revolutions. The other manifests in dramatic changes between two points in time but with no particular moment to be singled out, such as illustrated in the industrial revolution. He calls the latter phase transition: a process of change from one system to another emerging from multiple points simultaneously, which may be accompanied by social convolution too. Bauwens describes prefigurative forms of

transition to a commons based system and shows how peer-to-peer relations and new forms of production can change the operating logic of the system. In particular he describes the shift from a system of 'pseudo abundance' (limited resources, wasted) and artificial scarcity (abundant knowledge, enclosed) to one that regenerates or protects resources and accelerates the dissemination of knowledge through alternative systems of value creation that address the present systemic crisis in both its socio-economic and its socio-environmental dimensions. One which roots material activity in the local and is able to project global power.

Transition or revolution? Resonating with Maharajh and Bauwens, Robert C. Smith rejects the idea of a *Grand Soir*, or any form of radical intentional take-over of the system by a political camp, which he sees as either disempowering or reproductive of dominant and authoritarian social structures. The political philosophy of systemic change he proposes is multifaceted and multidimensional, taking into account how systems actually work, and how change actually occurs, not only in their political and philosophical aspects but also in their psychological, emotional, existential, relational, anthropological, epistemological dimensions. The major challenge to overcome is the lack of coherent understanding of the processes of systemic change and of the complex set of mediations that interconnect all its dimensions, which Smith suggests could be understood through critical theory. For Smith, systemic change is an on-going many-sided human transformation akin to a healing process that manifests through grassroots participatory emancipatory movements such as Occupy. He sees movements for change emerging from experience, where the subject, efficacious, mediating, and transforming, creates and develops structure in a self-transformative, self-educative yet mutually appreciative manner.

Anthony Judge addresses the difficulties in acquiring knowledge on the processes of change and its various dimensions and possibilities. Looking at who is driving change and how, he points out the variety of views on issues and the diversity of opinions on solutions and pathways, and draws comparisons between how religions, the military and sciences all claim they hold the absolute 'truth', manipulating fatwa and fiat, and contributing to polarization. He cites the incapacity to reconcile disparate cognitive modalities as a motive of failure of the system to change itself, and emphasizes the inability of science to self-reflect and adopt an un-passionate perspective on differences, complementarities, synergies and incommensurabilities between schools of thoughts or contrasting theories. Seeking a strategy

to prevent unilateral options for change, he calls for cutting across sciences to address real issues, and for disciplines to engage in processes of higher cybernetic orders, reflective of themselves and of the scientific process, through seeing things from several levels and perspectives, to ensure the emergence of patterns of global coherence.

Doug Schuler wonders for his part how we might 'think together' to solve the world's pressing systemic challenges. He suggests an inquiry into the cognitive and, especially, the metacognitive ensemble that we can draw upon, recommending in particular the development of what he calls civic intelligence. He defines civic intelligence as the use of collective intelligence and metacognition for a purpose: something that must be stimulated especially in the face of civic ignorance, which often is cultivated as a means to maintain the status quo. He describes the principles of a framework to bolster civic intelligence based on its attributes and the critical abilities required to demonstrate and practice it. Practical means to foster civic intelligence include the media, governance, education, all boosted by information and communication systems, new forms of collectivities that form around shared goals, and a series of digital and analogue tools. Pattern languages that Schuler has been developing play an important role as learning and inquiry tools.

Addressing issues of power and civic intelligence, Jack Harich attempts to answer, through a root cause analysis of resistance to change, why major environmental and social issues systematically remain unsolved. Root cause analysis actually looks at forces that produce (or prevent) lock-in effects. One recurring force or pattern highlighted in Harich's work, that hinders the adoption of systemic breakthroughs, is of a political nature: deception (false memes) can be inflated, whereas honesty (true memes) cannot. One can argue about what constitutes truth, and claim that truth is in the eye of the beholder. The thesis however is that inflated falsity attracts more audience and is easier to spread than sharing validated facts. Harich shows how this operates mechanically and benefits from the plethora of resources available to support status quo. For Harich, getting out of this predicament doesn't necessarily involve more investment in problem solving or dissemination of truth, but involves raising the general ability of populations to detect deception. We are in the realm of civic intelligence here, aimed at diminishing the threshold in the famous Lincoln quote "you can fool some people sometimes, but you can't fool all the people all the time".

Joe Brewer would probably argue that there are ways to amplify the diffusion of good memes too, raising deception detection and civic intelligence along the

way. He notes that billions of dollars are invested in marketing and public relations to change and influence behaviours in order to ‘solve’ social and environmental challenges, with outcomes that are not necessarily beneficial to society and the planet. To boost behavioural change towards beneficial outcomes, Brewer suggests the creation of a ‘science of social change’ that would be built on the basis of complexity science, studies in human cognition, and cultural evolution, and more generally on processes of systemic evolution. This would require cutting through sciences, which, as Brewer notes just like Judge, tend to evolve in siloes... For Brewer, all the pieces are there but they must be integrated. We need to find ways to put the technologies, tools and strategies that have been used for centuries to dominate and influence the masses, to work for the benefit of humanity, nature and a thrivable future. This involves ethical discussions on how technologies are used.

We touch here a concept inherited from Plato and dear to Bernard Stiegler: the *pharmakon*. Through the domain of digital studies, at the intersection of philosophy, culture and technology, Stiegler focuses particularly on the benefits and risks of technology and how humans can maintain and improve their capacity for critical thinking and agency while reaping the best of it. For Stiegler, a technology is at the same time a liberator and an enabler of human aptitude through the externalization and extension of a capability, and something potentially toxic that must be kept in check. Algorithms and the processing of big data are particularly sensitive as they can be used to deform the architecture of choice by ‘nudging’ people into confirmation biases as well ‘conformation’ biases (a term used by Anthony Judge) in ways which are hidden from view. Other topics Stiegler investigates are the future of human labour in the face of automation and the advance of economies of contribution, as well as the development of tools which foster transdisciplinary scientific, philosophical and political deliberation and the recording of controversies to advance general knowledge and capacity for critical thinking.

Typical objects of inquiry are the new types of platforms that attract users in droves and empower new forms of production. The question whether they will contribute or not to ‘liberate the masses’ (of their users) from old and newer forms of lock-in and exploitation and enable generative change is particularly debated. In his article on the role of Platform Based Peer Production and the Commons in the dynamics of innovation, Simone Cicero discusses how giant platforms can help achieve abundance in the post-shift economy by constantly improving user experience through design. Making an argument quite different from that of Bauwens,

Cicero argues that the platforms that enable market places cannot be valuably developed as commons because of a never-ending expectation for increased convenience from their users that commons based peer production cannot systematically meet. Commons fare much better, in his opinion, as interfaces or standard of communication and exchange between infrastructure and market places, such as the commons of code, knowledge and design that are currently flourishing. Networks of fablabs and distributed organizations enabled by blockchain technology are likely to expand commons as infrastructure as well. The big issue here is the network effect that mechanically creates dominant positions, and whether these dominant positions and the global power they confer can and will be used to progress knowledge and collective intelligence rather than become ever larger exploitation devices for the benefit of a few.

Could we ‘hack’ these platforms and the systems we would like to see change, to master their ‘code’ and redesign them anew? Brett Scott uses the hacker narrative to explain how a system like the financial system can be understood and re-appropriated by its users. He describes the financial system as an opaque and alienating complex *par excellence*, packed with systemic risk, involved in much of the systemic breakdowns we have been experiencing lately, but extremely difficult to overcome as a whole because it is so incomprehensible. Scott promotes the hacker approach and narrative because systems such as the financial system are as opaque as computers with their friendly and simple interfaces on the outside, and code locked in black boxes, with very few knowing how they really work inside. For Scott, hacking is a healthy rebellious exploration impulse – not to be confused with breaching and stealing which is a dark side of hacking –, manifesting the desire to explore and understand those things that most people in society are not encouraged to explore or understand. It is thus a drive to de-alienate a world, which might otherwise appear confusing and unwelcoming. Scott sees hacking as an empowering rational-romantic impulse that would be very well employed in open source type of settings oriented towards opening access, reconnecting emotion, liberating creativity, with a focus on social and ecological processes, and a spirit more feminine than that of the male geek, put to the service of systemic change.

Focusing on how we discern and build structures in contexts of organized complexity, those that “*deal simultaneously with a sizable number of [heterogeneous] factors [...]interrelated into an organic whole*”, Jenny Quillien illustrates with concrete examples how different organizations of variables and initiating impulses

can produce different effects. She builds on J.G. Bennett's triads, which display the minimum condition for dynamic relationships of change to occur, to introduce and configure three types of impulses: the assertive impulse, the receiving impulse and the mediating impulse. Various sequences of these impulses have different systemic outcomes when the processes are run. Sequences can therefore be built oriented towards specific outcomes. This exercise shows how reality can be parsed into the smallest possible segments to discern and differentiate "*the behaviours of a variable when in the presence of other variables*" and the processes whereby "*segments are also related with one another*", as outlined in urban critic and analyst Jane Jacob's methodology for understanding systemic change in cities. This actually demonstrates the 'operating system' of a pattern. Quillien's final questions open up on how to nest and scale these segments and sequences to move from the smallest to larger boundaries and boundaryless system.

Looking at various dimensions and levels of operation of systems, Ashwani Vasishth gets deep in the analysis of the processes that are at play in systems, and describes how change 'happens' as a result of evolutionary dynamics and a pluristic reality. For Vasishth, relationships, processes and functions are the reality that shape people, objects and entities and that set change into motion at various rhythms, levels and scales, with boundaries that are not fixed, in particular when considering open systems and wicked problems (of which he makes a compelling description), with no beginning and no end. Systems can be seen as in perpetual movement, and in this context, the process of change, more than a quest for a new equilibrium, is rather about understanding the pulses and perturbations, or in other words the patterns that send the system in distress or alternatively that fend off entropy and ensure its vitality. From this perspective, systems are difficult to change intentionally, and change is not something that can be managed, but rather that can be guided, channelled, amplified or deflected.

To help in this process, in particular in evaluating our capacity to act intentionally as change agents in a system, William Smith takes us to explore different forms of powers that can be used in different contexts, and the dynamic interplay between power, purpose and leadership. Power is ubiquitous and pervasive, but not all of the same kind, and we need to recognize different sorts of powers and to act differently with what we can control, influence and appreciate. Currently we tend to focus too much on the control dimension of power, trying to expand the boundaries of what we can control, while the transactional sphere (that which we can influence,

in interaction with others, and through which we may jointly affect outcomes) and contextual sphere (that which is totally out of our control and even influence, but which we can appreciate and see possibilities in) are left out of our inquiry field. These various powers operate at different paces, levels and scales. The distinction is particularly effective for assessing margins of manoeuvre and possibilities, and positioning them in space and time, for example to self-assess our capacity for action in given contexts and situations. In particular, and although people may have preferences in the forms of power they use, this model does not ask us to choose between control, influence and appreciation, and to apply one form of power across the board; rather it helps us choose the right form of power to apply on the various components of a context, in an approach akin to Dave Snowden's Cynefin model that helps evaluate whether a system or a situation is simple, complicated, complex or chaotic and deal with it accordingly. Smith proposes a framework and a process to link individuals to large systemic issues and to their own agency, in order to better connect people's purposes to societal purposes at various levels. Different levels of powers are associated to different levels of purpose as goals, values and ideals. The integration of power, purpose and action is what Smith calls leadership: the capacity to act with an intention (purpose), applying the right forms of power. It very much resembles what we call agency, the effective application of agency.

For Carol Sanford, the words and metaphors that are used in everyday business shape the paradigm and choices of practice in organizations, and therefore reflect the types of leadership and forms of power in use. Language is not neutral, and may exacerbate the usage of specific practices and systemic processes, intentionally, as described by Harich and Brewer, or not. Language and our preferred narratives shape the lenses through which we see things and frame our reality, and at the same time, these lenses shape the language and narrative we use. Sanford identifies four modern paradigms that have a strong influence on the way business activity is conducted, and examines their effects when applied on living systems. Very briefly: the machine paradigm sees all elements of a system as parts that can be (re)designed or replaced; the behavioural paradigm seeks to engineer and control culture and behaviours; the human potential paradigm seeks to develop the potential in each human; and the regenerative paradigm seeks to build human capabilities for the intentional evolution of living systems. Using language and practices as clues can help understand the lenses through which things are

seen. Sanford underlines however, that people tend to mix different paradigm related vocabularies, which creates confusion.

I would add that people may be using the narrative (language and metaphors) of one paradigm to describe the intentions and processes of another, which may affect their capacity to understand each other even more. An interesting area of research and action would be to describe each paradigm in the language of the other paradigms, and understand the *pharmakon* of each paradigm, so that words do not get 'cornered', and effective messages can be 'multicast'.

In addition to contexts which may require different operational approaches to change, and the different beliefs and paradigms that people hold, such as described by Judge and Sanford, people have different cognitive approaches to change, which also affects their attitudes and the metaphors they choose. Denis Postle explores the work of Michael Kirton and his Adaption Innovation Theory, which offers insights on preferred creative styles in problem solving situations. Creative styles span on a spectrum from adaptive to innovative. As quoted by Postle: "Adaptors tend to accept the problems as defined by consensus, accepting generally agreed constraints. Early resolution of problems, limiting disruption, and immediate increased efficiency are their more important considerations. Innovators tend to reject the generally accepted perception of problems and redefine them. Their view of the problem may be hard to get across. They seem less concerned with immediate efficiency, looking to possible long-term gains." The model is particularly interesting when looking at the relationships between various styles, and the diversity of styles in teams or groups of people; it has been widely used in organizational settings to build teams with complementary or homogenous attitudes to change, depending on the goals to be achieved. Using case studies, Postle investigates how being aware of the different creative styles of people involved is critical for a change to succeed, and how this awareness can help solve systemic challenges in more effective ways.

To bring together diversity in thought, talk and action, Mimi Stokes-Katzenbach explores art as pan-cultural form of activism, and in particular Drama as it was performed by the Greeks, to "stop cosmic death in its tracks before it stops us in ours". A good allegory of what our system is experiencing right now! She unfolds a Dramatic activism model based on the ensemble as organizational form for groups engaging in social change, and a dramatic theory of social change in 3 acts each representing an archetypal Hellenic dramatic form: Tragedy, Sacred Comedy (Pan's Play), Comedy.

Ensembles co-develop their own style and language and enact their collaborative creative process in a theatrical form. Each dramatic form is characterized by its own specific pattern of dramatic action. In all three stages, these patterns are eudemonic (oriented towards collective well-being, thriving, human flourishing) and characterized by reversal (a cathartic process towards awakening and catalysis of hope). In Act One, Ensembles develop their own action strategies to solve for the "wicked problem" of the tragic pattern playing out in multiple living, cultural systems. In Act Two, Ensembles devise their own forms of engagement with the ecological comedic pattern of securing the mutual thriveability of nature and humans. In Act Three Ensembles develop action plans to activate the civic comedic pattern of social change. This enables all styles, approaches, preferences in an ensemble to express themselves. The approach leads to the coalescence of individual creative engagement with the power to federate disparate efforts, narratives and attitudes towards systemic change, achieving unity in diversity at various levels.

Drawing from the Greek philosophy as well, Michelle Holliday and Michael Jones highlight the need to bridge the chasm between the logos and the mythos, or in other words between reason and imagination, scientific observation and mythic inspiration.

They provide practical insights on applying a living systems theory for regenerative change in organizations and communities. Holliday has been active in developing and disseminating the narrative of thriving. Now with Jones, they are birthing a practice of stewarding change of which they outline the key principles and practical aspects. This practice acknowledges aliveness of experience, and communities and organizations as living systems, reconnected and rooted to a physical place. Their inquiry addresses two critical questions which underlie many of the articles in this issue. First is how we can craft spaces for life to thrive and align our thinking with how nature thinks. Second is how we can acknowledge the diversity of organizations and communities as parts of the living system, and foster their integration into a coherent thriving whole that each can steward along his/er own pathway, manifesting the various ways of expressing "our full divergence in service of our common goals".

Real opportunities arise when we collectively explore systemic synergies to curate the emergence of a global ecocivilization, one that celebrates and invests in local expressions of thriving while contributing to the emergence of global interdependence. To achieve this, Alexander Laszlo suggests matching the connective and distributive power of Information and

Communication Technologies, (our technological intelligence) with advancement in relational intelligence and systemic consciousness, through what he calls Technologies of Organizational Communion (TOC). This involves collaborations among change agents and designers of innovation to create systems of shared solutions. Systems thinking can be used as a catalyst to learn how to interpret and understand the effects of change that both shape and are shaped by us as agents of thriving. In practical terms it means finding ways of perceiving interconnections, of recognizing wholes and parts, of acknowledging processes and structures, of reconciling apparent opposites. Dialogue and conversation in a variety of forms play a critical part in the process. Laszlo cites David Price's *Daologies* with the Earth as an invitation to explore how conversation, play, dance, and all aspects of life as art connect us to ourselves, to each other, to the more-than-human world, and across time to past and future generations of all beings. These are the four dimensions of systemic thriving that help create sustaining and enduring harmonies with the broader symphony of life, which Laszlo calls syntony.

Laurence Victor proposes a whole system and co-adaptive strategy for the radical change of humankind into a 'nu' humanity, and introduces a 'nu' language to express the multidimensionality of concepts and the nested and networked nature of thought and speech. If "new" refers to the past, "nu" explores possibility. The nu humanity (NU) emerges like a butterfly through social metamorphosis. The process by which the metamorphosis occurs is an exponential uplift in the distribution of humankind's potentially actualisable competences: change agent by change agent, team by team, community by community. Contemporary humankind can't create NU; but humankind can uplift itself to requisite competency levels to create NU. A mantra for the ontology-of-becoming for UPLIFT may be *reeee seaf galdee*: a relevant, effective, efficient, enjoyable, elegant process (*reeee*) to support, enable, augment, facilitate (*seaf*) a nu humanity to grow, adapt, learn, develop, evolve, emerge (*galdee*). UPLIFT is a bootstrapped, self-organizing process (not an external force lifting something up), through which people organize to learn and learn to organize, tapping into the expanding knowledge commons on humankind, and human social relationships and change. UPLIFT requires fertile soils and nurturing scaffoldings for seeds (the alternative projects and views of change) to sprout, and must foster the capacity of communities of practice to learn about each other's seeds so that cross-pollination can occur. Victor envisions further developments in

the technologies of human change to put this knowledge to good work, with new semiotic structures and representations of conceptual reality, and systems enabling learning expeditions within domains of knowledge.

Relational aspects of human technology require an on-going reflection and conversation aimed at building systemic awareness and capacity, with a transformational goal. Tom Atlee focuses on conversation, which he frames as co-evolutionary interaction that uses diversity creatively and generates shifts in people, ideas and feelings, so that behaviours can adapt in response to emergent reality. Conversations need not be only exchanged words, and may include interactive drama, dance or film. In this respect, Mimi Stokes Katzenbach's Ensembles are transformative conversations. These forms are particularly suited to the non-linearity of our crisis, which cannot be solved with linear processes. For Atlee, conversations need to be configured to bring about coherence in the perspectives and energies of those engaged. They are currently for the most trivial, manipulated or adversarial. Well-designed conversations, which use power and networks effectively, are likely to provide the infrastructure for an ongoing conscious evolution of social systems. In particular they provide the ability to bring unconscious dynamics into shared awareness and to attend to weak signals of disturbance before they become problems, crises, or catastrophes. Atlee underlines the importance of design tools and methodologies to make conversations effective, setting directions with practical examples.

Lilian Ricaud examines practical design methods for systemic change and in particular two similar systemic approaches based on patterning: permaculture and pattern language. Both apply systems theory to material systems with effective practical results. "Permaculture design is a system of assembling conceptual, material, and strategic components in a pattern which functions to benefit life in all its forms". Many people see permaculture as a way to design gardens, but the approach, based on a deep understanding of how ecosystems work and firmly rooted in science, can be applied in cultural and social contexts as well. It is based on a strong ethical foundation summarized in the three key principles of Care For The Earth, Care For The People, and Fairshare also called Return Of Surplus, which strongly affirm the purpose of the system at the onset of the design process. Pattern Languages are similarly used to solve collections of common problems pertaining to the design and construction of buildings and towns, with a goal of building generative structures. Both permaculture and pattern language are design frameworks that create systems by intentionally

describing or designing relationships between key systemic elements and the forces that are involved. More than just a way to describe good practices, a pattern therefore is a particular – within a particular system – that integrates and resolves a set of conflicting forces in a harmonious/non-forceful manner. These forces can be structural, social, psychological, psychic, natural or a mix of several different ones. Ricaud outlines what both frameworks enable and suggests pathways towards these new methods of design.

Ricaud's article is a perfect introduction for the concept and approach of the PLAST project described in the last article of this issue. The PLAST project (Pattern Languages for Systemic Transformation) brings together people involved in pattern languages, collective intelligence, complex systems, knowledge commons, epistemology, semantic tools open source software and more, with the shared objective of inspiring, empowering and enabling systemic change and collective awareness. It is set to develop the use of pattern languages for systemic transformation to address the socio-economic, socio-environmental and technosocial challenges people are confronted with on the ground, by creating connections between domains of practice and systemic interventions. The approach is to leverage the dual semantic and systemic format of the pattern as knowledge design format, actionable, reproducible, iterative, scalable and inter-operable. The project has been submitted to the H2020 European funding program for collective awareness platforms for sustainability and social innovation, to receive some piloting support. The article is an extract of the document submitted, to which the collective of authors have participated.

The PLAST concept emerged from the research and reflections I have been engaged in these past few years, exploring possibilities to bridge the diverse engagement and action logics of change agents to enable the exploration and sharing of alternatives practices. I started to look, from a strategic perspective, at the multiple variables that could combine into producing systemic effects: the ways to describe systemic phenomena in simple terms, the possibilities to systematize an approach to make it iterative, the narratives and themes that could help federate and aggregate the effects of various disparate efforts and foster agency across the board, the leverage points and barriers to change and the ways to accelerate learning and expand collective awareness. I was investigating how to address at the same time the 'what' to change (allowing multiple 'whats' to coexist), the 'why' to change it (reflective of sustainable systemic generative or degenerative outcomes, giving room for multiple perspectives and paradigms), and the 'how' to bring it about (the praxis itself in its multiplicity of

pathways) both in operational terms and in the process of change itself.

Pattern languages and the technologies that could be developed in conjunction quickly emerged as an ideal catalyst of all these domains, enabling multiple self-reinforcing systemic effects to operate on several dimension. The PLAST project and the planning of this issue of the *Spanda Journal* emerged concomitantly, and discovering the many areas of overlap and convergence between articles has been encouraging.

It is inspiring indeed to acknowledge how much we, authors of this *Spanda Journal* issue, share in common on many aspects, independently from our angles of approach to systemic change and the languages we may use. We generally perceive our socio-technical-economic-environmental system as a complex living system, with elements we can control or organize, others that we can influence, and others that we can only acknowledge and appreciate. Our appreciative power includes the mutual recognition of the multiple ways in which we think, talk and act.

What seems divergent may be reconciled: the hacker and designer impulses, systems sciences or root cause analysis, which borrow some of their language from the much decried machine paradigm; our desire to use the technologies at our disposal to understand individual and collective behaviour and influence culture, while at the same time challenging technologies from the standpoint of our critical thinking and trans-individuation; our quest to develop human potential and unleash our capacity to act, create, learn and adapt, and make the best of our capabilities; the reconciliation of rifts and chasms of many sorts, to heal and fertilize, anchor activity in place, bridge global and local. Paradigms and the metaphors we use as change agents to describe approaches and practices may differ, but teleology, the direction we strive for, aliveness and thriving, is usually widely shared albeit in a 'fuzzy' ambiguous way. All these approaches and narratives are necessary for effective change to emerge. They need to be interconnected, and approached with the *pharmakon* in mind, i.e, finding the generative and degenerative aspects in each of them.

We invite those who would like to pursue the development of research, mindful practices and tools that can help us make more systemic and semantic connections, to join our conversations and the projects we may be developing in the future.

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# THE METABOLIC RIFT, ANACHRONISTIC INSTITUTIONS AND THE ANTHROPOCENE



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## INTRODUCTION

IT IS NOW A CENTURY SINCE THE PUBLICATION BY Alfred Wegener of an important text on the origin of the continents and the oceans (1915). Whilst the idea of continental drift had been seeded 100 years ago, it would take decades before its confirmation as scientific fact and for the idea to become incorporated into our collective global knowledge commons. The year 2015 also commemorates the fiftieth anniversary of "Moore's Law," whereby Gordon E. Moore had famously hypothesised that within a decade "the number of components per integrated circuit for minimum cost will be 65,000" (1965: 83). This prediction would largely establish the relentless pace of innovation in the fields of information and communication technologies (ICTs) and whereby computing power has doubled every two years since.

This essentially enabled the transition into the fifth Kondratiev long wave of capitalist development and the Techno-Economic Paradigm characterised as the era of ICTs. Each preceding long wave had historically been accompanied by innovations in energy systems and had utilised non-renewable fossil-fuels such as coal, oil, and gas. With fossil-fuels now assumed to have peaked, the next generation of energy provision may increasingly have to be sourced on a renewable basis. This poses a real and immanent threat to the political economy which requires privately appropriable commodities and wage-slaves for mass production and consumption of standardised items.

This essay reviews human and social history from the perspective of the political economy. It draws on recent research findings in the fields of palaeoanthropology and determines a *periodised* narrative of evolutionary change punctuated by revolutionary transformations. It is important to note that temporal-lags between expanding intellectual frontiers, scientific knowledge and technological capability-formation results in informational asymmetries. The emergent chasms are also resilient to modification due largely to the persistence of institutional anachronisms. The political economy of contemporary capitalism utilises structural and systemic forms to legitimise hegemonies and thereby curbs the possibility of didactic reasoning liberating people from their own entrapment.

The essay is elaborated through four sections. After this introduction, we turn briefly to exploring our long evolutionary history and the revolutionary transformations that have collectively shaped our common (albeit, combined and uneven) contemporary conjuncture. Section-three discusses the framework of *Planetary Boundaries* within the discourse on the *Anthropocene*. The fourth, and final section concludes the essay by considering the possibilities of transitioning towards a planetary-scale of civilisation through the agency of global citizenship, a Great Transition, and the commons paradigm. This essay supports the idea that agency and structure remain framed by dialectical relationships. Thus, whilst the resulting praxis will ultimately define our collective fate as human beings, our faith in each-other and our bonds of solidarity, cooperation, and collaboration, are indeed under stress.

Redressing our metabolic rift requires our advance beyond capitalism.

#### THE MAKING OF OUR CONTEMPORARY CONJUNCTURE

Our Linnaean<sup>1</sup> classification as the ‘wise human being,’ locates our sub-species within the Animal Kingdom. Animalia together with six other Kingdom’s: Bacteria; Chromista; Fungi; Plantae; and Protozoa constitute the biodiversity which occupies the only terrestrial planet with an active hydrosphere (the Earth) and which circumnavigates a ‘yellow dwarf’ G-type main-sequence star (the Sun) approximately once every 365 days, 5 hours, 48 minutes, and 46 seconds. In the Common Era<sup>2</sup>, we have truncated this into 365 day years with every fourth instance being a Leap-year of 366 days. It is reasonably estimated that the orbit of the Earth around the Sun was undertaken at least 4.55 billion times before the current cycle, designated as the 2,015<sup>th</sup> year of our Common Era. According to the geological record, our Moon formed approximately 4.527 billion years and *Prokaryotes*<sup>3</sup> began photosynthesising about 3.5 billion years ago. The atmosphere enveloping the Earth became Oxygen-rich nearly 2.3 billion years ago and Eukaryotes<sup>4</sup> appear in the fossil record from about 2.1 billion years ago (Knoll et al: 2006). According to the *endosymbiotic*<sup>5</sup> theory, the mitochondria inside every eukaryotic cell were once free-living bacteria.

Thus, after the geophysical formation of the planet, a further 3 billion years would pass before multicellular life emerged: “(c)ells organized themselves into new three-dimensional structures. They began to divide up the labour of life, so that some tissues were in charge of moving around, while others managed eating and digesting. They developed new ways for cells to communicate and share resources. These complex multicellular creatures were the first animals, and they were a major success” (McGowan: 2014). It is estimated that the first animals emerged approximately 800 million year ago and the oldest animal fossil found has been dated to -650 million years ago (Maloof et al: 2010). According to McFall-Ngai et al, animals should rightly be considered host-microbe ecosystems (2013). A hundred million years later, or about 542 million years from now, the Earth experienced a ‘Cambrian Explosion’ with a profusion of animals with shells and skeleton now collated in the fossil record. According to Qing-Jin Meng and colleagues, the oldest tree-dwelling and subterranean *mammaliaform* fossils have been dated to -165 and -160 million years respectively (2015). These results are aligned with the finding by Shundong Bi and colleagues that dates

the origins of mammals from -208 million year ago (2014). It would take another 202 million years before the emergence of our hominid species.

The age of the oldest fossil from a member of our genus: *Homo* is dated at -2.8 million years old (Villmoare: 2015). It is variously estimated that the hominid species separated from the other primates approximately seven million years ago (Palmer: 2005; amongst others). Other hominid sub-species such as *Homo habilis*, *Homo erectus*, *Homo sapiens*, and *Homo sapiens neanderthalensis* have variously been identified. *Homo sapiens sapiens* are therefore the only extant hominid sub-species and have occupied the planet Earth for at least 200,000 years. Genetic (analysis of Y chromosome DNA) and phenotypic evidence supports this contention and places the zone of human origin in an area ranging from southern to eastern Africa, with some minor boundary variations depending on whether we are considering the genetic or the phenotypic evidence (Manica et al: 2007). According to Marean, recent evidence suggests that complex cognition may have appeared between ~164,000 and 75,000 years ago (2010). Utilising data on language phonemic diversity<sup>6</sup>, Perreault and Mathew have presented results that are “[...] consistent with the archaeological evidence suggesting that human behaviour became increasingly complex during the Middle Stone Age (MSA) in Africa, sometime between 350,000-150,000 years ago” (2012: 5).

According to archaeological and paleontological research, the anatomically modern human beings dispersed over wider territories of the planet over long periods of time. The literature concerning our dispersal across the surface of the planet may be grouped into three main schools: 1) a Regional (or Multi-Regional) Continuity Model suggests that we evolved independently out of *Homo erectus* in various territories; 2) a Replacement (or Recent Out of Africa) Model argues that *Homo sapiens* migrated from Africa and replaced the various regional populations of early Hominids; and 3) an Assimilation Model which synthesises the previous two models and contends that the human line can be traced to Africa but various human types sometimes interbred with each other, creating a human hybrid. This debate remains unresolved and is being updated as more data becomes available. Recent advances in genetic research shows that whilst modern humans have had some interrelations with other hominids, *Homo sapiens sapiens* have come to be the only sub-species to survive into our contemporary conjuncture.

Increasing fossil finds and improved paleo-anthropological capabilities are expanding our understanding of the long evolutionary interregnum. During this

time-span, we, like other life-forms, devoted a significant portion of our *pre-historic* day to the tasks of securing food for nutrition, safeguarding ourselves from predation, and seeking shelter from the elements especially during the night. The physical and chemical processes in our bodies that convert or use energy are referred to in the literature as our metabolism. For Marx, “(t)he life of the species, both in man and in animals, consists physically in the fact that man (like the animal) lives on organic nature; and the more universal man (or the animal) is, the more universal is the sphere of inorganic nature on which he lives. Just as plants, animals, stones, air, light, etc., constitute theoretically a part of human consciousness, partly as objects of natural science, partly as objects of art – his spiritual inorganic nature, spiritual nourishment which he must first prepare to make palatable and digestible – so also in the realm of practice they constitute a part of human life and human activity. Physically [humanity] lives only on these products of nature, whether they appear in the form of food, heating, clothes, a dwelling, etc. The universality of man appears in practice precisely in the universality which makes all nature his inorganic body – both inasmuch as nature is 1) his direct means of life, and 2) the material, the object, and the instrument of his life activity. Nature is man’s inorganic body – nature, that is, insofar as it is not itself human body. Man lives on nature – means that nature is his body, with which he must remain in continuous interchange if he is not to die. That man’s physical and spiritual life is linked to nature means simply that nature is linked to itself, for man is a part of nature.” (Marx: 1844).

During the Palaeolithic era which spanned from -2.5 million years ago until approximately 12,000 years ago, our sub-species became highly specialised in foraging, gathering and hunting for food for energy. Our apparent advantage included our capacity for creativity and adaptive versatility as our existence today is evidence for our various ‘successful’ adjustments to the uncertainties of environmental and climate change. From rather precarious existences amongst other sub-species, human beings have now expanded to a current scale of approximately -7.2 billion people (UN: 2015). The expansion of our sub-species was accompanied by the sharing of knowledge and technology through culture and communication. With receding glaciers, climate change, social organisation and human ingenuity laid the basis for the establishment of agriculture. According to Richerson and Boyd, human society evolved from “a Pleistocene regime of hunting and gathering subsistence and low population density, [to a] a Holocene regime of increasingly agricultural subsistence and relatively high and rising population densities” (2000: 16). Climate changes and a rapid

acceleration in the rate of innovation saw the domestication of plants and animals spread rapidly amongst the human species. As recognised by Fredrick Engels, “(i)n short, the animal merely uses its environment, and brings about changes in it simply by its presence; man by his changes makes it serve his ends, masters it. This is the final, essential distinction between man and other animals, and once again it is labour that brings about this distinction” (1876). As humans are primarily a social group, distinct social relations influence and are reproduced in the ‘mastery’ over nature.

Although constrained by the availability of historical evidence, Engels utilised the detailed anthropological research of Lewis Morgan, to describe the early transitions of the human sub-species through three distinct periods (1884). Engels summarised these as the movement between the following phases of development: 1) “Savagery: the period in which man’s appropriation of products in their natural state predominates and the products of human art are chiefly instruments which assist this appropriation; 2) Barbarism: the period during which man learns to breed domestic animals and to practice agriculture, and acquires methods of increasing the supply of natural products by human activity; and 3) Civilization: the period in which man learns a more advanced application of work to the products of nature, the period of industry proper and of art” (*ibid.*). Whilst essentially exposing a fixation with modernisation, the caricatures of savagery, barbarism and civilisation are contextually bound to an era with its own set of mores. As a historical categorisation, it also reminds us of the limitations of our times.

These critical transitions contributed to shaping the general contours of our current conjuncture. As observed by Karl Marx “[...] nature does not produce on the one hand owners of money or commodities, and on the other hand men possessing nothing but their own labour-power. This relation has no basis in natural history, nor does it have a social basis common to all periods of human history. It is clearly the result of a past historical development, the product of many economic revolutions, of the extinction of a whole series of older formations of social production” (1867: 166). Subsequent evidence largely corroborates these transitions though recognising that the process was not universalised and therefore unevenly distributed across the peoples of the planet.

In this long period, the fossil record clearly evidences our expanding technical capabilities, and especially our tool-making specialisation. The *Lomekwian* find of stone tools, including flakes, cores, hammers, and anvils, in a spatiotemporal association with Pliocene hominin fossils in a wooded paleo-environment has

been dated to ~3.3 million years ago (Harmand et al: 2015). The artefacts discovered “indicate that their makers’ hand motor control must have been substantial and thus that reorganisation and/or expansion of several regions of the cerebral cortex (for example, somatosensory<sup>7</sup>, visual, pre-motor and motor-cortex), cerebellum, and of the spinal tract could have occurred before 3.3 [million years ago]” (*ibid.*: 314).

It has also been speculated that tool-making capabilities co-evolved with the emergence of socio-cultural learning and the capacity for the transmission of knowledge within groups of individuals and amongst society as a whole. The human capability to transmit knowledge over generations would seem to have afforded the sub-species a significant advantage in its rivalry with other Hominids. The increasing technical prowess and an expanding knowledge-specialisation correlates with an increasing intensity of the deployment of human competencies for exploiting the natural environments. In the late Pleistocene Epoch (20,000 years ago until the Holocene), food acquisition had already shifted from being largely random towards higher levels of organisation, complexity and regional specialisation. It is argued that the ‘wide-scale exploitation of marine resources derived from fishing and shellfish collection’ represented “a major departure from the previous focus, lasting hundreds of thousands of year” (Larsen: 2003: 3894S). Whilst fish and shellfish provided valuable sources of protein, energy and micronutrients; they also required new and innovative strategies of food collecting. It was in this epoch that humanity basically transformed from Palaeolithic to Neolithic entities

The diffusion of technology allowed for more settled populations to become established and changed social life from subsistence towards surpluses and accumulation – facilitated by an intensification of the division of labour through higher levels of specialisation and sophistication. It has been suggested that increases in our socio-economic differentiation coincided both with the generation of surpluses and through controlling access to surplus (*viz.* ancestry, authority, and inheritances). Gerda Lerner argues that male dominance over women is not ‘natural’ or biological, but the product of an historical development begun in the second millennium B.C.E. in the Ancient Near East (1987). Lerner uses historical, literary, archaeological, and artistic evidence to trace the development of these patriarchal gender relations ideas, symbols, and metaphors and their incorporation into Western civilization (*ibid.*). This argument has recently been supported by the findings of Dyble et al, who show that “[...] it was only with the dawn of agriculture, when people were able to accumulate resources for the first

time that an imbalance emerged” (2015). Until then, they argue that “sexual equality may have proved an evolutionary advantage for early human societies, as it would have fostered wider-ranging social networks and closer cooperation between unrelated individuals” (*ibid.*).

With the shift to the Holocene and the advent of the agricultural revolution, “human diets began to change in dramatic ways; people in select areas around the globe began to domesticate the plants and animals that heretofore had been wild” (*ibid.*). This transition to less meat and more plants resulted in less nutritional diversity but increased the availability of food in much larger quantities and on a more regular and purposefully-planned basis. According to Bagley, “(u)ntil the advent of agriculture and urbanisation, the human population was largely limited by the same factors that limit other living organisms. Limiting factors in the environment, such as availability of food, water and shelter, evolutionary relationships like predator/prey ratios or presence of pathogens provide natural balances to populations” (2013).

Since the advent of the Neolithic period, human development may be seen as the outcome of the dynamic, uneven and uncertain combination of “three motors of history: technological progress, ruling class competition, and the struggle between classes” (Faulkner: 2013: 296). Indeed, each of these drivers has resulted in specific outcomes for humanity and their combination helps describe contemporary combined and uneven development under a near totalising globally hegemonic mode of production called capitalism in the 19<sup>th</sup> and 20<sup>th</sup> centuries. Foster et al. have expanded on the critique of contemporary capitalism to argue that the source of our present ecological crisis lies in the paradox of wealth in capitalist society, which expands individual riches for some at the expense of public wealth and the wealth of nature (2010). This process generates an ecological rift, between humans and nature, undermining the conditions of sustainable existence. As argued by Foster et al, “[...] a deep chasm has opened up in the metabolic relation between human beings and nature – a metabolism that is the basis of life itself. The source of this unparalleled crisis is the capitalist society in which we live” (2010:1). This metabolic rift between humanity and nature is irreparable within Capitalist society, since the rift is integral to the laws of motion of the system. Structure and agency seem paralysed as the institutional framework appears incapable of reconciling developmental inequalities with a mode of production that is fixated with growth as an end in itself regardless of its social and ecological consequences. Whilst most of the world-systems are capitalist in practice, their contemporary ubiquity is not for want of alternatives.

The Paris Commune of 1848 was one of the first anti-capitalist experiments. Since then, various attempts at constructing alternatives to capitalist expansion have met with variable success and also failures. The Soviet Revolution of 1917 ushered in the possibility of a large-scale leapfrogging opportunity from Feudalism to the building of a Socialist system. The invasion of Russia by a number of countries, the establishment of a bureaucratic and repressive state apparatus, and subsequent emersion in World War Two, stultified the possibilities for redressing the metabolic rift.

World War Two occasioned another form of primitive accumulation in response to the generalised economic crisis of 1929. Subsequent Keynesian reforms and a so-called 'civilized' capitalism especially in the Scandinavian countries also did little to redress the metabolic rift. A third opportunity emerged in the struggles for national liberation from the yoke of colonial subjugation. Unfortunately, except for some success in the special-case of Cuba, most other territories rapidly transited from post-colonial euphoria into neo-colonial re-incorporation into the global circuit of Capitalism.

A further attempt at an alternative developmental trajectory was established in the People's Republic of China (PRC). The Chinese Communist Party's (CCP) ascended to power and declared the PRC in 1949. Since then, much change has been experienced by the most populous country on the planet. The CCP has especially since 1978 sought to update and upgrade its version of socialism with Chinese characteristics. Between 1978 and 2014, China's GDP expanded from approximately USD 59 billion to approximately USD 9.4 trillion. Zhang quotes Zheng Zhen, a Marxist scholar and professor at the Fujian Provincial Party School, as expressing the view that "(i)n the past, we thought environmental pollution and ecological crisis were maladies exclusively associated with capitalism. China as a socialist country would be unlikely to have such problems. However, in the past thirty years of reform and opening-up, China's resource and ecological problems have grown in proportion to the economic growth, whose level of severity even is no less deplorable than in the primitive accumulation stage of capitalism" (quoted in Zhang et al: 2014).

In 2007, the CCP introduced proposals to build an 'ecological civilization.' According to Hu Jintao, "[...] the essence of the construction of ecological civilization is building a resource-saving and environment-friendly society based on the environmental carrying capacity of resources, the laws of nature and sustainable development [...]" (2012). The objective of utilising the concept of an eco-civilization could therefore be seen as seeking to balance the relationship between humanity and

nature, which includes economic development, population, resources and the environment. For Xiao, the concept represented "a new civilization form which takes respecting and maintaining ecological environment as a theme, accords to sustainable development, takes the continued development of the future human as starting point, and realizes interdependence, mutual promotion and coexistence communion of man and natural environment" (2012).

Kai notes that the term "is a historical concept" and argues that the "relationship between people and nature is the most fundamental relationship that exists in human society. Like all other creatures, people are creations of nature, and rely on nature for their survival and development. Nature is the foundation and the precondition for the emergence, existence, and development of human society. Therefore, humans are in no way the masters of nature, and in no way are they able to command nature as they please without serious consequences. On the other hand, humans are different from other creatures. Through their social activities, humans are able to purposefully utilize and transform nature in order to improve their modes of survival and development, which gives rise to human civilization. Therefore, humans are not mere 'servants' of nature, capable only of passive adaptation. Nature is both rich and generous. But at the same time, it is also vulnerable, and requires balance. With the growth of populations and the improvement of living standards being irreversible trends, the impact that humans have on nature is becoming increasingly great. However, humans are, after all, a part of nature, and their activities should not go beyond the limits of what nature permits. In other words, the activities of people should not result in nature irreversibly losing its capacity for self-restoration; otherwise, people will risk undermining their own survival and development. Ecological civilization is all about striking a balance between humans and nature. It is about taking in moderation, using nature in ways that are mindful of the consequences of doing so, and promoting dynamic balance between development, populations, resources, and the environment, so as to constantly raise the level of harmony that exists between humans and nature" (2013).

In 2013, at the 18th National Congress of the CCP the concept of an ecological civilization was integrated into the constitution of the CCP. According to the former Vice Chairman of the Standing Committee of the National People's Congress of China, the following seven characteristics define the country's approach to an ecological civilisation:

"Human beings are a part of nature. The relationship between human beings and other creatures should be one of equality, friendship, and mutual reliance, as opposed to a relationship in which humans are supreme.

Since it is nature that has given us life, we should feel gratitude towards nature, repay nature, and treat nature well.

We should not forget the debt that we owe to nature, or treat nature and other creatures violently.

Humans are entitled to exploit natural resources, but we must take the tolerance of ecosystems and the environment into account when doing so in order to avoid overexploitation.

Human beings must follow the moral principles of ensuring equity between people, between countries and between generations in resource exploitation. We should refrain from violating the rights and interests of other people, other countries, and future generations.

[Human beings] should advocate conservation, efficiency, and recycling in the utilisation of resources so as to maximise efficiency whilst keeping consumption and the impact on nature to a minimum.

[Human beings] should view sustainable development as our highest goal, rejecting the overexploitation of resources and short-sighted acts aimed at gaining quick results.

The fruits of development must be enjoyed by all members of society and not monopolised by a small minority” (Chunyun: 2013).

According to the Climate Group, the outcomes of the 3rd Plenary of the 18th National Congress places the meeting “on a par with the historic third plenary session of the 11th Central Committee conference in 1978. This session famously launched the major ‘Reform and Opening-up’ policy of Chinese leader and reformist, Deng Xiaoping” (2014: 2). For Zhu and Qin, “(c)onstrucing ecological civilization is not only the important pathway to the rise and prosperity of China, but also is the new contribution for human civilization” (2014). Wang et al, have however argued that because of the deep influence by Western modernity, “China has predominantly accepted an anthropocentric world-view and values, which regard human beings as totally different from the world of natural things, and accordingly treats the world of nature as a world of objects. The value of natural things lies merely in being ‘used for our purpose’” (2014).

Wiedmann et al. have developed a new metric called the ‘material footprint,’ which “provides a consumption perspective of resource use and new insights into the actual resource productivity of nations” (2014: 6271). Their results show that the material productivity gains in the Organisation for Economic Co-operation and Development (OECD) countries<sup>8</sup> and that have been reported since 1995 are false when expressed as material footprint per gross domestic product. They thereby prove that overall material use does not decline when countries get wealthier. Interestingly, whilst China had the largest absolute material footprint in 2008, Australia has the largest material footprint per capita (2014: 6272).

Human evolution has not ended. As Stearns has argued, “(w)hether we want to or not, we have

already changed our future course of evolution, and it is not being done by some small group of people who are thinking carefully and planning, it is being done as a by-product of thousands of daily decisions that are implemented with technology and culture” (*ibid.*). Based on results from a five-year global technological forecasting study, James Canton argues that there will be a massive Internet of everyone and everything linking every nation, community, company and person to all of the world’s knowledge. This will accelerate real-time access to education, health care, jobs, entertainment and commerce (2015). His views anticipate a trans-human advance where humans and robots merge, digitally and physically, as artificial intelligence becomes both as smart as and smarter than humans (*ibid.*). This represents a techno-determinism that is difficult to reconcile with the contestations of the contemporary conjuncture. Speculating along similar lines is Michio Kaku, a physicist, who has drawn upon advances in neuroscience technologies to explore the future of the science of consciousness (2014). Kaku ventures that we could see the gradual transition from the Internet to a brain-net, in which thoughts, emotions, feelings, and memories might be transmitted instantly across the planet over the next decade (*ibid.*). Such speculations assume that our current level of scientific prowess allows us to simplify nature into a model of reality from which we can then reproduce and expand our current capabilities. These suggest some of the ways in which the metabolic rift may further be widened. The irreducibility is epitomised by the recent identification by Yildirim and Correia of a new emerging ‘situational phobia’ which they call nomophobia or a ‘no mobile phone phobia’ (2015). The distance between our technological artefacts, our physiology and our psychology is increasingly becoming intertwined.

#### PLANETARY BOUNDARIES AND THE ANTHROPOCENE

Human society has transgressed some planetary boundaries and appears to be hurtling towards a catastrophic descent into barbarism at the behest of global capitalism, particularly under conditions of corporate imperialism enforced through Empire and its neo-liberal ideology. Environmental degradation is exacerbated by intensified exploitation and oppression through mass unemployment in the formal sectors, short-term contract work, ‘casualisation’, increasingly meaningless and boring labour punctuated by periods of unemployment and short-time work, declining real wages, and a rapidly diminishing social wage, and from wholesale alienation of people from the things they produce and consume.

The proposition to recast the Holocene as the Anthropocene recognises that within the contemporary geological epoch, humanity has become a critical driver of rapid changes in the earth system (Zalasiewicz: 2008). Whilst the exact start-date for this remains unclear but some consensus has emerged that locates its origins with the advent of Industrial Revolution of the 18th century CE and the establishment of the current capitalist mode of production. Besides the fact that this recently framed geological epoch acknowledges the devastation that results from the impact of human activities on the planet's ecosystems and biodiversity, our current conjuncture also experiences conditions of over-production and under-consumption. Improvements in the material living conditions of parts of humanity have resulted from the extension of the provision of various infrastructures including water supply, housing, electricity, transport connections and a wide range of essential products and cultural activities. These are however not universalised and their provision has increasingly become dependent on international linkages in globally commoditised chains of production, distribution and consumption under the accumulative drive of financialised neoliberal and globalised capitalism.

Whilst humanity has inordinate power to materially alter planetary realities, this potential remains constrained by the dominance of capitalism. These constraints are the contradictions of our contemporary mode of social organisation, its political economy and the metabolic rift that it extends. Thus, whilst it is not the technology that is the problem, it is the social choices we make about technologies and their uses that generates some of the contradictions underpinning the contemporary crises of capitalism. The resulting precariousness of humanity is an expression of such contradictions and are manifest in the increasing brutality through which repressive state machineries of nationalistic elites impose their self-determined agendas in pursuit of narrow short-term accumulation strategies at the expense of global sustainability. These are usually conducted in comprador<sup>10</sup> relations with global capitalism. As recognised by the United Nation's Intergovernmental Panel on Climate Change: "there's a more than 90 percent probability that human activities over the past 250 years have warmed our planet. The industrial activities that our modern civilisation depends upon have raised atmospheric carbon dioxide levels from 280 parts per million to 379 parts per million in the last 150 years" (IPCC: 2007). The panel also concluded there's a better than 90 percent probability that human-produced greenhouse gases

such as carbon dioxide, methane and nitrous oxide have caused much of the observed increase in Earth's temperatures over the past 50 years.

The planet currently faces multiple tipping points that will ultimately signal the failing of some of the world's ecosystems with life-threatening consequences for all. The IPCC maintains that "with increasing warming, some physical systems or ecosystems may be at risk of abrupt and irreversible change" (2014). According to an international team of scientists examining numerous interdisciplinary studies of physical and biological systems, nine environmental processes were determined that could disrupt the planet's ability to support human life (Stockholm Resilience Centre: 2009). The nine earth system boundaries identified are:

- Climate change;
- Stratospheric ozone;
- Land use change;
- Freshwater use;
- Biological diversity;
- Ocean acidification;
- Nitrogen and phosphorus inputs to the biosphere and oceans;
- Aerosol loading; and
- Chemical pollution.

The boundaries for these processes recognise the limits within which humankind can safely operate. All of the boundaries are interconnected and changes in one area have an influence on each of the others. Seven of these processes have clear boundaries established by science. Three of those boundaries – for climate change, ocean acidification and stratospheric ozone depletion – represent tipping points, and the other four signify the onset of irreversible degradation. The remaining two processes comprising atmospheric aerosol pollution and global chemical pollution have no determined limits due to their temporal proximity and the lack of long datasets relating to them. According to a recent data updates, four of the boundaries (climate change, biological diversity, nitrogen input to the biosphere, and change in land use) may have already been transgressed (Steffen et al.: 2015).

The potentially irreversible climate change implies the loss of productive land, extreme weather conditions, rising sea waters, massive dislocation of people, desertification and serious economic and social upheaval. Other resource shortages like fresh water, forests, agricultural land, and biodiversity are being severely impacted. Depletion of oil and gas reserves impacts directly on the lives of the billions of people of the world and the fragile biosphere. The current production paradigm remains locked into fossil fuel dependencies that include long distance transportation; factory and

other production systems; and corporate commodification. This system will become increasingly difficult and constitute an important site of conflict because of the planet as a finite system in itself. In the context of the Anthropocene, under duress of Planetary Boundaries, the Metabolic Rift transforms into a more generalised concept of an ecological rift which has “arisen between human beings and the earth, emanating from the conflicts and contradictions of the modern capitalist society” (Foster et al.: 2010: 1).

#### CONCLUSIONS: TRANSITIONING TOWARDS A PLANETARY CIVILISATION THROUGH GLOBAL CITIZENSHIP

Human beings are only just beginning to better appreciate the limits of the Earth’s capacity to maintain life on the planet. The system of global capitalism has enveloped the planet and established a distinct pattern of combined and uneven development within world-systems. The resulting inequalities, marginalisation and exclusion requires a fundamental reassessment of the life-defining aspects characterising our contemporary social, economic and political paradigms. Converging global living standards between the more developed and mature capitalist systems and the rapidly emerging developing parts of the world will undoubtedly be expressed through further stresses on the planetary boundaries. This is especially true as the vast majority of countries remain outside the remit of benefit flows and a predatory elite further ensures an uneven distribution of material goods and services within countries.

The array of forces emergent from these contested dynamics hold the possibilities of enabling a ‘Great Transition’ to a planetary civilisation. Significant interests however remain bound within the logic of an expansion of capitalist relations for accumulation through destruction that maintains inequalities and threatens the collective survival of biodiversity and humanity itself. However, as noted by Müller, “(w)hat has changed fundamentally after the financial crisis is the fact that capitalism, the system legitimating most aspects of our modern economic science (and corresponding academic positions), has decisively lost its comfort zone” (Müller: 2014: 1). Gerst et al argue that “(p)erhaps the key theme in the story of the 21st Century will be how humanity addresses multiple threats to the stability of the planetary social-ecological system” (2014: 124). The Global Scenario wove together major economic, social, cultural, institutional, technological, and environmental themes whilst providing disaggregated regional and sectorial detail. Gerst

et al suggest that emergent scenarios align with at least three archetypal visions: evolution, descent, and transformation; and which they argue have been “recurrent in the history of ideas and in the contemporary scenario literature” (2014: 125).

According to the UN, “The central challenge in designing the post-2015 development agenda is to ensure that efforts to improve the quality of life of the present generation are far – reaching, broad and inclusive but do not compromise the ability of future generations to meet their needs. Accomplishing this goal hinges on the ability of the international community to ensure access to resources for growing numbers of people, eradicate poverty, move away from unsustainable patterns of consumption and production and safeguard the environment” (2015). As argued by Steffen et al “there is an urgent need for a new paradigm that integrates the continued development of human societies and the maintenance of the Earth system in a resilient and accommodating state” (2015: 736). UNCTAD is supportive of this view and has argued that a very important part of the challenge is for a developing countries to ensure that development is sustained environmentally, economically, financially, socially, politically and in other dimensions as well (2013). They further emphasise the need for a “broader, developmental concept of sustainability – ensuring that development can be sustained in all its dimensions, rather than only seeking to minimise environmental impacts” (*ibid.*). In sum this requires the establishment of an integrated developmental agenda that encompasses both “more viable and inclusive national development strategies and changes in the global economic system to accommodate and support them” (*ibid.*). Unfortunately, such pronouncements from UN agencies have often tended to confirm causal relationships without explicitly mobilising for a more radical systemic and structural transformation. Appreciating our long evolutionary past, reconciling the metabolic rift and liberating ourselves from an irrational and unjust mode of production requires our collective transition towards a shared commons. Global citizenship for a planetary civilisation is within our grasp, should we be willing to release ourselves from the captivity of institutional anachronisms and a political economy of inequality.



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# THE RETURN OF REAL SPACE

## CO-AUTHORING SPACE PLANNING FOR COMMUNITY RESILIENCE



*Christiaan Weiler is the founding architect of Cab42 Architecture: Strategy and Design in 1997 in Rotterdam, The Netherlands. He has worked on different projects in architecture and urbanism, public or private, new or renovation, exterior or interior. In 2003 he moved to Paris and he re-created his office in 2009 when moving to Bordeaux. The leading motives of his work are technical and programmatic innovation for sustainability requirements, preferably with low-tech bioclimatic energy solutions. He has developed personal convictions and methods, through design research and teaching, in institutes such as the Delft University of Technology, various European architecture schools during a four year research project on coastal development, and l'Ecole National Supérieur d'Architecture de Bordeaux. Two grants from the Dutch Foundation for the Arts, Design and Architecture were the starting point for a research focus on mobility and communication and their influence on the rationale of sustainability in architecture and planning. Central to his point of view are 'sustainability', 'adaptability' and 'identity', and their value within a systemic perspective on architecture and planning. Since 2013 he is an active member of the 'Darwiniens' Association of Enterprises in the Darwin-Ecosystem, and specifically of the Committee of Territorial Co-operation.*

### PREFACE

**T**HIS ARTICLE IS AN ATTEMPT TO ASSESS THE potential of hybrid third places and the recent phenomenon of coworking clusters, as agents of societal resilience through spatial and geographical contextualisation. At least four centuries of history have brought us to the critical moment in which we find ourselves today. The workings of that cultural evolution must be questioned in order to bend its trajectory towards an ecologically and economically stable future. As an architect I am a generalist and a designer, orchestrating motives to underpin a desired result. This design thinking<sup>1</sup>, a prospective and iterative cycle of questioning and answering, has found its way to management, and for a good reason – it's proactive and open ended.

### OUT OF CONTROL

#### CHRISTCHURCH 2001

I rediscovered the subject of urban regeneration thanks to a podcast called *The Urbanist* and their article on civil urban initiatives in Christchurch after the earthquakes of 2010 and 2011. In the rubble of the disaster, many people set up activities, often on a voluntary basis, to try to get the public moral back up. I was struck by the combination of disaster and hope – the 200 year old city center was shattered, yet the urban initiatives were a rare display of people with a hands-on attitude for giving shape to their lives. Some very innovative activities came out of these civil initiatives, such as *Gapfiller*<sup>2</sup> – a cultural broker for temporarily vacant sites. When we compare the off-spin of this natural catastrophe to that of the global economical crisis, it came to my mind that maybe such a sudden shock was to be preferred over the slow-motion explosion of our faltering society. The collective challenge of post disaster reconstruction flattens out traditional hierarchies and cuts through administrative inertia.

#### ARCHITECTURE IS NOT VIABLE, URBANISM IS NOT EFFECTIVE

History shows a long process of progress, but at this moment, when so many fundamental principles are showing signs of fatigue, we should look for a common mechanism at the root of it. We must try to understand the symptoms, and look for the causes.

It is supposed that in 2050 66% of the world population will live in urban areas<sup>3</sup>. Special attention is required to secure good living conditions for these new citizens. However, architecture is in a tight spot, and as a public discipline, the industry is currently lying in ruins<sup>4</sup>. Since Gehry's Bilbao intervention, star-architects have slowly gained in fame, but lost touch with their end-users. The other 99% has ever less influence in construction. In The Netherlands, 60% of the profession has disappeared since the 2007 financial crisis<sup>5</sup>. The French government works on a legal reforms that should stimulate economic productivity, and as part of the package they intend to simplify regulations. For example, farmers will be allowed to erect hangars up to 800m<sup>2</sup> without consulting an architect. It seems that architectural services

are considered to be an expensive barrier for economic development. Just when cities most need it, architecture is on its knees, out of breath.

Urban planning is a complicated affair. It is the spatial planning scale that has no boundaries. However, it is limited by administrative borders. Adjacent communities that don't have a coherent territorial policy, will see investment take place where they didn't foresee it. As a result urban sprawl is everywhere, and it is rarely the result of intentional planning. People will find the loopholes in the rules and use them to their profit. There is an impressive example of such a spontaneous investment, where now you can find the Kowloon Walled City<sup>6</sup> park in Hong Kong. In an overlap of jurisdiction a pass-the-monkey-attitude of governance resulted in a block of improvised habitats. The monolith was connected to electricity, there was sewage, and the mail was distributed. It was fully functional, but a clear risk to public health.

#### CHANGE CHANGES ITSELF

An urban project that does thorough analysis of a project brief and an existing situation, should be able to conceive, quantify and plan construction. But even with a thoughtful master-plan, the time-scale is often out of phase with demography. The planning of 700.000m<sup>2</sup> office space and 8.000 dwellings at Amsterdam Zuid-as in the beginning of 2000<sup>7</sup>, was based on a detailed prognoses. But ten years later many buildings need to be refitted from office to housing. In Modderfontein, a district of Johannesburg, USD 70M will be invested for 12Mm<sup>2</sup> of construction between 2015 and 2030. Will their solution still be good by the time they finish? When you quantify an urban question today, you can be pretty sure that the question will have changed by the time

work is done. Traditionally demography, economy and urbanism are closely related, but in these times of accelerated demographic and economic mutations, urbanism just can't keep up. In Rem Koolhaas' article *The Generic City*<sup>8</sup>, and through his work on the city of Lagos<sup>9</sup>, he shows "Planning

makes no difference whatsoever." It is apparent reality in the city of Detroit where the car-industry first left the city center, then moved to Asia, with 300.000 people leaving the city as a consequence<sup>10</sup>. It is apparent reality in Seseña Spain, where 13.500 dwellings were planned, 5.000 were built and only 2.500 are inhabited<sup>11</sup>.

#### OUT OF CONTROL

As was suggested in Kevin Kelly's book with the same name, it's *Out of Control*<sup>12</sup>. Similar manifestations to those described in the context of urbanism, can be seen in other parts of society. Joris Luyendijk<sup>13</sup>, a investigative journalist, exposed a banking culture cut off from the real world, where

accountability was no longer a factor. A famous quote says that bank financing is like "[...] playing Russian roulette with someone else's head". The algorithmic automation of banking makes that "[...] the behavior of the market undergoes a fundamental and abrupt transition to another world [...] It's out of control, it's going places we never intended or imagined. A United Nations official draws up a brief for us: "We must embrace sustainability and tackle [...] global warming, rising inequalities, social unrest and violence and a fragmenting world order, with low trust in governments and business [...]"<sup>14</sup>. And all that time we were so confident that we had the right solutions. We adopted the urbanist ideals of CIAM's Athens Charter<sup>15</sup> in 1943. We built the projects<sup>16</sup> to clear out the slums in the Seventies. They're stages of a slow-motion explosion. It's

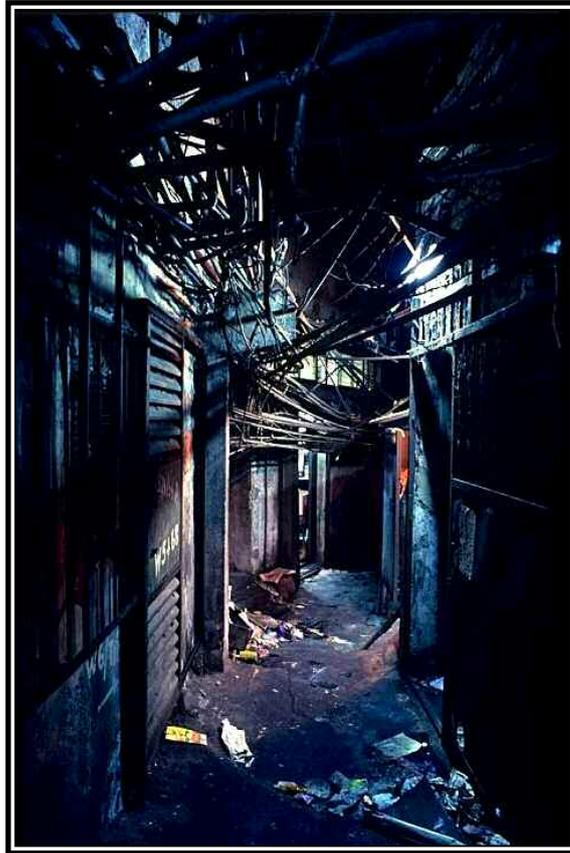


FIGURE 1 - Interior street, Kowloon, 1990.  
G. Godard - Architonic.com.

too slow to show, so we're not waking up the way they did in Christchurch.

#### THE SCOPE OF THE PROBLEM

How can it be that we repeatedly presume to have the right solution, but never get what we expect? How ironic to be the victim of the complexity of our own making. What's happening outside our focus?

In 1982 the company Autodesk released the first desktop-computer compatible version of Autocad. This computer aided design tool made it possible to have dynamic contents on a hard drive, and print only what was necessary at a given moment. This drawing novelty changed drawing ateliers in cad-modeling studios. Modifications were easy. We can see in contemporary architecture a increase in creativity, starting with the CAD-revolution. Herzog and De Meuron's exhibition and catalog *Natural History*<sup>17</sup> in 2002, is a beautiful showcase. Since the mutations in plans were so easy, changing the brief was supposedly easy too. The tool had a collateral effect that was not anticipated, at least not by the draftsmen.

An example in mobility engineering shows a similar intention-vs.-impact-discrepancy. Everyday millions of people are stuck in traffic jams. How many productive hours could be added to a local economy if there were no traffic jams? The solution of adding lanes should alleviate the problem. But wider highways allow for people to live further from their destination, at lesser cost, without changing their daily two hours traffic jam. Their level of comfort is increased, at home, but the traffic problem is not solved.

It's remarkable that so much effort has been made, with true shared conviction, to improve our life conditions, and find ourselves ultimately confronted with the limits of our capacities. Could there be a cultural attractor<sup>18</sup> that can explain this recurrent insufficiency?

#### A SHORT HISTORY OF CULTURAL EVOLUTION

It is interesting to consider european history, and see an evolution outside the supposed objectives. Copernicus, da Vinci and Galilei, among others, liberated public opinion from power structures through science. Their pursuit of reason was continued by Bacon, Spinoza, Voltaire, and Newton, et al. Their theories helped to write the *Declaration of Independence* for the United States (1776), and to overthrow the rule of Louis XVI in France (1789). Meanwhile they colonized vast overseas territories.

#### EXPERIMENTAL ENGINEERING

Many theories were tested by experimentation, and many techniques were developed to obtain observable proof. Scientific endeavor was a great client of experimental engineering. The steam engine became economically feasible only in the 18th century, after years of experiments. It unleashed the beginning of the Industrial Revolution. With the power of steam engines, industrial processes like milling were no longer dependent of topographical elements such as rivers.

#### TECHNOLOGICAL INNOVATIONS

In the beginning of the 20th century distilled petrol for internal combustion engines, accelerated the commercial production of personal vehicles. Automobiles gave people the freedom to move about comfortably. The commercial success of cars preceded the innovation of mass-production, as developed in the production plant of the Ford automobile company in 1914. Two world wars accelerated the optimization of production techniques, and spread them across the western world. Later, stuck in transit, people were said to be losing touch with a sense of place<sup>19</sup>.

#### MANAGEMENT AND DESIGN

When Frederick Winslow Taylor (1856-1915) took a scientific look at production techniques, the evolution changed spheres – process optimization was the objective. Economy, once territorial and then only material became immaterial – economical management saw the light. The separation of tasks was the key to the success: management and design were separated from production. It has been suggested that Taylorist management was a determining factor for the United States to win the second world war for Europe.

#### INDUSTRY, PEOPLE AND THE ARTS

In the world of the arts other revolutions were taking place. The living conditions of citizens were improved by the transformation of Paris by Georges-Eugène Haussmann (1853-1870). The celebrated aesthetic result was mostly obtained by improving sanitary and security conditions. Children who were born in dark and unhealthy apartments, became adults in a city with running water, electricity and wide avenues with cars.

In the same period the modern arts developed rapidly, freeing artistic expression from academic rules. Piet Mondriaan's evolution of his *Apple Tree* works, shows how the arts were looking for 'liberation' – abstraction – maximum effect with minimal gesture. We see works that pursue light, clarity, simplicity, and architecture develops towards similar goals. The



FIGURE 2 - *Corner of Michigan and Griswold, Detroit, circa 1920. Author unknown.*

comparison between the Mondriaan's *Apple Tree* and Van der Rohe Barcelona Pavilion is striking. Mondriaan had contacts with dutch industrials and urbanists such as Kees van Eesteren<sup>20</sup>. When after the war society and cities had to be reconstructed, all the elements for a convincing project were available. Modern housing architecture picked up Frederick Taylor's separation of tasks, and organized it in spatial compositions of avant-garde arts. It was studied and deployed at an urban scale, with the Modernist promise of personal hygiene and comfort for everyone. It was very efficient.

#### GLOBAL VALUE CHAIN

In this prosperous society economical growth came to the agenda of economical management. Michael Porter (1947-), drew up a scheme called *The Value Chain*<sup>21</sup> in 1985. In this scheme means and ends are organized to constitute a business unit. Now everybody could understand the separated tasks of business. It was the blueprint for outsourcing business components to low-wage countries, to optimize processes, and to increase profits. But the distance to the outsourced business-units required remote control.

#### REAL-TIME

Modern history saw many varieties of communication techniques, such as morse code, radio transmission, telephone, facsimile, and television. Telephone contact over long distances was common in 1985. But transmitting complex processes was difficult. Computing technology was the essential accelerator of global industrial management. This technology became a commercial success with the personal computer of IBM in 1981. When computing and telecommunication crossed paths, an additional service broke through: the internet and email. With a telephone connection and software, intense telecommunication was affordable. In 15 years time online communication took over practically all tele-communicated information<sup>22</sup>. Real-time was the new reality – the economy was no longer limited by spatial constraints. The new global economy meant more markets, more sales, more production, more industry, more income, more consumption, more traffic, but also more resource depletion, more pollution.

#### A SPACELESS COMMON SPHERE

With internet, much of the physical preconditions of economy and urbanity have been dematerialized. We share and trade in a spaceless common sphere. The effect of internet on architecture was a regular

subjects of debate in the Ninties. Today the effect seems to be limited to photo journalistic homogenization of popular design style. But the internet is the ultimate tool of economic deterritorialization. Much of the economy is now independent from space and geography.

#### REAL SPACE

The previous paragraphs are an attempt to describe a systemic cultural evolution and the forces and markers that bent history in its known curves. Understanding the interactions should help find the necessary initiatives to bend the current course away from dystopia. We've learned systemic and transversal thinking. We acknowledge that intention and impact do not always align. We've gained a deeper understanding of planning. Will it grant us control of the situation to solve the problems? It could also be the contrary. We've studied the hydrologic cycle since 3.000 years. Nonetheless, we still can't forecast the weather with reasonable precision beyond 5 days. Would we have sufficient insight now to presume to know how to shape a better future? Could understanding meteorology help?

Several years ago at the beginning of the crisis, I wondered what would be the natural equivalent of credit. Money is basically a means to simplify the exchange of things. These things are essentially food, shelter and affection, and tools to get them. Money is energy, business is metabolism. So then, credit means to have more energy to spend, than is actually available in the body. There's an analogy with high level athletes, who perform biological tasks of the highest efficiency. The limit of their performance is the lactate threshold, when more waste (i.e., lactic acid) accumulates in the blood stream than can be evacuated. Athletes train their skills and their organism. They can improve their technique and their breathing, loose weight, gain strength, heighten their fatigue-resistance, or do EPO as we saw in recent scandals. A sprinter can give everything and then rest, a endurance runner needs to master his metabolism over a longer period. But what do we do if we never stop running? Could this analogy help to understand where credit is taking us?

#### THREE PRINCIPLES

At the basis of the coming argument lie three principles: Dawkins' idea of 'memes' explaining cultural evolution – Dennett's varieties of Darwinian 'fitness', indicating that elaborate natural selection is a collective process, and McCann's (et la.) work on biodiversity group resilience.

#### CULTURAL PHENOMENON

Richard Dawkins<sup>23</sup>, an English evolutionary biologist, argues that the extended phenotype impacts of a gene can change the environment. With the Eurasian and the North American beaver as example, we see two genetic varieties with variation in their extended phenotype, i.e. their dams and lodges. This allows to understand how genetic evolution is not limited to the genetic code of the body, but also interacts and modifies the biotope<sup>24</sup>. In his book *The Selfish Gene* he introduces the term 'meme' as the behavioral equivalent of 'gene'. It is a unit of culture which is 'hosted' in the minds of individuals, and which can reproduce itself. When a meme is well adapted to its technotope<sup>25</sup> the corresponding concept proliferates. The principle of memes lets us apply natural selection to cultural phenomenon. An internet video-clip is good example – when people like it, it can go viral. You can trace paths of cultural replication in the form of a genealogy. Darwin's Tree of Life and etymology and sports shoe design can all be understood in genealogy. Is this tree-of-X-chart a true visualization of how things evolve? It seems fair to say that there is a striking similarity to natural and cultural evolution.

#### DARWINIAN CREATURES

When we accept natural selection as a frame for understanding cultural evolution, it is interesting to know the differentiation made by Daniel Dennett, in his book *Darwin's Dangerous Idea*<sup>26</sup>. He introduces 5 types of creatures that have an evolved capacity to generate-and-test for their survival. The first is the Darwinian creature who simply passes or fails the test, and is a 'victim' of natural selection. Skinnerian creatures improve their chances with memorized training. Popperian creatures can for pre-evaluate multi-scenario options. Gregorian creatures can question their own pre-evaluation hypothesis. Finally, scientific creatures can communicate their questioning and create an exterior environment for co-authoring their hypotheses – it's a collective risk assessment.

#### HISTORY CONTRADICTS IT

Let's take the principle of natural scientific\* fitness (scientific according to Dennett's definition) and test it on cultural evolution. Collective risk assessment improves the sustainability of the individual and the group. If natural selection can manage itself towards sustainability, than cultural selection should manage itself towards sustainability. Unfortunately, history contradicts it. As long as people have similar risk assessment capacities, and they are collectively confronted to comparable risks,

it can work. But when the group is made up of a mix of all 5 types of creatures, and they share their risk assessment in varied situations, where does that lead? Those who master the scientific\* perspective have a dominant advantage of mastering the process - some win, some loose.

#### DIVERSITY – STABILITY

The Diversity-Stability principle can explain community resilience. Kevin Shear McCann<sup>27</sup> et al., explore how diversity improves resilience in an ecosystem, through food-web inter-dependencies. A food-web is the complex variety of a food-chain. They argue that the stability of an ecosystem increases with the diversity of it's members, because a multitude of weak food-links delivers more food alternatives. Similarly risks, such as disease, are better absorbed by many different species<sup>28</sup>. Few strong species links are more fragile. The biotope is a fundamental factor as it is the geographically fixed food supplier of a given ecosystem

#### A TIGHT NETWORK

If we shortly go back to the comparison where economy = money exchange = energy exchange = metabolism, and we recall the short history of cultural evolution, we can come to the following observation :

1 ~ Natural ecosystems gain resilience, when a community of species includes more varieties, that are all adapted to their habitat, and that constitute a tight network of food inter-dependency and risk distribution.

2 ~ Cultural systems have developed a global economy, with only a few strong economic links organized in specialized tasks, homogenizing economies according to their optimal conditions, concentrating profit and reducing risk for a specific group.

The two evolutions are heading in opposite directions. According to the analogy between natural evolution and cultural resilience, our cultural system is on the wrong track. We can find suggestions of how to pursue cultural resilience:

3 ~ Cultural systems can gain resilience, when the members are diversified, when all are adapted to their habitat, and they constitute a tight network of business exchange and risk distribution.

#### SOCIAL ECONOMY

Let us go back to bending cultural history towards the UN's task list.

At the height of globalization, internet allows for augmented remote control, and is an unmissable tool for the global economy. But outside our focus, something else emerged. The internet developed a social function. When Facebook opened it's pages to the world in 2004, it climbed from an impressive 1 million users initially, to 1 billion in 10 years. To put the numbers into context, it comes down to 1.4 % of 1 billion people's waking time, in a single identifiable connected space, not being geographical. It's an opportunity for people to check if they're crazy, or if there is maybe someone, somewhere, who shares the same crazy ideas as they do. The reactions from online communities to your input, give a social feedback. It feeds the Hierarchy of Needs<sup>29</sup> – online feedback can improve your self esteem and status. This sense of belonging was once attached to a spatial community, but is now produced by a timeline on a computer screen.

#### ONE-MAN BUSINESS UNIT

The economic crisis has left many people without a job, but not without internet access. Maybe they don't belong to a productive community, but they do belong to a value community. The internet has become an important sphere of promise and opportunity, in a social sense but also in an economic sense. People make a living as freelancers or small enterprises. They are developing new markets using the possibilities of online working : accounting, consulting, design, software development. A business unit consists of some basic elements that can be delivered by one individual: Human resource (you); Technology (laptop, software, telephone and internet); Procurement (shopping); Infrastructure (accountant). Many start-ups start up in kitchens and garages, inspired by heroic stories of Steve Jobs and Mark Zuckerberg. The business process is cropped into a one-man-unit equipped with the necessary network tools. With the dot-com collapse in 2000 internet entrepreneurs lost their innocence. Now, 15 years later, the opportunities are still there, and the examples are impressive.

#### STARTUP LIFE

Even if the financial numbers of Facebook and Twitter are inspiring, independent business is tough, days are long – and something's missing. Real-time doesn't seem real. Some high profile tech heroes show their attachment to the 'real' world. Zack Klein co-founded vimeo.com in 2004 when he was 22 years old. A year later he sold the company. In march 2009 he started an image bank called Cabin Porn<sup>30</sup>, exhibiting 6.000

remote and primitive habitats – a refuge? There he quotes the 1959 Boy Scout Handbook “There’s nothing in the world that can compare to sitting with your best friends [...] watching the flickering flames and having a wonderful time [...]”. In 2011 he founded diy.org, a children’s workshop with an online sharing platform. Also Steve Jobs showed he had a limit to what he could accept in online time, when he told *The New York Times* his kids had limited iPad liberties<sup>31</sup>.

#### SHARING ECONOMY

Trying hard to make a living, every sale counts. The sharing economy is the (obvious) emergence of well equipped individuals putting their assets to value. There’s a simple principle that separates service form ownership and cashes in on assets idle time “[...] what you need is the hole, not the drill [...]”<sup>32</sup>. From car-pooling, to crowd-funding, to neighborhood task-sharing, there’s a list of possibilities for sharing assets online, and making a profit. On the one hand the sharing economy can be credited for letting people save money, time and the planet by sharing a car rather than traveling individually. On the other hand it can be criticized for taking a predators attitude when network individuals don’t comply to the same legal conditions as regular businesses. It’s surprising how it uses online ubiquity for local tasks, connecting informal local supply and demand. There is an important human challenge for this new economy, which is to enable trust between the people who use it.

#### COWORKING ECONOMY

The life-work-balance is a recurrent concern for start-up entrepreneurs making long days<sup>33</sup>. Separating work hours from home hours improves both lives. There is another simple logic that drives business individuals together, which is to share a space and save money. With a small collective investment a work place can give a sense of pride. When you receive a client or a vc-investor for the first time, you’re not comfortable at your kitchen table. Whatever the capacity of your business tool, or the potential of your market, ultimately you need contracts, and that is an affair of trust. A representative space, busy with co-workers, gives an adequate background to business meetings. There’s also the collateral advantage of having potential business partners at hand. A successful community that knows how to communicate it’s value can attract exterior partners, as is the case for NUMA<sup>34</sup> in Paris, who partnered with Orange for tech innovation projects. The business model is not based on square meters but the user-experience, says Benjamin Dyett of The Grind in New York.

#### ECONOMIC COMMUNITY

There’s a quote from Dusty Reagan<sup>35</sup>: “Coworking is not a space or a noun. It is a verb.” With the permeable culture of individuals, and without any company hierarchies, the direct relations between the members are simplified. Fernando Mendes, co-manager of Coworklisboa works entirely on individual trust – there are monthly invoices, but no contracts. The relations are stimulated through shared informal services, like the kitchen where relations stabilize and trust can build. The financial independence of the members, and the absence of hierarchy creates a unique working environment. Everybody’s at the same level of contribution. The amount of implication in the collective activities is a clear indicator of community cohesion, says Alex Hillmann of Indy Hall in Philadelphia. Everybody is expected to participate, accountability is reinstated – those who don’t ‘comply’ run the risk of being ‘rejected’, but most often they just go away. In an inspiring conference, he illustrated the role of the community manager as a Tumbler<sup>36</sup>. This person cultivates the links and collaborations between all the members, without putting him or herself in the center of attention.

#### THE RETURN OF REAL-SPACE

There is not a single definition of a coworking space. There are sector specific spaces, that have optimized common procurement and communication. Multidisciplinary spaces are suboptimal in that sense, but have a richer business-community. The scale of the community determines group dynamics – a big group allows for anonymity, and a small group is more intimate. Inevitably the space articulation is the continuous condition for a successful business community. There are some spatial characteristics of co-working spaces, that usually have a specific mix of several ingredients. The mix determines the amount of private and public work areas, and by that the amount of privacy at the workplace. The surface is optimized by time-sharing service spaces. The spaces are usually composed of leisure areas, meeting rooms, open work areas, separated work areas, and confined work areas destined for special tasks. A good space-layout can stimulate idea-sharing among the entrepreneurs. Leisure areas and auxiliary activities at the work location allow for minds to open up. Of the Cavendish science laboratory in Cambridge<sup>37</sup>, it is said that “Most members of the lab met freely in the canteen, which was said to assist inter-divisional communication and collaboration.” More Nobel prizes have been attributed to this institute’s professors than any other laboratory. Common meeting rooms also make for people to

meet. According to their position in the design and their transparency, visual contents can spill into the open space work area. In an open space plan the work is open source by definition – there’s no place for confidentiality in open spaces. However, chance meetings can occur when one individual overhears the question of another, and dares to answer. For confidential work there are other types of areas. Small companies have small separate offices, and confidential phone calls can be done from closed cubicles. Mixing these types of areas, without each one being appointed to someone, enables serendipity among the co-working. The scale of the space determines the scale of the group. When the size is right and the community finds stability, trust can settle among the members, and business partnerships can appear. The scale being relatively small makes for a lesser investment, a lesser risk, and a better reversibility<sup>38</sup>. It is pure and simple architecture, without the ostentatious gestures, on the right tone and destined to serve its user spatially for his or her job and life quality. The richness of hybrid programming, so often proposed against mono-culture districts, is being re-experienced in many coworking spaces.

#### THE CITY AS SECOND NATURE

Hybrid coworking clusters are the technotope for a new business species. They appear to have the features of a resilient ecosystem: a community of entrepreneurs with many different trades, adapted to their habitat, in a tight distribution network of skills, knowledge, ideas and risk. One of the weak links is to the building – the rent. The prices are relatively low, reducing the risk for members to join. With less financial pressure the members have more freedom to pursue their goals. Opportunities can be followed with less risk – there’s no harm in failing. All the places I learned about during the 2014 European Conference, were building conversions. This reduces the initial investment, and allows for lower prices. The advantages of renovation lie in the usually well connected locations, the strong identity of historical sites and/or buildings, the low initial cost, the flexible programming, and the high end value<sup>39</sup>. Also it must be said that renovation saves significantly on indirect energy costs by saving twice on demolition, construction and material transport. The hybrid programming that is typical of coworking spaces is not entirely new. There is the example of the cultural center the Meerpaal in Dronten, a dutch new-town in the polders. The center was built in 1967, is still part of the city amenities and has undergone several renovations. The program consists of a theatre, a cinema, an arts gallery, a library, a shop and a

tourist office. The question of scale of space and economy was experimented and studied by Christopher Alexander for the Campus of the University of Oregon. The results were later captured in his book *A Pattern Language: Towns, Buildings, Construction* (1977)<sup>40</sup>.

#### CIVIL URBAN INITIATIVES

Coming back to the situations described in the first paragraph, where urban master-plans can’t be to the point because of the ill-adapted time scale, there are three examples of ‘meanwhile redevelopment’ that I’ve studied first hand. For the european comparative action-research called *The Origin of Spaces*<sup>41</sup>, for which I am conducting the research coordination, there are three of five partners that have done a programmatic conversion of a building that is situated in an area for which an urban master-plan is made. For the Portuguese partner, the property developer Mainside, it is the LX Factory<sup>42</sup> in Lisbon, that was redeveloped with a hybrid program of arts, business, retail, and leisure. When they acquired the factory in 2004 they aimed for a global redevelopment in the context of urban master-plan for Alcantara. But when the crisis hit Portugal they found an alternative aggregate redevelopment strategy that makes for one of the most vibrant parts of contemporary Lisbon. In Bilbao, it is the initiative called Zorrozaure Art Work in Progress (ZAWP<sup>43</sup>) of the association hACERIA Arteak, that works to facilitate urban culture and space regeneration. Meanwhile, the peninsula waits for the realization of Zaha Hadid’s urban master-plan since 2003. The initiators of the OOS research project are members of the association Les Darwiniens in the Darwin Ecosystem in Bordeaux, France. These military warehouses were saved from demolition by the ad hoc property developer Evolution Ltd., and redeveloped as a hybrid culture and business community. The project precedes the coming urbanization of Bastide-Niel under direction of MVRDV urbanists. All three cases are organized around a main activity and have complementary programs creating a lively atmosphere and round-the-clock activities.

The case of private urban initiative is extensively studied by Francesca Ferguson in her book ‘Make\_Shift City’<sup>44</sup>. In an Uncube article, she says: “[...] the realities of austerity urbanism shed a completely different light upon a spatial design practice [...] making do with an alternative culture of self-management, of shared resources and of the sweat equity of unpaid, voluntary labour”. User engagement, and acts of reappropriation and empowerment, are signs of people taking initiative to create what they need, even when government says

they can't do it. The European government however acknowledges the need for citizen involvement<sup>45</sup>, and says participation “[...] develops a sense of ownership, [...] improves acceptance and implementation, [...] helps the development of appropriate behaviors, helps to ensure long term sustainability by increasing residents' satisfaction, enables people to find solutions of their own [...]”.

The situation is very similar for housing cooperatives. In comparison to regular housing projects and their current price-quality-ratio, there's a different incentive towards project involvement. There's an important gap between the evolution of income and the cost of housing<sup>46</sup>. When buyers get organized they can undertake a project themselves and get a better product, if they have the necessary skills. Inevitably the cooperative spirit is diluted and appropriated by regular developers, proposing unfinished products

and calling them 'cooperative'. But during a debate on housing cooperatives, with a hybrid operation as case-study, it appeared that even regular developers are willing to be more innovative, if they don't sell to an anonymous market but to identified buyers. In one cooperative innovation called De Ceuvel<sup>47</sup> in Amsterdam the innovation is taken so far as to use temporary cultural accommodation as a means to depollute a former harbour brownfield.

#### REAL SPACE – THIRD PLACE

When private urban and architectural initiatives are taken, waiting for the announced urban developments that are stalling in the economic crisis, by (re)developing (unused) property for the sake of hybrid urban programs with a self-sustaining economical model, it would seem that a certain resilience is being demonstrated. If, as was suggested before 'cultural systems can gain

resilience and stability, when a community of individuals is diversified, when all are adapted to their habitat, and they constitute a tight network of business exchange and risk distribution', then these new hybrid third places<sup>48</sup> could be a step in the right direction.

If the UN announces at Davos, that “We must embrace sustainability and tackle [...] global warming, rising inequalities, social unrest and violence and a fragmenting world order, with low trust in governments and business [...]”, it would seem that the mentioned initiatives can address these concerns with an integral approach. In echo of the name 'Real-time' that was given to the new community condition created by online networks, I propose the name 'Real-space', as opposed to virtual space, for this certain type of spatial condition. It serves for activating opportunities in the exist-

ing urban landscape, for user oriented upcycling projects with financially independent programmes, developed in close collaboration with the end-users. It may not take over the world, but if it proliferates enough to demonstrate its viability, it might very well change the game for the better.

Spatial planning, be it architecture or urbanism, is the fundamental organizational task that can create the right physical conditions for a community of citizens, entrepreneurs and leaders to share their presence and build trust. Managing scales, distances, orientations, directions and proportions of space with care, will get people on the good foot.

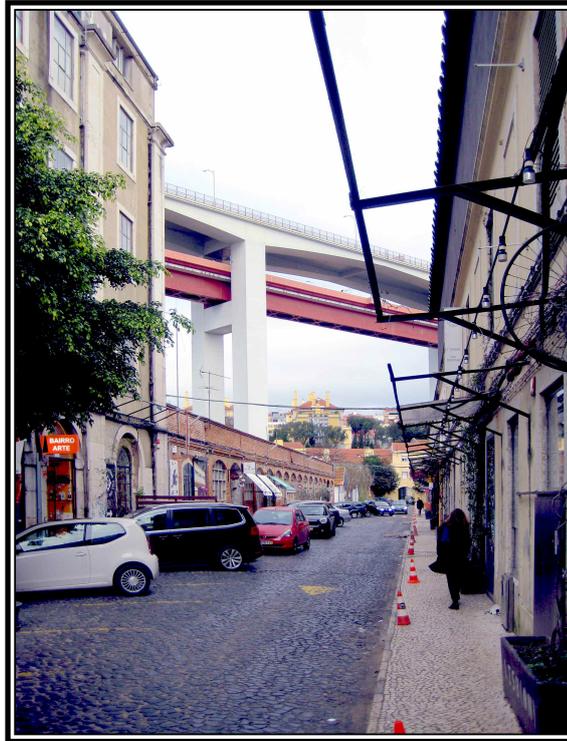


FIGURE 3 - LX Factory main street, Lisbon, 2015. C. Weiler.



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## P2P REVOLUTION AND COMMONS PHASE TRANSITION.

NOTES ON THE NATURE OF THE REVOLUTION IN THE P2P/COMMONS EPOCH



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**A**T THE P2P FOUNDATION, WE DON’T USE THE moniker ‘revolution’ with much frequency, preferring the concept of phase transition.

In this article, we would like to elucidate the relation between the two concepts.

In my experience, revolution is used in two quite different senses; in a generic sense, it just means a ‘big change’, like for example when we speak about the Industrial Revolution, this was a long and drawn out process, with many aspects, and it would be really difficult to identify it with one particular

event. Yet at the same time, there is clearly a time when industrial changes emerged in a mostly agrarian context, and a time when it is the industrial processes and forms of organisation that are dominant, and the agrarian aspects subsumed under that domination. Clearly, between these two moments, a ‘phase transition’ has occurred.

Revolution is also used in a much more narrow fashion, which usually refers to a momentous series of concrete events, in which the very organisation of power in society changed fundamentally, leading to a wholesale replacement of human personnel, a new different balance of power between social classes, and the like. Paradigmatic examples would be the French and Russian revolutions.

Both types of revolutions occur throughout history, but for many people, at least for those that live more comfortably, the second notion is less attractive. Indeed, it is most often associated with violence, often directed against the very ‘leaders’ of the first phases of such revolutions, and to boot, usually leads to counter-revolutions. The achievements of such revolutions, their victories, are often also very problematic. Who can unproblematically affirm that the Napoleonic and Soviet regimes for example, were necessarily ‘better’ than what they replaced; or, that these radical social and political events produced better outcomes than the slower processes that led to similar phase transitions? An additional issue for the ‘narrow’ meaning of revolution is that for many people, even for those who dislike the presently dominating regime of their time, is that it is not very clear most of the time, what form the new post-revolutionary regime should take, especially if the negative aspects of other attempts are quite clear.

For this and other reasons, we prefer to talk at the P2P Foundation, about phase transition, stressing the process of change from one system to another, without necessarily being able to predict how exactly these changes will occur, especially on the political and social level. But let’s be clear, from the historical record, it is pretty clear that such fundamental changes are usually associated with rather deep social convulsions. For example, if we take the deep shift from the Roman system to the feudal system, it was characterised by military invasions from foreign

tribes, which substantially changed the political leadership in post-Roman regimes. For centuries, Europe was unstable. If we take the changes associated with the Reformation for example, we see similar convulsions and religious civil wars; the change from the Ancien Regime to capitalism was similarly fraught with deep political and social crises. So there is no doubt that a similarly deep transition will be associated with social convulsions, wars, and yes, political and social revolutions. The question is, what kind of forms these will take, and not that we can guarantee a cosy transition.

However, just as the revolutions of feudalism differed fundamentally from the revolutions that created capitalist societies, so the transition to a commons society will take different forms.

In what follows, I explain my view of what those differences could be.

First, what do we mean more precisely, when we talk about a transition towards a post-capitalist, p2p-driven, commons-oriented society?

Here are a few pointers.

In the present dominant form of society and economics, nature is considered to be an infinite resource and the market 'externalises' environmental concerns. It is based on 'pseudo-abundance'. At the same time, the present system attempts to systematically render 'artificially scarce' what is naturally abundant, such as say agricultural processes, but more specifically, knowledge production. In p2p/commons processes, the natural abundance of the immaterial commons such as knowledge, software and design, and technical and scientific knowledge, is recognized and shared and made available to all humanity; and it is associated with changes in the mode of production, that insure that production regenerates resources, maintaining ecological and resource stability for coming generations and for the natural world and its beings, of which we are an integral part.

In the present form, corporate entities compete against each other, but within these entities, collaboration, though mostly hierarchically driven, occurs: cooperation is subsumed under competition; in the new form, ethical entrepreneurial coalitions co-create commons with contributory productive communities; and are interlinked around these commons through social charters and open licenses; though they may compete within that sphere of collaboration. In other words, competition is subsumed under collaboration. The value is created and deposited through commons, the economy creates livelihoods around these commons and their contributory communities, and the

market creates 'added value' services and products around these commons.

So what we see here in the nature of these changes are a series of qualitative reversals in terms of the operating logic of the system.

These phase transitions are inextricably linked to changes in the nature of economic, social and political power. How should we see that relationship?

The process of past phase transitions has been the following:

- 1 ~ the existing dominant system increasingly creates systemic crises that it no longer is able to solve;
- 2 ~ both managerial (ruling), and productive classes (the dominated producers of value for the managerial classes), look for solutions; they do this in varied, fragmented, and pragmatic ways, under the dominance of the older structure; forming 'patterns of response', or solutions. Gradually, these patterns find themselves, and though they are used by the dominant system, they also represent an alternative logic that is slowly building up and asserting itself. Within the old paradigm a new prefigurative paradigm emerges, which is subsumed under the old logic at first but gradually gains strength;
- 3 ~ these changes in the modalities of production and value creation and diffusion also create new social structures; an 'exodus' occurs from the old system towards the new system; Roman slaveholders become feudal lords become merchants and industrial capitalists; slaves become serfs become labour. When the tensions between the new and the old are no longer absorbed by the old system, social and political convulsions occur, eventually leading to 'revolutions' in the organization of society.

Today, we see this process clearly at work.

The systemic crisis of global neoliberal capitalism is leading to 3 types of patterned responses:

- 1 ~ sustainable production which takes into account ecological limits;
- 2 ~ solidarity economy and cooperative forms of organisation which stress the need for social justice in terms of value distribution;
- 3 ~ commons oriented peer production and other forms of sharing and openness which operative against the enclosures, artificial scarcities and privatisation of common knowledge.

These patterns are still fragmented, only exceptionally 'eco-systemic' in their concrete practice, though these alternative eco-systems are definitely emerging

and strengthening. What is specifically emerging is a new proto-mode of production in which contributory communities create common knowledge, in which entrepreneurial coalitions create added value on top of the commons in the still capitalist marketplace, and in which for-benefit associations create and maintain common infrastructures of cooperation and production.

What needs to happen, and is starting to happen is that these productive communities, rather than be subject to the logic of extractive value captation by 'netarchical capitalists' (those in the old system which are investing in the new systems for their own benefit); create their own ethical economic vehicles, which allow them to create livelihoods around their commons-creating activities. This represents the necessary convergence, through open cooperativism, of economic forms which respect social justice (the solidarity economy and other forms), with peer production; and on the other hand the equally necessary convergence with sustainability, through for example the 'open source circular economy'.

An important issue today is the relation between the 'prefigurative' forms, i.e. individuals and communities finding alternative systems of value creation that respond and solve the present systemic crisis, with political and social change. The crisis today expresses itself because the traditional emancipatory forces of the industrial society (left parties, unions and the like), are still oriented towards the old paradigm of capital and labour; while the many productive communities have a strong distrust of these older political forms, and new forms are still weak and emergent.

Nevertheless, we see this necessary convergence is also already happening:

- 1 - new political forms are emerging from the new digitally networked production practices, such as the Pirate Parties and others;
- 2 - huge social mobilisations have taken place, using the models of peer production in their creation of politics, which has substantially influenced the new political movements that have also grown from this, like Syriza in Greece, and Podemos in Spain. Emblematic may be the city coalition in Barcelona, En Comu, which won the elections, and which is the first political coalition to specifically refer to the commons in its new political ideology. Other perhaps even more radical forms are the civic coalitions that have emerged in France (Saillant), and the UK (Frome), in which allied civic groups directly replace the existing 'political machines'.

These more political movements have emerged from what were originally anti-political mobilisations but

have learned through experience that prefigurative actions and protests cannot produce substantial victories in the context of a hostile state; and that therefore, the state itself has to be tackled and transformed. What is most likely in this evolution is the transformation of the electoral democracies, in which elections have now themselves become enclosures of political power of the people by a professional political class that is operating in a market state form that is dominated by private financial interests that have made real and gradual change impossible. New hybrid forms will combine elections, with associated forms of deliberative and participative democracy, but the political initiative more directly in the hands of the citizenry, and use the 'partner state' model, in which a transformed state will create the necessary civic and technical infrastructures to 'enable and empower individual and collective autonomy'; on the political agenda is the development of public-commons partnerships and the commonification of public services, such as for example the example of the Bologna Regulation for the Care of the Urban Commons.

My personal belief is that, given the exodus from labour forms of work to those of networked and commons-creating peer producers of the new precarious working class, a reconstruction of social and political institutions is necessary, based no longer of the declining form of the salariat (which is itself a legal form of subordination), but on the 'commons'. I have elsewhere proposed to create at the local level, Assemblies of the Commons for civic actors and Chambers of the Commons for the new economic actors, to reconstitute institutions of 'commonfare' that can recreate a powerful social force that will in turn reconfigure politics to create powerful 'coalitions for the common(s)', such as En Comu in Barcelona. The Barcelona victory was indeed preceded by precisely such a civic reconstruction by the post-15M activists, which created new participatory forms in the social movements and commons-creating productive communities.

Another important issue to be resolved in this specific phase transition is the relation between the local and the global. The big wave of relocalisation taking place today, through for example the groups reconfiguring the provision of food and energy, is paradoxically itself facilitated by the globally networked technology that is the internet. But most of the time, these local communities are using global technology to strengthen local activity, and not necessarily to project global power.

Today we have global formal civic associations, and through p2p, global open design communities. What is missing is global ethical entrepreneurial forms that can operate on a global scale and can form a counterpower to private and extractive multinational corporations.

The immediate limitations imposed on the Greek Syriza party also shows the very strong limitations for local and national politics in terms of structural change. Local and national movements are necessary, but not sufficient, and an orientation towards the global commons, through physical global institutions, will be vital, as is their political expression. Lasindias.net has proposed, and we support this vision, the creation of 'phyles', global business eco-systems that sustain the commons and their communities, and the FairCoop project is a first attempt at developing this.

Revolutions in the narrow sense are organic and often destructive events, out of the control of any particular social force. We can notice the tinder, but we can't know which spark will set it alight. It would be unwise to rejoice especially if the alternative social forces and productive systems are still emerging.

Big waves of social revolution have been unsuccessful, like for example the wave of 1848 in Europe, or the wave of 1968; and as for the successes, "be careful what you wish for".

Therefore today, what matters is the reconstruction of prefigurative value-creating production systems first, to make peer production an autonomous and full mode of production which can sustain itself and its contributors; and the reconstruction of social and political power which is associated and informed by this new social configuration. The organic events will unfold with or without these forces, ready or not, but if we're not ready, the human cost might be very steep.

Therefore the motto should be: contribute to the phase transition first; and be ready for the coming sparks and organic events that will require the mobilization of all.



ROBERT C. SMITH

# CRISIS, SOCIAL TRANSFORMATION AND THE FRANKFURT SCHOOL: TOWARD A CRITICAL SOCIAL SYSTEM AND AN ALTERNATIVE PHILOSOPHY OF CHANGE



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## CRISES AND SYSTEM CHANGE: A CRITICAL SOCIAL-PHILOSOPHICAL INTRODUCTION

**I**T HAS TO BE SAID: THE IDEA OF REVOLUTIONARY SYSTEM change as a grand event is deeply problematic. How could the entire reconfiguration of society be sustainable, if not carried by anything other than a complex, integrative, multidimensional, open, lived, and transitory (socio-historical) process<sup>1</sup>? The answer is that we need to develop a new, progressive philosophy of systemic change – an alternative philosophy that breaks away from a dependence on the grand narrative of some sort of distant *potential* social ‘big bang’, or the idea of a sudden violent overthrow of the present order (as a result, for example, of the final realization of the proletariat revolution), or the misguided belief in top-down authoritarian politics. These types of theories or theoretical reliances do nothing to support the actual manifestation of fundamental societal transformation as underpinned by grassroots and radical participatory democratic movements.

This does not mean that one should subscribe to a purely post-modern, anti-grand narrative perspective – the sort of perspective which in many ways translates into a deep social passivity that allows a corrupt social system to continue to manifest and rule. On the contrary, the issue I would like to draw out here is how abstract grand narratives of social change are problematic precisely when they are not grounded in an engaged critical social-philosophy, inasmuch as they often do establish a sort of passivity, implicitly or explicitly. The psychology here is simple: ‘I do not need to work every day for a better society, not at least ‘until (the ever distant) revolution comes’ or

‘the second coming of Jesus’ or ‘the rise of a new dominant leader to implement a sweeping tide of change’ or, in the anarcho-primitivist light, not until ‘a catastrophic event happens and all of civilisation collapses’. In most cases, abstract grand narratives of revolutionary change rely on an almost mythical prophecy of a forthcoming ‘big bang’ event – a prophecy that is really more of a psychological projection of the path society is currently headed toward, no different than the projection of society’s end in the rise of Armageddon films in Hollywood. But this reliance on abstract grand narratives act as a sort of substitute for one’s efficacy as a human being, or, as I wrote in a previous book, they are disempowering and become a substitute for the efficacious agent (i.e., the individual who *can* change his or her sociohistorical-cultural conditions on an everyday level). Almost as an obscene way of justifying inaction in the face of endless crises, one admits, in subscribing to an abstract grand narrative, that while things do need to change ‘I don’t have to take any responsibility to work for that change constructively each and every day’; when, in truth, systemic change requires daily acts of struggle, efficacy, creation, debate, theory, and progressive development.

This is not to say that events, such as high food prices, do not spark social unrest and therefore also inspire movements toward fundamental social change<sup>2</sup>. Stark social realities today, from high food prices and racial injustice to violence, are systemically related. “Why is there poverty and hunger alongside the rise of global temperatures while polar ice caps melt at unprecedented rates? Why are there, at the same time, violent revolutions throughout the Middle East and uni-directional tendencies toward militarization? Surely, today’s crises are not isolated or random, but flow out in patterned-forms from the deepest structures of our society and may be conceived on the rationale for the political economy upon which this society is based”<sup>3</sup>. In the context of understanding the systemic relation among different crises, it is a fairly practical conclusion that each particular crisis can spark a political event which, in turn, represents the possibility of a transformative moment (especially if the movements are not reactionary, but *critical* in the deepest sense). Crises are, in other words, leverage points. But while we can recognise the transformative potential of such leverage points,

the question remains of how and where systemic change primarily manifests.

On the basis of my own research, I would argue that moments of social unrest represent only a fraction of the total unfolding force of fundamental societal change, especially when we look at the sustainable transformation of society as *a socio-historically transitory process*. In short, this is because if the transformative horizon of a revolutionary, actually democratic, participatory and egalitarian politics is to be possible, the goal *has to exist in the present*: for emancipation to *be* emancipation, it must start as it aims to go on<sup>4</sup>. To put it another way: each and every day on a grassroots level, the myth that there is no alternative to capitalism is defeated. It is defeated by the countless progressive, radically democratic movements across all spheres or sections of society, who demonstrate that another way of living is possible – that there are alternative possibilities when it comes to new forms of organisation, economies, cities, and so on. The very existence of these developments and possibilities are a testament to John Holloway’s thesis in *Crack Capitalism*: i.e., the defeat of the neoliberal myth of the naturalisation of capital is acted out in the countless cracks that open up across the social landscape<sup>5</sup>. One of the main aims at Heathwood, for example, is to create bridges and direct connections between these cracks, between alternative movements across all areas of society, and the bigger social-philosophical picture represented within the many lines and many sides of discourse in critical theory. As I have written elsewhere, within these cracks it is possible “to experiment with different ways of doing things, to imagine another world, to organise and participate alternatively. Seen in this light, revolutionary change is understood as something that is not centralised – it is diffuse and almost amorphous – inasmuch as emancipation occurs through interaction and mutual collaboration. One could perhaps say that emancipation is always moving”<sup>6</sup>. It is in this *moving* where theory, by which I mean critical theory, must find direct avenues of engagement. As I will discuss in a moment, the same can also be said for a critical, engaged social systems theory. But before discussing in more detail this notion of an engaged social systems theory, there is a point of critique I feel needs addressing.

It is naive, I argue, to place responsibility for the manifestation of revolutionary change on any sort of top-down politics. Systems thinking can easily become captured, I think, by a less-than-revolutionary top-down politic, which depends primarily on a dogmatic and archaic emphasis on party politics, political hierarchies and

the election of a dominant leader to drive forth change. The problem is that this type of politics is almost always ideologically one-dimensional and shorted sighted, and its view of systems doesn’t take into account the more complex view of what Lambert Zuidervaart describes as “the realization of all norms”<sup>7</sup>. The thrust of my argument here, moreover, is that this sort of backwards politics more often than not produces or reproduces dominant social systems. To break the trend we need to be critical today of dominant and authoritarian theories of social change and the often questionable politics that they entail, which depend on the idea of a sudden total integration of an economic or political system to which people must therefore adapt. Contrary to this wholly authoritarian approach, I suggest that it is more consistent with the necessary requirements of actual egalitarian democracy<sup>8</sup> to ground the question of systemic change, of a progressive critical social systems theory, in the notion of *a radical dialectical political praxis* rooted in a foundational, alternative view<sup>9</sup>.

Another problem is how the top-down perception of systemic change doesn’t take into consideration the longer term view – that is, the sustainability of revolutionary change (after the fact). One cannot expect, to draw a simple caricature, that fundamental revolutionary change can emerge suddenly and rapidly, and then somehow miraculously overcome capitalism’s coercive legacy (socially, relationally, psychologically, emotionally, epistemologically, and so on). Fundamental social change, for all intents and purpose, is just as much a many-sided transitory social-transformative process as it is a healing process. This is one reason why I think Uri Bronfenbrenner’s ecological systems theory could potentially strengthen a critical social systems theory, because it offers a greater empirical perspective on the complexity of individual interaction within systems and therefore also reinforces a progressive theory of many-sided “systemic change”, which takes into account the emotional, psychological, relational (and so on) needs of the individual. But because the top-down concept of ‘revolution’ is not anticipated to be the result of a truly emancipatory, *prefigurative* grassroots politics and of a ‘many-sided human transformation’ process, it relies on the authoritarian logic that people will once again have to adapt to the new system in place. It relies, to put it another way, on the dominant logic of a sort of ‘total social integration’ which, as we’ve witnessed in different (failed) revolutionary movements in history, forces a more or less totalised single (ideological) model onto society without considering the differences of people’s needs in each particular sociohistorical-cultural context. Here, the universal is just as

damaged as it is in global capitalism or the sham of representative democracy in the era of Neoliberalism. A single vision of systemic change is forced onto society, coercively and even dominantly, bending people at will and creating an entirely new ‘subordinate populous’. Systems thinking must break from this type of political-theory. It must find its way toward critical theory, toward an engaged critical social philosophy, and therefore toward a truly emancipatory political horizon which accommodates autonomous movements, grassroots and participatory democratic politics as the body, as the force, on which all structure and systems may be transformed and sustained.

#### WHAT IS “SYSTEMIC CHANGE”?

I once wrote in the context of a discussion on an alternative philosophy of systemic change that the problem of ‘needless social suffering’ is the ultimate grounds of truth, especially when it comes to judging “social progress”. The general thrust of my argument was aimed directly the modern political-economic system. The problem with capitalism is that it creates an order of needless suffering. In other words, we can measure the wretchedness or corruption of capitalism precisely in that it produces needless social suffering: environmental destruction; the adoption of authoritarian systems; the division of labour; the deep psychological afflictions of the mind numbing work week; the establishing of false needs and superficial psychic paradigms; deepening social and economic inequality; racial injustice; horrendous exploitation – all these phenomena are essential to the system of capital and produce situations of needless suffering. They are, in other words, *systemic*. There are endless studies, countless articles and reports disclosing this very reality. It is no wonder, then, that in the context of our present (bad) social reality, the notion of ‘well being’ has taken on a whole new role when considering the need for revolutionary change. Well being has become a sort of counter-narrative against the horrific policies of neoliberal governments – almost a point of leverage for re-engaging with the larger population the need for a shorter work week, worker’s co-ops and even universal basic income. But, if I was right to argue a couple years ago that fundamental ‘systemic change’ requires an understanding of the ‘truth context’ of ‘social progress’ to underpin its qualitative and quantitative evaluation, not only does this concern, for me, the systematic elimination of needless suffering. It also concerns the alteration of society as a whole<sup>10</sup>.

In other words, I often think of “systemic change” in light of the Frankfurt School: namely, as *the fundamental*

*transformation of the “whole” of society*. Of course “systemic change” can also refer to the structural transformation of particular subsystems. But I consider this level of definition to be more in the realm of reform, as opposed to the genuine alternation of the *totality* of social coordinates and therefore systems and subsystems. For me, genuine systemic change pertains to the alternation of the deepest, most fundamental structures of society. On this point, it is of my view that any theory of systemic change worth its salt has to look *structurally* at the need for societal transformation; but it must do so while considering a genuinely progressive critical theory of society’s alteration. Allow me to explain this in basic terms.

One way we might describe a deeper vision of systemic change is as the fundamental transformation of the existing social “*totality*”. At first this may sound overly philosophical, but it captures a very important, if not crucial, insight. In a play on Von Bertalanffy in his development of *General Systems Theory*, “totality” describes the systemic whole in which exist ‘models, principles, and laws that apply to the generalized system and its subclasses or subsystems, the nature of their component elements, and the relationships or “forces” between them’<sup>11</sup>. This description shares something in common with some of the most basic lines of critique in critical theory, in which the ‘bad social totality’, as I often describe, represents, on one level, the integration of all facets of the anatomy of society. The ‘bad social totality’ represents, in another way, the shape and structure of society, its parts and historical genesis on a systemic level. On the basis of this understanding, a critical social systems theory very much focuses on the big picture, on the social whole, and how all of the different social parts are interrelated. This is why, for Adorno, we read an emphasis correctly toward the particular without also losing sight the universal. For example, consider the problem of racial injustice. The particular, in this case the problem of racial injustice, always has to be understood within the context of the ‘bad social totality’ in which it exists. To do justice to a particular social problem, critical judgments need to grasp both the complex internal dynamics of that problem and the dynamics of the sociohistorical totality to which that issue belongs<sup>12</sup>. This is the essence, if I can say, of a critical social systems theory. It is representative of one of the basic understandings of critical theory. Within this scope of critique, there is an obvious “truth content”<sup>13</sup>. This “truth content” is the way in which an issue of deeply pressing social importance simultaneously ‘challenges the way things are (i.e., the status quo) while suggesting how things could be better’<sup>14</sup>. Thus, a critical systems analysis is not without, I argue, an understanding of

the broader social totality in which, in this case, racial injustice exists and is integral, while also lending to a broader social-philosophical understanding of what a systemic alternative might look like.

If there is a common problem with social theory today, with general critique in the dominant media, in the endless journalistic columns in even the most progressive of newspapers, it is always how the social whole often goes without question. (Is this not, moreover, one of the frequent charges against Liberalism?). I think we can explain this frequent absence of fundamental critique in modern politics, at least in a popular sense of the term, as being a product of what Adorno described as *identity driven conceptuality*. I've written about this in several places. Due to space restrictions I cannot elaborate in detail what this line of critique entails and why it is important, but what I can say is that this critique of 'identity thought' really goes at the heart of the genesis of the modern subject, of modern scientism, and certainly also at the heart of the genesis of modern systems of domination and coercion. Generally and simplistically put, I sometimes describe 'identity thought' as really being a systemic problem; it underlines much of the cognition of contemporary systems, as it represents the drive today to absolutely capture a phenomenon, to reduce phenomena – nature, people, things – to the status of 'mere objects' to therefore be dominated. Think, for instance, of the modern capitalist logic of positivism. Think, as another example, of the distortion or instrumentalism of the social sciences to help drive modern capitalist bureaucracy, in which human beings are reduced to the status of numbers, 'profit maximizers' or any other form of epistemologically violent classification. Moving away from a purely systems point-of-view, critical theory can help us understand the genesis of the institutional structures of modern capitalist societies, which, in turn, can offer insight into how deep a critical social systems theory must go to really be philosophically coherent. As Zuidervaart summarises in light of Adorno: "Society and culture form a historical totality, such that the pursuit of freedom in society is inseparable from the pursuit of enlightenment in culture (DE xvi). There is a flip side to this: a lack or loss of freedom in society – in the political, economic, and legal structures within which we live – signals a concomitant failure in cultural enlightenment – in philosophy, the arts, religion, and the like. The Nazi death camps are not an aberration, nor are mindless studio movies innocent entertainment. Both indicate that something fundamental has gone wrong in the modern West."

According to Horkheimer and Adorno, the source of today's disaster is a pattern of blind domination,

domination in a triple sense: the domination of nature by human beings, the domination of nature within human beings, and, in both of these forms of domination, the domination of some human beings by others. What motivates such triple domination is an irrational fear of the unknown: "Humans believe themselves free of fear when there is no longer anything unknown. This has determined the path of demythologization [...]. Enlightenment is mythical fear radicalized" (DE 11). In an unfree society whose culture pursues so-called progress no matter what the cost, that which is "other," whether human or nonhuman, gets shoved aside, exploited, or destroyed. The means of destruction may be more sophisticated in the modern West, and the exploitation may be less direct than outright slavery, but blind, fear-driven domination continues, with ever greater global consequences. The all-consuming engine driving this process is an ever-expanding capitalist economy, fed by scientific research and the latest technologies<sup>15</sup>.

This pattern of "blind domination"<sup>16</sup> is, as I intend to argue in an upcoming series of papers, *systemic*. It is systemic precisely in the sense that it underpins the historical production and reproduction of systems of domination. One could say that I am, in a way, hypothesizing here a transhistorical theory of systemic domination. But the thrust of my argument is simple: Ultimately I agree with Louis Althusser's observation that the reproduction of the already existing conditions and relations is achieved increasingly through the production and reproduction of suitable human subjects. If the reproduction of subjects takes place in the realm of 'coercive and authoritarian social circumstances' and coincides with the reinforcement of 'instrumental reason', the outcome is simple: the individual develops and grows in a social world where s/he needs to know how to act in relation to his or her position in the world of dominant social order. In '(bad)society' one must accept his or her own exploitation insofar that the historical genesis of dominating social systems emphasise the production of the necessary states of mind needed to ensure the continued preservation of the existing state of oppression and exploitation. But is this theory '(bad) society' enough? Does it capture the more total picture of the reproduction of the core systems, relations and psychology of capitalism? There is undeniable truth to the notion that 'coercive, exploitative and authoritarian' structures or dynamics go a long way to supporting the reproduction of oppressive and dominating societies. If history teaches us anything, it is that the most dominating societies were also those whose deepest systems and structures functioned according to 'coercive, exploitative and authoritarian' principles. But what this theory of the reproduction

of '(bad) society' often misses is a more multidimensional understanding of social change. More often than not, to say that 'dominating social systems emphasise the production of the necessary states of mind needed to ensure the continued preservation of the existing state of oppression and exploitation' translates into very one-dimensional political or economic theories of an alternative. Let me put it this way: isn't the power of capitalism precisely in that it creates a threat of constant impending economic scarcity? What makes the system of capital so powerful is that it establishes a horizon of experience in which one must exist as though their situation is universally unalterable. Indeed, millions of people across the world might know that climate change or economic inequality are serious problems worth protesting, but to feel threatened at the prospect of losing one's source of income or means of economic survival as a result of choosing to act against that system is a powerfully repressive instrument that capitalism naturally tends to wield<sup>17</sup>.

So how does all of this relate to systems thinking, to the development of a critical social systems theory and even an alternative philosophy of systemic change? We can begin by returning to the field of critical theory, which has a long history in systems thinking. Here "systemic change" is often described through a critique of the "linkages between the economy and the political, social, cultural, and psychic realms while stressing the relative autonomy of the superstructures"<sup>18</sup>. Critical theory thus describes "the mediations, or interconnections, between these spheres as well as the contradictions," and thus develops a theory of what might be called a "mediated totality"<sup>19</sup>, a point I discussed above. Moreover, critical theory represents the basis for a progressive social systems theory because it, "involves construction of a model of the current society and a demonstration of the fundamental connections – as well as of the contradictions and conflicts – among the various domains of the current social system. Inasmuch that critical theory asks "which interconnections exist in a definite social group, in a definite period of time and in a definite country, between the role of this group in the economic process, the transformation of the psychic structures of its individual members, and the totality of the system that affects and produces its thoughts and mechanism" (*ibid*: 44)", it seeks to describe "the complex set of *mediations* that interconnect consciousness and society, culture and economy, state and citizens," structure and agency<sup>20</sup>. Consequently, critical theory captures the emancipatory thrust of a progressive social systems theory and provides analyses of the mediated social totality that describe various relations among spheres of reality." To quote Doug Kellner in full (who, in his important

paper confronts the meaning of critical theory and the crisis of modern social theory): "Critical theorists use the term "totality" in a synchronic sense to refer to the structure of society, defined by the Marxian critique of political economy, which provides the framework and context of inquiry, and which constitutes many social facts. For the Marxian theory, the relations of production provide the framework for development of a capitalist system; the economy thus constitutes a form of society. The critical theorists begin with the categories of economics and the Marxian critique of political economy precisely because the economy continues to play a constitutive role within all areas of social life and thus provides the framework for developing a theory of society. Marx's concepts of commodity, money, value, and exchange characterize not only economics, but also social relations because social relations and everyday life are governed by commodity and exchange relations and values. In this sense, critical theory utilizes totalizing concepts to describe a totalizing capitalist system which attempts to impose its values, structures, and practices throughout social life."

The concept of totality refers in other contexts to the diachronic, or historical, perspectives of critical theory which both characterize the historical conditions which have produced the existing capitalist society, and which conceptualize the vicissitudes of capitalist development and the (hoped for) transition to socialism. Thus, rather than operating with a static or metaphysical notion of totality, the Institute utilized dynamic and historical modes of totalizing thought. The Institute's justifications for its macro, or global, theory of society were thus: 1) capitalist society is organized as a system and requires systemic theory to grasp its social organization; 2) the logic and social processes of capitalism penetrate into ever more domains of social life requiring a theory of capitalist society as a whole to explain developments and processes in every domain of social reality. Consequently, since capitalist society is totalizing, so too must social theory; 3) capitalist society constantly changes and develops, and requires global historical analysis of its various stages and transformations; and 4) social critique and transformation require delineation of historical alternatives and normative values which can be used to criticize existing states of affairs and to argue for alternative values and organization of society<sup>21</sup>.

At the heart of the "totality" of modern society or, to put it in systems terms, at the heart of the totality of parameters and interactions representative of the general systemic context of what needs to change, is the issue of political-economy. As critical theory insists, "one needs a theory of society grounded in a theory of capitalism to make sense of socio-historical

processes and developments because the dynamics of capitalism play such a constitutive role in [modern] social life”<sup>22</sup>. In this sense, I consider the reorganisation of political-economy to be one of the primary aims when it comes to the development of a critical social systems theory.

Moreover, in the systems-based research which links food shortages and social unrest, or poverty and hunger alongside the rise of global temperatures, or the emergence of any number of crises as a “flow out in patterned-forms from the deepest structures of our society”, Robert King is absolutely correct to cite the deepest, most foundational point of critique as being one concerned with political-economy “upon which this society is based”<sup>23</sup>. Issues of agriculture, labour, inequality, racial injustice, violence, institutional oppression and so on, all have deep connections to the problem of modern political-economy. When someone uses the term “systemic”, as in “systemic violence” or “systemic inequality”, the indication should be patterns of violence or inequality which are inherently manufactured by the present social, political-economic system. What this translates into, for activists, is how there will be no fundamental transformation of society without the reorganisation of political-economy – that is, the whole of the modern social, political-economic system.

To further illustrate this point, let us consider the general thrust of my essay on the recent uprisings in Baltimore. In response to the uprisings, one of the messages to come from politicians in support of the anti-oppression struggle of black communities in Baltimore and of the need for police reform was that, in tackling the institution of police, “systemic and structural change was required”. On face value, this call for deep change makes sense. However, upon further reflection, one sensed in hearing those words that “systemic and structural change” meant a limited horizon of actual transformation: i.e., superficial reform from within the present totality of social coordinates. To put it differently: in response to recent events, an understandable demand for police reform has become an issue of intense focus. But as I wrote in an article on a systemic alternative to police, there is something of a myth around such belief in reform. To paraphrase Ta-Nehisi Coates, when tackling the problem of the institution of police and the issue of “police authority” (not to mention “power”), the real problem is one of restoring democratic authority. In other words, “a reform that begins with the officer on the beat is not reform at all. It’s avoidance. It’s a continuance of the American preference for considering the actions of bad individuals, as opposed to the function and intention of systems”<sup>24</sup>. In drawing off Coates,

my own argument was that one cannot meaningfully dismantle the racist and unjust institution of the police without confronting a fundamental critique of political-economy<sup>25</sup>. The “war on drugs”, police corruption and violence, institutional racism, mass incarceration, deep and unending inequality – these may all be connected to the Baltimore uprisings in one way or another; but the centre-most part that is *systemic* is political-economy. Racism in the US, for example, has deep historical ties to property<sup>26</sup>. The problem of systemic racism, which any progressive reader is likely to be all too aware of, is inherent in the very social map of the modern social, political-economic system<sup>27</sup>. This leads to the obvious point that it is not enough to focus on police reform without also addressing the systemic injustices and oppression that produce oppression, institutional violence and social unrest to begin with. In the same way, it is not enough to address systemic-levels of inequality or injustice without bringing into question the systemic whole of the modern social, political and economic apparatus. As I concluded in my essay, anti-oppression or racial struggle shares the same battle as anti-capitalist struggle. The same can be said for the struggle for social justice or anything else.

A critical systems perspective is therefore directly anti-capitalist, because it understands the fundamental origins of modern crises as being integral to the systemic patterns of the capitalist universe. This leads to one of the main points that I would like to strike in this article: any call for “systemic change” which doesn’t translate into a call for the transformation of the “whole” of society loses its emancipatory potential. Adorno once said that the “whole is the false”. A progressive reading of this assertion, which, for Adorno, also translated into how “there is no good life in a bad society”, indicates, in the end, the need for actual change of the structural apparatus and social-system of modern society. For Adorno, the whole needs to be transformed and this transformation cannot occur unless the all-pervasive *principle of exchange* loses its grip<sup>28</sup>.

Although there is not enough space for me to elaborate any further on Adorno’s concept of the principle of exchange, what I will say is that this general understanding of “systemic change” ultimately boils down to an incredibly complex yet integral theory of societal transformation. One of the best formulations when it comes to such a theory of societal transformation can be found in Zuidervaart’s notion of “differential transformation”, which he formulated in his book *Social Philosophy after Adorno* (2007). While simple in its tone and presentation, Zuidervaart’s notion of “differential transformation” is far from simplistic. He reflects: “Given the tight links among exploitation,

repression, and destructive control, no single societal site can suffice as an arena in which to promote creaturely flourishing. Yet changes in many diverse sites also will not suffice if they do not move in mutually reinforcing directions. Hence, the transformation of society as a whole needs to be an internally differentiated and complimentary process. The differentiation of levels and principles in Western society provides a historical basis for such a process<sup>29</sup>. For Zuidervaart “differential transformation” ultimately translates into the need to recognize a range of societal principles – resourcefulness, justice, solidarity, egalitarianism, mutual recognition, and so forth – that could inspire, foster and affirm countless (systemic) transformative efforts across all spheres of society. Not only does it describe the fundamental alternation of political-economy – that is, the overcoming of capitalism – but it describes the multidimensionality and plurality of systemic change, as societal transformation originates from “plural sources of transformation within the differentiated fabric of contemporary society”<sup>30</sup>. Another way to describe this is as a many-sided, holistic or multidimensional view of the very concept of social transformation, which not only captures the process of a true alternation of present social coordinates in economic, political, ecological, relational, epistemological, psychological (and so on) terms, but also in the sense of all spheres of society<sup>31</sup>.

#### AN ALTERNATIVE PHILOSOPHY OF SYSTEMIC CHANGE

In closing, I have reserved a respectable amount of space to discuss the most important part of this article: the process and practice of societal transformation. What are the forces and dynamics at play? What are the conditions for empowerment and enablement of systemic change? How do agency and structure come into the picture? We can begin by looking to the rise of progressive democratic movements around the world. Ranging from practising movements within the field of education, like the Alpha Project or Summerhill School, to commons-based renewable movements in Spain (and elsewhere); inspiration for what a critical social systems theory might look like, particularly when it comes to the formulation of emancipatory alternatives, is all around us. More generally, the movements of the squares, Occupy Wall Street and Occupy-style movements around the world, the Indignados, the 15M, the Arab Spring, the student-led University occupations in the UK, various anti-fracking and environmental initiatives – these are just a few examples we might consider of recent global waves of revolutionary struggle that can inform a radical systems

theory. Their emphasis on horizontality and participatory democracy serve as outward markers of an emancipatory horizon, *prefigurative of the development of an actually egalitarian democracy*. Their often prefigurative status – such as with Occupy-style movements<sup>32</sup> – offers direction in terms of overcoming the structure vs. agency stalemate; because, when we look close enough, one of the most significant aspects of progressive democratic movements today is precisely the manner in which they *enrich the texture of experience in a self-transformative and self-educative manner*. The subject, efficacious, mediating, transforming, creates and develops structure precisely insofar that structure is an extension of his/her ‘free flourishing’ status within “actual democratic” dynamics. This is what led me to write in a previous article:

In the global context, what seems to be common amongst many radically democratic movements today is not only a shared emphasis on direct (participatory) democracy and horizontality. There is a deeper connection, which we might describe in light of the notion of an underlying and dynamic process of mutual recognition. As Richard Gunn and Adrian Wilding note in their studies, which focus on what goes on in the different Occupy-style events and radical assemblies around the world, the principle of mutual recognition – understood in the Hegelian tradition as an egalitarian and emancipated form of interaction – represents a fundamental break from ‘contradictory recognition’. Set against, in other words, the hierarchical, undemocratic and one-way relations of power characteristic of the capitalist world, mutual recognition is seen as a mode of horizontal, participatory, inclusive and intersubjective relations propaedeutic to what ‘commonising entails in the field of participatory public engagement’. Set against contradictory recognition, Gunn and Wilding argue that mutual recognition must exist if emancipation is to be real. In terms of Occupy-style initiatives for example, which I’ve spent much time studying and writing about, one of the most actually revolutionary aspects at play is the prefigurative process through which an alternative social reality is sought: the idea that if emancipation is to be emancipation, it must start as it aims to go on. It is, in other words, on the level of praxis that answers to questions around the contemporary crisis of democracy, participatory politics and the meaning of ‘public’ in twenty-first century society emerge. Through the freedom of mutual recognition, an awareness surfaces that revolutionary moving must be, from the start, a living reality, brought about in the very process of coming together<sup>33</sup>.

Systemic change must, in other words, be based on the politics of unfolding experience as contingent, tentative

movement. This contingent, tentative movement accompanies “all engagements through a sort of multi-faceted dialectical interplay between general orientations and particularity of emerging challenges: i.e., constraint and enablement, innovation and drift, as well as individual and the social”<sup>34</sup>. As I described in the above quote, if systemic change is rooted in a process that is “constantly at work and reworking itself as it comes into inquiry – therefore progressively refining itself – it would seem that, philosophically speaking, this politics is actually immanent to a dynamic intersubjective process where individual and social arise together”<sup>35</sup>. Free of restraint, definite limits, restrictions, or authoritarian structure, systemic change, if it is to be a truly emancipatory process, should almost be like what Luigi Russi describes in *Everything Gardens and Other Stories: Growing Transition Culture* (2015). There is an analogy between his account of Transition and the present account of systemic change insofar that both are dialectical and almost exist in-between one of the many conflicts of modernity: structure vs. structurelessness<sup>36</sup>. Moreover, in *Everything Gardens* one gains a clear sense of Transition as being without a centre. Instead it is understood as a transitory ‘process of flourishing into (and through) a number of different – yet kindred – fields of experience, such as growing food, experimenting with new possibilities for relating to others (and nonhuman othernesses) in a mindful and attentive way’<sup>37</sup>. I would argue that systemic change very much accommodates the same sort of process across all academic disciplines, fields of study and social spheres.

Most importantly – and herein lies a significant point of emphasis - an alternative philosophy of systemic change should not get caught up in the tendency to create abstract ‘grand narratives’ of social change, as if ‘change’ itself will occur in the form of some distant revolution and everything will somehow be different in the end. Rather, if revolutionary system change is to be sustainable it should be grounded in a politics of lived experience. As I have already commented, these abstract grand narratives are neither sustainable nor realistic. They are in many ways the opposite of ‘revolutionary’. Moreover, it is a common error to see fundamental systemic change theorized from the basis of such a limited, linear perspective that does little to consider the type of honest hard work and persistence it would realistically take from all of us, in all areas of life, to actually create alternative emancipatory coordinates with regards to the transformation of society as whole. It doesn’t matter if you’re a gardener, a teacher, a labourer, an academic, a lawyer, an athlete, an artist, a window

manufacturer, a scientist, an engineer or a barber – we each have the power and responsibility when it comes to the development and practice of systemic alternatives. Of course no one person in their solitary existence can change the world, but we need to start seeing fundamental system change as being built and actively developed, not as the product of some top-down revolution. Thus “as we’ve witnessed in numerous town squares and occupations, big or small, it is on the grounds of lived experience that an entire world of alternative possibilities may emerge, taking form in and through interaction with one another as the foundation of participatory democracy and the process of (re)commoning society. It is no coincidence, therefore, that an anti-fracking occupation in a small corner of England places the same value on horizontality and participation as a major event in Spain – at least if we understand that both are oriented towards facilitating mutual recognition. But what is most interesting is that, if we consider this prefigurative politics in the sense of a certain prioritising of lived experience, another radical idea emerges: that revolutionary change is ongoing and akin to a process of healing (as opposed to being the product of a discrete event)”<sup>38</sup>. From the basis of this understanding I believe a progressive social systems theory can emerge, as rooted in a critical theory of society, and provide not only new insights in terms of foundational critique of the existing order, but also when it comes to enlightening the global movements in terms of the holistic process of development for a future radical democratic, egalitarian society.




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<sup>1</sup> Smith 2014, *Promissory notes of a better world: Occupy, radical democracy and the question of revolutionary politics*.

<sup>2</sup> King 2013, *Food Shortages, Social Unrest and the Low-Input Alternative*.

<sup>3</sup> *Ibid.*

<sup>4</sup> Wilding, Smith, Gunn 2013, *Alternative Horizons: Understanding Occupy’s Politics*.

<sup>5</sup> Holloway 2010, *Crack Capitalism*: 20-25.

<sup>6</sup> Smith 2015, “Preface” for *Everything Gardens and Other Stories: Growing Transition Culture*.

<sup>7</sup> Zuidervaart 2007, *Social Philosophy after Adorno*: 127.

<sup>8</sup> Smith, Sperber 2014, *Democracy in Crisis: Toward a Foundational, Alternative Theory of Participatory Democracy*.

<sup>9</sup> Smith 2014, *Promissory notes of a better world: Occupy, radical democracy and the question of revolutionary politics*.

- <sup>10</sup> Smith 2013, *A series of essays introducing an alternative philosophy of systemic change*.
- <sup>11</sup> von Bertalanffy 1970, *Robots, Men and Minds*: 115.
- <sup>12</sup> Zuidervaart 1991, *Adorno's Aesthetic Theory: The Redemption of Illusion*; Zuidervaart 2011, "Theodor W. Adorno" in *The Stanford Encyclopedia of Philosophy*; Adorno 1990, *Negative Dialectics*: xix, 160-164; Adorno 1970, *Aesthetic Theory*: 130-135.
- <sup>13</sup> Zuidervaart 1991, *Adorno's Aesthetic Theory*; Zuidervaart 2011, "Theodor W. Adorno" in *The Stanford Encyclopedia of Philosophy*.
- <sup>14</sup> Zuidervaart 2011, "Theodor W. Adorno" in *The Stanford Encyclopedia of Philosophy*.
- <sup>15</sup> *Ibid.*
- <sup>16</sup> Zuidervaart 2007, *Social Philosophy after Adorno*: 118-124.
- <sup>17</sup> Smith 2013, *A series of essays introducing an alternative philosophy of systemic change*.
- <sup>18</sup> Kellner 2014, *Critical Theory and the Crisis of Social Theory*.
- <sup>19</sup> *Ibid.*
- <sup>20</sup> *Ibid.*
- <sup>21</sup> *Ibid.*
- <sup>22</sup> *Ibid.*
- <sup>23</sup> King 2013, *Food Shortages, Social Unrest and the Low-Input Alternative*.
- <sup>24</sup> Coates 2015, *The Myth of Police Reform*.
- <sup>25</sup> Smith 2015, *An Institution of Oppression or for Public Well-Being and Civil Rights? Reflections on the Institution of Police and a Radical Alternative*.
- <sup>26</sup> Sperber 2014, *Property, Racism and Police Violence: Why Recent Injustice in the US is Systemic*.
- <sup>27</sup> Osterweil 2014, *In Defense of Looting*.
- <sup>28</sup> Zuidervaart 2007, *Social Philosophy after Adorno*: 72.
- <sup>29</sup> *Ibid.*: 127.
- <sup>30</sup> *Ibid.*: 74.
- <sup>31</sup> Smith 2013, *A series of essays introducing an alternative philosophy of systemic change*.
- <sup>32</sup> Wilding, Smith, and Gunn 2013, *Alternative Horizons: Understanding Occupy's Politics*.
- <sup>33</sup> Smith 2015, "Preface" for *Everything Gardens and Other Stories: Growing Transition Culture*.
- <sup>34</sup> *Ibid.*
- <sup>35</sup> *Ibid.*
- <sup>36</sup> *Ibid.*
- <sup>37</sup> Russi 2015, *Everything Gardens and Other Stories: Growing Transition Culture*: 6-7.
- <sup>38</sup> Smith 2015, "Preface" for *Everything Gardens and Other Stories: Growing Transition Culture*.
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TWO GIRLS WITH FRUIT AND SETAR

# REQUISITE META-REFLECTION ON ENGAGEMENT IN SYSTEMIC CHANGE? FIAT, FATWA AND WORLD-MAKING IN A PERIOD OF EXISTENTIAL RADICALISATION



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## INTRODUCTION

**T**HE PAST DECADES HAVE SEEN MUCH FRUITFUL reflection on systemic change, most notably in response to calls for action in the face of emerging crises. Numerous initiatives have been variously proposed and undertaken.

There is however a case for framing this in terms of a suitable adaptation of the title of a work, now “old”, by James Hillman and Michael Ventura: *“We’ve Had a Hundred Years of Psychotherapy – And the World’s Getting Worse”*.

Of course a feature of the systemic condition (and the remedies in play) is that there is a spectrum of views on the matter, and many would prefer to claim that the “world’s getting better”. Such differences are characteristic of the increasingly sterile debate regarding the need to be “positive” versus the preoccupation of critics readily deprecated as “negative” – otherwise to be termed as “hope-mongering” versus “doom-mongering”.

One articulation of this dynamic is offered by Barbara Ehrenreich in *Smile or Die: how positive thinking fooled America and the World*. In cybernetic terms it can be framed as the need for more appropriate understanding of the interaction between positive feedback and negative feedback.

The argument here focuses on the relatively unexplored opportunity for system change through

framing matters otherwise – “seeing it so”, if only as an individual act of imagination. The feasibility is indicated by the use of fiat by conventional authority, as in quantitative easing, and the use of religiously inspired fatwas or their equivalents. Within academia the process may take the form of elaboration of a model. Together these are considered here as variants of world-making. Their credibility and viability becomes increasingly evident under the current conditions of existential radicalisation.

## TOWARDS A SELF-REFLEXIVE FOCUS

The question addressed in what follows is whether and how a sharper and more fruitful focus could be given to systemic change — with far more attention to appropriate self-reflexivity, corresponding to higher orders of cybernetics, especially beyond the preoccupations of the first order. A lead into the matter can be offered by using the pattern of WH-questions to challenge the terms of the title above: *Requisite Meta-reflection on Engagement in Systemic Change?*

“Requisite” for whom, given the variety of analytical preferences and models? What is to be usefully meant by abstruse “meta-reflection” at a time when many are in desperate quest for a minimal standard of living in challenging environmental conditions? How is “engagement” to be understood and undertaken, given preferences ranging from business-as-usual, through glocalism, to jihad? Again, given such a range of worldviews, which “system” is it appropriate to endeavour to change? Potentially more to the point, why is any effort to “change” desirable when its unpredictable consequences may be as disaster-prone as the current situation? Necessary change, from a Gaian perspective, may even occur in ways beyond conventional comprehension. Reference to “requisite” is appropriate in this context in recognition of the cybernetic law of requisite variety in governing any system.

Omitted from this set of WH-questions are the other two, namely where and when change is to be considered necessary. In the quest for a greater degree of focus, the title is itself framed as a question, implying the fruitful possibility of a “deadly question” through which change might be catalyzed.

The emergence of movements of opinion in reaction to perceived inadequacies may well be closely associated with a variety of forms of change. This is evident in the case of human rights, environmental preoccupations, and in response to those in need. These may well be associated with political movements seeking a degree of revolution in the political order and with efforts to institute an equitable pattern of international law. International agencies, notably the Specialized Agencies of the United Nations, can be understood as agents of change in this sense.

Clearly other international actors can be seen in this way, notably in the light of the dynamics between the ideologies they represent, as in the case of the World Economic Forum and the World Social Forum. The former notably claims its intention “to make the world a better place”. This is despite the manner in which this self-appreciative strategy is challenged by the latter, itself deprecated in turn by the former. Arguably there is a need for a systemic framework capable of encompassing such dynamics, as speculatively suggested in terms of an aesthetic metaphor.

The argument here therefore focuses on other “agencies” whose modalities can be usefully considered as driving and framing such initiatives. These are religion, academia and the military. It is within each of these arenas that the framing of the problematic dynamics between contrasting perspectives is especially evident. Whether it be religions, academic disciplines or opposing armies, each has fundamental differences with others of its ilk. As most briefly put, it is a case of *we are right, you are wrong*. Desirable systemic change is envisaged in terms of “*if only you would agree with us, all would be well*”. In terms of a Christian metaphor: *Let us all sing the same song* – and from the same hymn sheet.

So framed, systemic issues and crises arise – and are perpetuated – only from failure of all to agree in some way. None of the three agencies has demonstrated a high degree of competence in handling disagreement fruitfully. However all pride themselves as being agencies of desirable change, as they respectively understand it. For religions, those holding alternative worldviews may be targeted – possibly to the point of their elimination. A similar view is characteristic of the fundamental modality of the military – surrender or else “*we may bomb you back to the Stone Age*”. The natural sciences might be understood as having a corresponding view of the social sciences.

The argument can be further developed by focusing on “science” understood most generally as a consciously disciplined mode of knowing. Curiously both religions and the military can also be explored in these terms – whether as theology or military science. The first may be framed as knowing divinity and the latter as knowing one’s enemy. Religion of course frames its enemies as diabolic. In less charged terms, all three are fundamentally opposed to ignorance – effectively to nescience.

The question here is which of the three currently has the potential to engender greater insight into system change and transformation. Clearly the military have a simple answer to the question but significantly fail to derive subtler and more fruitful insights from the traditions of the martial arts, for example, as most notably articulated in the East. Religions have long demonstrated their limitations, currently illustrated by the failure of interfaith discourse or the capacity to engage meaningfully with any fundamentalism by which believers may be variously attracted.

It is therefore the range of academic disciplines, which merits particular attention as a potential source of insight into systemic change and the challenges to it. The matter is well framed by the fact that each discipline defines a field with which it is especially preoccupied. This may be such as explicitly to exclude the preoccupations of other disciplines as being misguided or inferior in some way — or simply irrelevant. Issues relating to the “pecking order” of disciplines have long been recognized.

The situation has been usefully illustrated by the so-called Sokal Affair in which the views which fail to accord with those of a particular discipline are framed as “nonsense”. Nicholas Rescher is explicit in his articulation of the challenge in *The Strife of Systems: an essay on the grounds and implications of philosophical diversity*:

For centuries, most philosophers who have reflected on the matter have been intimidated by the strife of systems. But the time has come to put this behind us — not the strife, that is, which is ineliminable, but the felt need to somehow end it rather than simply accept it and take it in stride.

The problematic dynamics extend, more unfortunately, into the relations between those promoting contrasting theories, models and “schools of thought” within any one discipline. As with the relation between the disciplines of academia more generally, there is very little capacity to engender more sophisticated frameworks

through which to articulate these dynamics. Academia therefore serves as its own metaphor of fundamental failure to engage more appropriately with systemic change – and of the justification for not doing so. The pattern is however applicable to change agents more generally and exemplified by the widespread blaming of “others” for crises, whether existing, emergent or anticipated.

The challenge has been usefully identified for other purposes by Edward de Bono (1992). The systemic implications are systematically neglected. As might be expected, any such conclusion is of course vigorously denied as meaningless by academia. There is a complacent sense of business-as-usual in the unquestionable advancement of human knowledge enabled by science – with the potential rewards of intellectual property, tenure, awards, and the like, along a well-trodden career path. Together with the “publish or perish” syndrome, this strangely echoes the pattern promoted by religion with respect to heavenly reward after death.

#### SYSTEMIC NEGLECT BY SCIENCE

The question of concern here is whether science as practiced is adequately attentive to the current limitations of its own processes and priorities. This can be explored at greater length in relation to various kinds of criticism. It can be argued that science frames its mandate to focus on easier problems, avoiding the “wicked problems” which are a greater challenge and may be of more immediate relevance to a civilization in crisis. There is a sense in which the achievements which are of popular appeal – going to Mars – are publicised to disguise the systemic issues which science inadvertently neglects, of which mass immigration into Europe is but one example.

Other examples include the dynamics relating to disagreement in the face of seemingly naive appeals for consensus. This applies as much to relations between the disciplines as to issues like climate change, and yet does not give rise to argument mapping of a sophistication matching the articulation and dynamics of incommensurable perspectives. It is notably evident in the case of issues associated with overpopulation and its consequences, and with the curious neglect of the dynamics driving unconstrained reproduction.

Whilst unblushingly complicit in the development of weapons of mass destruction, and in technologies endangering the environment (“scientific whaling”, fracking, etc), there is a remarkable lack of capacity to address systemic issues of the governance of such undertakings – understood

in cybernetic terms. Avoidance of responsibility through gerrymandering is the rule rather than the exception. This is evident in the lack of simulation of options for better oversight of complex processes, most notably as a consequence of the development of sophisticated surveillance technologies.

The concern here is not to develop such points, nor to relate them to so-called Science 2.0, as a suggested new approach to science that uses the information-sharing and collaboration made possible by network technologies. The concern is rather to draw attention to a peculiar form of uncritical complacency in undertaking science. This could be explored in terms of a form of confirmation bias reminiscent of that of religion – potentially also to be understood as a pattern “conformation bias” reinforced by the peer review process.

This possibility raises the pertinent question as to whether what is rendering science less “fit for purpose” – in a civilization faced with a crisis of crises – is the failure to apply the emerging insights of science to the scientific method itself. Such failure would mark science as fundamentally non-self-reflexive. A potentially interesting example of this would be whether the manner in which mathematics is organized to encourage comprehension of its riches, reflecting the remarkable insights of that discipline, most notably with respect to symmetry group theory.

#### MUTUAL EMBEDDING OF DISPARATE COGNITIVE MODALITIES

The issue can be presented otherwise by exploration of the pattern of organizational correspondences between science, religion and the military. Necessarily provocative, any such mapping would highlight problematic similarities between mindsets which consider themselves variously unquestionable. Has science effectively taken on the trappings of religion despite seeking to displace it? To what extent does each constitute a particular modality of collective learning — or of learning aversion?

Potentially even greater insight could be derived from understanding the degree of embedding of each of the three cognitive-behavioral modalities in the other:

- RELIGION ∞ MILITARY: the embedding of the military modality in religion is evident in such cases as the Christian Church Militant (*Ecclesia Militans*) and Islamic *jihad*. The former notably empowers crusades, as now more frequently undertaken in metaphorical terms. The reverse embedding is evident in anecdotal accounts of individuals framing their military engagement in religious terms, clearly reinforced by deliberate religious endorsement of military activity. Both are evident in the articulation of just war theory.

- **MILITARY ∞ SCIENCE:** the recognized discipline of military science is the study of military processes, institutions, and behaviour, along with the study of warfare, and the theory and application of organized coercive force. There is a long tradition, of which Leonardo da Vinci was one exponent, of weapons science (and technology), namely the application of science to the design of military hardware.
- **SCIENCE ∞ RELIGION:** theology can be understood as religious science, or the science of religion. Of particular relevance in a period of religiously inspired conflict is the potential interweaving of mathematics and theology. This could constitute a bridging modality of a subtlety and sophistication appropriate to the two seemingly incommensurable modalities and the manner of their organization. Mathematics may eventually prove to be the most sophisticated articulation of religious belief, as suggested by Sarah Voss in *What Number Is God? Metaphors, Metaphysics, Metamathematics, and the Nature of Things*.

Given the cognitive richness of the patterns of quantum mechanics, could this mutual embedding be explored in terms of entanglement and mirroring?

Especially intriguing is the manner in which each such modality arrogates authority to itself and to its declarations of truth – as to what is “right” and what is “wrong”. However each also eludes any institutional framing with which responsibility might be associated in legal or ethical terms. Each can be explored as an imaginative fantasy. This itself clearly engenders difficulties in a complex society characterized by a multiplicity of variously incommensurable perspectives. Is the elusive nature of the “international community” – as a focus for belief to which appeals are now desperately made – increasingly resembling the traditional relationship to divinity, however defined?

#### SYSTEMIC CHANGE BY AUTHORITATIVE FIAT

It is curious to note the extent to which preoccupation with systemic change frames both system and change as objective externalities, typically distant and dissociated from any commentators and the authorities to which they are beholden. Hence the ease with which the matter is misleadingly presented in terms of the need for others to change, together with their institutions and their mindsets. Much effort is devoted by groups to achieving this transformation of other groups in the global system – or blaming them for failing to act appropriately, however that is defined.

A different understanding is evident in the grassroots focus on local change as potentially enabling

global change – irrespective of whether this is otherwise considered to be feasible or meaningful. The arguments of John Michael Greer are noteworthy in this respect. When espoused by an individual, this strategy may be widely framed by the Gandhian slogan: *Be the change that you wish to see in the world*.

Curiously little is said regarding a further opportunity of which there are a variety of indications as to its feasibility. One such is evident with respect to currency and finance, namely fiat money. This is currency which derives its value from government regulation or law — unsupported by any other value. A striking example is offered in 2015 by the European Central Bank. Previously deprecated as “printing money” and an indication of incompetent governance, this has now become an accepted global strategy as so-called quantitative easing. An equivalent of relevance can be recognized as a form of “qualitative easing” indicative of a wider spectrum of previously questionable strategies that are increasingly becoming acceptable.

Another example is offered by the manner in which the boundaries of countries have been defined, most notably on the termination of conflict, as with the Treaty of Versailles. The recognition of “spheres of influence” by the Yalta Conference or the Monroe Doctrine is of a similar nature. These exercises have frequently taken little account of cultural or traditional boundaries of the inhabitants of those lands (as with those defined by colonial policies) – or the conflicts artificial boundaries may subsequently engender.

A similar approach is recognizable in the boundaries between disciplines. The pattern is also evident in the manner in which complex issues, most notably wicked problems, are arbitrarily defined in relation to the mandates of agencies. The most striking examples of fiat are of course offered by the formal categorisation of people, as by the Nazi and Apartheid regimes. Potentially more insidious is the use of injunctions, namely court orders compelling a party to do or refrain from specific acts – now extended into superinjunctions preventing publication of the matter in issue or reporting of the fact that the injunction exists at all.

Controversially there is of course a case for exploring the role of fatwa in Islamic cultures as it relates to that of Western use of fiat. Both could also be explored in relation to “models” articulated within academia as a means of ordering reality and methods of engaging with it. As with orders and directives, these all share an arbitrary quality.

FIAT AND WORLD-MAKING AS  
AN INDIVIDUAL OPPORTUNITY

These examples can however be understood otherwise as being indicative of a means whereby individuals and groups can achieve systemic change and transformation by “seeing it so” – or “making it so” in military jargon – irrespective of views to the contrary or of making known their distinctive worldview. Variants of the process can be recognized in marketing concerns with achieving “buy in”, usefully explored as a form of investment. Beyond the preoccupations of secrecy by authority, this points to the possibility that the viability of civilization may be curiously dependent on individual silence.

The opportunity is perhaps epitomised by the phrase *Eppur si muove* (*And yet it moves*) attributed to the Italian mathematician, physicist and philosopher Galileo Galilei, after being forced formally to recant his claims that the Earth moves around the Sun rather than the converse (as declared by fiat by Catholic authority). Articulation of any model by an individual can be seen in this light.

The poorly explored opportunity for systemic change is therefore to imagine the situation otherwise, “connecting the dots” of observation such as to form a different and more fruitful pattern. A reminder of this possibility was offered on the cover of the *Last Whole Earth Catalog* (1974): *We can't put it together; it is together*. The possibility is otherwise understood by the phrasing of the title of a book by physicist Stephen Hawking: *The Dreams That Stuff Is Made Of: the most astounding papers of quantum physics – and how they shook the scientific world*.

This alternative possibility can be argued more extensively in relation to current strategic frameworks. The latter took the form of a review of a report to the Club of Rome: *2052: A global forecast for the next forty year* (Randers, 2012). This is seemingly one of several initiatives using a suspiciously distant time as a focus, including: *Global Europe 2050* of the European Commission; *Vision 2050: new agenda for business* of the World Business Council for Sustainable Development. The focus is challenged by one critic as avoiding consideration of the earlier commitment to the UN Millennium Development Goals for 2015 (Seaman, 2012). These were reframed in 2013 by a Post-2015 Development Agenda.

Repeated displacement of strategic focus to a somewhat mythical future contrasts curiously with the political focus on the immediate present and its reframing through the next press release. In that sense there is indeed a concern by authority to revision the present imaginatively – if cynically, whilst avoiding longer-term concerns or the

present consequences of those of the past. The pattern of strategic envisioning by authority over past decades could be usefully compared to the confidence trickery characteristic of *Find the Lady* at any fair ground. “*Find the strategy*”? The present can however be re-imagined more radically and effectively by the individual.

Dependence on such processes to avoid civilizational collapse recalls the classic tale of the prisoner condemned to death by a king. Following a proposal by the prisoner to the king, the execution was postponed whilst the prisoner taught his horse to talk. When this incredible proposal was queried by a fellow prisoner, the proposer indicated that it was a simple matter: *The king might die, I might die, or the horse might learn to talk. However, in the meantime I remain alive*.

Given the ready use of fiat by authority, there is then a case for recognizing the alternative interpretation that can be drawn from the much-cited remark by Abraham Lincoln: *You can fool all the people some of the time, and some of the people all the time, but you cannot fool all the people all the time*. Given claims by authority variously to represent the individual, there is a case for exploring the manner in which confidence in such authoritative representation could be “withheld” by the individual in some way. This could be understood as a further stage in the current systematic erosion of popular trust — one form of radicalisation. Assertion of authority can no longer be assumed to be viable as an unquestionable focus for belief. Seeing things otherwise is arguably the essence of non-violent system change.

It is especially appropriate to recognize the manner in which the language of systemic externalities mirrors that of existential experience – seemingly inadvertently – most notably with respect to depression and inflation. This echoes the contrasting tendencies to doom-mongering and hope-mongering.

SELF-REFLEXIVE DISCOURSE  
AS CATALYST FOR CHANGE

In a period in which mapping of the globe down to street level is accepted as normal, it is remarkable how little effort is made to map systematically the variety of interacting perspectives which characterize global civilization and its dynamics. This has been a goal of the *Encyclopedia of World Problems and Human Potential*. Despite investment and experiments to that end, this did not engender maps usefully supportive of discourse of a higher order. The situation remains one resembling that on the flat Earth of centuries past,

marked at the edges with *There Be Dragons*. As in that period, any detailed maps which exist may even be considered a secret asset.

Use of citation analysis could be considered an approach to such a mapping, although it necessarily avoids the isolated villages and hamlets of knowledge space in concentrating on its urban centres –avoiding the realms where dragons are held to dwell. Little use is made of social network analysis despite the technology now enabling it.

There is little reference to argument mapping or discourse analysis in relation to problematic strategic issues – most notably in plenary debate. One notable exception, suitably caricatured as the *Afghan Spaghetti Monster* for that reason, took the form of a systems map of actors in the Afghanistan arena. There is thus currently little effort to transcend the dynamics of *We are right; You are wrong*, as reinforced by the seating arrangements for opposing factions in such venues. Conferences are typically exercises in (self-) selectivity whereby the most primitive dynamics are ensured. These preclude the kinds of ecosystemic sensitivity now recognized as fundamental to understanding of biological systems. Are psychosocial systems assumed to be of lesser complexity than metabolic pathways?

In a period of rapid technological innovation, the innovation in meeting processes is in no way comparable – even when modest use is made of communication technologies. The unchanging pattern of keynote speakers, lectures/presentations, panels, Q-and-A, and workshops, cannot be said to reflect the rate of upgrading characteristic of information technology. It is remarkable the obligation to listen to a presentation *in extenso*, before being able to peruse an argument rapidly in some more convenient form – especially when no other format is available, or may only become so in the future and for a fee (“read my book”). The absence of active hyperlinks in academic journals is indicative of preference for an essentially obsolete mode of discourse via which systemic change is envisaged. Images are typically an embarrassment, especially given the issues of copyright. Metaphors may themselves become subject to copyright.

It is in this sense that strategic discourse, as enabled by academia, can be said to be “on repeat” – with every probability of little change anticipated by 2050 or 2100, whatever the risk of societal collapse. There is no Plan B. The argument can be extended to the environments in which strategic options are envisaged. Established comfort zones are in no way challenged – especially when challenging perspectives have been carefully designed out as irrelevant or “not even wrong”.

The challenge can be provocatively framed in terms of any encounter with extreme forms of otherness. Examples are offered by “talking with the Taliban” or “talking with ISIS”. Potentially even more challenging is the encounter with hypothetical extraterrestrial. Naively the latter are readily assumed to favour a mode of discourse consonant with that of academia — in contrast with the Taliban. It is remarkable that science has elaborated techniques for engaging with the dangers of radioactivity but has been unable to develop techniques for psychoactively dangerous discourse, as in the case of “hot issues”.

With the foreseen increase in use of intelligent agents in internet communications, other challenges are evident when an even more extensive array of messages – notably tweets – is generated by algorithms, as prefigured by algorithmic stock trading. Such developments of artificial intelligence, and its direct participation in strategic dialogue, will constitute a revolution in its own right, as separately explored. In the form of an array of tweets, rather than conventional phrasing, a question of interest is whether these would more readily pass the Turing test – and be unrecognizable as such, perhaps in preference to humans.

The rapid uptake of Twitter points to the possibility that strategic discourse may be rapidly transformed into a multiplicity of succinct tweets, hashtagged in support of a narrow band of interests and short attention span – both valued in support of the illusion of navigating information overload successfully. A key challenge may be the means of ensuring the emergence of patterns of global coherence from such communication dynamics.

Insights into more appropriate means of managing connectivity and disagreement are now suggested by exploration of higher orders of cybernetics (Yolles and Fink, 2015). The third and fourth orders notably take account of self-reflexivity – itself to be distinguished in varying degrees meriting exploration and recognition.

#### MNEMONIC CATALYSTS ENABLING SELF-REFLEXIVE DISCOURSE

Insights into degrees of self-reflexivity are clearly progressing with respect to systems control in the technical language of cybernetics. The question is how to articulate those learning pathways fruitfully – especially since the higher orders of cybernetics have an experiential dimension, as suggested by Douglas Hofstadter (2007).

Previous consideration was given to the distinction between uni-modal, bi-modal, tri-modal, and

quadri-modal discourse. A provisional approach is the identification of accessible metaphors which can serve as mnemonic catalysts to comprehension of discourse of a higher order and engagement in it. Examples might include:

- **AUTOMOBILE GEARS:** Given their familiarity, there is a case for considering the nature of the “conceptual gearbox” (as noted in that argument).
- **MULTI-STROKE ENGINES:** The well-recognized distinction between automobile engines (2-stroke, 4-stroke, 6-stroke, V6, V8, V12) suggests a means of articulating the relationship between successive “strokes” in any learning cycle.
- **OX-HERDING:** A valuable metaphor from Zen is expressed in a set of images relating to 10 stages of herding oxen – also known as the 10 bulls.
- **HATS AND SHOES:** Although focused primarily on the complementarity of different cognitive modalities, the many colour-coded metaphors extensively explored by Edward de Bono are potentially indicative of a means of identifying discourse of higher order.
- **POLYHEDRA:** Following traditional arguments, and those of R. Buckminster Fuller, the symmetrical Platonic and Archimedean polyhedra are suggestive of degrees of organization and interlocking of feedback loops.
- **PERIODIC TABLE:** The familiar organization of the periodic table of chemical elements suggests the possibility of its use to hold and distinguish different levels and styles of discourse

This disparate set of metaphors may be variously of value. However, given their nature, potentially more significant may be recognition of the extent to which the rich range of technologies – as externalities – may be mined as templates for more meaningful organization of collective discourse, following the arguments of Susantha Goonatilake (1999).

In the light of current explorations of biomimicry, this may be understood as technomimicry. Of particular relevance to systemic change is the challenge of designing and empowering strategies to “fly” (preferably like an eagle) – in contrast with the many that fail to “get off the ground” (typically compared with a turkey). This metaphor of sustainable flight can be explored in the light of the work of Arthur M. Young (1976).

#### ACHIEVING TRACTION THROUGH EMBODIMENT

Building on their above-mentioned consideration of higher orders of cybernetics, Maurice Yolles and Gerhard Fink (2015) subsequently consider the

nature of the ‘agency’ and its processes of change. They conclude:

‘Agency’ is a living system that is defined through a generic system hierarchy. This permits the development of higher order generic metasystems that create higher levels of collective consciousness. These see and explain reality in new ways, and through the associated network of processes that attach them to the other parts of the agency, establish new ways of dealing with reality. Establishing a superstructure, which may also be seen as a metasystemic approach to modelling, permits the incorporation of commensurable theory from other paradigms.

For the authors, an elaboration of this is that higher levels of agency consciousness can be generated through processes of internalization that can better deal with complexity. Agency has behaviour, which is determined by its structure as well as a transeunt capacity that explains how its cognitive structure shapes its behaviour. They note earlier work indicating that internalization is the transition in which external processes with external material objects are transformed into processes that take place mentally at the level of consciousness. During this transition these processes become generalised, verbalised, and abbreviated; importantly, they also become the means for further development and transcend what is possible with external activity.

This suggests a justification for exploring the manner in which identity – whether individual or collective – can be understood as emerging in the cyclic context of feedback loops of higher order. This would be consistent with the sense in which biological identity is sustained by a complex of interlocking metabolic pathways. An understanding of such subtle patterns is offered in poetic form through the psychiatric insight of R. D. Laing (1970). Recourse to poetry is consistent with the argument of biologist Gregory Bateson:

One reason why poetry is important for finding out about the world is because in poetry a set of relationships get mapped onto a level of diversity in us that we don’t ordinarily have access to. We bring it out in poetry. We can give to each other in poetry the access to a set of relationships in the other person and in the world that we’re not usually conscious of in ourselves. So we need poetry as knowledge about the world and about ourselves, because of this mapping from complexity to complexity. (Mary Catherine Bateson, *Our Own Metaphor*, 1972: 288-289).

The question from a strategic perspective is how such a higher order of internalized identity achieves traction in relation to externality. This can be variously explored in terms of experiential embodiment. This was notably a later preoccupation of Arthur Young, inspired by

the cognitive processes required to pilot a helicopter – in contrast to those required to drive a “tractor”.

A question for the future will be whether the scientific process of the present is recognized as essentially locked cybernetically in to what might be metaphorically named as “first gear” – a first order science, in anticipation of an “upgrade” (beyond Science 2.0) to forms of science capable of engaging with processes of higher order. These are increasingly intimated by some of the considerations of fundamental physics. This would be consistent with Einstein’s much-cited dictum: *The significant problems we face cannot be solved at the same level of thinking we were at when we created them.*



*Arguments in this article are amplified in a variant on the author’s website <<http://goo.gl/TKBwpf>> notably with links to related papers.*



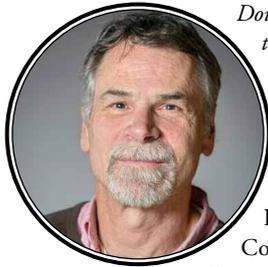
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# HOW WE MAY THINK - THE NEXT CHAPTER

## CIVIC INTELLIGENCE AND COLLECTIVE METACOGNITION



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**H**UMANKIND'S CENTURIES LONG MARCH, including its technological achievements and colonization of nature, has brought us to a unique place. The challenges facing us today are complex and inter-related and the potential for sudden, profound, and unexpected outcomes is great. The vast network of interconnected causes and effects worldwide contains numerous tipping points, large and small, and breaching them can result in cascades of unexpected and undesired events, such as food shortages, severe financial perturbations, or social collapse (Tainter, 1990). The approaches that we develop to address or prevent those events – and to recover more readily from the ones that do happen – obviously must be different than the ones that we have used before. We need to understand these particular challenges as best we can and consider how best to meet them, given who we are and what resources we can muster. Significantly, many, if

not all of these challenges are the result of human actions. Our psychology, habits, circumstances, institutions, cultures, and our genetic makeup have helped bring us to this historic point: We have met the enemy and it is us as Pogo (a cartoon character) famously declaimed.

While earthquakes historically have been products of earth's tectonic shifts, not something we could attribute to the activities of humans, we now have more evidence of humankind's awesome potential to destroy our own planetary domicile, as they can now be shown to be directly attributable to human activities. Before 2008, there were about two earthquakes per year on the average in the US state of Oklahoma. Now with some new practices of the petroleum industry in which millions of gallons of tainted waste water are injected into the earth, Oklahoma, hundreds of miles from any significant fault line, is now experiencing about two earthquakes every day. (When I looked at the online US Geographical Survey (USGS 2015) map today, May 15, 2015, there had been two earthquakes over 3.0 and another of 2.8 over the last 24 hours.)

Many of the challenges we face are social – ones unleashed or exacerbated by fellow humans – and even the ones that aren't entirely social could be mitigated somewhat through social actions. But even before the recent corporate affront described above, even in the case of earthquakes social factors are significant. Creating settlements in earthquake prone areas, for example, could have been discouraged, and rescue operations after earthquakes could be faster and more efficient. And, of course, natural disasters, even when not exacerbated by additional misbegotten human activity, invariably hit economically disadvantaged people the hardest.

### HOW DID WE THINK IN THE PAST ABOUT HOW WE'D THINK IN THE FUTURE?

Right after the end of the Second World War, Vannevar Bush, whose Office of Scientific Research and Development for the United States directed the application of science and technology to warfare,

proposed a provocative alternative to war. His revolutionary article, *How We May Think* foresaw many of the capabilities – including mass storage of information, environmental sensors, and more precise photography and instrumentation – that we now take for granted in modern information and communication technology. Many of his predictions were provocative and prescient. His hypermedia tool – which he dubbed MEMEX – with its brainlike “association trails” was a mid-century world wide web. MEMEX also was to be a “machine of logic” which would help us apply reason itself more effectively: “We may some day click off arguments on a machine with the same assurance that we now enter sales on a cash register.” At the same time he made it clear, however that MEMEX was intended to be a tool to help us think, not a tool to free us from the burden of thinking.

Most of Bush’s essay is devoted to discussions of technological marvels that could play some role in a possible future world that was less violent than our current one. While Bush suggests this role for science in reviewing and analyzing humankind’s ubiquitous problems he is silent as to how this relatively unprecedented approach might be encouraged or how it might become more effective. Bush seems to see a glimmer of hope but doesn’t provide any details.

#### NOT LEAVING IT TO HOPE ALONE

Now almost precisely six decades later I would like to propose a follow-on chapter that picks up where Bush left off. The “we” in Bush’s article doesn’t actually address the “we” that must be addressed: how we – collectively – might be able to think together. This capability is actually far more important than the ability to think better individually for two simple reasons. First because everything of any consequence – from warfare to healthcare, desertification to reforestation, oppression to tolerance – is a product of collective thinking and acting. Second because group ignorance can trump group intelligence. This means that if we ignore education we do so at our own peril. Hoarding it, or reserving it for the wealthy, is shortsighted. And education that doesn’t encourage people to question the status quo, critically analyze what they hear, learn how to learn, and participate in the creation and recreation of the living world, is not adequate.

This paper walks the thin line between pessimism and optimism because this ultimately seems most honest and most useful. It is not pessimistic or cynical because it allows the possibility of positive change. Neither is it blindly optimistic where the new day is clearly and unmistakably and inexorably dawning. One of the most unpopular

aspects of the enterprise suggested in this article may be that everybody is called upon to both think and act. The proposal focuses on a renewable resource – namely intelligence, but not individual intelligence nor some broad-brush, mystical, unknowable collective intelligence, but one based on distributed, shared, reflective, flexible, and cooperative intelligence. It assumes that human engagement could make a substantial difference in how the future unfolds.

#### CHALLENGES AND RISKS

Compiling a rough list of challenges that humankind faces is relatively easy. Two tendencies vie for the top spot: the struggle not to deplete or despoil our planetary resources so thoroughly that we create an environment that is antithetical to life and the struggle not to kill, enslave, or otherwise exploit vast numbers of our fellow humans. Other challenges, both big and small, could be added easily. The list seems potentially limitless yet most if not all would be related to the two listed above – and to each other.

The short list below contains fresh opportunities for mischief on a grand scale – potential hazards that are more-or-less discontinuous from the basic trajectory of human history. They reveal for the first time that we have the technical means to alter realities and relationships that have been assumed too fundamental and unchanging.

- Monitoring and surveillance on massive scale
- Tightly coupled, hair-trigger financial networks
- Global ecosystem modification and disruption
- Changing the genetic structure of the human progeny through embryo editing
- Genetic manipulation and new life forms
- Intercepting, decoding, and instilling perceptual and other neurological signals (e.g. in video games)
- The rapidity of (mis)information distribution and potential mobilization of large groups
- Remote control of military and police weaponry; semi-autonomous military and police weaponry
- Nuclear, chemical, biological, genetic, and cyber weapons
- Human-like interfaces, including new Barbie dolls that have conversations with their owners

Bush also foresaw some of these technologic advancements. Writing about information transmitted to the brain from the eye, he notes that “we can pick up those vibrations by electrical induction and thus discover and reproduce the scene which is being transmitted, just as a telephone wire may be tapped for its message.” This knowledge could presumably be used to help improve vision or, even, to restore sight. On

the other hand, tapping that stream of image information, or, even manipulating it or sending false signals opens new possibilities that, aside from science fiction, have rarely been considered – and only then from a theoretical perspective. Bush acknowledged that he doesn't know where this knowledge will lead, but his advice is apparently to press on: "who would now place bounds on where such a thing may lead?"

Bush seemed to presume that the innovations he predicted would be introduced into a world in which they would necessarily be used for the common good. We know that this is not always true. Many innovations of course are intended to yield private profit (pharmaceutical corporations) while others could be used for warfare, surveillance, or mass incarceration. Bush certainly acknowledged the possibility that wisdom might not prevail but his famous paper did not provide any insights for working towards it.

#### LIMITS AND TRIGGERS

Several considerations emerge when we characterize our present situation as a system in which all of humankind's activities are interwoven, where an action in one location, directly or indirectly, helps lead to actions in another location that would have seemed unrelated. A drought in one location may help cause civil war; change in lending policies may lead to food shortages and food riots in another; and the need for rare earth minerals for mobile telephones in the developed world could cause banditry and oppression in the developing world. Instabilities can cascade – sometimes very quickly, brutally, and unpredictably.

The structural aspects of our systemic, networked (Helbing 2013) world are admittedly abstract and apparently difficult to influence directly. Their roots in social phenomena, those in which we are directly related, can be readily traced however. Inequality, especially extreme inequality, a product of economic and other types of oppression, seems to be at the root of most of these problems. For one thing, political and economic elites who are the most privileged consume more resources of all kinds than other people further down the ladder. Overconsumption helps create scarcities that can erupt in riots or war, but often "just" contributes to misery and the degradation of potential human capital. Overconsumption also tends to colonize the economic sphere because of the needs (luxuries?) of the privileged crowd out the needs (often real) of the less privileged. Often the effects of this – and the effects of deprivation generally – are invisible to the overconsumers. Finally, they are largely responsible for the rules of the games – economic policies, political representation,

definition and enforcement of what is criminal, access and influence over mass media, etc. etc. – as well as the dominant ideologies of the time: What is legitimate thought? How should society be governed? What should the roles of "ordinary" people be? What are the risks and responsibilities?

Risk is function of the likelihood of some negative occurrence taking place and the magnitude of the negative consequences that would result from the occurrence. Unfortunately, it is often nearly impossible to assign precise values to either of these – especially the new opportunities for regrettable consequences with which we have had little experience. Then, of course, there is the very difficult issue of determining what could or should be done in relation to the risk and, generally even harder still, figuring out how to do what has been determined to be prudent and to do it.

To address – and anticipate – the risks and opportunities that confront us today, we must inquire into the cognitive and, especially, the metacognitive ensemble that we can draw on. This is Bush's How we may think question again. For how we may think begets how we may act. The deep and vaguely understood relationships between our thoughts and our actions, the risks and opportunities, and the uncertainty and unknowability of the future place humankind at critical transition point. Where this swings and what new paradigms emerge are likely to be at least partially driven by the civic intelligence, discussed below, that we can develop in the short-term.

#### VARIETIES OF COGNITION AND INTELLIGENCE

To consider how fit we are collectively to address the challenges we face, we need to look directly at our ways of thinking. In any task one faces it is prudent to consider whether the resources (skills, tools, time, knowledge, etc.) will be sufficient. The intelligence distributed among the human population is arguably our most important resource. Will we be able to apply this resource successfully to the battery of challenges we will face in the coming years?

#### INTELLIGENCE

Cognition is a complex process and very little is visible for inspection. Cognition in an individual is an amalgam of many processes including perception, interpretation, decision-making, learning, emotional reactions, values assessing, planning, etc. It is not a matter of purely rational thought (or a hypothetical entity, rarely observed outside of academic journals) and it surely cannot be gauged accurately in its entirety by a single number. It is likely to be composed of many

semi-independent networks which are engaged during all of our waking (as well as our non-waking) moments. We need/use it when we go about routine activities and when we are confronted with unprecedented events as well.

Intelligence can be seen an assessment as to how well somebody performed on a specific test or challenge. Also, presumably it would describe how well they would perform in the future – or, even, on other tasks. I use a more holistic view of intelligence – one that factors in all of the elements that go into our thoughts and actions, more like intelligence in the wild, as it exists in the real world. Clearly, the ordinary and extraordinary challenges we face in our lives won't be solved using only logic or math, or solely by using an impressive vocabulary. And they won't take place in a psychologist's laboratory. Intelligence means efficiently and effectively addressing a variety of tasks that we are often faced with. It also means adjusting one's approach when necessary, generally when it fails or otherwise seems inadequate.

#### METACOGNITION

Metacognition is a fairly unfamiliar concept. In a nutshell, metacognition is “thinking about our thinking” and it describes the ability to improve how individuals think. Metacognition includes “people's abilities to predict their performances on various tasks” and their ability to “monitor their current levels of mastery and understanding” (Bransford, 2000). Importantly, metacognition takes place both consciously and subconsciously. This implies that we can sometimes make changes in our thinking without our knowledge of doing so.

Further, metacognition is a key feature that separates experts from non-experts. Metacognition allows experts to improve their understanding of some area by improving the methodologies they use to think about it. And new methodologies can result in deeper models of the content of their study, whether it is geology or human behavior. Metacognition also can help us develop educational approaches “that focus on sense-making, self-assessment, and reflection on what worked and what needs improving” (Bransford, 2000).

#### COLLECTIVE INTELLIGENCE

Collective intelligence broadly characterizes how well collectivities work together to address challenges. These challenges can range from simple problems with known answers (such as identifying the capitals of all the countries in Europe) to thoroughly vexing problems (such as lessening the extent or limiting the damages of climate change). The form that collective intelligence takes (similarly with intelligence in individuals) depends

on the context – the nature of the collectivity involved, the circumstances, and the challenges being faced.

As Roy Pea (1993) observes, “Anyone who has closely observed the practices of cognition is struck with the fact that the “mind” never works alone. The intelligences revealed through these practices are distributed across minds, persons, and the symbolic and physical environments, both natural and artificial.” In fact it is not clear exactly where intelligence is located. Many times it is easier to retrieve information from the web even if the same information exists somewhere within our own brain. Is the search engine part of our brain? Rai (2013) points out that “Living in social groups greatly enhances the cognitive capacity of a given individual because we can rely on others for both additional memory and information processing.” And although Wegner (1987) labelled the sharing of memory duties of romantic couples as “transactive memory” it is clearly an important feature whether we are presently involved in that situation or not.

The base of knowledge that we rely on to a large degree is built on information that has been accumulated from people and cultures spanning the centuries. Through the miracle of language the whole of humankind, including those living, dead, or not yet born, is drawn into the collective web of thought, historically through writing and the written records that survive, but also through paintings, music, architecture. The media that humankind currently produces is more diverse than those of previous centuries and it will be available to our successors. The extended mind hypothesis (Clark and Chalmers 1998) presents the case that “mind” is not just what is in your head: it doesn't stop at the border between your body and the environment. A person, for example, can store information in their own memory, on a slip of paper, on their telephone, or even, just be knowledgeable about how to locate that information on the Internet via search engines. Each of these approaches could be seen as memory.

The study of collective intelligence has recently focused on small groups, in particular to develop more creative and effective work teams. Anita Woolley and her colleagues (2010) have done important work in this area, testing many small groups on a variety of tasks. One of their findings, presumably applicable in other settings, is that collective intelligence is not necessarily determined by the IQs of individual participants: the intelligence of a group is often higher than that of the most intelligent participant. For example turn-taking in a meeting or conversation turns out to be an important part of collective problem-solving, as well as the number of women participating (Woolley et al, 2010). The secret recipe however is not simply to include as many

women as possible in every team or to adopt mandatory turn-taking, but rather to realize that how the collectivity works together is the ultimate goal and that diversity, respect, turn-taking, and other such features are all very important.

Currently, no doubt stemming from the new possibilities enabled by networked digital technology, there is a big focus on collective intelligence. Much of this revolves around “harvesting” and other techniques where individuals are reduced (in my opinion at least) to “neurons” performing snippets of thinking, and who, along with many other people are providing a neuronal service, serving people elsewhere for other purposes. I would argue that this type of collective intelligence contains to some degree the whiff of exploitation. It certainly advocates a narrow use of human beings – which is, admittedly, not without precedent. Collective intelligence, as it is generally portrayed, does not have an explicit focus on usefulness or norms. It could be argued for example that war can be characterized as two (or more) competing collectivities both employing collective intelligence – albeit of a non-collaborative and counter productive variety. Unfortunately, collective intelligence has conceived and conducted wars, witch hunts, genocides, pogroms, mob actions, and other barbarisms – sometimes most brilliantly. It has helped establish – and maintain – vast systems of social and environmental dominance. These are habits of collective intelligence that we would like to unlearn.

#### COLLECTIVE METACOGNITION

Collective metacognition is to collective intelligence what metacognition is to individual intelligence. Basically it describes how collective intelligence can be used to think about its own collective intelligence with an eye towards understanding it, and, hopefully, improving it. However abstract it may first appear, understanding how other groups of people “think” and how societies work is of utmost importance to attempt to “fix” things. After all, this thinking (however unconscious it might appear) has helped us devise complex societies and incredible technologies. Probably the most significant of them is language, which enables us to convey complex ideas and information that cannot be readily communicated via facial expressions, vocalizations, and body movements, and which links us together and helps us think and act cooperatively. There are currently a variety of institutions such as businesses, schools, and foundations that practice collective metacognition but they generally lack the broad societal focus. Also, in many societies, this type of perspective is explicitly or implicitly discouraged: for one thing, it assumes that the society is not perfect.

#### CIVIC INTELLIGENCE

Civic intelligence is the capacity of a group of any size (including a single person – the smallest possible “group”) to address shared challenges effectively and equitably. It can be described as the ability to address civic ends through civic means. It is intended to pick up where collective intelligence and collective metacognition leave off. For one thing, civic intelligence is normative, it is something that we strive for, not just something to observe. The idea of civic intelligence is used descriptively, diagnostically, and aspirationally. We assume that civic intelligence is something that changes naturally over time, waning and waxing depending on a variety of factors. We further assume, however, that by acknowledging that such a thing exists, we can evaluate our current and historic measures of it and, most significantly, take measures to improve it.

Civic intelligence tends to focus on civil society, communities, non-profits and the like. This is not because the role of economic and other elites is not necessary. If anything, their tasks should actually intensify with a stronger focus on civic intelligence. The focus on the people who have been left out is important for several reasons. The first is because their massive numbers represents a vast resource – of energy, time, intelligence, creativity, etc. And these numbers also suggests that they hold a sort of veto power whether they know it or not. The other reason is that the elites are not necessarily able – or willing – to employ civic intelligence, since civic intelligence is inclusive and is intended to benefit everybody.

Civic intelligence cannot be reduced to numbers – nor should it. This, of course, doesn’t mean that it is impermeable to analysis. One approach is to look for attributes that bolster civic intelligence. The first draft of a framework for civic intelligence capabilities is presented in the figure below (discussed in more details in Schuler 2014). The objective was to identify and synthesize a wide range – including most if not all – of the critical capabilities of civic intelligence from a variety of sources including social innovation, social change, organizational behaviour, social psychology, and many other disciplines. There are five main categories of capabilities, represented in the columns below, all necessary for a collectivity to develop and deploy civic intelligence in pursuit of the common good. The first column shows a number of approaches to Knowledge, most of which are not addressed in formal education. The second column, Attitudes and Aspirations, presents a variety of critical features such as Social Imagination, Self-efficacy and Civic Purpose, which are, again, not generally part of a formal education. The next two columns contain features of Organizational Capital

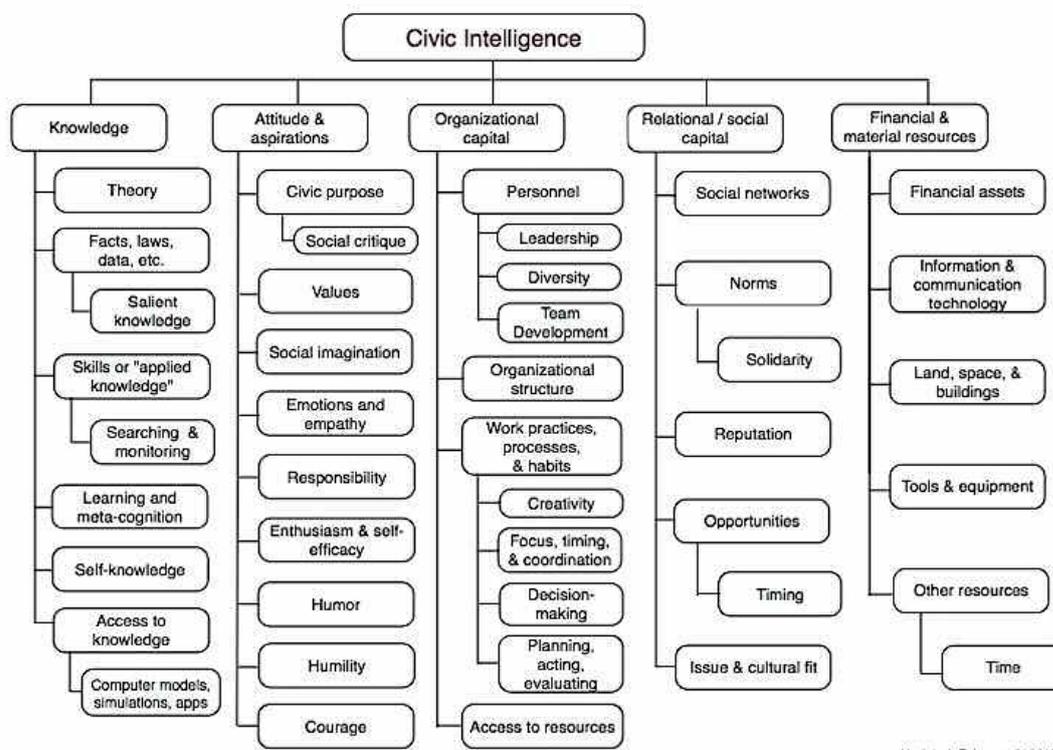
and Social Capital respectively, acknowledging the importance of being organized (with people, processes, etc) and of social relationships. The fifth column lists Financial and Material Resources, which are needed, but often in short supply for activists and others who may be working for social change.

#### CIVIC IGNORANCE

Ignorance exists in many forms. One is the simple lack of knowledge, which is the only non-active form of ignorance. The others require some type of active processing (including filtering). Not knowing is an unshakable aspect of life: we don't know exactly what the future will

Dewey (2007) points out, "we always live at the time we live and not at some other time."

We need to look at civic ignorance for several important reasons, in particular because it has not received the attention it deserves. People have the impression that "if the facts were known" people would accept them right away. This naive belief causes us to not notice a vast force that permeates our lives. Yes, ignorance of ignorance makes ignorance. It is probably useful to consider it as a variety of cognition, and acknowledge that the cognitive processes of civic ignorance are working against our collective survival and our ability to work together for the common good.



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Framework for Civic Intelligence Capabilities.

bring. Ignorance becomes civic ignorance when the ignorance takes a social direction by not lodging solely in the minds of individuals. One of the ways in which ignorance becomes dangerous is when people (or groups of individuals) don't believe that they are ignorant – but know that others are. Ironically, it is the denial of ignorance that demonstrates civic ignorance most clearly. Moreover, because civic intelligence is contextual, ignoring or denying environmental degradation and other factors that threaten our survival suggests that civic ignorance is being deployed. As

Although public manipulation is probably as old as our species, the invention of the public relations industry was probably a big step in the development of professional propagation of ignorance. The cigarette industry's fight against public health in the United States represents one of the best examples from which to learn. One of the tactics employed, which helped keep premature death rates high, was to sow doubt in the public: Because, the story went, science had not proved a link to cancer and other debilitating diseases, there was no need to regulate tobacco use. Other entrenched interests have taken other paths toward civic ignorance. In the US the

National Rifle Association (NRA) lobbied congress to pass legislation that specifically forbade the Center for Disease Control for studying gun violence as a public health issue. And the US state of Wyoming recently passed legislation criminalizing various acts of recording environmental conditions, via photography or testing creek water for biological and industrial contaminants.

The challenge of increasing our civic intelligence is made ever more persistent – and daunting – when witnessing determined, irrational, self-inflicted cascades of ignorance that arise periodically with little to no external provocation. Recently (i.e., still going on as of May 2015 when this was written) a group of conservatives in Texas and other Southeastern states have convinced themselves that under the guise of Operation Jade Helm, a routine military training exercise, the US military under the command of President Barack Obama is planning to “confiscate firearms, impose martial law, or even forcibly relocate citizens to FEMA internment camps.” The situation stretched beyond merely marginal eccentricity when Texas Governor Abbott ordered the Texas National Guard to monitor the situation.

There are several themes that purveyors of civic ignorance use and, unfortunately for the rest of us, they often can find ready audiences. These include claiming that they – or a book or document – alone provides access to the literal truth, naming one or more specific groups as villains, or appealing to people to return to some bygone golden era. And while purveyors of civic ignorance are culpable, they would have little success without people who are receptive to their messages. This suggests a need for teaching more critical thinking and media literacy in the schools.

Rai (2013) also introduces some very relevant ideas for the exploration of civic ignorance: “Perhaps more intriguing than the cognitive consequences of participating in a social group are the cognitive consequences of being cut off from the group.” Also, citing the work of Bertrand, Mullainathan, and Shafir (2004), Rai mentions that people of low-sociological status lack the access to the “extensive environmental and interpersonal supports” that people of higher socioeconomic status enjoy. He goes on to say that because of this, “living poor in America is akin to a chronic state of thinking under divided attention, a condition known to severely impair cognitive processing (Bertrand, Mullainathan, & Shafir, 2004).

#### ARENAS AND PROJECTS

Here we discuss briefly a few broad areas such as education or the media that seem to be most central to the expression and cultivation of civic intelligence. These areas although they are discussed separately are strongly related to each other.

For example, ways of thinking about media and interpreting its messages and effects – the field of media literacy – is an important topic for education while, at the same time, the media has vast potential, largely unrealized, for educational initiatives, literacy, and a focus on public affairs. In general these areas present both challenges and opportunities for civic intelligence. We can also look at specific circumstances and see how they affect capabilities from the civic intelligence framework. If, for example, we noticed that media – television, perhaps – helped degrade some of the capabilities, we could attempt to make up for that deficit.

#### MEDIA

We are all connected to each other. The fact, however, that we are all part of a gigantic web of ideas, discussion, declarations, should not be mistaken as evidence that we are all in this equally. Large corporations (and, often, national governments) are the primary gatekeepers of the media, be it broadcast, film, print, or online. They control a large percentage of what people see and hear and use as points of reference in their thoughts and conversations with others. According to research that is now several decades old, these institutions do not control what we think – only what we think about – itself a substantial challenge. Existing within an immense media dominated world presents daunting challenges for civic intelligence: ignoring it is impossible – and would not be useful. Using the tools that are available to us is reasonable but critiquing the existing systems and developing our own independent approaches and supporting existing ones are necessary as well.

#### GOVERNANCE

How can we go about changing a vast system, solidly established and instrumental in the maintenance of institutions that are sometimes helping to cause our problems and often not being successful in solving them? Attempting to answer this by suggesting that they be simply replaced begs at least two questions: (1) How could this replacement come to pass? and (2) What confidence do we have that their replacement would be any better than the original? Currently there is worldwide mistrust of government, yet many of the alternatives suggested are not ready for prime time. We can rail against these institutions but in all likelihood we will have to play a role in their transformation. Exposing corruption and promoting more transparent processes are both important. At the same time however many authors are noting that government-citizen partnerships are now in place and yielding good results (See Briggs 2008 for several interesting examples). Renegotiating the relationship between citizens and their governments seems obvious and timely.

## EDUCATION

Education for civic intelligence takes different forms than those offered by formal education around the world. Using the capabilities framework to assess educational institutions and programs can show how much work we have before us. Education that turns students into assembly line objects to be filled with knowledge and then graded and tested continually diminishes the prospects for civic intelligence. Fostering autonomy and problem-solving skills are essential. Encouraging students to pose questions (Bruce & Bishop, 2008) in relation to the existing systems including the messages they produce and the assumptions that are not visible is perhaps the most important lesson – and the hardest to unlearn. The desire of students to learn and that of teachers to teach are hard, but not impossible, to extinguish. We need to find or create the spaces in which educational practices that encourage civic intelligence can flourish.

## INFORMATION AND COMMUNICATION SYSTEMS

Just twenty-five years ago, most people had never even heard of the Internet. In the early days of the Internet commercial activity was prohibited. Now, however, a few corporate behemoths, Google at the pinnacle, are the de facto rulers of the Internet. The public libraries, now probably seen as somewhat quaint, were guardians of public knowledge. They used the public Dewey Decimal System approach to catalogue their holdings. Now Google continuously sweeps the public Internet to enrich their repository of information but shares their bounty parsimoniously, one search at a time – and never in an automated fashion similar to the way that they conduct their business. But what would a public search engine look like? It would presumably not sell advertising space. The system could be massively distributed around the world and would not require gigantic server farms. Could there also be a public Facebook that was extensible by other groups besides Facebook? And could collaborative and deliberative approaches (De Cindio, 2012) be built into these systems? Can we envision new early social warning systems that help us understand how oppression and poverty play out in the real world? And what is stopping us from building these tools?

## NEW COLLECTIVITIES

It is an article of the democratic faith that the more people are knowledgeable (and willing to become more knowledgeable), willing to listen to others, con-

cerned about short and long-term challenges, and engaged in the pursuit of the common good, the better the chance of achieving social progress. But while the numbers of individuals who meet these criteria is important, the ability for them to think and act together is of far greater significance. One of the most pressing needs – which is one that the Internet and new information and communication systems are likely to help meet – is the need for new collectivities. We are beginning to understand some of the characteristics of these new collectivities although we are essentially entering uncharted territory. And because some of the many opportunities may not remain available forever we need to be moving quickly.

Business and government are organized around common interests but civil society seems to be lagging behind. The structural asymmetries are staggering. They include inequalities around economic opportunities, knowledge, surveillance, language, mobility, climate change and environmental degradation, access to communication and information, skills, and access to power and decision-making. We need to use a big tent approach perhaps modelled after the World Social Forums, perhaps online or both, in which these concerns can be discussed. We also need to explore various methods of working together via indirect coordination that are flexible but promote cooperation on shared goals.

We believe that the new collectivities should generally be both inclusive and diverse. According to Stokol, drawing from a variety of studies, “Cross-disciplinary teams have become increasingly prevalent across many research domains, owing to the growing recognition in academia and society at large that the world’s most complex and intractable problems – including global climate change, poverty, war, famine, and disease – can be better understood and ameliorated from a broad interdisciplinary perspective than from the narrower vantage points of separate fields.” Although these new collaborations are not trivial to institute or sustain, they are vital. It will be important to work directly with artists, educators, designers, community health workers, social workers, business owners, scientists, media outlets, technologists, activists, and with marginalized communities, to join established collectivities and build / invent new ones.

## HOW MIGHT WE THINK NEXT?

The type of social progress we need will not be provided by a new app. The strongest determinant for civic intelligence today is the degree to which it is actively cultivated and practiced by people around the world. We have seen on the framework that social critique and

the belief in positive social change are both necessary. In addition to this, the social imagination to envision a better future is also necessary. Civic intelligence attempts to point the way towards changing the system before it is too late. It attempts to make a practical case for utopian ends. What would a general rise in civic intelligence look like? The successful demonstration of civic intelligence might manifest via fewer acts of violence and less denial of the legitimate plight of other people. There would be more empathetic engagement by people of greater means. We would need to see progress towards social and environmental amelioration.

Ultimately the intent of this article is to make a strong case for intelligence – individual, collective, and civic. The vision of intelligence presented here is expansive and protean – it can and should take different forms with different people in different situations. The book that I developed with contributions from over eighty other authors (Schuler 2008) contains 136 patterns that describe concepts, actions, and projects that can be used by people interested in civic intelligence. Each of the patterns is intended as a seed that can be used to help inspire and inform civic intelligence enterprises. While each pattern has potential relevance, Civic Intelligence, Open Research and Action Networks, Teaching to Transgress, Strategic Capacity, Social Dominance Attenuation, Community Inquiry, Mirror Institutions, Tactical Media, Open Source Everything, and Experimental School are likely to be especially pertinent to this discussion.

Civic intelligence means thinking, and thinking about thinking. It implies action as well. We cannot wait until we know everything before we act because we cannot wait forever. This essay explores the concept of social metacognition, particularly in relation to civic intelligence. Although neither of these concepts is in wide currency, both, by virtue of the intellectual and other efforts they help engender, could prove useful as humankind struggles with the challenges of the 21st century.

I suspect that Vannevar Bush erred to some degree by seemingly putting too much faith in technology. Regardless, I do believe that too much faith is currently placed in technology. Technology is relevant since it is likely an element of potential solutions. It is also obviously part of the problems that we now face. But it cannot do the work that only people are capable of doing. Bush's article *As We Might Think* did raise some extremely important questions. I suspect (and hope) that he would agree with many of the points made here. The question of how we might think next is the critical one for us. Times have changed and the way we think about how we think needs to be changed as well. The authoritative story of civic intelligence is currently being written.

While what we call intelligence may be distributed in unequal amounts, it is in the democratic faith that is sufficiently general so that each individual has something to contribute, and the value of each contribution can be assessed only as it entered into the final pooled intelligence constituted by the contributions of all. (Dewey 1939).



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# SOLVING DIFFICULT LARGE-SCALE SOCIAL SYSTEM PROBLEMS WITH ROOT CAUSE ANALYSIS



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## INTRODUCTION

**T**HERE EXISTS A CLASS OF PROBLEMS THAT HAVE DEFIED solution for generations. This class includes environmental sustainability, over population, recurring wars, avoidable large recessions like those of 1929 and 2008, endemic corruption, and excessive wealth inequality. These problems can be characterized as systemic, difficult, large-scale, and involving social systems of multiple intelligent social agents. They also involve systemic lock-in. For example, Garrett Harding, in his classic analysis of the environmental sustainability problem in *Tragedy of the Commons*, found that: “Each man is *locked into a system* that compels him to increase his herd without limit – in a world that is limited.”

The existence of this class of problems raises the question that sits foremost in the minds of millions of global activists: How can we solve these problems? This question is so ubiquitous that the theme of this journal issue is Systemic Change: “How and where does systemic change manifest? How does it unfold? What are the leverage points, the forces and dynamics at play?”

However, what is the right question to ask first? Perhaps we should consider Albert Einstein’s viewpoint: “If I had an hour to solve a problem and my life depended on the solution, I would spend the first 55 minutes determining the proper question to ask, for once I know the proper question, I could solve the problem in less than five minutes<sup>1</sup>.”

This is the road Thwink.org has taken. Our work initially focused on the environmental sustainability

problem and later broadened to the class of problems described above. Our 55 minutes took two years and led to a very different question: WHY are popular solutions failing? This subsequently led our research down a road less traveled. The answer, found in a matter of days, was that popular solutions are failing because they do not resolve root causes. We know this to be so because all problems arise from their root causes<sup>2</sup>.

This hypothesis, that popular solutions for this class of problems are failing because they do not resolve root causes, has defined our work ever since. If the hypothesis is true then we can make a prediction. We should be able to find root causes that are not being addressed by popular solutions, however elusive those root causes may be.

Our research approach has been to develop a formal process, based on root cause analysis, that fits this class of problems. This parallels what the business world has successfully done with its own classes of problems.

This approach led to the System Improvement Process (SIP). The remainder of this article reports on how SIP works, describes the application of SIP to one particular problem, and concludes with discussion of how the application results confirm or deny the prediction that root causes exist which are not being addressed by popular solutions.

## METHOD OF ANALYSIS: THE SYSTEM IMPROVEMENT PROCESS

SIP was designed from scratch to solve the highly intractable class of problems described above. Let’s pause to give the class a name. The problems listed above are difficult and large-scale. They involve the lock-in factor reported by Hardin and multiple intelligent social agents acting together in a social system. We need a meaningful acronym to identify this class. Let’s label the class Difficult Intelligent Social Multiple Agents Large-scale Lock-in (DISMALL) problems.

More than anything else, what makes DISMALL problems difficult is lock-in. Deep, well hidden, poorly understood forces exist that lock social agents into self-destructive behavior and make it excruciatingly

difficult to break free, despite the prolonged effort of problems solvers. Therefore, if we are to successfully effect systemic change we must understand the systemic forces involved.

For DISMALL problems this requires root cause analysis, which is the practice of finding and resolving a problem's root causes. The driving principle is that all problems arise from their root causes<sup>3</sup>. Evidence of the effectiveness of root cause analysis is irrefutable. Vast swaths of industry have adopted root cause analysis. Generic processes like Six Sigma, Total Quality Management, Kaizen, and the ISO 9000 family of standards have evolved from application of root cause analysis. Root cause analysis processes like the fabled and widely emulated Toyota Production System lie at the very heart of corporate success<sup>4</sup>.

SIP works by breaking a problem down into smaller and hence easier to solve subproblems. For example, when solving the problem of how to put a man on the moon and bring him back, NASA divided the problem into six subproblems: how to achieve earth orbit, how to move to lunar orbit, how to land on the moon, how to achieve lunar orbit again, how to move to earth orbit, and how to land on the earth. Once SIP has divided a problem into subproblems, each subproblem undergoes analysis to find its one or more root causes and to identify the high leverage points for resolving the root causes. Solution elements are then developed for pushing on the high leverage points. The solution elements are then implemented. For each subproblem the process looks like this:

- 1 - Subproblem Definition
- 2 - Analysis (This is complex so it contains five substeps.)
  - 2.1 - Find the immediate cause of the subproblem symptoms in terms of the system's dominant feedback loops.
  - 2.2 - Find the intermediate causes, low leverage points, and superficial (symptomatic) solutions. (Intermediate causes are defined below.)
  - 2.3 - Find the root causes of the intermediate causes.
  - 2.4 - Find the feedback loops that should be dominant to resolve the root causes.
  - 2.5 - Find the high leverage points to make those loops go dominant.
- 3 - Solution Convergence.
- 4 - Implementation.

The purpose of the Analysis step is to find the important causal chains in a subproblem. Causal chains work as shown below. An arrow means one thing causes another. Intermediate causes are defined to be causes in a causal chain that occur between root causes and symptoms.

#### ROOT CAUSES → INTERMEDIATE CAUSES → SUBPROBLEM SYMPTOMS

If the root causes of a problem are unknown, problem solvers have no choice but to attempt (usually in vain) to resolve the intermediate causes by pushing on their connected low leverage points with superficial solutions. If the root causes are known, then problem solvers can attempt (usually with success) to resolve the root causes by pushing on their high leverage points with fundamental solutions<sup>5</sup>.

For example, before the root cause of infection was known, treatment was directed to intermediate causes like fevers (with cold baths), festering wounds (with concoctions like mouldy bread and warm soil), and speculated causes in general (with trepanning, incantations, and all sorts of herbs and charms). The cure rate was low. But once the root cause of infection was found to be infectious agents like viruses and bacteria, revolutionary treatments that usually worked could be directed to high leverage points, such as avoiding infection (by hand washing and vaccination) and killing bacteria once an infection was established (with antibiotics). The result has been a high avoidance and cure rate.

The most urgent DISMALL problem is global environmental sustainability. There have been countless practical ways offered for solving the problem, like regulations, conservation, population reduction, and carbon taxes. But society doesn't want to change its behavior and adopt these practices. Therefore how to overcome change resistance is the crux of the problem<sup>6</sup>.

As an example of how root cause analysis can work on DISMALL problems and to test the prediction that root causes exist which are not being addressed by popular solutions, let's review what the SIP analysis found for the change resistance subproblem of the global environmental sustainability problem. The analysis was built using a feedback loop model of the subproblem.

#### THE RACE TO THE BOTTOM

There are two feedback loops in the human system that, in the large, affect citizen's lives more than anything else. They are the loops that politicians use to gain supporters.

Over time, social evolution has pared the many strategies available for gaining political support into just two main types: the use of truth (virtue) and the use of falsehood and favoritism (corruption)<sup>7</sup>. For example, a virtuous politician may gain supporters by stating, "I know we can't balance the budget any time soon, but I will form a panel of experts to determine what

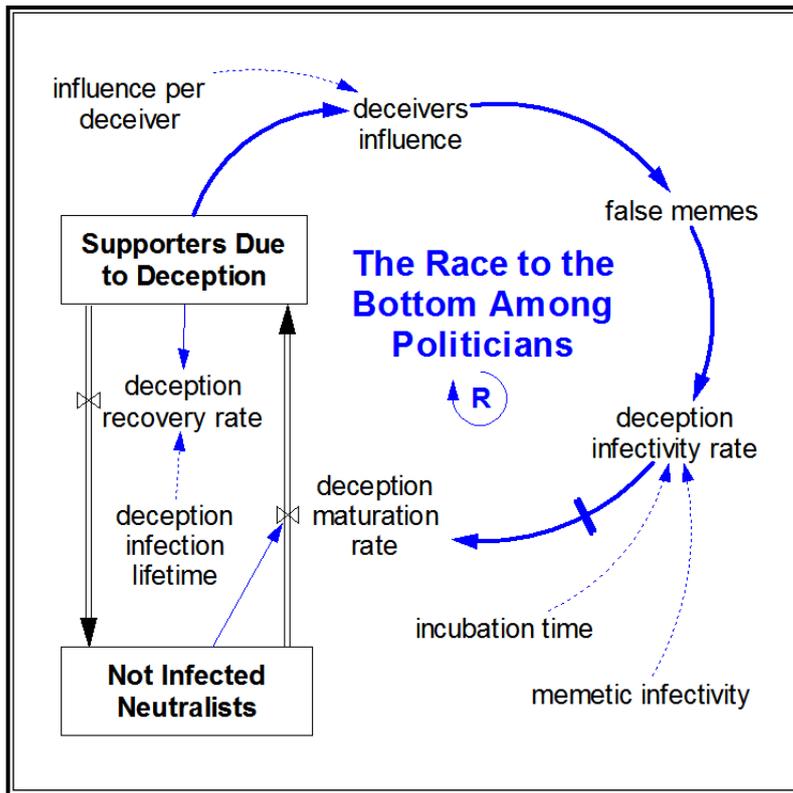


FIGURE 1 ~ The Structure of the Race to the Bottom. The reinforcing loop grows in strength by using corruption in the form of highly appealing falsehood and favoritism. This increases the number of supporters of corrupt politicians, which increases their influence, which in turn increases their power to peddle still more falsehood and favoritism. Over time the loop can grow to tragically high levels.

the best we can do is.” Meanwhile, a corrupt politician is garnering supporters by saying, “Economics is easy. You just put a firm hand on the tiller and go where you want to go. I can balance the budget in four years, despite what the experts are saying. They are just pundits. Don’t listen to them. A vote for me is a vote for a better future.” The corrupt politician is also saying to numerous special interest groups, “Yes, I can do that for you. No problem.” Guess who will usually win?

Falsehood and favoritism have long dominated political strategy. Most politicians use rhetoric, half truths, glittering generalities, the sin of omission, biased framing, and other types of deception (propaganda) to appeal to the greatest number of people possible for election or reelection. Once in office many politicians engage in acts of favoritism, also known as patronage.

For example many politicians use the *ad hominem* (Latin for against the man) fallacy to attack and demonize their opponents, particularly as an election draws near. A prominent instance was the use

of the Swift boat ads in the 2004 US presidential campaign to attack John Kerry’s character. The ads were an *ad hominem* fallacy, because they had nothing to do with Kerry’s political reasoning or positions. Other terms for the *ad hominem* fallacy are demagoguery, shooting the messenger, negative campaigning, smear tactics, and sliming your opponent.

Politicians are forced to use falsehood and favoritism to gain supporters, because if they do not they will lose out to those who do. This causes the Race to the Bottom among Politicians to appear, as modeled using system dynamics<sup>8</sup> in FIGURE 1. Once this loop takes hold a society’s leaders are locked into a systemic race to the bottom. They will make poor decisions on problems whose solutions would benefit the majority of the population, i.e. the common good.

To understand how the loop works, let’s start at *false*

*memes*. (Node names are italicized.) A meme is a mental belief that is transmitted (replicated) from one mind to another<sup>9</sup>. Rather than show falsehood and favoritism, the model is simplified. It shows only the larger factor, falsehood.

The more *false memes* transmitted, the greater the *deception infectivity rate*. The model treats arrival of a meme the same way the body treats the arrival of a virus: it causes infection. After the “mind virus” incubates for a period of time, the infection becomes so strong that maturation occurs. This increases the *deception maturation rate*, which causes supporters to move from the pool of *Not Infected Neutralists* to the pool of *Supporters Due to Deception* as they become committed to the *false memes* they are now infected with. *Supporters Due to Deception* times *influence per deceived* equals *deceivers influence*. The more influence a deceived politician has, the more *false memes* they can transmit, and the loop starts over again. As the reinforcing loop goes around and around, each node increases in quantity, often to astonishing levels. The loop stops growing when most supporters are committed.

Once a supporter becomes deceived, they become deceivers themselves in order to spread what to them is the truth to others. The *deceivers influence* node reflects this behavior. The race to the bottom loop creates a giant political echo chamber, as deceivers compete to see who can do the best job of spreading more (false) beliefs. This maximizes the number of false memes, minimizes defection, and ensnares additional neutralists into their fallacious paradigm. These effects explain the high level of (false) proselytization and dogmatism seen on the far right in many political systems.

The behavior of the race to the bottom is of considerable importance. A deceived person has fallen (degenerated) from the norm of discerning the truth. The health of a society whose leaders are elected relies on the majority of its voters to be able to discern the truth about who would make the better leader. They can't do this perfectly, but they should be able to satisfice<sup>10</sup> and do it most of the time. If the majority can be routinely deceived into supporting those who have used falsehoods to garner their support, then that society is in serious trouble.

#### THE IMPORTANCE OF GRAPHS AND ANALYTICAL THINKING

Authors of this journal issue were invited to consider these questions: "How and where does systemic change manifest? How does it unfold? What are the leverage points, the forces and dynamics at play? What are the conditions for its empowerment and enablement? How do agency and structure come into the picture?" These questions can be systematically answered with root cause analysis of the problem, construction of a model of the problem's structure, and close study of how the forces in the model dynamically play out over time. These dynamics are best presented in the form of graphs.

A time based graph shows how various factors behave over time. The classic example of a model and its graphs for understanding a public interest problem is the *Limits to Growth*<sup>11</sup>. The book is built around its graphs. The third edition uses ten scenarios and thirty graphs to explain how a system dynamics model of the environmental/economic system behaves when various leverage points are pushed on with solutions. What people remember about the *Limits to Growth* is its stunning graphs. For the first time these graphs showed, in a convincing fashion, approximately what would happen if business as usual continued or various solutions were implemented.

This article takes a similar approach. Ten graphs (one for each scenario) are used to explain how the analysis model works. This is a generalized model

so the graphs extend over an arbitrary period of time. The *Limits to Growth* graphs use 200 years. We have chosen 500 years, but this could just as well be 500 months, weeks, or days, depending on the particular problem. On these graphs most of the interesting behavior occurs in the first few hundred years. This is about how long it has historically taken civilization to address past DISMALL problems, like slavery, universal suffrage, civil rights, and conversion from autocracy to democracy beginning in the 18th century.

The article speaks in terms of politicians and their behavior to hold positions of power. From that perspective the graphs should have a short time scale. However, for a DISMALL problem the graphs should be interpreted as representing the entire system (often global) of politicians and its macro behavior over the period of time it takes to solve the problem. At that level of thinking long time scales of hundreds of years become appropriate.

#### THE RACE TO THE BOTTOM GRAPH

Our first graph appears in FIGURE 2. This shows how the race to the bottom loop behaves over time. The behavior is simple because the model has only a single main loop.

Corrupt politicians exploit the power of the race to the bottom by broadcasting as much falsehood and favoritism as possible to potential supporters. This is done with speeches, articles, biased media outlets, books, jobs, lucrative contracts, special considerations in legislation, etc. The lies and favors are a cunning blend of whatever it takes to gain supporters. The end justifies the means. The more influence a politician has, the more falsehood they can afford to broadcast, and the greater the amount of favoritism they can plausibly promise and deliver.

The race to the bottom employs a dazzling array of deception strategies. These are usually combined to increase their power. Here are four of the most popular:

- 1 ~ FALSE PROMISE – A false promise is a promise that is made but never delivered or never delivered fully. False promises are widely used to win the support of segments of the population, such as organized special interest groups, industries, and demographic groups like seniors or immigrants. False promises flow like wine during election season.
- 2 ~ FALSE ENEMY – Creating a false enemy works because it evokes the instinctual fight or flight syndrome. The brain simply cannot resist becoming aroused when confronted with a possible enemy.

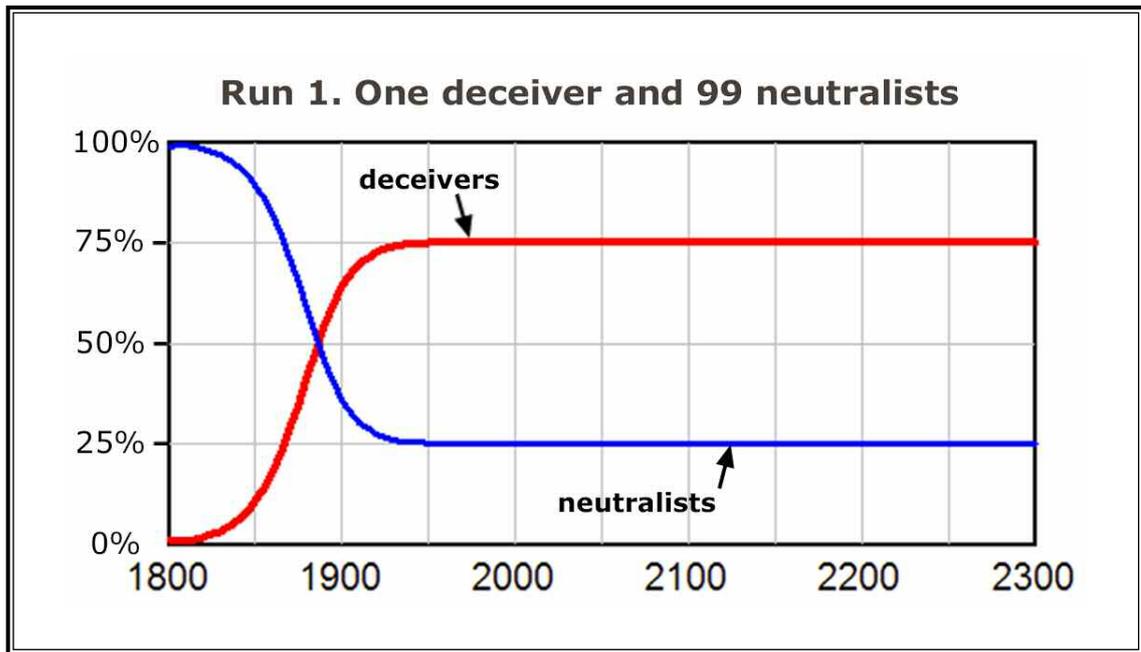


FIGURE 2 - Run 1. The simulation run begins with one deceiver and 99 neutralists. Over time the percentage of deceivers grows to 75% and stops. What keeps it from growing to 100% is the way deceived people can recover from their infection, after a *deception infection lifetime* of 20 years.

False enemies may be internal or external. Examples of internal false enemies are negative campaigning, the Salem witch trials, McCarthyism, Hitler's persecution of the Jews, and anti-Semitism and racism in general. A recent example of an external false enemy was George W Bush's painting of Saddam Hussein as evil incarnate, behind the 9/11 terrorist attack, and concealing weapons of mass destruction, which falsely justified the second Iraq war<sup>12</sup>. A current example is Vladimir Putin's unilateral creation of the Second Cold War, justified by "lies and conspiracy theories"<sup>13</sup>.

3- PUSHING THE FEAR HOT BUTTON – When a politician talks about almost everything in terms of terrorism, or communism, or crime, or threats to "national security" or "our way of life," and so on, that politician is pushing the fear hot button. It's very easy to push. Just use a few of the right trigger words (like "big" government, "radical" environmentalist, or axis of "evil"), throw in a dash of plausibility, and the subconsciousness is automatically hoodwinked into a state of fear, or at least into wondering if there is something out there to fear. Whether or not an enemy actually is out there doesn't matter – what matters is that we think there might be one.

4 - WRONG PRIORITY – Wrong priorities stem from hidden agendas. A hidden agenda is a plan or goal a politician must conceal from the public, due to

an ulterior motive. The low priority that environmental sustainability receives from most governments today is rapidly becoming the textbook example of how devastating wrong priorities can be.

The next time you see any of these strategies of deception, think of it as proof the Race to the Bottom among Politicians exists, and as proof that few politicians can escape the pressure to join the race to the bottom.

#### THE BASIC DUELING LOOPS

Opposing the race to the bottom is the race to the top. The two loops are joined together as shown in FIGURE 3. Because each loop competes for the same *Not Infected Neutralists*, they are "dueling loops"<sup>14</sup>.

In the race to the top virtuous politicians compete for supporters on the basis of the truth (called *true memes* on the model) about what is best for all (how to optimize the common good). No favoritism is used because those who tell the truth treat everyone equitably. Virtuous politicians can help improve things so that society benefits as a whole, but they cannot promise or give anyone more than their fair share.

The race to the top works in a similar manner to the race to the bottom because the two loops are symmetrical, with one crucial difference: in the race to the top, the size of the truth cannot be inflated.

Corrupt politicians can use *false meme size* to inflate

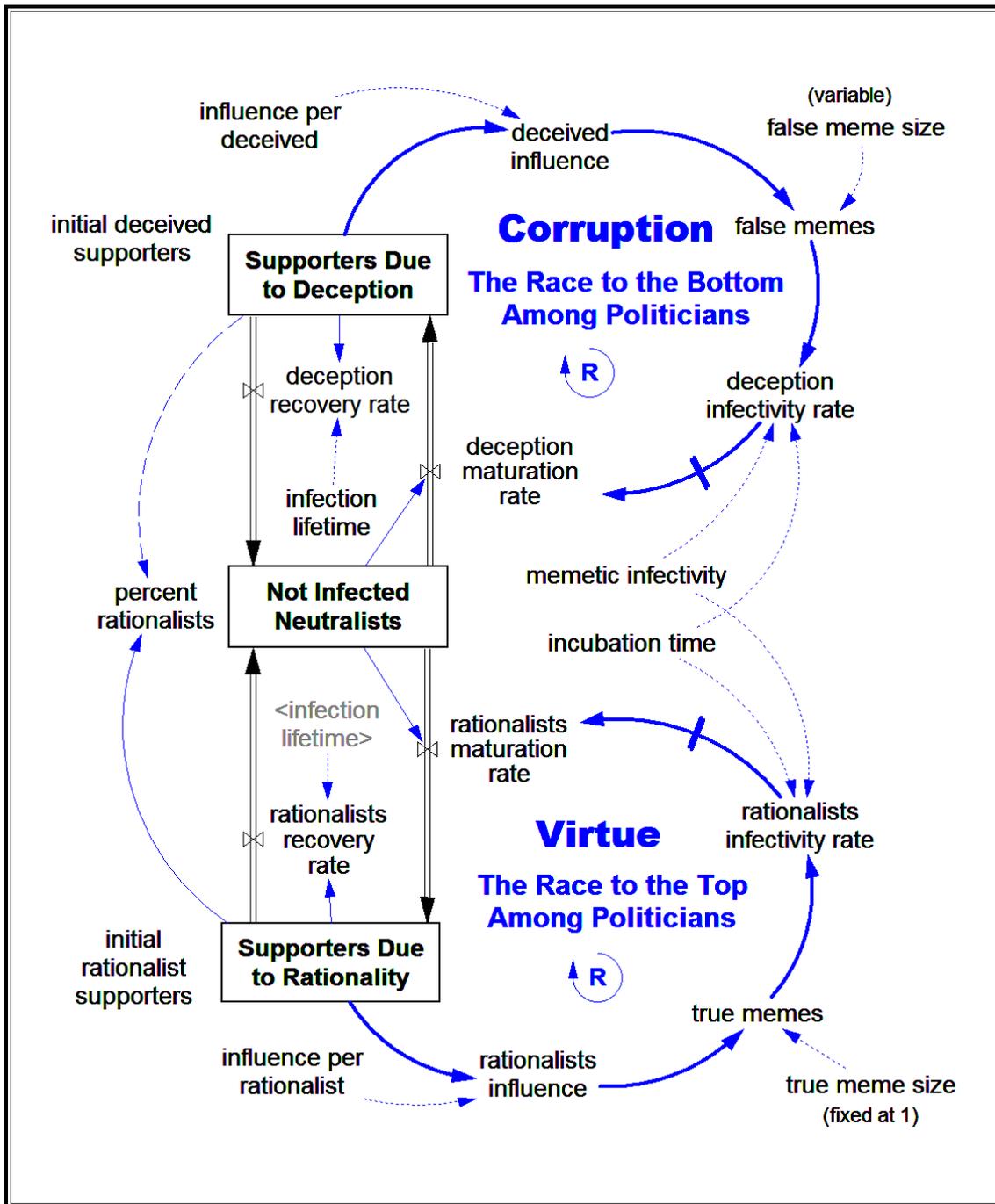


FIGURE 3 ~ The basic structure of the Dueling Loops of the Political Powerplace. There are many variations. This structure is the fundamental cause behind the behavior of all political systems, both ancient and modern. It explains the ubiquity of the left right political spectrum. More importantly, it explains why corruption is what dominates politics, no matter how hard society tries to stamp it out.

the appeal of what they offer their supporters. But virtuous politicians cannot use falsehood to promise more than they can honestly expect to deliver. Nor can they use favoritism to inflate expectations of how well they can help particular supporters.

By examining how the basic dueling loops model behaves in the series of simulation runs shown in FIGURE 4, we can better understand why the political powerplace works the way it does.

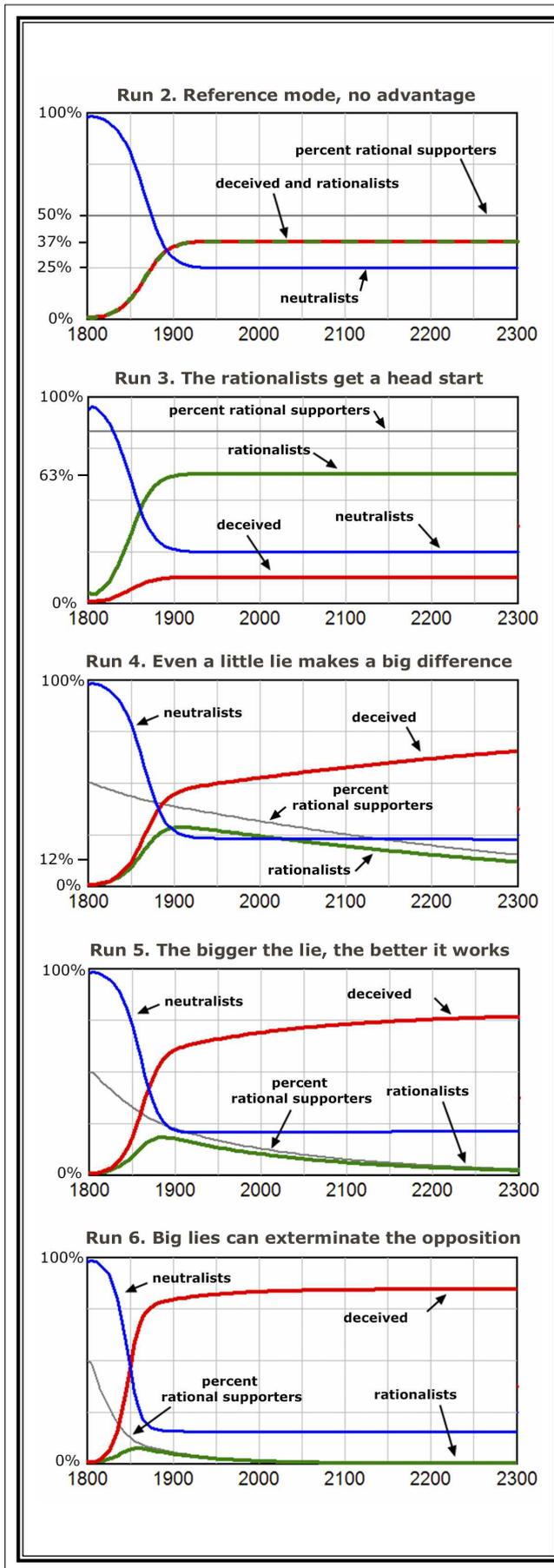


FIGURE 4 - Duelling loop simulation. Runs 2 to 6.

In these runs, *true meme size* is fixed and always equals one. A *false meme size* of 1 contains no deception, while a *false meme size* of 1.1 contains 10% lies.

The graphs have four lines. *Percent rational supporters* equals rational supporters divided by (rational supporters plus deceived supporters). Deceived, neutralists, and rationalists equal the number of those types of social agents in the three stocks (boxes) on FIGURE 3. The total number of social agents always equals 100, so the number of each type is the same as its percent.

**RUN 2** – In run 2 *false meme size* is 1 and the number of *initial deceived supporters* and *initial rationalist supporters* are both 1. Because neither loop has an advantage over the other loop, the result is both loops behave the same. Each loop attracts the same 37% of supporters, so the deceived graph line sits on top of the rationalists line. *Percent rational supporters* stays the same throughout the run at 50%.

**RUN 3** – This shows what happens if we give one side a head start. *False meme size* remains 1. *Initial deceived supporters* is 1, while *initial rationalist supporters* are 5. This time the rationalists pull away and end up with 63% of supporters.

**RUN 4** – Now things get interesting. The number of *initial rationalist supporters* is set back to 1 and *false meme size* is increased from 1 to 1.1. This is only a tiny bit bigger, by 10%. It would seem that itsy bitsy lies and favors wouldn't make much difference, but no – they make a huge difference over a long period of time. As the run 4 graph shows, the good guys get wiped out. At the end of the simulation run the rationalists are down to about 12%. A small advantage, if all else is equal, can over time lead to a large advantage.

In run 4, notice how slowly the lines for deceived and rationalists diverged for the first 50 years. What might happen if the bad guys decided to tell bigger lies and give out bigger favors?

**RUN 5** – If *false meme size* is increased from 1.1 to 1.3, system behavior changes dramatically. It only takes about 50 years for the deceived line to pull away from the rationalists. Now the rationalist line flattens out much faster. The lesson is that the bigger the lie, the faster a corrupt politician can take over a political system. I wonder if that explains anything we might be seeing in politics today?

**RUN 6** – Finally we see what happens if a corrupt politician decides to tell real whoppers, also known as “big lies.” *False meme size* is increased to 2. In other words, every false promise, every false enemy, and so on is now twice as big as they really are. The results are no surprise. Now the system responds so fast the good guys never even make much of an impact on politics. They are smothered so fast by such big lies that the graph line for rationalists is starting to look like a pancake. At the end of the simulation run there are no rationalists left in the system. They have been exterminated.

There is a limit to how big a lie can grow before it starts to make detection easy. In FIGURE 5 we will add the *effect of size of lie on detection* variable to the model, which imposes diminishing returns on the size of a lie.

This is the basic structure of the dueling loops of the political powerplace. The two loops are locked in a perpetual duel for the same *Not Infected Neutralists*. In addition, each politician has his or her own loop, and battles against other politicians for the same supporters. It is these many loops and the basic dueling loops structure that forms the basic structure of the modern political powerplace. The outstanding feature of this structure is:

the inherent advantage of the race to the bottom.

Because the size of falsehood and favoritism can be inflated, and the truth cannot, the race to the bottom has an inherent structural advantage over the race to the top. This advantage remains hidden from all but the most analytical eye.

A politician can tell a bigger lie, like budget deficits don't matter. But a politician cannot tell a bigger truth, such as I can balance the budget twice as well as my opponent, because once a budget is balanced, it cannot be balanced any better. From a mathematical perspective, the size (and hence the appeal) of a falsehood can be inflated by saying that  $2 + 2 = 5$ , or 7, or even 27, but the size of the truth can never be inflated by saying anything more than  $2 + 2 = 4$ .

Because the size of falsehood and favoritism can be inflated and the truth cannot, corrupt politicians can attract more supporters for the same amount of effort. A corrupt politician can promise more, evoke false enemies more, push the fear hot button more, pursue wrong priorities more, and use more favoritism than a virtuous politician can. *The result is the race to the bottom is normally the dominant loop.* This finding completes SIP analysis substep 2.1: "Find the immediate cause of the subproblem symptoms in terms of the system's dominant feedback loops." This also explains why "Power corrupts and absolute power corrupts absolutely"<sup>15</sup>. The reason is not so much that power itself corrupts, but that the surest means to power requires corruption.

Due to lack of analysis of the root causes of change resistance, problem solvers have long been intuitively attracted to the low leverage point of "more of the truth." On the Dueling Loops model this is the *true memes* node. The truth is discovered by research on technical ways to live more sustainably, such as population control, alternatives to fossil fuels, and reduce, reuse, and recycle. The truth is then spread by scientific reports, popular articles, environmental magazines,

lobbying, pilot projects, lawsuits to enforce the legal truth, demonstrations to shock the public into seeing the real truth, and so on. This works on problems with low solution adoption resistance (low change resistance), such as local pollution problems. But it fails on those with high change resistance, like climate change, because environmentalists simply do not have the force (wealth, numbers, and influence) necessary to make pushing on this point a viable solution.

Substep 2.2 of the SIP analysis says: "Find the intermediate causes, low leverage points, and superficial (symptomatic) solutions." The intermediate cause of high change resistance is the universal fallacy that Growth Is Good<sup>16</sup>, i.e. economic growth trumps all other priorities, including solving DISMALL problems. To combat that fallacy problem solvers use the low leverage point of "more of the truth" to promote superficial solutions as described above.

Because of its overwhelming advantage, the race to the bottom is the surest way for a politician to rise to power, to increase his power, and to stay in power. But this is a Faustian bargain, because once a politician begins to use corruption to win he joins an anything goes, the-end-justifies-the-means race to the bottom against other corrupt politicians. He is "locked into a system" where he can only run faster and keep winning the race by increasing his corruption. This explains why the race to the bottom frequently runs to excess, causing its own demise and collapse.

This collapse ends a cycle as old as the first two politicians. A cycle ends when corruption/exploitation becomes so extreme and obvious that the people rise up, throw the bums out, and become much harder to deceive for awhile. But as good times return, people become lax and another cycle begins. These cycles never end because presently there is no mechanism in the political systems to keep ability to detect political deception permanently high<sup>17</sup>.

#### THE ROOT CAUSE OF HIGH CHANGE RESISTANCE

Substep 2.3 of the SIP analysis says: "Find the root causes of the intermediate causes." This follows from the structure of the model. The root cause of high change resistance is the same as the root cause of why the race to the bottom is the dominant loop most of the time. The cause of loop dominance is *high political deception effectiveness*, which is the root cause. As long as this root cause force stays high the world's political systems will tend to favor solving problems that

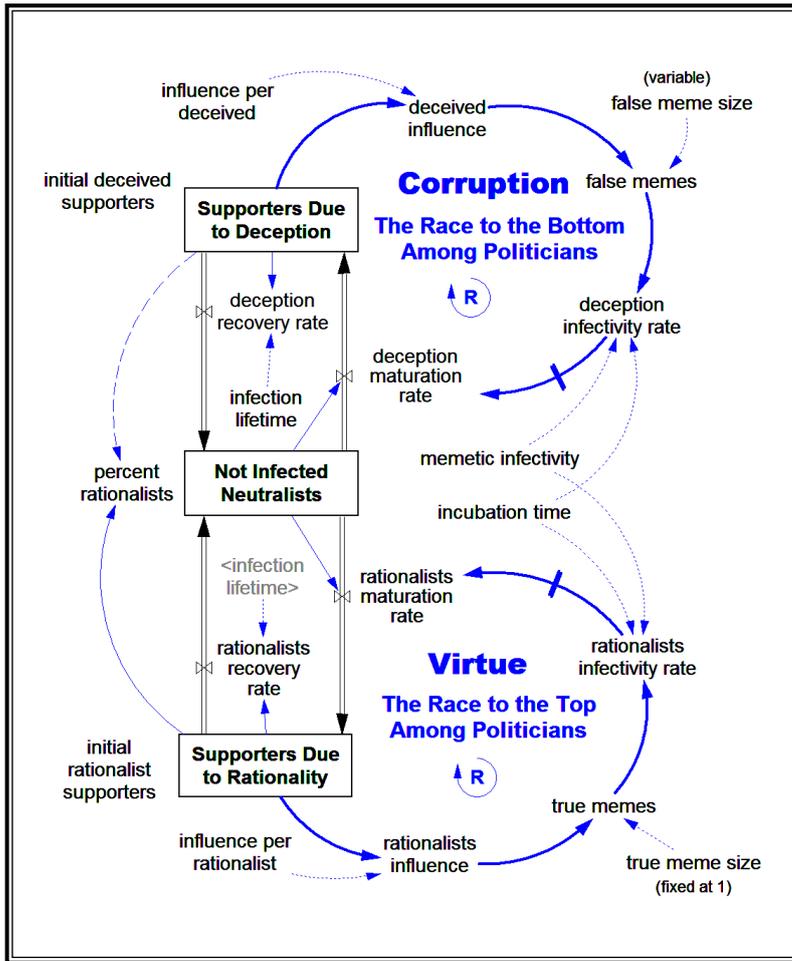


FIGURE 5 - The High Leverage Points of the Dueling Loops. The two high leverage points are underlined.

benefit powerful special interests (notably large corporations and their owners, the rich) and will resist solving problems whose solution would benefit the common good.

This is a significant finding. It confirms the prediction that root causes exist, which are not being addressed by popular solutions to DISMALL problems.

The next step in the process is to determine how to resolve the root cause.

#### THE HIGH LEVERAGE POINTS MODEL

A high leverage point is a place in a system's structure that when "pushed on" with solution elements resolves its connected root cause. Finding the high leverage points to resolve the root cause of high political deception effectiveness requires the expanded model of FIGURE 5. Here's how the model works:

We have extremely good news. There is a promising high leverage point in the human system that has not yet been tried. It is *general ability to detect political deception*. Pushing there appears to give problem solvers the greatest possible chance of overcoming resistance to systemic change.

Currently *general ability to detect political deception* is low. The lower it is the lower *detected false memes* are. The lower that is, the higher *undetected false memes* are and the lower *repulsion memes* are. This causes more deceived and fewer rationalists, which is bad news.

Currently *repulsion to corruption* is also low. The lower it is, the lower the *rationalists infectivity rate* and the lower *supporter desertion due to repulsion*. This is because *repulsion to corruption* times *detected false memes* equals *repulsion memes*. This makes sense, because detected corruption is a good reason to decide to support virtuous politicians and to desert corrupt ones.

For the system to react correctly to deception, two steps must take place. The deception must be detected, which is handled by *general ability to detect political deception* times *false memes* equals *detected false memes*. Then those *detected false memes* must cause people to be repulsed enough by the corruption to either defect from the Supporters Due to Deception, which is what the *supporter desertion due to repulsion* variable does, or to move from neutralists to rationalists, which is handled by adding *repulsion memes* to *true memes* to calculate the *rationalists infectivity rate*. In addition to this, *false memes* minus *detected false memes* equals *undetected false memes*, which reduces the *deception infectivity rate*.

Let's summarize how the You Can't Fool All of the People All of the Time loop works, focusing on the higher leverage point. Currently the loop is weak. Low ability to detect deception and the fact that the size of falsehood and corruption can be inflated but the truth cannot combine to cause more supporters to be attracted to the race to the bottom. Thus if

ability to detect deception is low, corruption works because most *false memes* flow through the system unimpeded. This causes *undetected false memes* to be high and *detected false memes* to be low, which favors the race to the bottom.

But if problem solvers can raise ability to detect deception from low to high, most *false memes* will flow to *detected false memes*. This greatly decreases *undetected false memes*, which destroys the power of the race to the bottom. At the same time this increases *repulsion memes*, which increases the *rationalists infectivity rate* and increases the *deception recovery rate* due to *supporter desertion due to repulsion*. The result is corruption doesn't work anymore, which causes the race to the bottom to collapse as most people suddenly see the real truth and flee for their lives to the stock of *Supporters Due to Rationality*. This is precisely what happens when massive amounts of corruption are suddenly exposed.

Substep 2.4 of the SIP analysis says: "Find the feedback loops that should be dominant to resolve the root causes." The loop that should be dominant is clearly the You Can't Fool All of the People All of the Time loop. The more dominant that loop is, the less people are fooled and the more dominant the race to the top becomes. Transition to a permanent race to the top will usher in the equivalent of the Age of Reason in the electorate of nations<sup>18</sup>. Such a transition happened long ago to science, so it can be done. Imagine what it will be like when a similar transition happens to voters and hence entire nations.

Finally, substep 2.5 of the SIP analysis says: "Find the high leverage points to make those loops go dominant." There are two high leverage points, *repulsion to corruption* and *general ability to detect political deception*. Currently both are low, so let's examine in FIGURE 6 another series of simulation runs to see how these high leverage points behave.

The results show that at last we have the behavior in the model we would like to see in the real world, because *percent rational supporters* has risen to a blissful 100%. The destructive opposition is eliminated and virtuous politicians can now focus completely on society's proper priorities. If the model is correct, then raising *general ability to detect political deception* from low to high is all it takes to make the race to the top go dominant and solve the change resistance side of the problem. We won't get *percent rational supporters* to rise to 100% in the real world, but we can get it close enough.

In run 11, *repulsion to corruption* and *general ability to detect political deception* were both 20% and *percent rational supporters* leveled out at 20%. In

run 12, raising *repulsion to corruption* to 80% caused *percent rational supporters* to rise from 20% to 59%, a 195% increase. But in run 14 raising *general ability to detect political deception* to 80% caused *percent rational supporters* to rise much more, from 20% to 100%, a 400% increase. Thus *general ability to detect political deception* has about twice the leverage of *repulsion to corruption* and is the highest leverage point.

## ANALYSIS CONCLUSIONS

Given this analysis, three important conclusions about the environmental sustainability problem stand out:

- 1 ~ Popular solutions to overcoming change resistance push on the intuitively attractive but low leverage point of "more of the truth." This fails because it does nothing to resolve the root cause. This explains why problem solvers have been unable to solve the problem.
- 2 ~ The main root cause of successful change resistance is high political deception effectiveness.
- 3 ~ A suitable high leverage point for resolving the root cause is raising general ability to detect political deception.

Suppose environmentalists shifted their strategy to root cause analysis. They might come to similar conclusions. In particular, they might find that the high leverage point for overcoming systemic change resistance is raising general ability to detect political deception. We need to raise political truth literacy. This can be done with a variety of solution elements, such as the nine sample solution elements found in the SIP Solution Convergence step<sup>19</sup>.

However, because of no clear conception of the Dueling Loops (or any shared valid model of the problem's root causes and their high leverage points), problem solvers are unable to focus their efforts and push on the correct high leverage points in unison. We are unable, as Helene Finidori wrote in this journal, to find "ways to coalesce rather than dilute the diversity of our efforts [...]"<sup>20</sup>.

This completes the SIP application example. The complete analysis found four subproblems, four main root causes, 12 sample solutions elements, and is available at Thwink.org<sup>21</sup>. The analysis presented here, with its one subproblem and one root cause, may appear simplistic or erroneous until the complete analysis is examined.

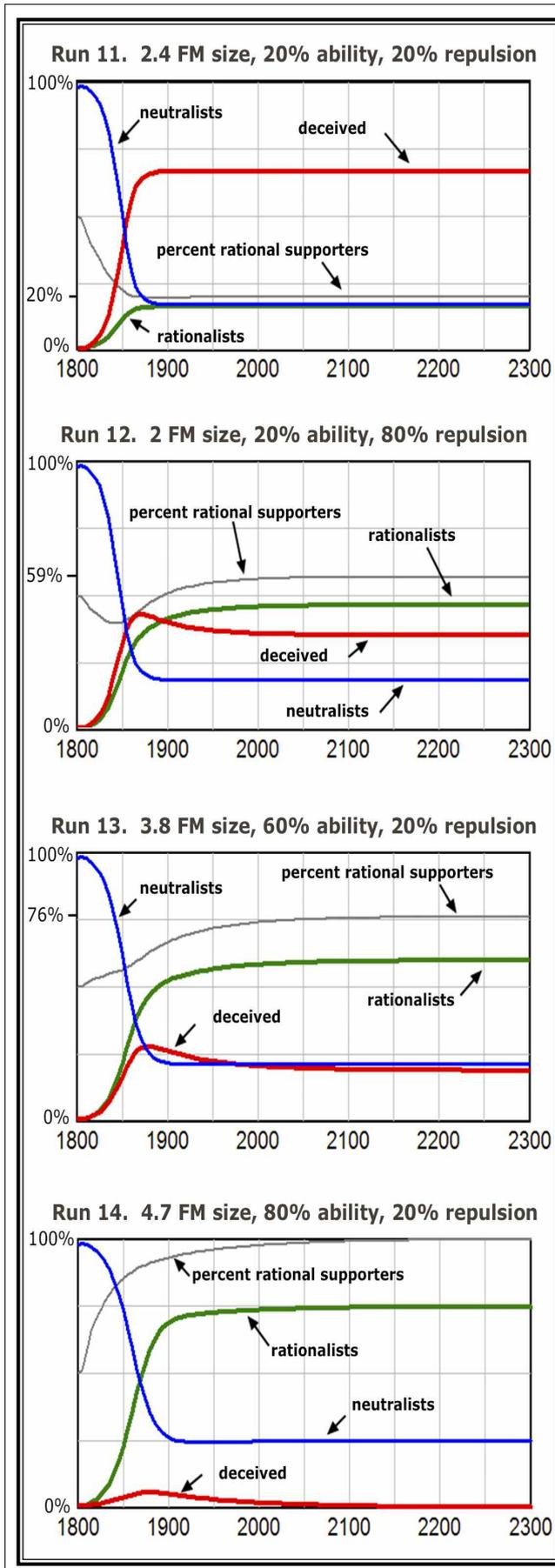


FIGURE 6 - Duelling loop simulation introducing general ability to detect political deception. Runs 11 to 14.

Three factors are adjusted in this simulation: *false meme size*, *general ability to detect political deception*, and *repulsion to corruption*. A *false meme size* of 1 means no falsehoods and equals a *true meme size* of 1. The truth cannot be inflated, so *true meme size* always equals 1. But *false meme size* can be inflated by deception, aka spin, disinformation, propaganda, and lies. For each particular level of *repulsion to corruption* and *general ability to detect political deception*, there is an optimum *false meme size*. In the real world this is set via trial and error by intelligent social agents. In the model it's set by trial and error by the experimenter.

RUN 11 - This represents approximately where we are today. Both high leverage points are low, at 20%. The smarter the agent, the faster and better it adapts to changing circumstances. Corrupt politicians, via trial and error, have adapted their deception strategies to the equivalent of a *false meme size* of 2.4. This is the optimum for these conditions. The result is corrupt politicians control the political system, which correlates with how well most nations have been able to solve DISMALL problems.

RUN 12 - Next let's see which of the two high leverage points gives problem solvers the most leverage. First let's raise *repulsion to corruption* from low to high, which is from 20% to 80%. Then we experiment with the running model to determine the optimum *false meme size* for these conditions. It turns out to be 2. Will the result be good enough for the good guys to win or not?

No. The results show that even 80% *repulsion to corruption* is not good enough. The forces of good and evil are still so evenly matched that they would be totally unable to deal cooperatively and proactively with difficult problems like sustainability, because they would be too busy battling each other. Corrupt politicians and their deceived supporters would also be engaging in promoting too many wrong priorities for the right priority of environmental sustainability to emerge as a top priority.

RUN 13 - Here we rollback *repulsion to corruption* to 20% and raise *general ability to detect political deception* to 60%. The optimum *false meme size* is 3.8. Compared to run 12 the results show that ability to detect deception offers much higher leverage than *repulsion to corruption*. Therefore this is the high leverage point that problem solvers should be pushing on with their solutions.

There is, however, a problem with run 13. *Percent rational supporters* is 76%, which is probably about the bare minimum for a government to begin to put aside political squabbling and begin working on its backlog of problems. But 76% is still not high enough for nations to focus efficiently on highly demanding DISMALL problems, because solving these types of problems requires a nation's full attention and complete cooperation with other nations. We must do better.

RUN 14 - To see if we can achieve a high enough *percent rational supporters* to solve the problem, let's raise ability to detect deception from 60% to 80%. Again we assume adaptation and change *false memes size* to its optimum of 4.7.

## GENERAL CONCLUSIONS

The prediction, that root causes exist which are not being addressed by popular solutions to DISMALL problems, was confirmed for the environmental sustainability problem.

Due to its mind-boggling complexity and devilish difficulty of solution, the environmental sustainability problem is the prototypical DISMALL problem. Therefore this

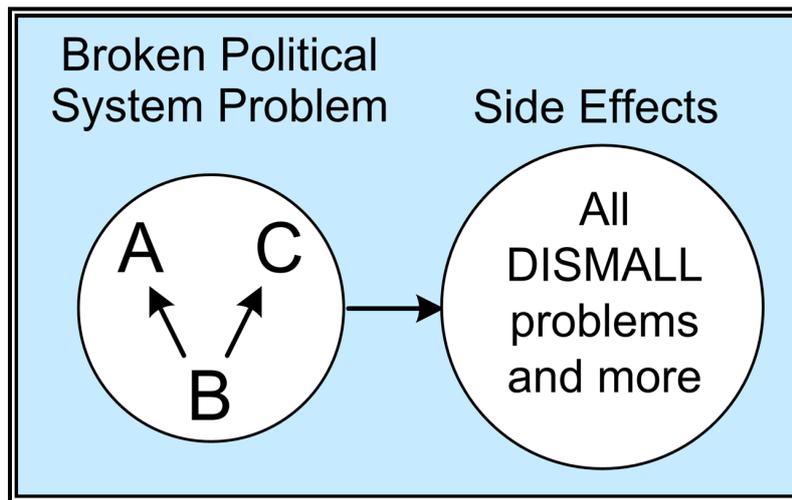


FIGURE 7 - The Broken Political System Problem and its side effects. A is the change resistance subproblem. Due to the Dueling Loops of the Political Powerplace, change resistance is presently so high that all DISMALL problems are insolvable.

confirmation may be expected of the entire class. If other DISMALL problems are subjected to a similar analysis, we can expect to find one or more root causes in each problem not being addressed by popular solutions.

Indeed, this is what the full SIP analysis found. The full analysis contains four subproblems: A, B, C, and D. Each was found to have a single main root cause. One subproblem (D) was the environmental sustainability problem. The other three subproblems (one of which is change resistance) combine to form “the broken political system problem.” Symptoms (aka side effects) of the broken political system problem include the environmental sustainability problem, the other DISMALL problems, and more, as seen in FIGURE 7

This suggests a striking conclusion: The prediction holds for *all* DISMALL problems. All DISMALL problems are symptoms of “the broken political system problem,” so they arise from its root causes. These root causes are largely unaddressed by popular solutions. That all DISMALL problems appear to be symptoms of a deeper problem was

an unanticipated discovery with implications that may be of some interest.

The pattern of prediction confirmation for all DISMALL problems lends considerable support to our central hypothesis, that popular solutions for DISMALL problems are failing because they do not resolve root causes.

This hypothesis points to a new strategy that could work. If present solutions are failing

because they do not resolve root causes, then future solutions can succeed if they shift to resolving specific root causes. This strategy has long worked for industry. It can thus work for DISMALL problems if a suitable process based on root cause analysis is employed.

DISMALL problems are solvable. If enough public interest activists adopt the new paradigm of root cause analysis, then systemic change is not a pipe dream but a forthcoming practical reality.

## ACKNOWLEDGEMENTS

*The author wishes to thank Philip Bangerter and George Turner for their insightful discussion of these concepts as they developed, as well as thoughtful edits on drafts of this and previous articles. Additional thanks go to Helene Finidori for her exceptionally constructive review of several drafts and her quest to make the article more understandable.*

<sup>1</sup> The Einstein quote is from the book by Vogt and Isaacs, page 1.

<sup>2</sup> We know from Newton’s third law that for every action there is an equal and opposite reaction. Every effect has a cause and every cause has an effect. From this we can infer that all problems arise from their root causes, using the definition of root cause below:

<sup>3</sup> A root cause has three identifying characteristics: (This definition is from Harich 2010, with the definition of resolve added.)

1 - It is clearly a (or the) major cause of the symptoms.

2 - It has no worthwhile deeper cause. This allows you to stop asking why at some appropriate point in root cause analysis.

3 - It can be resolved. Resolve means changing a system’s structure such that a root cause force no longer exists or is acceptably low, and the resolution introduces no new significant problems.

This definition allows numerous unproductive or pseudo root causes to be quickly eliminated.

The important thing is to not stop at intermediate causes. These are plausible and easily found. Working on resolving what are in fact intermediate causes looks productive and feels productive. Intermediate cause solutions, more accurately called symptomatic (or superficial) solutions, may even work for a while. But until the true root causes are resolved, powerful social agents will invariably find a way to delay, circumvent, block, weaken, or even roll back these solutions, because intermediate causes are symptoms of deeper causes. One must strike at the root.

<sup>4</sup> Liker 2004, *The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer*. How vitally important a total process is to a company's problem solving success may be gleaned from the book's organization. The book presents each of the 14 principles in a chapter of its own. These are organized into three sections, with the largest containing 7 principles. The section is titled "Section II. The Right Process Will Produce the Right Results." This is the main point of the book and the secret to Toyota's success. It is also a principle that may be applied to DISMALL problems.

<sup>5</sup> For more on these terms see the glossary entry on Superficial Solution at Thwink.org. For the classic article on the importance of pushing on high instead of low leverage points (in the right direction) see *Leverage Points: Places to Intervene in a System* by Donella Meadows, available at < <http://bit.ly/1B14Bxb> >.

<sup>6</sup> That change resistance is the crux of the problem was addressed at length in Harich 2010, *Change Resistance as the Crux of the Environmental Sustainability Problem*.

<sup>7</sup> Let's examine why the two main strategies for gaining political supporters are truth versus falsehood and favoritism. In any form of government, historically there have been six methods for gaining supporters: force, bribery, patronage, falsehood, favoritism, and truth. In a democracy force and bribery are illegal. Patronage, the giving of jobs as rewards for support, is legal unless a merit system is present. However, in a political unit with a voting population of a million people for example, there would be only a few thousand patronage jobs available at the most. This is not nearly enough to sway the majority, so patronage is not a viable main strategy. This leaves the three main strategies of falsehood, favoritism, and truth.

Next let's examine why political systems have evolved into two main groups of supporters, where falsehood and favoritism are used by one group and truth is used by the other. A population group is either a minority (a special interest, aka vested interest) or a majority (a general interest, aka the common good). If helping a minority will make the majority worse off, as for example in tax cuts for the rich or corporations and countless cases of special treatment, then the only way the minority can convince the majority to support the minority position is favoritism or falsehood. On the other hand, a majority doesn't have to convince itself to support a majority position since it's already convinced. The truth needs no embellishment or spin. The plain truth will do, since a majority by definition already supports its own position.

Finally, here's why falsehood is used more than favoritism. Favoritism is the giving of favors (excluding jobs) as rewards for support, such as favorable treatment in new legislation or in interpretation or enforcement of existing law. However, favoritism is mostly a zero sum game. Giving something to one group takes away from that available to all. Tax cuts for some reduce the income for all. Weaker regulations and enforcement for some reduce the benefits of regulation and enforcement for all. In contrast, falsehoods are not a zero sum game. They are also considerably cheaper than favors, and can be manufactured and distributed almost instantly via the media. For these reasons falsehoods are preferred over favoritism for race to the bottom politicians.

<sup>8</sup> For an introduction to system dynamics and how to read system dynamics models like those in this paper see the glossary entry on System Dynamics at Thwink.org.

<sup>9</sup> The concept and word "meme" was created by Richard Dawkins in one of the classics of behavioral biology, *The Selfish Gene*, in 1976. See p. 192 of the 1999 edition.

<sup>10</sup> The word "satisficing" was coined by Herbert Simon in 1956. Combining the words satisfy and suffice, the word describes the method of decision making commonly used by people (including managers) in most decisions, even important ones. They satisfice with rough heuristics rather than use optimal decision making, which is so arduous it is seldom used.

<sup>11</sup> The three editions of the *Limits to Growth* were published in 1972, 1992, and 2004. The book has become the all time best seller in environmentalism, even more than *Silent Spring*, with somewhere over nine million copies sold. People are thirsting to understand how the environmental sustainability problem behaves at the global system level. The book provides that understanding.

<sup>12</sup> Prasad et. al. 2009, *There Must Be a Reason: Osama, Saddam, and Inferred Justification*. "One of the most curious aspects of the 2004 [US] presidential election was the strength and resilience of the belief among many Americans that Saddam Hussein was linked to the terrorist attacks of September 11. Scholars have suggested that this belief was the result of a campaign of false information and innuendo from the Bush administration."

<sup>13</sup> For example, *The Economist* reported that: "Yet for a few years after Mr. Putin came to power he built close relations with NATO. In his first two presidential terms, rising living standards helped buy acceptance of his monopoly on state power and reliance on ex-KGB men; now that the economy is shrinking, the threat of war is needed to legitimise his rule. [...] At home Russian media, which are mostly state-controlled, churn out lies and conspiracy theories." The "threat of war" is created out of thin air by creating a false enemy using "lies and conspiracy theories."

<sup>14</sup> For an easy to follow video based introduction to the Dueling Loops model, please see The Dueling Loops Video Series at Thwink.org. This contains 12 videos averaging nine minutes each.

<sup>15</sup> Baron Acton 1887, *Historical Essays and Studies*. The exact quote is "Power tends to corrupt and absolute power corrupts absolutely."

<sup>16</sup> Why is Growth Is Good such a universal fallacy? Because economic growth benefits corporations by increasing potential sales, which increases potential profits. Large corporations essentially control the world's political systems, especially its democratic ones, as reported in works like *When Corporations Rule the World* by David Korten, *Supercapitalism* by Robert Reich, *Captive State: The Corporate Takeover of Britain* by George Monbiot, and *Suited Themselves: How Corporations Drive the Global Agenda* by Sharon Beder. The corporate life form achieves political control by exploitation of the inherent advantage of The Race to the Bottom among Politicians. This requires tremendous amounts of deception, as documented in *Global Spin: The Corporate Assault on Environmentalism* by Sharon Beder and *A Century of Spin: How Public Relations Became the Cutting Edge of Corporate Power* by Dinan and Miller.

<sup>17</sup> The Dueling Loops are cyclic. See the complete Dueling Loops paper for an additional model showing this cyclic nature at <<http://bit.ly/1EsxaZz>>.

<sup>18</sup> Transition to a permanent Race to the Top among Politicians appears to be in its early stages in the European Union, a marvelous sign that it's possible. A strong education system gives Europeans truth literacy in their early years. Thereafter they are not as easily fooled as the rest of the world, on the average.

<sup>19</sup> The nine sample solution elements for the change resistance subproblem may be found at <<http://bit.ly/1PGWgQL>>.

<sup>20</sup> Finidori 2014, *Collective Intelligence Is a Commons that Needs Protection and a Dedicated Language*: 79. Finidori went on to say on page 88 that “In particular we need to acquire capabilities to examine the dynamics that lock us into structures that are unfit and detrimental to the thrivability and renewal of the system through time.” We could not agree more.

<sup>21</sup> The SIP analysis may be found at: [www.thwink.org/sustain/analysis/index.htm](http://www.thwink.org/sustain/analysis/index.htm).



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## TOOLS FOR CULTURE DESIGN: TOWARD A SCIENCE OF SOCIAL CHANGE?



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**B**ILLIONS OF DOLLARS ARE SPENT EACH YEAR BY CORPORATE marketing departments<sup>1</sup>, public relations firms<sup>2</sup>, government agencies<sup>3</sup>, and nonprofit organizations in attempts to change social behaviour and tackle complex cultural issues.

All of these efforts are attempts at “culture design” – applying some kind of design thinking that culminates in changes to social norms and cultural practices<sup>4</sup>. Yet, these efforts are seldom integrated with the scientific study of cultural evolution, either conceptually or methodologically. They are rarely approached systematically or with methodological rigor. As humanity confronts a maelstrom of interdependent risks in our rapidly changing world, this is not good enough. Luckily, as I’ll argue here, we can do much better with existing tools and knowledge that are ready to be deployed today.

We are entering a precarious transition for humanity – for the first time in our history, planetary limits have been reached<sup>5</sup> and economic growth (as it has been practiced up till now) threatens our very existence if we don’t change our dominant cultural paradigm<sup>6</sup>. The great challenge of this epoch is planetary stabilization. New categories of systemic risk accompany globalization<sup>7</sup>, such as ocean acidification, resource depletion, rising sea levels, loss of top soils, and build-up of greenhouse gases in the atmosphere. These are among the ecological components. Add to them a suite of social and political issues such as extreme wealth inequality, global poverty, systematic violence against women, the debt crisis, militant

religious extremism, and structural instabilities in global finance – to get a sense of what we’re up against. Will humanity garner the capacity to design and manage cultural systems to keep our civilization within the planetary boundaries essential to our survival?

The key issue is one of intentionality. Right now we lack the ability to take collective actions at the required scale. Even when unity of voice is achieved about a certain direction – say that the mainstream publics of the world want affordable housing, decent wages, and dependable jobs – there is no ability to make it so. This lack of intentionality becomes urgent in the face of imminent ecological collapse. We currently lack the ability to save ourselves even if the majority of us chose to do so. In an article titled “Evolving the Future: Toward a Science of Intentional Change”<sup>8</sup>, David Sloan Wilson and his co-authors express the problem succinctly: *Science should be an important agent of change, and it is; but it is responsible for as many unwanted changes as those we desire. Even the desired changes can be like wishes granted in folk tales, which end up regretted in retrospect. Despite some notable successes [...], our ability to change our behavior and cultural practices lags far behind our ability to manipulate the physical environment. No examples of scientifically guided social change can compare to putting a man on the moon.*

Just as we find ourselves in greatest need, a new capacity can be brought into existence that enables us to shape the evolution of cultural systems at the local, regional, and planetary scales. This capacity is nascent across many knowledge domains. It will require a grand synthesis of many different fields that have been siloed in the past. I call this transdisciplinary synthesis “culture design” and will make the case for birthing it in this article.

Culture design is the integrated practice of (a) treating cultural change as a complex adaptive system; (b) studying the mechanisms and drivers of cultural change, including trend analysis and emergent social behaviours; (c) applying design frameworks based on this approach to identify operating parameters for social systems and (d) guiding the evolutionary process of social change toward safe zones within these operating parameters.

The keystone pillars of this field – which comprises hundreds of existing domains of research and practice – are complexity research, cognitive science, and cultural evolution.

~ Complexity research looks at the interactions among many parts that give rise to novelty in physical, biological and social systems. It includes topics like the study of tipping points, feedback loops, rules of local interaction, emergence of global behaviours, dynamic attractors, and so forth<sup>9</sup>.

~ Cognitive science brings together all that is known about human thought and behaviour. It looks at the neural processing of language<sup>10</sup>, how emotions shape reasoning<sup>11</sup>, why the body and brain interact in profound and subtle ways that give rise to the making of meaning<sup>12</sup>, and much more.

~ Cultural evolution is the application of evolutionary principles to the emergence of fitness criteria for idea propagation<sup>13</sup>. It looks at the spread of ideas and emergence of new cultural traits in social systems at the interpersonal and institutional scales.

Taken together, these knowledge domains enable designers to engage in the many practices of “applied memetics” – uncovering the patterns of social change that arise when ideas and behaviours spread across social systems. The skills of this craft include creation of viral media events<sup>14</sup>, shaping of cultural mythologies<sup>15</sup>, crafting of social policies<sup>16</sup>, diffusing innovations of both technical and social nature<sup>17</sup>, and a host of social analytics for monitoring and shaping the process throughout.

We are now entering a new phase of social research, where the deluge of user data from our smart devices and sensor networks can be mined with unprecedented scope and precision<sup>18</sup>. With this flood of data comes a new suite of tools for cultural research. Tracking interactions on social media. Analyzing and visualizing sentiment and moods on Twitter<sup>19</sup>. Observing the evolution of social graphs on sites like LinkedIn and Facebook<sup>20</sup>. Monitoring user behaviour on massive interaction platforms through social gaming<sup>21</sup>. And so much more.

#### LET'S LOOK AT AN EXAMPLE – SAFEGUARDING THE HIMALAYAN WATER SUPPLY

Consider one of the most important strategic reserves on Earth – the Himalayan water supply. More than 3 billion people depend on the hydrology of this region for their survival.

The International Centre for Earth Simulation paints a sobering picture of the complexities inherent to this

region<sup>22</sup>: “The Himalayas are a young seismically active mountain range arching across the Tropic of Cancer in Asia with over 100 peaks exceeding 7000 meters that are still being pushed upwards by the tectonic collision of the northward moving Indo-Australian Plate with the Eurasian Plate. The mountains extend for 2,400 kilometres in length and between 150 kilometres in width at the eastern end to 400 kilometres width in the west.”

High altitudes have induced the formation of over 35,000 glaciers within the Himalayas, forming the source of major river systems that flow both north and south into neighbouring countries. The mountains also play a major role in the flow and direction of large-scale monsoon weather systems that regularly impact the region.

Geologically, the Himalayas and their immediate surroundings are often referred to as a ‘Third Pole’ of Planet Earth. The region suffers frequent large-scale disasters from earthquakes, avalanches, mudslides, rock falls, floods, and extreme weather events. In addition, the glaciers are in serious retreat due to global warming, and there is a shift in much of the biological makeup of the region due to such warming.

Safeguarding this water supply is a grand challenge for culture design. The populations of fifteen nations directly depend on the Himalayas – a diversity of peoples who speak dozens of different languages, practice many different world and indigenous religions, operate under very different systems of government, and have a long history of economic interdependence juxtaposed with sporadic military conflict. Technical fixes are a necessary, but clearly quite insufficient, component of this challenge.

The Himalayas currently lack a commons-based management framework for governance. As the political scientist Elinor Ostrom has shown, there are eight design principles at play in every culture that has successfully managed common pools of finite resources such as grazing land, forests and irrigation waters, mining rights, and hunting territory<sup>23</sup>. Define clear group boundaries. Ensure the rules for decision-making align with local needs. Make sure those effected by the rules have the ability to change them. Develop a system for monitoring behaviour for members of the group. Use graduated sanctions for rule violators. And so on. Tried-and-true approaches have always had these features in them. The Himalayan water supply will need them as well.

The absence of a commons-based management framework is only one component of a culture design strategy. It demarcates the presence (or absence) of legitimate governance structures that build on the social

dynamics of human group behaviour. This meets one set of criteria for guiding the evolution of culture throughout the region. It too, is necessary but not sufficient. Design criteria for decision-support must be used to tell us which cultural traits are helpful in the institutional framework – including the relevant values associated with participation, accountability, and empowerment – that make collective action viable for shared management.

Still missing are the many dynamic elements showing feedbacks, tipping points, local rules of interaction, and so forth that give rise to emergent behaviours across the region. Also missing is the rich ethnographic knowledge about cultural history, narrative identities, commonplace understandings, belief systems, etc., all of which together reveal how ideas may spread (or garner active resistance) across the landscape of ever-changing social relationships.

Yet already we can see how a culture design approach sheds light on these issues. The challenges involve nuanced understandings of the emergent patterns involved. Tools from complexity research are essential here. They require sophisticated social research into the cultural norms, value systems, and ideologies of the different peoples involved. The cognitive and social sciences are well suited to do this. And change processes can only be guided if their evolutionary underpinnings are adequately understood. This is the role for approaches and insights from cultural evolution.

Charting a course toward preservation and long-range management will be key to success for the Himalayas. It will involve many years of work – likely spanning two to three decades, possibly extending indefinitely as an ongoing policy feedback process – recruiting urban planners, policy analysts, communication experts, ethnographic researchers, cultural historians, environmental scientists, legislators, and more.

Experienced practitioners of organizational and cultural change may ask how all of this gets coordinated. Are there checklists or frameworks to follow? What gets prioritized first and how is the effort managed? The process can quickly become mired in conflict as different groups set their own priorities and attempt to own the outcomes. These too are culture design elements. Many tools are commonly used for project management, strategic planning, collective storytelling, group facilitation, and process improvement. Bringing together the right balance of existing tools – and creating new hybrids when needed – will be the practice of the culture designer.

This example shows why a new synthesis is needed. Many diverse bodies of knowledge and fields of practice remain separated into silos. Each has its

own peer-review processes, standard publications, conferences, and professional societies. The result being that no effective process of intentional social change is being guided through the birthing stage. All of the pieces are there but they are not integrated. As systemic risks for region and planet grow more treacherous with each passing year, the absence of a coherent culture design framework is very sobering indeed.

#### SEEING THE POWER OF CULTURE DESIGN IN A SUCCESSFUL SOCIAL MOVEMENT

At this point you might be wondering if it is even possible to tackle grand challenges like the Himalayan water supply. What tools are available to do this ambitious work? How can you trust that they will be effective? The sceptical response would be to say that no one has ever attempted, let alone succeeded, at culture design on this scale. There was a time when I held this view myself – until I learned about the successful social movements of the Modern Era. Seeing them in action, we can begin to articulate what they did that was so powerful and which tools they used to achieve their goals.

Let's start with one of the most successful social movements in history. The rise of corporate capitalism to world dominance in the last 300 years supplanted the monarchic and feudal empires that came before. It spread across the Americas, Europe, Africa, and Asia, while also assimilating hundreds of indigenous cultures into the domain of modern market economies. The 20th Century saw the rise of nation states around the world, accompanied by the establishment of global institutions and intergovernmental bodies that promoted a particular vision of "free market" corporatism through trade agreements, regulatory bodies, economic development frameworks, and numerous financing instruments.

What is often overlooked in this epic pattern of cultural change is how it was orchestrated by elite communities throughout key developmental periods. For the sake of brevity, I will focus on one of these periods – the rise to dominance of Neoliberal ideology as guided by the Mont Pelerin Society (MPS) starting in the 1930's in the United States<sup>24</sup>. The MPS was formed in response to the New Deal when a small group of intellectuals and wealthy business tycoons gathered against the spread of mainstream hostility toward their *laissez-faire* approach to economic policy. Their ideas had become unpopular and were marginalized during a period of ambitious socialism, as observed in the

explosive rise in union membership, cooperatively owned businesses, public banks, and the creation of a social welfare state (insured banking, minimum wage, public health care, retirement benefits, unemployment insurance, and so forth).

The power of these socialist ideals was so entrenched that the MPS fought a losing battle for the hearts and minds of the citizenry until the mid-1970's. As documented in the famous Powell Memo<sup>25</sup>, a strategy was put forth to build a vast network of think tanks and communication platforms starting with the Heritage Foundation and growing to the current level of 300-400 institutions<sup>26</sup> in a coast-to-coast meshwork of public relations apparatus funded to the tune of USD1 billion in the 1990's when revenues were estimated<sup>27</sup>. They have only grown in size and breadth since then.

The first major win for the MPS was the election of Ronald Reagan to the White House in 1980. A parallel process was underway in the United Kingdom under the Thatcher Administration. The MPS movement was global in scope from its inception. I am focusing solely on the US developments here. This was quickly followed by placement of Neoliberal ideologues in local, state, and federal offices across the United States and also among key academic departments at elite universities. Of particular note were the endowed faculty positions in economics and business departments.

As the Neoliberal Movement gained momentum, it was able to enact investor friendly policies across all levels of government – including in the formulation of debt repayment programs at the International Monetary Fund and World Bank and through trade agreements like the North American Free Trade Agreement and the current developments for the Trans Pacific Partnership that is its predecessor. The institutional power to quell dissent became so strong that the field of economics is dominated by Neoliberal ideologues to this day, despite the fact that every theoretical assumption underlying its intellectual foundations (in what is known as neoclassical economics) have been known to be false for decades<sup>28</sup>. Even the collapsed global financial system in the Great Recession of 2008 has hardly made a dent in their planetary-wide control of economic development.

The sweeping success of this social movement is difficult to overstate! Realizing the extent to which it arose through coordinated efforts may be sobering in its own right, and yet it demonstrates how cultural change can be orchestrated at very large scales that span the entire globe and arise through periods of time longer than an individual

lifespan. Culture design can be done. The question is whether it will be used in the service of life and humanity – or, as it has so far, to consolidate wealth and power in the hands of a tiny elite. This may well be the defining question for our times.

#### TOOLS AND OPPORTUNITIES – BIRTHING THE FIELD OF CULTURE DESIGN

I started this article with the observation that billions of dollars are spent each year on crude attempts at social change. This shows both that people already recognize the value of cultural evolution (even if they don't understand it in this way) and that there is room for major advances in the efficacy of these investments to create positive impacts on the world.

This is the silver lining of efforts like the NSA practice of illegal wiretapping and misinformation campaigns to confuse the public about the health risks of smoking or the science of global warming. At face value, activities like these are clearly harmful and need to be addressed immediately. Yet, these attempts at social control are crude and largely ineffective in the long run because they contradict the human tendencies to challenge illegitimate authority and to respond to perceptible changes in our social environments. We are a social animal that hates to be oppressed. And we are a symbolic creature that builds dream worlds of ideas that we then transform into the structures of our cultural reality.

One way to think about the current predicament is that humanity has been gradually cultivating the capacity for culture design for more than a century – through our efforts to craft social policies, use advertising to shape consumer behaviour, deploy military and financial resources to gain power and create market economies, and so on. What we have not done well is apply these skills for the betterment of everyone.

This is why our world is now so perilous. Our *unsystemic* attempts at culture design of the last century have created all manner of systemic threats. Two examples make this clear – terrorism and the student loan bubble. Terrorism is the indirect consequence of post-colonial activities of wealth extraction, whereby those who control financial capital have created the conditions of widespread desperation (the ideal birthing ground of religious extremism) so that they could hoard unimaginable amounts of wealth. This may have benefited these elites in the short term. But it threatens everything they hold dear in the form of “blowback” outbursts of violence that were unintended consequences of their actions.

Similarly, the architects of public education never intended the deflation of credentials that have made college degrees a minimal requirement for most living wage jobs. And so they didn't intend to create a situation where people who could not afford the training required to earn a living would find it necessary to accumulate massive amounts of personal debt – to the tune of USD 1.2 trillion in the United States alone<sup>29</sup>. This has led to a kind of debt serfdom for an entire generation of workers and planted seeds for revolution that fuelled recent uprisings in Egypt, Tunisia, Brazil, Mexico, Spain, Greece, and the United States.

The field of culture design is stuck in an adolescent mode and we need it to grow up quickly. To do so, we'll need to take an iterative approach – applying the crude tools we have today to the practices of culture design *as a culture design process*. This is why I have set out to create a research centre on culture design for planetary thriving. It doesn't yet exist, but when it comes into being it will include a suite of existing tools that are “shovel ready” right now. For the discussion here I will not attempt to be comprehensive, opting instead to be suggestive with the following categories of tools that can be used for culture design work.

#### STRATEGY DEVELOPMENT AND SCENARIO PLANNING

Practitioners trained in future studies, project management, brand formulation, and business development use a variety of tools to achieve their goals. They create strategy maps and use balanced score cards. Conduct visioning exercises and focus group studies. Convene diverse constituents to create “power maps” of political influence and community assets. They do exercises in business model creation and competitive analysis of the sector they operate in. Hundreds of frameworks exist for doing these kinds of strategy development work.

#### DISCOURSE ANALYSIS AND ETHNOGRAPHIC RESEARCH

Those who work with language and the spread of ideas are well aware that information is structured into discourses that can be analyzed using a variety of different tools. Mapping the conceptual metaphors and mental models is essential for making sense of the ways that people perceive and act on the topics around them. Active and passive forms of ethnographic research are commonly used – field surveys, structured and open-ended interviews, participatory reflections, and descriptive analyses are routinely done by social scientists. Add to these the techniques of media studies – close-text analysis of written materials, elucidation of visual

design elements that communicate in certain ways, frame analysis of semantic content to see how thoughts are constructed in active language use, and so on.

#### MARKETING AND COMMUNICATIONS

The art of storytelling is now quite advanced. People know how to write press releases, summary reports, and research studies. These are supplemented and enhanced by visual design of infographics, brand logos, internet memes, posters, web videos, and other kinds of more-than-text media. Long-form storytelling is now quite powerful in the extended television series format used by cable and live streaming internet companies. Flash animation films, documentaries, feature films, music videos. The list goes on and on.

#### GROUP FACILITATION AND COMMUNITY ORGANIZING

A growing number of practitioners are skilled at group facilitation and community organizing. They hold public hearings, hackathons, open space meetings, and design processes of many kinds. So many tools exist in this space that it is difficult to know where to begin. The “art of hosting” and “dynamic governance” communities are very sophisticated at this point in time.

#### MODELING AND SIMULATION

Dealing with real-world complexity means using the best research tools available. With the advent of digital computers came an endless flood of mathematical models for studying complex phenomena. We do numerical weather prediction to create local forecasts, simulate collisions to improve the safety of our automobiles, and observe the molecular interactions of synthetic drugs in the body to tackle deadly diseases. It is a truism of 20th century science that we don't know something unless we can model its behaviour. Simulation-based research includes high performance computing, numerical estimation, scientific visualization, and many other technical areas where the tool kits are diverse and very advanced indeed.

Already we can see that there is great promise for the field of culture design. What is needed now is a compelling vision for (1) planting the idea that we can and should do this and (2) that it is practical to do so today. My hope in sharing this brief introduction to the “tool space” of culture design is to convey how much is possible to achieve with what we already have at our disposal. The next challenge – which I am enthusiasti-

cally cultivating a community of culture designers to address – is to launch the first institutional research environment for integrating the pieces.

Two partnerships I've cultivated in the last few years are illustrative of where this is going. I had the great pleasure of helping conceptualize the vision for the International Centre for Earth Simulation (quoted above), whose mission is to build a high performance computing facility in Geneva, Switzerland dedicated to modelling the whole Earth System<sup>30</sup>. And now I have taken up residence as an editor for the Evolution Institute<sup>31</sup> where we are beginning the work of applying evolutionary thinking to all manner of economic, political, and moral issues.

This blending of cultural evolution with a complexity approach to planetary change is meant to weave the pillars of knowledge from these domains into the field of culture design – a critical early step on a long journey that remains for an entire generation of culture designers to build upon in the decades ahead.

#### IN CLOSING, THE ETHICAL QUANDARY

Having considered the promise of culture design (preserve water supply for the Himalayas) and its dark side (how elites can manipulate to gain control over major swaths of the global economy), we are left in an ethical quandary. This nascent field is already taking form. It currently goes by labels ranging from advertising and marketing to policymaking and business strategy.

What it lacks is integration across fields and the ever-important conversation about ethics. As humanity gains this ability to intentionally guide social change, how will we ensure it is used for the highest good? And who decides what that highest good is anyway? It should be obvious that I am an advocate for *accelerating* the development of this field. My reasoning does not absolve the discussion about ethics or resolve its central challenges. Indeed, those challenges have yet to be publically vetted or articulated at this early stage in the process.

What my argument attempts is to draw on a sobering observation – the tools of culture design have so far mostly been used in clandestine ways to advance unpopular and destructive social policies. Whether we use them or not, this activity will continue unabated until it is addressed. This is not without a hint of irony, considering that only a culture design process can bring an end to the unethical use of culture design tools.

Go back and read that last sentence again. We don't have a choice about using culture design.

What we DO have a choice about, as a global community, is *how it gets used*. And so I leave you to ponder this. What do you feel is the best way to move forward from here?

I for one am going to continue to write about and apply culture design principles in the public light. It is my way of democratizing this powerful body of tools and knowledge. If everyone knows about culture design, then no one can use it against someone else without his or her knowledge. While this principle may be difficult to apply in practice, harder still would be the management of activities that reside beyond the horizon of ignorance. The risks we don't know about are threats that cannot be managed.

Onward, fellow humans.



<sup>1</sup> Laya 2011, *Do You Pay Enough for Advertising?*

<sup>2</sup> Booz Allen Hamilton 2014, *Reaching Forward: Inventing the Future*.

<sup>3</sup> The Minerva Initiative 2015, *Program History and Overview*.

<sup>4</sup> Brewer 2015, *Taking Control of the Planet*.

<sup>5</sup> Rockstrom et al. 2009, *Planetary Boundaries*.

<sup>6</sup> Klein 2014, *This Changes Everything*.

<sup>7</sup> Goldin & Mariathasan 2014, *The Butterfly Defect*.

<sup>8</sup> Wilson et al. 2014, *Evolving the Future*.

<sup>9</sup> Waldrop 1993, *Complexity*.

<sup>10</sup> Feldman 2006, *From Molecule to Metaphor*.

<sup>11</sup> Damasio 1994, *Descartes' Error*.

<sup>12</sup> Varela et al. 1993, *The Embodied Mind*.

<sup>13</sup> Richerson & Christiansen 2013, *Cultural Evolution*.

<sup>14</sup> Nahon & Hemsley 2013, *Going Viral*.

<sup>15</sup> Holt 2004, *How Brands Become Icons*.

<sup>16</sup> Weimer & Vining 2005, *Policy Analysis*.

<sup>17</sup> Rogers 2003, *Diffusion of Innovations*.

<sup>18</sup> Rudder 2014, *Dataclism*.

<sup>19</sup> Mislove et al. 2010, *Pulse of the Nation*.

<sup>20</sup> Wick 2014, *What Facebook's Evolving Social Graph Means*.

<sup>21</sup> Yee 2006, *Motivation for Play in Online Games*.

<sup>22</sup> ICES Foundation 2014, *The Himalaya Project*.

<sup>23</sup> Ostrom 1990, *Governing the Commons*.

<sup>24</sup> Jones 2012, *Masters of the Universe*.

<sup>25</sup> Washington and Lee School of Law 2015.

<sup>26</sup> Thunert 2013, *Conservative Think Tanks in the United States and Canada*.

<sup>27</sup> Callahan 1999, *\$1 Billion Dollars for Conservative Ideas*.

<sup>28</sup> Beinhocker 2007, *The Origin of Wealth*.

<sup>29</sup> Rayfield 2015, *National student loan debt reaches a bankers \$1.2 trillion*.

<sup>30</sup> ICES Foundation, <<http://www.icesfoundation.org>> [Retrieved 15 May 2015].

<sup>31</sup> The Evolution Institute, <<http://www.evolution-institute.org>> [Retrieved 15 May 2015].



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BOY HOLDING A FALCON

## SYSTEM AND TECHNICS

INTERVIEW BY HELENE FINIDORI



*Bernard Stiegler is a French philosopher, head of the Institut de Recherche et d'Innovation (IRI), which he founded in 2006 at the Centre Georges-Pompidou. He is one of the founders of the political group Ars Industrialis based in Paris, which calls for an industrial politics of spirit, by exploring the possibilities of the technology of spirit, to bring forth a new "life of the mind". He has a long-term engagement with the relation between technology and philosophy, not only in a theoretical sense, but also situating them in industry and society as practices. His best-known work is Technics and Time, 1: The Fault of Epimetheus.*

**B**ERNARD, THANK YOU FOR THIS CONVERSATION. Here are the general questions I asked the authors of this Spanda Journal issue on systemic change, counting on them to enrich the inquiry with their own work, in order to bring new insights to those who work on the ground to make our world a better place.

*How and where does systemic change manifest? How does it unfold? What are the leverage points, the forces and dynamics at play? What are the conditions for its empowerment and enablement? How do agency and structure come into the picture? We would like to look at the subject from various perspectives and disciplines, in research and praxis, exploring the visible and the invisible, space and time, unity and diversity, level and scale, movement and rhythm.*

*What does this theme inspire to you?*

**Bernard Stiegler:** I have a specific approach to these issues. My approach is based on the analysis I have been conducting since I started my thesis work 30 years ago. I consider that we live in a time when the technical system has a considerable weight on people's lives. I myself am an heir of philosophers such as Gilbert Simondon and Bachelard, anthropologists like Andre Leroi Gourhan, and historians like Bertrand Gilles or Harper in the United States, who have studied the role of technics in human history.

Leroi Gourhan's position is radical and one that I share, which is also that of George Canguilhem another philosopher whom I am inspired by: humans are technical beings. Technics is what constitutes humanity. If technics is what produces stable forms that are not biologically determined, then language is a produce of technics. A word is a technical object as much as a hammer is. Obviously, words are less visible than hammers, but nevertheless this is very important. Besides, words and hammers arrive at the same time says Leroi Gourhan, and characterize human evolution – the hammer is a flint then.

Over the past thirty years I endeavored to theorize technical evolution. I wrote a book called *Technics and Time*, which is still not finished. There are three volumes published and I plan to publish three more. In this book I trace the genesis of technics, not as a historian or archaeologist because it's not my job and it has already been done, and very well done, but at the conceptual level. How to think the relationship between technics, society and the individual, for example at the time of the Paleolithic or the Neolithic, or at the time of the Great Empires, of the Greek City, of Monotheism and the Renaissance. And I posit that these three instances are reciprocally conditioned in a non-deterministic way. People often think I have a deterministic view in Marx's sense, though Marx was not exactly deterministic either. What I say however is that there is no human being without technics. The technics makes the human.

We need to understand in the history of technics how we came out of the most rudimentary prehistoric technique of the Upper Paleolithic – actually not that rudimentary – how the first externalizations of the memory appeared about forty thousand years ago in the form of drawing and painting; how the models that would give rise to the Great Empires appeared in ideographic writing; and how this lead through Ancient Greece and alphabetic writing to the printing press and the Industrial Revolution. I studied each era and tried to create theoretical models. I studied the arrangements between technics, society and the individual in these times and how these arrangements changed in time.

The Industrial Revolution brought significant change because this is when societies started to become aware of technological progress. Technology was

already playing a foundational role but people did not realize it because things were changing only in jolts from time to time with transformations such as a war, a religious war, or an economic crisis, which lasted for a while and then subsided, followed by periods of relative flat. The Industrial Revolution marks the beginning of what is called progress, and from then on the world never stopped changing. People realized it and protested: luddites, derailed trains. Change took place through industrial mechanization that resulted in the proletarianization of manual labour. This is very important because workers who were labourers with particular skills will lose their knowhow, and become servants of the technical system. This is the formation of the proletariat in Marx's sense.

In the twentieth century the mass media appear and Ford introduces a new business model in the US on the basis of Taylor's ideas. This model aims to build large mass markets and therefore to produce consumers, what we now call consumerism. With Ford's assembly line the enterprise, its organization, technologies, and marketing, are transformed, producing huge distortions that will culminate during the 1929 crisis. Keynes arrives in 1933 with a macro-economic model able to support this scientific reorganization of labour with a reorganization of the state aimed at creating an economy based on the redistribution of productivity gains acquired through wage based purchase power. Each worker can almost become a bourgeois. Clearly in the 1950's United States, American engineers earn more money and live much better than French engineers. They have a car, a refrigerator, a television that the French engineers do not yet have. Purchasing power sets off a virtuous circle that keeps the machine running.

The Fordo-Keynesian model hinges on an automation system based on the division of individuals into two categories: the producers of automobiles, or medicines, or media programs on one side and the consumers of these products on the other. The automobile consumer may be the worker who made the car, but he actually does not know how to make cars, he knows how to tighten bolts in a given place, he is completely devoid of know-how. This is a systemic functional opposition, which is the condition for the possibility of this consumerist model. With increasing automation however, the purchasing power machine and consumerist model can no longer run.

We are experiencing today a major change in this regard. The change began for me in practice on April 30, 1993 with the creation of the web. The web induced a sudden and absolutely fundamental break because consumers could become

maybe not actual producers, but publishers and contributors. This movement was prefigured ten or twelve years earlier by peer-to-peer open source software organizations, which gave rise to many kinds of very interesting contributory communities. It spawned an evolution of web technologies that we call technologies of contribution also called Web 2.0 or metadata technologies that we work on a lot at the IRI. But it also ruined a whole social organization. Public tax systems for instance are highly disrupted by players like Amazon and others that escape taxation processes such as VAT. It also profoundly destabilizes the education system. Examples are endless.

Today, on September 16, 2014, the question you ask has a very specific answer. If you believe an article in the Belgian newspaper *Le Soir* on July 21st: "Robots could fill half of our jobs." The article builds on a paper from the Bruegel Institute citing an Oxford research, itself based on cross-sectional studies from several American institutions. This research states that 47% of US jobs would be lost within in a decade. Belgium, would lose 50%. A phenomenon widespread in all industrial countries.

The loss of jobs to machines is also a scenario considered by Bill Gates. Bill Gates made specific proposals such as reduction of wages and tax cuts for companies in order for work to cost nothing. And this, besides being socially unjust, is completely utopian, or rather no, it is not utopian, it just will not work. Why were subprime mortgages invented in the first place? To be able to provide consumers faced with a decrease in purchasing power the means to consume. But someone has to pay the bill sometime. Who pays for subprimes? The states. The US state has bailed out its banks. France paid too. There is a question of global economic solvency. What Gates suggests is not possible. Decades ago, Milton Friedman anticipated that capitalism would develop in such a way that a minimum subsistence income would have to be distributed to everyone. This is something I oppose. Or rather, I am favourable to the idea that everyone receives a basic income, but this cannot constitute an economic policy, it is not energizing, plus a thousand euro a month would not get people to consume or the economic machine to run.

Now is time to understand the systemic transformations that are at stake. They are massive. We started working at the IRI on the radical transformations of scientific research in digital technologies, and created the Digital Studies, with an international network of people from all kinds of backgrounds, computer scientists, anthropologists, philosophers, artists, researchers and PhD students, etc. I could cite other examples of transformations in the

field of the arts or in the domestic field, but fundamentally because the economy is so crucial: the economic model that we inherited from the twentieth century is collapsing forever and we haven't realized it yet. There was the breakdown in 2008, which was financial and partly industrial but not yet completed. But the collapse is about to come and it is coming at full speed, a tsunami. The fundamental issue is to rethink macroeconomics of such a system and that's the challenge of systemic change.

**H.F:** *This is where you introduce the economy of contribution?*

**B.S.:** Yes, the economy of contribution is an economy which is based on the valuation of positive externalities as they say in economics, i.e., the contribution of people. When the French employers in the '30s said that women had to be paid to have children, it meant that raising children for six years, dressing them, feeding them, educating them, teaching them how to walk, to talk, not to pee everywhere, not to hit anyone, not to set the house on fire, was a job. A positive externality. And it's not the left-wing Front Populaire, but the Catholic social employers of northern France that pushed for women to be remunerated for this.

The automated society of tomorrow will be contributory and based on the valuation of a wide variety of knowledge, through multiple vectors. Free software has been a fundamental matrix but many other vectors exist today, which digital technology massively enables. But this requires inventing new models of redistribution that are not based on salary but on a new device for the development of what Amartya Sen calls the capacitation of individuals. The web provides access to digital technologies that are extraordinarily capacitating but which are not used in line with the original purpose of the web as knowledge sharing platform.

Today many activities are contributory. Wikipedia, for example, although it does not engage the 7 billion humans actually draws 800k contributors, which is not quite bad, and it could draw many more. It produces positive externalities. If we calculated the monetization of Wikipedia on the basis of its social utility, it would be valued for hundreds of billions of dollars. The Google model is based on our contribution, the Facebook model as well, and most of the major technology platforms.

**H.F:** *The contributory economy is deploying, it exists on the web and offline too. It's the great topic of conversation. But is it not being co-opted by "the system"?*

**B.S.:** Yes, Wikipedia is a special case because it is not a commercial enterprise. Others are capturing

information deliberately or not. And they use the data, which indeed has been produced in a contributory manner. Indeed, with the data I provide, I contribute to the creation of the treasure, of the retentional capital of these companies, through what they themselves don't call retentions but data that they exploit covertly. They verticalize what was produced horizontally, reproducing a hidden top-down processes. And in doing so, they deeply divert the function of the web.

The web designed in the late 80s, which is at the origin of this systemic transformation was initially conceived for its own developments to arise from the community, as a community of peers in the strict sense. Peers, I might add, were invented by the Greek philosopher Thales. The first peer-to-peer community is found in the geometry through the peer-to-peer technology of the time: alphabetic writing.

Peer-to-peer technology implemented twenty-five years ago has been progressively hijacked within the W3C by the pressure of the stakeholders to gradually submit W3C formats and recommendations to economic solvency, and to ultra-speculative business models and capital investment. We have nothing against the market at Ars Industrialis and the IRI, but we think it should not be the market that prescribes the common tools of the community.

Today, decision-making is increasingly shifting in favour of these new powers, these private governments that the major players (the big four, Apple, Google, Amazon and Facebook, and there are many others) who master digital technologies to record our behaviours and all kinds of personal data, have become. Let's not forget that the word statistics comes from the word *staat*, which means state in German. Statistics is the science of the state. To govern is to predict we are told. Statistics enable anticipation and control. Initially in the hands of the states, especially developed by Prussia but also France and Belgium, today's statistics are operated by private actors. David Cameron announced a year or two ago that he was delegating the management of UK statistics to Facebook and discharging the UK state from this task. Moreover, Google boasted it had better control of health data and could better anticipate an epidemic process than the World Health Organization (WHO), a public international organization.

**H.F:** *Let's talk about the economics of data and big data.*

**B.S.:** Big data provides the ability for economic agents to process billions of data produced globally almost at the speed of light, simultaneously and on the instant. Not everything is processed in real time and immediate reaction, but a fundamental aspect

of big data is to extract extremely quickly from huge databases, structures and elements of information on the state of the system, and to react on the system with this information in order to change the state of the system. This can be experienced easily when working with a search engine such as Google. You may see that a solution is offered as you write, which means that it processes information in real time, at the same time as it processes billions of other information that it articulates together, in some situations. That's what I call outpacing [*prise de vitesse* in French].

Digital technologies transform knowledge. All forms of knowledge. It has industrialized life and social skills – *savoir vivre* (eating, moving around, receiving people) by interfering in all social relations, as much as it has automated know how – *savoir faire*. All knowledge is outpaced. This is why Chris Andersen can write that Google is able to translate Klingon into Farsi although nobody speaks either language at Google. Add this to the prediction of epidemic outbreaks, and we're just a few steps away from saying that there is no more need for linguists, or doctors. In this logic, we must educate data scientists who know how to create algorithms and perform data analysis. We must automate everything, and let systems run, we must trust applied mathematics, the speed of light and algorithms. Today we are outpaced by automata and by the private powers that manage them according to their own private interests exclusively.

Working at the speed of light also has some implications in terms of organization of the law. It causes quite specific problems than lawyers currently do not understand. Lawyers are obsessed by copyright but the issues are much more serious than that. Digital technology operates structurally outside the law. Not so much in the sense of delinquency although this happens too, but rather it creates a legal vacuum, increasingly. It creates factual illegality, or factual a-legality.

I consider this a dangerous development and I am not the only one. The head of Springer wrote an open letter to Google's CEO Eric Schmidt six months ago in which he says: we are afraid of Google. This was published on the front page of German newspapers. Springer is one of the most powerful publishers in the world and its CEO says he is afraid of Google. This is amazing, a boss cannot be afraid. A boss is just as Bayard, the Knight without fear and beyond reproach. A boss must never say he is afraid. The fact he did shows that he wanted to emphasize a state of emergency, that Google and all its satellites have taken a monopolistic position on the state of the web and on the internet that makes them extremely dangerous, including also for themselves.

Some may say that we only have tears left to shed. I do not believe so at all. Frederic Kaplan, a mathematician who studies applied mathematics used in networks to produce big data through intensive computing, showed that the exploitation of language by Google gradually levels semantic differentiation and impoverishes languages at great pace. He shows how Google is in the process of destroying what it has built its business on, and that may be an issue for its future. In a similar vein, Antoinette Rouvroy, a Belgian lawyer and philosopher, speaks of an algorithmic governmentality, which destroys collective intelligence.

From there arises a problem of entropy. Entropy is the scientific name for destruction. The digital and economic system induces entropy through the imposition of calculation. The entropy issue raised by big data is that they only work on algorithms that consider all the data as fully calculable. Negentropy however, and in the human system in particular, is what is unpredictable, improbable and singular, so it is what escapes calculation by nature. For Google, what is beyond calculation should be deleted, it has no interest, it is unworkable, and it only produces noise. Google favours anything that is computable and tends to eliminate everything that is not, all idiosyncrasies and singularities that the algorithm cannot take into account, which are yet fundamental.

**H.F:** *What particularly interests me in your work is your pharmacological and therapeutical approach to the systemic crisis and its solutions. Could you tell us more?*

**B.S.:** Alan Greenspan in the senate hearing following the 2008 financial collapse recognized he still didn't fully understand why the collapse occurred, and he admitted flaws in the model he perceived and in the critical functioning structure of how he saw the world. He told how he was shocked in disbelief by the collapse of the whole intellectual edifice of risk management due to data imputation and the failure of lending institutions to protect shareholders' interests. His distress clearly traces the breakdown to issues of ethics, automation, and data related entropy, and other aspects that would need to be described in more details.

The contributory potential of existing technologies today is in a sense toxic. My position, which is that of ARS Industrialis and the IRI is that any technology is potentially disruptive and toxic.

Digital technologies as automation techniques constitute a *pharmakon*. A *pharmakon* as defined in Plato's *Pheadrus* dialogues is what produces a delegation and externalization of knowledge by the extension of a skill into the technics. A *pharmakon*

is also a drug. A cure for all kinds of problems, which is also an extraordinary danger. It is potentially curative and beneficial, or dangerous if not implemented according to specific requirements. Socrates contends in Phaedrus that writing as externalization of knowledge can lead to the destruction of geometry and of the legal foundation of the city if it falls into the hands of the sophists. This opposition to the sophists made him the first philosopher in the strict sense. Heraclitus was the first to use the word philosophy, love of wisdom, but Socrates defined himself a philosopher. I am a philosopher he said, and I am opposed to the sophists. He blamed the sophists for manipulating a pharmakon, writing, in a way that is intended not to take care of others but to dominate them.

Pierre Hadot in his book *Introduction to Ancient Philosophy* who greatly inspired Michel Foucault, wrote something I fully agree with, that all the Greek and Roman philosophers are people who invented techniques of care and discourse on care, and who devised on how to care for ourselves. Why take care of ourselves? Georges Canguilhem's answer is because we cannot stop hurting ourselves. Canguilhem says that humans are very special beings who have the power and the will to make themselves sick. As soon as he invents a new technique, *homo sapiens sapiens* sickens himself and the whole society. And diesel particles are not necessarily the ones to blame. Tribal society and gerontocracy were destroyed by alphabetic writing. That's why Socrates ended up being accused of manipulating youth and was sentenced to death. From there I define philosophy as care and more generally, I consider education as care. Our problem as human beings is education. We learn until our last day, this is what distinguishes the human brain. We need to learn because new technologies constantly emerge. And we have to keep reinventing systems of care, and therapeutics (treatment in Greek). The question then is how these systems of care are developed. Are they a responsibility of the state, of the teacher to whom we delegate the education of our children? Is education not fundamentally broken in this respect? Human reason is what allows man to transform something toxic into something positive. So in order to develop a contributory economy we must first adopt a rational therapeutic approach to the economy.

And let us not confuse 'rational', as the produce of reason, with rationalization. What I call rational, as the produce of reason, is what produces motivation. Reason in the French language is a motive (why), which is based on desire; a true desire is not an urge or a drive. An urge is an automatic mechanism that originates in the body or the

brain. Desire is a social development. Reason is what enables to build therapeutic models, what I call therapeutics, which can be prescribed as social rules when facing specific pharmakon. And prescribed collectively and democratically of course, not imposed, by those who implement them and who therefore are subject to them. I believe the future of society now resides in these contributory models that are expanding anyway. This is a very profound transformation of education, social organization, law, and organology.

**H.F:** *So how then can technology get us out of the systemic crisis we are in? Under which conditions can it save us?*

**B.S.:** At *Ars Industrialis* and *IRI*, we work to develop systems that articulate automation. We are not against automation, which enables all kinds of analysis. The power of analysis is important. Digital technology is an extension of the analytical power of what Kant called the understanding. Kant's understanding gives us the power to analyze individual elements, to decompose data in discrete reproducible elements, which can thus be automated and delegated to machines. Digital technology greatly expands the power of understanding. Kant said understanding was necessary, but without reason it may be unreasonable. And that's exactly what happens, we have created an automatic understanding but there is no reason to steer it. Reason for Kant, is the skill and the power of synthesis, a skill of interpretation. One that permits the reconstruction of something internally consistent from the analytical diversity produced by the understanding, and this reconstruction is done by the subject. It is also a capacity of creation and invention, which allows the production of things that do not exist. Reason is what Kant also called the kingdom of ends, of finality, of purpose, the expression of desires and wishes, the power of synthesis, the power to say at some point there is a decision to make, which generates a neguentropic bifurcation, which produces negentropy. Obviously Kant does not say it like this. He does not know the theory of entropy. But it translates just fine like this.

We say that these bifurcations occur through a process of interpretation. If one follows the controversy between Niels Bohr and Einstein, one can see unfold a process of interpreting the data of two physical models which both have their legitimacy. It is clear that both quantum mechanics and the theory of relativity are legitimate. Bohr and Einstein disagreed, and it is in their disagreement that the future of science will be built. So it is extremely important not only to identify these disagreements but also to facilitate their rigorous

expression (and of course not through the type of denunciation one can see on the web which is something totally different).

What we say at the IRI, and in the Digital Studies group is that knowledge is always based on technics and the acquisition of automatisms, but that since the origin of philosophy, and Plato especially, philosophy has refuted the technical dimension of knowledge and has pit automation and autonomy against each other. Autonomy, however, is acquired and conquered through automation. We consider that the analysis of the constitution and formation of knowledge, which Bachelard called the concept of phenomenotechnique, should be reconstituted. Writing takes 20 years to learn in school and enables us to decipher and interpret things without giving them any thought. It is a part of our brain, which reconfigures it as shown by neurologist Mariane Wolf, a member of Digital Studies. Writing allows all the minds that have evolved in similar ways to work together to produce new interpretations. We argue that digital technology is a new form of writing and that automation can provide space to create and interpret.

Addressing the issues of singularity and negentropy is critical. We believe it is possible to reinvent a fully automated web and restore its original function of organizing conflicts of interpretation and public debates, and to foster singularities instead of eliminating them. To this effect we are developing organological research that will help create a hermeneutic web to complement what Tim Berners Lee who works with us called the Semantic Web. We believe that this semantic web must be accompanied by explicit systems of shared annotation and technologies that trace interpretations. The IRI is currently developing and testing systems such as Polemic Tweet and other research community focused projects operating in different ways for different types of corpora of data. These devices should eventually help create contributory communities and contributory social networks, based on annotation processes and the sharing of contributory annotation to generate collective interpretation, especially constructed to allow controversies and confrontations. We need to foster controversies both on the content of anything that would be processed in that way and on the organizations that would deal with these processes, i.e. the organizational models of the web itself.

**H.F.:** *What would it take in your opinion to change the situation? What does this involve in practical terms?*

**B.S.:** Today we are confronted with two huge issues: an almost cosmological problem of entropy (because entropy is a cosmological problem) and a

structural and generalized political economic problem of automation that is destroying jobs. We at Ars Industrialis and the IRI support the argument that it is possible and absolutely necessary for Europe and for the world to change this situation, and that Europe has the strongest interest and the broadest capacities to do so. This means transforming the structure of the web itself, and including within it new possibilities that do not respond to the interests of Google and the like but rather to the general interest globally.

The goal of the W3C team at the origin of the web, or rather the goal of the people of the CERN who later formed the W3C with the INRIA in France, which included Tim Berners-Lee and Robert Cailliau, was to open public debate and to make knowledge accessible in order to facilitate the confrontation of ideas. Dominique Cardon has shown in his book *Internet Democracy* how the purpose of the web as intended by its founders to not be subject to commercial imperatives, has gradually been hijacked over 21 years under the pressure of economic actors who have turned it into a business platform. Unfortunately Europe did not understand the importance of what was happening. Many of us warned about the need for an original European policy different from that of the United States, but we were never heard. Europe completely let go of the web under the pressure from ultra-liberal ideology. There are no national policies, there is no EU position on these issues, while the United States has been leading for four decades a policy that gives the state a driving role through the army. Contrary to what you would expect, American policy is federal; it is not governed by the market because the market is a follower. The market does not invent, it does not create novelty since novelty creates new situations where no one yet knows how money will be made. Inventions come from scientific research. The market invents ways to make money with inventions.

We are in a state of planetary shock exacerbated by the revelations of Snowden, facing both a systemic crisis and a crisis of confidence. We think it is entirely possible and high time for Europe to invent something new, distinct from America's own models.

**H.F.:** *So what are the challenges of the web and digital technology?*

**B.S.:** They are closely linked to those of scientific research, and the publishing and media industries. Without publishing there is no scientific life. Scientists only exist because they publish, and French scientists need French publishers who are not bound to comply with American bibliometrics criteria. Publication in *Nature* for example requires adhesion to American

criteriology. At the same time France has a very good reputation in sciences, it remains the first school of mathematics in the world, and is considered an academic knowledge base of the highest order, just as Europe is. This was made possible because Europe is the continent of the printing press, and the formation of large publishing houses such as Hachette, but will this last? If we do not create a model different from the American model, all will be lost. Amazon has locked everything from the beginning, and Google Books followed. It is therefore essential to invent a new model, a new publishing system that produces the *Res Publica*, the public space, which is the space for scientific as well as political and legal controversy, the space of citizenship. If we do not create in the coming years and very fast an alternative to how the web has been submitted to the American model, universities will disappear. Because the university exists only because there are teachers, who exist only because they publish, and they publish only if they have publishers. We propose the adoption an approach opposite to what we have today which requires adoption of the American model. We must invent a new model.

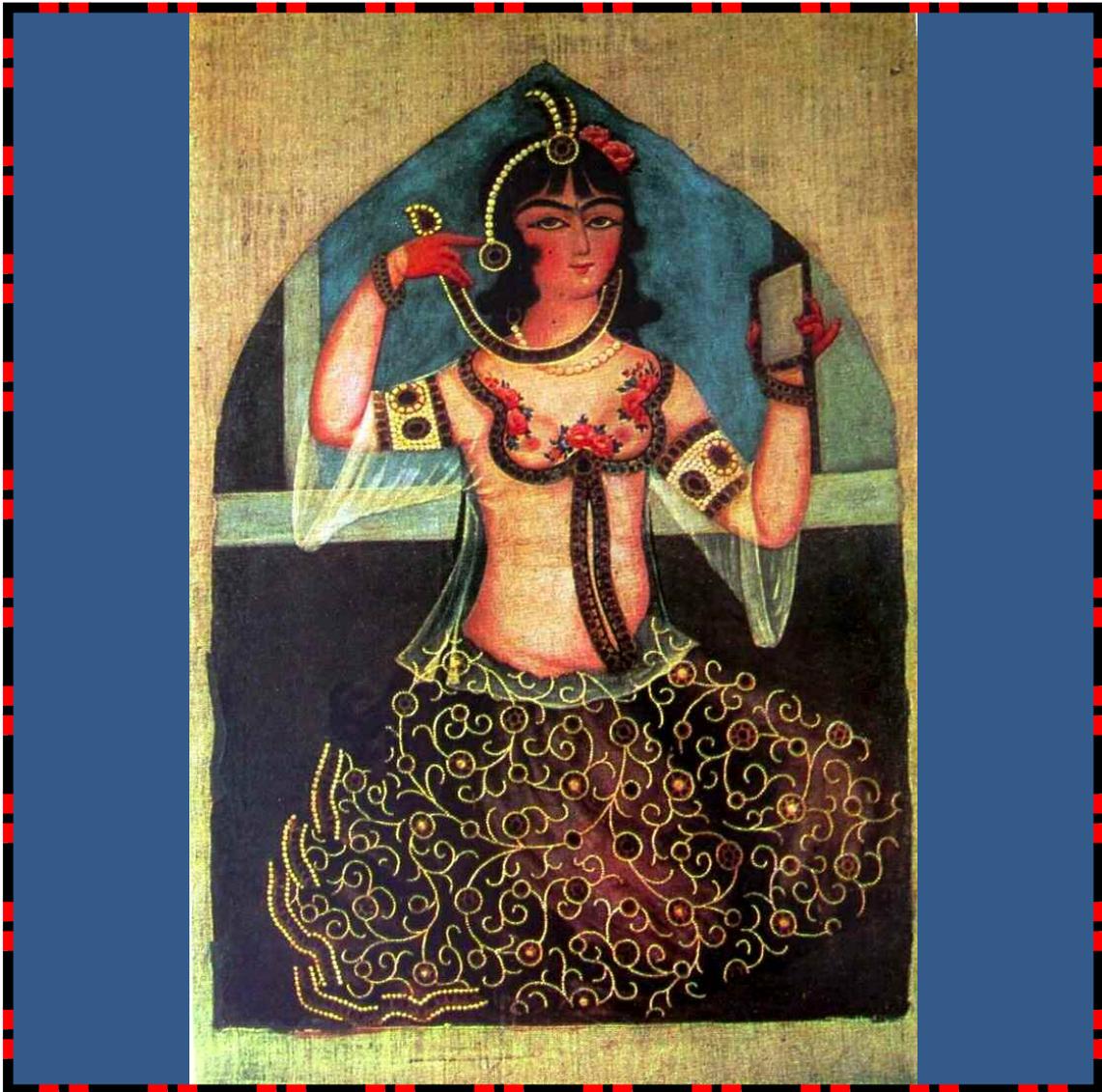
It is fundamental for us now to rethink the conditions under which research and the sharing of research operate. Science evolves very quickly and it is important that society be assisted (or participates?) in this evolution. This will be impossible without a new social acculturation, without re-imagining education and the development of individuals, citizens, and future scientist. It is not just about teaching code at school. I signed the proposal from the Conseil National du Numérique (CNN, the French national council for digital technologies), because it is better than nothing, but it is not enough. The real question is to fundamentally transform disciplines themselves in relation to digital technologies and how they are taught and from there, to allow the academic, scientific, educational world to produce new tools and implement a truly peer-to-peer organology.

We must invent alternative models that are not financed by the market. An alternative model never has a market anyway. We must first create an event of disruption. France has the Public Investment Bank (BPI). The BPI must invest one billion euro and convince the European Union to raise ten additional billions. If we really want Europe to regain the initiative, we must create a pool of European researchers to become top level on these issues. I recently launched a proposal to fund 500 theses each year dedicated to Digital Studies. Not only to study algorithms, but also to study topics such as the role of writing in the development of grammar, in order to develop an understanding of the technical

mediations at play in the acquisition of knowledge. The 500 theses will be selected based on three criteria. Firstly, the epistemological value of the proposed theses relative to the relationship between digital studies and another disciplinary field. Secondly the commitment that this theses will be conducted under the theme of what we call contributory research, which incorporates Kurt Lewin's action research methods while developing other techno-contributory methods to enable what Michel Bauwens described: the creation of contributory territories to which people are associated. The principle of action research is that the objects of observation are subjects and become researchers. With digital technologies there is a tremendous potential to develop new things. And thirdly the commitment from researchers to publish their work in an ongoing manner using new methods of publication and new annotation technologies such as those we are developing that can trace controversies, and to make sure that the theses is not published ten years after it has been presented but even before being presented, with the presentation aimed at consolidating comments and analysis.

This proposal has been adopted by the CNN, and will become an official position in France. The goal is to encourage other European countries to do the same. With France, Germany -where I will be teaching next year and which I'll try to convince-, Belgium and England, it would amount to 4 x 500 students working together in different languages; 2000 per annum and 10,000 in 5 years plus 10,000 research directors, this make a total of 20,000 people to reflect on digital technologies. A human capital larger than that of the Silicon Valley.





G I R L   H O L D I N G   A   M I R R O R

## ON THE ROLE OF PLATFORM BASED PEER PRODUCTION AND THE COMMONS IN THE DYNAMICS OF INNOVATION



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*Simone is also one of the leading European expert on open, p2p business models and the creator of the Platform Design Toolkit, a set of tools to design for communities. He's also a partner in Pentagrowth (pentagrowth.com) and former Co-Chair of Open Source Hardware Summit 2014.*

**I**F CONFRONTED WITH THE CURRENT STATE OF THE GLOBAL system that we call human civilization we cannot hide from the harsh truth: the system we have built – across ages and several *Techno-Economic Paradigm Shifts*<sup>1</sup> – now looks in a particularly complex situation.

Most of the global industries (from retail to manufacturing, from food production to logistics) that empower the current dominant lifestyles – the western, urban, connected lifestyle that all earth citizens seemingly aspire to – are just sitting there waiting to be disrupted. While most of such industries show evident signs of social and environmental un-sustainability and long term fragility, some of the key economic players are rethinking themselves, embracing different models that, most of the times, relate to decentralization, collaboration, openness. These models are mimicking or getting inspiration from (and sometimes even are collaborating with) the realm of the digitally empowered communities and commons based, p2p revolution.

Such collaborations and mashups (and sometimes clashes) between the two worlds may well be providing impressively good and exponentially accelerating returns on innovation (which Nick Grossman eminently catches with his *Venture Capital vs Community Capital* concept that I will introduce later). There is however a growing concern in public discussions on *digital social innovation* over the

prominent role – in the transition to a better, re-organized, resilient world – that privately owned, capital backed companies may have in generating radical innovations.

If we look back to the history of continuous development of new technologies (intended as the evolutionary process which almost all human activities are subject to) we notice that there has always been a dual impact. On one hand, technologies that historically made entirely new things possible indirectly produced large impacts on our global instabilities: after the industrial revolution, large footprint industries created new technologies in a void of serious political frameworks to regulate environmental and social externalities. On the other hand the most impressive of all human created technologies – the internet – is now giving us the very tools to understand, discuss and eventually transform all of our pre-existing industrial economic processes into a post-industrial era that looks intangible, automated, efficient and enabling for the citizens.

The intangibilization of the economy is finally pushing capitalism to face its transition into post-capitalism, and is doing so in exponentially faster cycles: as Nick Srnicek puts it “Deindustrialisation is a necessary stage to move beyond capitalism”<sup>2</sup> and that’s what we are starting to see.

The Internet of Things may be the last large scale infrastructure mankind needs to build and it will likely be built in a decentralized fashion through the adoption of (intangible) protocols rather than big corporate investments. Ironically enough, in a world of intangible value and no need for capital – a world that is “awash in money”<sup>3</sup> – capitalism is evolving and a new breed of companies is arising to dominate and monopolize markets that it has created itself from scratch.

### A NEW BREED OF COMPANIES ENABLING PLATFORM BASED PEER PRODUCTION

A number of interesting studies released lately reinforced the idea that – in an era of widespread access to a growing set of means of production, from computers to fabrication machines – networked business models win. A recent study from OpenMatters and Deloitte<sup>4</sup>, based on the observation of 40 years of S&P500 companies,

reported that four major business models have been used so far in the history of capitalism: more in details, these business models are those of *Asset Builders* (firms that “build, develop, and lease physical assets to make, market, distribute, and sell physical things”), *Service Providers* (“hire employees who provide services to customers or produce billable hours”), *Technology Creators* (“developing and selling intellectual property”) and finally, *Network Orchestrators*.

This new breed of companies wins on the market by creating networks of peers in which participants – being prosumers, small business or partners in general – interact and play a role in a shared and internetworked value creation process. With no surprises, this research confirmed that Network Orchestrators historically achieved better financial results: bigger market value, faster growth, and higher profit margins.

By surfing on the strong reductions of transaction costs mostly made possible by the ubiquity of the Internet and by leveraging existing and eventually “connected” infrastructures, inventories and network of resources, these companies can create markets that didn’t exist before. They can grow these markets into millions of participants, if not billions – by making connections and generating interactions between value *producers* and *consumers*, often shortcutting traditional middlemen and gatekeepers. These *platforms* focus on creating customer driven value – by using advanced techniques to deploy, test and measure the new – and on generating user experiences that are not only *just better*, but often 10x if not 100x times better (faster, easier, more enjoyable, more accessible, etc.) than the – not always existing - alternatives.

These platforms effectively enable what could be called a *Platform Based Peer Production* (PBPP in the rest of the document) paradigm – in contrast to the well known concept of Commons Based Peer Production as defined by Yochai Benkler.

FROM THE INTANGIBLE CORPORATION TO THE UNVALUABLE CORPORATION

According to a recent Ocean Tomo research<sup>5</sup>, which pretty much confirmed historical data, we are living

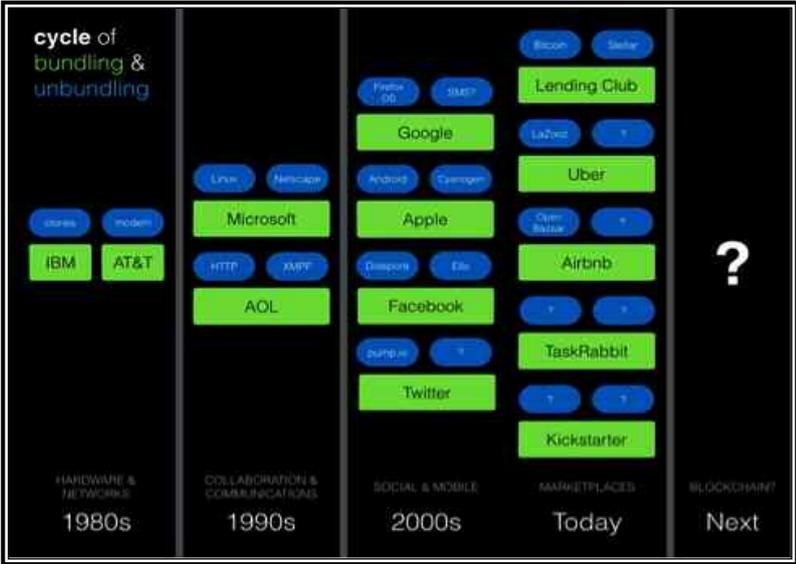


IMAGE 1 - Cycles of Bundling and Unbundling<sup>8</sup>.

in an era during which the market valuation of successful companies is defined for more than 80% by their intangible set of assets. In this respect, the champion of the first decade of the century was, with no doubts, Apple. Apple succeeded in making the most of its design capabilities and brand narrative of “thinking differently” by managing a relatively small industrial footprint, kept light mostly by systematically leveraging on existing eastern OEMs<sup>6</sup> and actually building its overall branded “platform” (mostly made of devices and developer ecosystems) on top of multiple, stratified, already available infrastructural layers such as the world wide web, global logistic chains and the productive capacity and shared knowledge of Chinese and Korean consumer electronics factories.

In an interesting recap of his already mentioned speech at the recent OUIShare Fest 15 in Paris, dubbed *Venture Capital vs Community Capital*, USV’s<sup>7</sup> Nick Grossman laid out an interesting consideration on how subsequent technological paradigm shifts enable the generation of new innovation waves that break and build on existing ones. Grossman’s blog post brings several interesting points to the table but, in particular, he describes how the rise of monopolistic, or quasi monopolistic, platforms first become enablers of new layers of innovation and then get disrupted themselves within time. According to the convincing explanation from Grossman, this happens, most of the time, thanks to an emergent role of open, shared standards or distributed architectures enabling higher value services. Very frequently these open disruptors are what I call “interfaces”, *knowledge* or *design commons* (think about Linux or the Http protocol) see IMAGE 1.

As a possible example we can think of Google becoming what it is now, on top of a precedent wave of innovation generated by AOL and Microsoft (in

democratizing personal computer industry and internet access): the emergence of the World Wide Web (as set of standardized protocols) from this contest gave us the Googles and Facebooks of today.

*“So there’s the pattern: tech companies build dominant market positions, then open technologies emerge which erode the tech companies’ lock on power (this is sometimes an organized rebellion against this corporate power, and is sometimes more of a happy accident). These open technologies then in turn become the platform upon which the next generation of venture-backed companies is built. And so on and so on; rinse and repeat.”*

In a way, this is what is happening now again: peer to peer marketplaces and platforms (the PBPP) are poking holes in the dominance of the GAFA (standing for Google, Amazon, Facebook and Apple in FaberNovel’s Gafanomics<sup>10</sup>) and are becoming the best representatives of the “intangible corporations” that are dominating today’s world of business. These platforms need smaller and leaner staff, work on digital and on-demand infrastructure and invest money mostly on improving user experiences (UXs) through design, while they sustain the growth in demand and supply through brand awareness and marketing. Airbnb is not just avoiding building hotels, but neither is building data centres.

As University of Oxford’s Professor Colin Mayer said earlier on this year, playing on a famous Shakespeare quote: *“all that ends this strange eventful history is the mindful corporation: sans machines, sans man, sans money, sans everything.”*

As a reinforcing trend we must consider that, in many cases, markets are also struggling to cope with the bubbling valuations that companies from the social era are eventually reaching: as Indy Johar pointed out at a panel days ago again at OuiShare Fest, there is no way that a company like Twitter could cope with its IPO valuation by means of its revenues; we should maybe just agree to the idea that such a company is more of an institution of the XXI century than a for-profit company and start treating it as such. The more these companies empower not only other companies and brands, but also public institutions and citizens to exist and thrive, the more it will be likely hard to consider only their revenues to justify their market valuation: they should be considered forms of public good or – in a way – expressions of the Commons.

#### THE TRANSFORMATION OF THE FIRM

This transition to post-industrial, networked model of markets and firms is not having effects

only on the business model side: in a recent essay, Geoffrey Moore looked at Coase’s seminal *The Nature of the Firm* from 1937 and explored the deep changes that the digitally transformed economy is having on the structure of the firm itself. If on one end, the transition into the “age of access” is transforming products into services and empowering the “on demand” economy, on the other hand, the growing demand for the firm to be able to act as a pivotal point, interact and collaborate with partners working from the outside (whether through an UpWork<sup>11</sup> contract or an API<sup>12</sup>) is being deeply disruptive to the hierarchical management structures that provided middle-management, middle-class jobs for most of the twentieth century.

In his recent book *The Utopia of Rules*, eminent American anthropologist David Graeber looks into the topic from a slightly different angle. Probably not underestimating, but consciously putting more emphasis on sociologic aspects than on the digital disruption itself, Graeber highlights the effects of the transition in the longer term, where a lot of people will be losing “bullshit”, bureaucratic, jobs (as he dubs them) to an algorithm, a piece of code or just to the very existence of the internet, as the infrastructures upon which we build shared knowledge, information and data, within time.

Despite the inspiring work of visionaries like Peter Drucker or Taichi Ono, for decades, we built firms that became like institutions: they provided a safe harbour for people, attached to the *protestant ethic of work* which shaped societies in the industrial age—with work to be done irrespectively of the value it brings to the worker, the customer, or society. Now that the internet changed everything, companies (or better, employees, people) fail to cope with the emergence of a new ethic: the *hacker ethic of work*. According to this new ethic, work should be enjoyable, meaningful and fun: this, in the end, is undoubtedly a shared item of culture between Silicon Valley Stanford tech laureates (and dropouts) and most of the digital commoners praising Commons Based Peer Production (CBPP in the rest of the article) and collaborative models.

Today’s successful firm is horizontal, lean, efficient, co-creative and talent sensitive and a swath of middle-class jobs will be the victim of this shift: moving from an economy dominated by large leviathans and obese institutions to one where smaller, nimbler, firms will literally “eat” chunks of the economy away as Marc Andreessen once explained with his now famous “software is eating the world” mantra.

For those that can embrace this new “ethic of work”, Internet and emerging technologies not only become

enablers of a new – post industrial – production model but could be, in fact, instruments of “liberation”: they can shift power from the corporation to the employee, following the same shift in power that in the last few years put the user in charge of the digital experience and that pushed back all the risk on the vendor – in the “on demand” economy.

A new era of independent (or rather inter-dependent) work, driven by passion and meaning, looks sometimes at hand: as Esko Kilpi<sup>13</sup> puts it: *“The Internet is the first communication environment that decentralizes the financial capital requirements of production [...] capital is not only distributed, but also largely owned by the workers, the individuals, who themselves own [...] the new machines of work. [...] the future will not be about jobs, but about tasks and interdependence between people [...] Can companies perhaps be replaced by apps in some cases? Or can managers be replaced by apps? Or perhaps more and more new companies look like apps, like Uber or Airbnb already do.”*

WRONG POINTS OF  
CONFRONTATION BETWEEN  
COGNITIVE CAPITALISM AND  
THE COMMONS

Given that in the technological innovation process a role seems to be there for both, private interest driven capital(ism) and CBPP collaborative models based on the knowledge commons: why are we often stuck in a polarized perspective that opposes the two?

The best place to start, to give an extensive coverage of a modern and substantially shared vision of the world of the commons and of the promoter of a Commons Based Peer Production model, is of course the excellent work recently done in “Network Society and Future Scenarios for a Collaborative Economy” by Michel Bauwens and Vasilis Kostakis, see IMAGE 2.

In his famous taxonomy, Michel Bauwens uses two axis to classify the fruits of the digitally transformed economy in two macro areas: *capital* on one end and the *commons*, on the other. Bauwens first defines as ‘netarchical capitalism’, more or less what we defined earlier as Platform Based Peer Production and Networked Business models. It

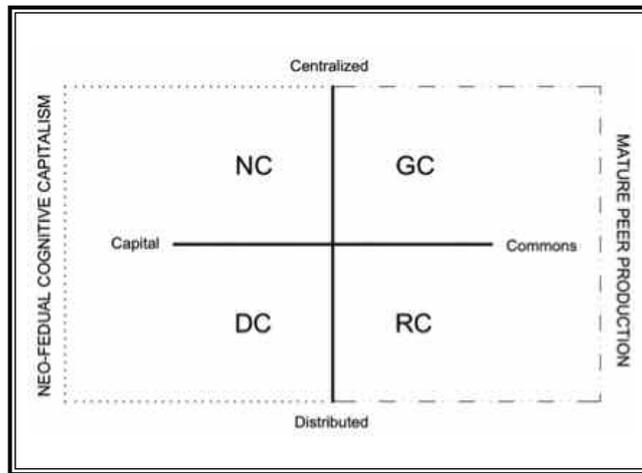


IMAGE 2 - *The P2P Infrastructure: Two axes and four future scenarios*<sup>14</sup>.

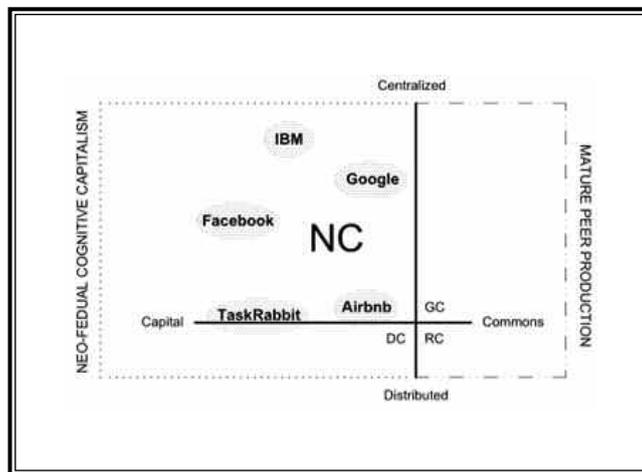


IMAGE 3 - *The P2P Infrastructure: Netarchical Capitalism*<sup>15</sup>.

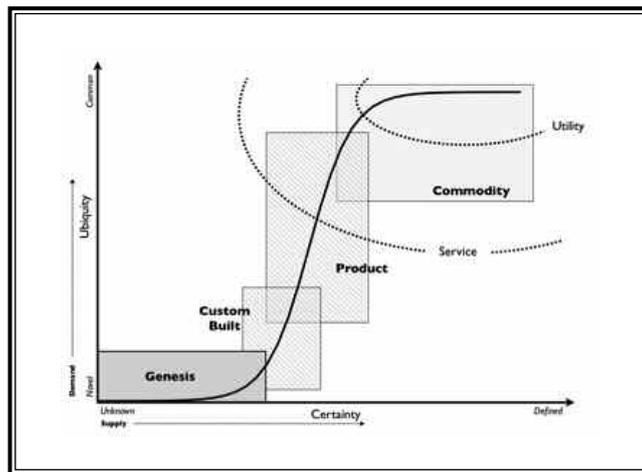


IMAGE 4 - *The evolution of human activities - Simon Wardley*<sup>17</sup>.

is the first combination (upper-left) “which matches **centralized control** of a distributed infrastructure with an orientation towards the accumulation of *capital*”.

A first potential misunderstanding here, is occurring when mixing the concept of different layers: *infrastructures* and *platforms*. This misunderstanding could be clearly recognized by this essential passage of Bauwens saying that “ultimately, the driving force of capitalism in our age is the eradication of all Commons and the commodification of all things”. Although one could easily agree with the first part, it’s harder to agree to the latter, and I will explain why, see IMAGE 3.

By assimilating platforms and infrastructures we underestimate the evolutionary aspect: while infrastructures evolve towards becoming *utilities* completing the whole evolutionary path (from *chaotic, unique and novel* to *ubiquitous*<sup>6</sup>), platforms often don’t, or at least they don’t entirely. Indeed, platforms keep part of their value proposition in a constant creative phase, continuing to improve user experiences and climbing up the value chain constantly by listening to the needs of their ecosystem of users: platforms effectively chose what components can be commoditized and what shouldn’t. As an example, that may help to clarify, we could mention the brilliant move by which – after attentively monitoring the use that the ecosystem was doing of its services – Amazon introduced Elastic Map Reduce (EMR). EMR is an environment for Big Data processing that, once introduced, pretty much instantly reduced such feature to a commodity, putting unbearable pressure on all third parties previously providing such a service on top of Amazon owned environment, see IMAGE 4.

This is a unique trait of platforms and ecosystems – which is made possible by pools of design talent and by a strategic hegemony – it produces two essential effects. First, these network orchestrators often create significant improvement in user experienced use value and – secondly – they create what is normally called “*customer driven value*” by exploring and testing new hypothesis of value all the time with customers. How many times have you heard of new upcoming features on Facebook being tested on a particular set of users? How many times a beta product program remained inaccessible for you to use just because you weren’t in the elected set of users? This is what a scientific, lean, experimental entrepreneurial thinking calls A/B testing. You may be in the A or B set of users but, at the end of the day, a new feature will be officially rolled out to everyone only after an evident customer appreciation and validation phase.

## IN SEARCH FOR A NEW ETHICAL APPROACH TO DESIGN?

As an effect of multiple drivers, including the disrupting nature of their value propositions, their design hegemony and the capability that some key cognitive capitalism hubs have – the most important of it being the ecosystem of the Silicon Valley – to create global narratives, these successful platforms can occasionally grow into global, quasi-monopolies and this trait generates increasing concerns in analysts, users and commenters.

If we look into the problem from a liberal perspective, of those who believe that free markets can generate innovation (being able to allocate scarce resources to the ones which are able to use them best) better than non-market economies, these monopolies are just products of exponentially connected market dynamics. As Peter Thiel puts it “*competition is for losers*”<sup>18</sup>: businesses that succeed to escape competition by growing into monopolies can stop focusing on the “*daily struggle for survival*” (indeed an attribute of utilities and commodities) and can focus on creating longer term *empowering innovations* – in the interest of backing shareholder capital that, most of the times when we talk of true enabling innovations, collides with the interest of the whole society.

At least partially converging with this vision, in an excellent write up of recent Nobel laureate French Professor Jean Tirole’s work, Financial Times’ Izabella Kaminska recaps that “*in some markets, particular idiosyncrasies can lead to longstanding dominant positions which need to be smartly regulated in a way that doesn’t overly penalise innovators*” and that regulations (which usually express the interest of the public and, therefore, should embed the protection of the commons) should “*make sure there’s a level playing field, that the platforms are empowering rather than restricting and the interests of the wider economy are defended*”.

In other words: while the position of the regulator should be that of the referee, there’s a big deal of complexity in trying to avoid to penalize someone for having invented a new market and for having followed customer advice in doing so. The good old antitrust mission becomes harder when companies don’t just compete in markets that we have known for decades but instead create new ones of which they, clearly, often become key players.

It’s key to ask whether these “empowering monopolies” are not only the result of the digital transformation but also evolutions which are dictated by us, the users. In the *third digital wave*, technology is not just integrated into products or used to increase sales but

it is meant to help users to achieve their personal goals, to empower them. The users that we “formerly called consumers” and now “funders, producers, sellers and distributors” – according to Jeremiah Owyang – are taking control of their digital identity and learning how to extract value from it by using platform of which they increasingly shape the narratives and value proposition. In the process users will be increasingly taking control of the firm itself: it is *Customer Driven Capitalism* (or Peer driven if you prefer).

Of course, the situation can be nuanced: the tendency to grow every single platform layer into a global monopoly looks like an attribute of the digital marketplace in itself – more than that of a single firm – but there’s still the choice (for each brand and firm) to pursue the challenge to avoid the survival struggle in a more or less ethical fashion.

#### DYSFUNCTIONAL PLATFORMS?

In particular, two dysfunctional issues are often identified and pointed out as key elements of friction between these global platforms and the common and desirable good. On one hand these platforms are accused to proletarianize contributing peers and not sharing enough of the value they create thanks to them: the critics range from pointing out that Uber drivers may be working on a wage that is apparently lower than the US minimum, up to considering posting data into facebook as a form of distributed free labour. If one looks into Travis Kalanick’s famous quote “the reason Uber could be expensive is because you’re not just paying for the car – you’re paying for the *dude in the car*” one can easily understand that the position of the driver, in this business vision, is evidently that of a – soon to be expandable – part of the supply chain.

The relationship between peers and platforms by the way, must always be considered from the perspective of the peer itself (as an entity). Only the peer’s perception of value is decisive: the peer’s **trust** towards the platform is key and the relationship strongly goes into *intangible* realms that can be hardly measured and regulated. In other words, the social agreement between Facebook and its user – with the former providing to the latter the possibility to leverage a wider social graph to accompany her own objectives – could be out of the typical scope of regulatory policy-makers. A different discussion – of course – could be applied to Uber’s agreements with drivers: this is

a much clearer form of labour that should be regulated according to the existing labour protection laws (as it can generate clear externalities on society), but just as long as Uber still has to employ people in its business process.

Another key dysfunction often pointed out with such platforms relates to their tendency to create walled gardens, used to lock in data and enclose collective intelligence: however this property could not be interpreted as dysfunction but

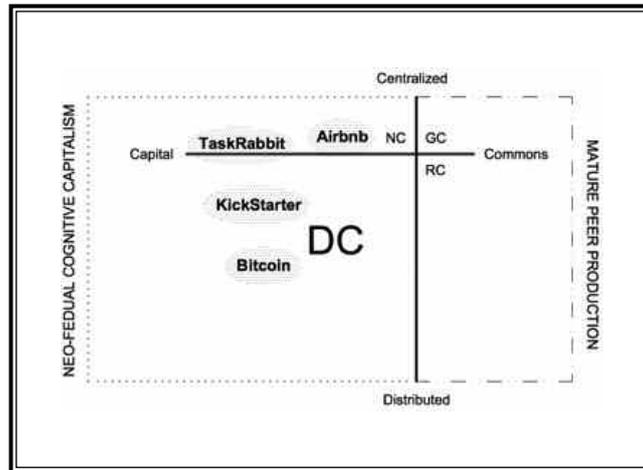


IMAGE 5 - *The P2P Infrastructure: Distributed Capitalism*<sup>9</sup>.

instead as a “feature” and a strategic lever for a platform designer to choose. There are evident plus in keeping data under control if you’re a monopolistic platform as long as this doesn’t become harming to the platform’s reputation and business. In other situations, opening the data layer might be just a different strategic choice to win on markets.

#### DISTRIBUTED CAPITALISM OR SOCIALIZED INFRASTRUCTURES?

On the same side of the four quadrant model – that of “capital” - but on the lower-left quadrant, Bauwens and Kostakis put a much more unclear concept to me (with respect to that of platforms of netarchical capitalism): that of “distributed capitalism”. The very same key examples mentioned to give substance to this quadrant, the crowdfunding portal Kickstarter on one hand and the distributed crypto currency Bitcoin on the other, are scarcely similar. The first is indeed mostly a “brand” which is able to build, share and give visibility to user crafted narratives: it is more a storytelling tool than even resembles the nature of a netarchical platform. The latter leans more towards being the first incarnation of a really interesting distributed and shared “infrastructure” (the Bitcoin Blockchain) which carries an embedded

incentive mechanism to be built from scratch (the Bitcoin itself) and which is now being increasingly used to empower different transaction based ecosystems thanks, for example, to tools like the “coloured” coins, lately adopted even by organizations such as the Nasdaq (IMAGE 5).

On the other side of the map, Kostakis and Bauwens see a dual nature of the commons taking shape and encompassing all the potential and needs for efficiency and innovation: according to the writers, and to the vast majority of digital commoners who agree, “resilient communities” – sometimes seen as local lifeboat strategies in a scenario of crash and uncertainty – “can co-exist in harmony within the scenario of the global Commons by the logic that whatever is heavy is local (for instance, desktop manufacturing technologies), and whatever is light is global (for instance, global knowledge)”.

#### BUT WHO’S GOING TO INNOVATE RADICALLY? AND WHERE CAN WE ACTUALLY USE THE COMMONS?

Despite the fact that we can’t deny that innovation is becoming more and more distributed, social and diffuse, “an emergent property of networks rather than an internal R&D affair within corporations” as per Bauwens and Kostakis, and that the “Apache web server, Mozilla Firefox browser, Linux kernel, [...] and a myriad of emerging open source software and hardware projects” have been created in Commons Based Peer Production environments, there are at least two factors that are underestimated or, in my opinion, wrongly interpreted when we credit commons based, collaborative systems the capability to innovate radically.

First of all, while it is true that “capital is becoming an a posteriori intervention in the realization of innovation rather than a condition for its occurrence” (Bauwens and Kostakis) we tend to underestimate the importance that capital and talent have in combining, transforming and distributing elements of innovation to larger audiences. Even if Linux and GNU were invented by one nerd and a revolutionary thinker, GNU/Linux definitely took off in the market when brands such as IBM and Google decided to base their industrial strategies on it and democratized Enterprise IT and mobile in the move.

Secondly, a relevant distinction here must be made between two different concepts we are talking about: *interfaces* and *infrastructures*. I will try to explain this difference by using two very seminal works that have been released in the last year. In a very fortunate recently published article, Boston Consulting Group<sup>20</sup> describes the digital marketplace

as made of mainly three players/roles: “*infrastructures on the bottom*, producing and consuming, *communities on the top*, and *traditional oligopolists* competing in the middle”; it leaves “platform” in a mixed state, sometimes leaning into infrastructures, sometimes into communities.

By merging this vision with the one explained in the seminal “*The hero’s Journey through the landscape of the future*”<sup>21</sup> – which praises a vision of the digital marketplace made of *infrastructures*, *customer relationship businesses* (essentially *platforms*) and *long tail markets* (communities), the joint vision we can propose today is that of a digital marketplace made of several infrastructural layers, stacked one on top of another and connected between “interfaces”, acting as a common language or, at least, a standard of communication and exchange.

Most of the time, the Commons play a great role and succeed when it comes to becoming *interfaces*, while they struggle to become *infrastructures*: a good example might be the Android OS, Linux or even the younger – and more discussed – Arduino’s set of open designs and code library. These commons of code, knowledge or design become standards, sit between layered infrastructures and platforms and push players to innovate at lower or upper layers: no one reinvents the electricity socket or the Metric System (if not Britons).

The infrastructure layer for its part is sometimes too complex to build *as a commons*: look at the ubiquitous infrastructure of mobile data connectivity which is, no-doubt, one of the major enablers of the digital transformation we are living: this layer is being strongly commoditized and is now subject to strong global consolidation trends, due to the massive demand of CAPEX (CAPital Expenditures<sup>22</sup>) investments that are characterizing 5G and beyond technologies.

Sometimes, despite the complexities, the culture of the commons and an open, accessible and decentralized model can penetrate the infrastructure realm; however this normally happens in a limited set of contexts, when the capital needed to build a node of the infrastructure is smaller than that what a single peer or coherent community can afford.

Also in that case we must not forget that the knowledge, services and materials needed to build that node are likely coming from a lower layer of the stack such as, for example, supply chains or global retailers.

This is more or less what happened with the Bitcoin Blockchain: people started accumulating and buying Bitcoin mining devices – even designing dedicated ASIC chips – sourcing it from the consolidated Chinese consumer electronics industry and connected

them though another existing infrastructure, the internet; all this was driven by the incentive of gaining Bitcoins. But what did this enable? Humanity now owns a truly distributed infrastructure, an accessible ledger that can be algorithmically trusted (effectively, a Commons) and that can be used to create almost every transaction based system with little or no upfront investments anymore. Like the “Cloud” for transactional system with the difference that no one really owns the infrastructure (differently from the Cloud which, in the words of security consultant Graham Cluley it’s just “someone else’s computer”).

The same is happening with Fablabs – of which almost 450 are already available worldwide and 400 more are in the making: communities source machines and components from existing industries, they build labs and interconnect them into the Fablab network (through the internet); within time they built their own academy of knowledge and this network is silently incubating a revolutionary manufacturing infrastructure that is local, efficient and owned by people and community institutions. An infrastructure that has been effectively “socialized”.

Building socialized, shared and commons based infrastructure is a quest worth pursuing: more than trying to socialize *customer relationship platforms* such as *marketplaces*. It is much more important to own, govern and control (in the Commons), a production infrastructure or network rather than a website connecting demand and supply or making new products possible: this task always was a matter of design, talent, entrepreneurship and creativity, something cognitive capitalism is designed for.

In conclusion, I think we should rethink and rebuild a more complete understanding of the roles of the key players in today’s processes of innovation: the perspective should be that of coexistence between competitive and collaborative models. Only by harmonizing the innovative potential of vision, talent, leadership and private initiative to create enabling innovations – the ones that Thiel calls *zero to one*<sup>23</sup> – and the democratizing and harmonizing potential of the open and collaborative Commons we can probably get a decisive takeoff toward an era of abundance.



<sup>4</sup> *Adopt Digital Age Business Models to Prosper* <<http://bit.ly/1Jj0Vmf>> (Retrieved 15 May 2015).

<sup>5</sup> Ocean Tomo Releases 2015 Annual Study of Intangible Asset Market Value <<http://bit.ly/1I3UH86>> (Retrieved 15 May 2015).

<sup>6</sup> Original Equipment Manufacturers.

<sup>7</sup> Union Square Ventures – A venture capital fund based in New York.

<sup>8</sup> Source: From Nick Grossman’s blog – *Venture Capital vs Community Capital* <<http://bit.ly/1AENMTk>> (Retrieved 15 May 2015). The green boxes are companies, and the blue bubbles are “open” technologies like free software and open protocols — i.e., venture capital and community capital, respectively.

<sup>9</sup> *Ibid.*

<sup>10</sup> Gafanomics - Fabernovel <<http://bit.ly/1G68KqI>> (Retrieved 15 May 2015).

<sup>11</sup> Upwork, formerly Elance-oDesk, is a global online work platform where businesses and independent professionals connect and collaborate remotely. Based in Mountain View and San Francisco, California, Upwork was launched on May 5, 2015 <<https://www.upwork.com/>> (Retrieved 15 May 2015).

<sup>12</sup> Application Programming Interface.

<sup>13</sup> *From Jobs to Gigs and from the Value Chain to the Internet* <<http://bit.ly/1d8Uh5J>> (Retrieved 15 May 2015).

<sup>14</sup> Source: Bauwens, M. and Kostakis V. (2014). *Network Society and Future Scenarios for a Collaborative Economy* (New York: Palgrave Pivot) <<http://p2pfoundation.net/>> (Retrieved 15 May 2015).

<sup>15</sup> *Ibid.*

<sup>16</sup> *Simon Wardley - Evolution, diffusion, hype cycle and early failures.* <<http://bit.ly/1JdlrWL>> (Retrieved 15 May 2015).

<sup>17</sup> Source <<http://blog.gardeviance.org/>> (Retrieved 15 May 2015).

<sup>18</sup> *Competition Is for Losers* <<http://on.wsj.com/1SPONgI>> (Retrieved 15 May 2015).

<sup>19</sup> Source: Bauwens, M. and Kostakis V. (2014). *Ibid.*

<sup>20</sup> BORGES’ MAP - *Navigating a World of Digital Disruption* by Philip Evans & Patrick Forth <<http://on.bcg.com/1QjGNk3>> (Retrieved 15 May 2015).

<sup>21</sup> Hagel, J. et al. (2014). *The hero’s Journey through the landscape of the future* Deloitte. University Press <<http://bit.ly/1F0rahZ>> (Retrieved 15 May 2015).

<sup>22</sup> Capital expenditures (CAPEX or capex) are expenditures altering the future of the business. A capital expenditure is incurred when a business spends money either to buy fixed assets or to add to the value of an existing fixed asset with a useful life extending beyond the taxable year.

<sup>23</sup> Thiel, P. (2014). *Zero to one* (New York: Crown Business).

<sup>1</sup> 2009. “Technological revolutions and techno-economic paradigms”, *Cambridge Journal of Economics*, 34(1):185-202.

<sup>2</sup> *Post-Capitalism Will Be Post-Industrial* <<http://bit.ly/1AEMure>> (Retrieved 15 May 2015).

<sup>3</sup> *A world awash in money.* November 14, 2012 Bain report By Karen Harris, Andrew Schwedel and Austin Kim <<http://bit.ly/1KH7O2p>> (Retrieved 15 May 2015).

## OPEN SOURCE FINANCE HACKING: THE POTENTIALS AND PROBLEMS



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**T**HE GLOBAL FINANCIAL SYSTEM IS A NOTORIOUSLY opaque and alienating complex. The system is implicated in social injustice and ecological destruction around the world, and the key financial institutions, such as banks and funds, wield unhealthy levels of political power. The financial sector – that cluster of institutions that sit in the centre of the financial system – have at least five problematic dimensions.

Firstly, the financial sector routinely steers money into projects that are hardwired to breach planetary ecological boundaries. It is thus premised on ecological *unsustainability*. Secondly, it is an active agent of *inequality*. Not only do financial professionals reap outlandishly large salaries, but financial instruments like shares and bonds are conduits for powerful cartels of investors to direct money into the powerful corporate sector, often in ways that do not benefit ordinary people.

Thirdly, even if you do not believe that the sector creates inequality, it exhibits high levels of *complexity* and *opacity*, which, when combined with the fact that the system is highly interconnected, translates into high levels of *systemic risk*, the ability for financial crashes in one country to shake the entire global economy.

Fourthly, the sector hosts a particular *culture of finance*. This tends to be portrayed in the press by pictures of obnoxious traders swilling champagne, but the much deeper issue is the pervasive

denial of agency and responsibility found in the sector: financial institutions like to portray their profession as an apolitical agent of economic efficiency, rather than accepting the highly political nature of allocating credit and facilitating investment processes around the world.

Fifthly, there is the process called *financialisation*. In basic terms it is the creeping sense that the culture and drives of the financial sector are taking over many aspects of life previously untouched by it, turning everything into investable and tradable commodities. Thus, land and atmospheric pollution rights become parcelled into land investment funds and commodity investment baskets, while people's life insurance policies get parcelled into structured investment products for hedge funds to speculate on.

These trends, when taken together, have a way of creating ever more alienating and obscure financial phenomena, which appear incomprehensible and uncontrollable to the average citizen. Take, for example, high-frequency algorithmic trading, portrayed by those involved as a force for rational efficiency, but creating hitherto unknown levels of systemic risk.

### THE IMAGINATION PROBLEM

It is notoriously difficult to try imagine alternatives to our dominant financial, and broader economic, system though. We can sometimes see promise in individual initiatives that we support – for example, an alternative currency, or a social lending platform, or a co-operative – but we struggle to see how they represent any broader programme of change.

Indeed, many standalone alternatives to mainstream finance actually end up getting critiqued by radical thinkers because they do not offer such an overall programme. Thus, Bitcoin has moved from being viewed as an interesting, subversive technology to being viewed as a conservative techno-libertarian get-rich-quick project. Microfinance gets slated for reproducing the politics of debt on a micro level. The promise of crowdfunding is critiqued for reproducing the illusion of 'everyone can be an entrepreneur'.

For every interesting new innovation, there are dismissive and demotivating critiques waiting to be discovered. While the technology conferences host happy-

clappy ‘everything is awesome’ innovation fetishists and elitist ‘entrepreneurship will save the world’ types, activist conferences are full of ‘everything is shit’ critical theorists, waiting to sledgehammer down whatever proposals come out of the tech conferences.

#### THE HACKER NARRATIVE

It is a fine line trying to walk between these poles, to maintain a critical mind whilst not weighing yourself down with the implications of your own critique. In 2013 I attempted to articulate such a line in my Pluto Press book, *The Heretic’s Guide to Global Finance: Hacking the Future of Money*, sketching out a critical but positive vision. In the book I drew on hacker philosophy to suggest approaches to exploring the financial sector, jamming some of its negative elements and building alternatives. I chose to use the language of hacking for two primary reasons.

#### REASON 1: A CRUDE BUT EASY-TO-UNDERSTAND ANALOGY

Firstly, the financial system, much like technological systems, has a way of repelling people through its apparent complexity. The way that technology hackers approach a complex, interconnected technological system can be a useful model to use when thinking about how to approach a complex, interconnected financial system.

Actually, at some fairly crude level, computer systems are good general metaphors for economic systems, because computers are like economic microcosms, albeit a lot more predictable and controllable than the average national economy. An economy is based upon people using energy and (physical and intellectual) labour to extract useful stuff from the earth, activating the planet’s productive potential with the help of tools, procedures, and systems of rules. Likewise, computer systems take inputs of energy (electricity) and combine it with software code (a kind of abstraction of human organisation), in order to activate the assemblage of physical hardware towards productive tasks, when willed to do so by a user.

We constantly interact with computers, but most people in the world do not perceive themselves as *programmers* of computers. They mostly perceive themselves as users of computers that experts have programmed. And even if they wanted to dig deeper, they would find that much of the software they use is proprietary, locked up in secretive, opaque, even obfuscated formations.

Windows looks like a friendly interface, but you cannot see what it does, or how it does it. It is a useful intermediary between you and the inner

workings of your computer, but it’s also a hard-shelled barrier. In much the same way, the financial sector portrays itself as a friendly intermediary between you on the underlying reality of global investment processes, but it simultaneously acts as a disconnecting barrier.

#### REASON 2: INVOKING REBELLIOUS CREATIVITY

The act of technology hacking first involves *exploring* a piece of technology, which then opens up the ability to *jam* it or mess with its workings, as well as to *build* your own version of it. Using that as an analogy, financial hacking involves open-ended exploration of the financial system, which in turn opens up the ability to design campaigns that allow us to mess with its workings, and also allows us to start building our own do-it-yourself versions of the system.

One of the underlying reasons, then, that I drew on the archetype of the ‘hacker’, is that it has a subversive appeal that can capture the imagination of both activists and entrepreneurs. This is a useful when trying to engage the entrepreneurial imagination of activists who need to build economic alternatives, and to simultaneously engage the activist imagination of entrepreneurs, who need to be more critical when building new things.

True hacking, to me at least, fuses together notions of creativity with rebellion. As I suggest in the book, it is like the act of ‘kicking down a door to make a table’. It is not merely rebellion (kicking down a door), or merely creativity (making a table). It is the art of blending the two into a seamless act of creative rebellion, or practical but rebellious creativity. It blends the activist desire to take on power structures with the entrepreneur’s desire to imagine themselves as DIY heroes living by their wits.

#### THE POLITICS OF LABELLING

Of course, it goes without saying that the terms ‘hacker’ and ‘hacking’ come with a certain amount of political and cultural baggage.

In the way I describe it above, hacking really refers to an *ethic* or an impulse, rather than any specific class of action. ‘Hacker’ is not really something you can put on a business card like ‘plumber’ or ‘accountant’. It has a similar dynamic to terms like ‘mystic’, or ‘leader’, or ‘innovator’: I may have mystical tendencies, or leadership skills, but as soon as I concretise those terms and explicitly call myself a mystic or a leader, I have missed the point in some way. They are not concrete roles. They are loose sets of characteristics that are hard to formalise.

One of the linguistic confusions, though, comes from the fact that there is one version of the word ‘hacker’ that refers not to a personality type or ethic, but to someone with the very specific vocation of breaching computer security systems. This is the definition that is obsessed about in sensationalist terms in the mainstream press, and it comes laden with criminal connotations, like ‘*Hackers steal credit card data*’.

This has turned the figure of the hacker into something of a bogeyman in the eyes of many people – especially in my parent’s generation – who are often on the defensive when it comes to technology anyway. It is a bit like the term ‘anarchist’, which has been divorced from its rich intellectual history and presented in the conservative press as lawless wildcats throwing Molotov cocktails, evoking fear in the everyday reader, who is instead encouraged to view the police as figures of warmth and safety.

#### THE GENTRIFICATION OF HACKING

In recent years though, the term has come to have a second problematic interpretation. This is the Silicon Valley version, which presents the geeky but successful male coder-entrepreneur as a ‘hacker’. As the computer industry has got exponentially more powerful, and as tech startup culture has risen to cult status, this definition of hacking has risen too.

Rather than carrying a subversive edge, this version of the term gets applied to all manner of generic computer-based innovation undertaken by preppy, Stanford-educated entrepreneurs. With their mainstream success comes a ‘revenge of the nerds’ triumphalism, and ‘hacker’ comes to refer to an exclusive club of soon-to-be-wealthy business-focused masters of tech.

This in turn has given the ‘hacker’ more legitimacy in innovation scenes in general. The gentrified version of the term is even seeping into public sector parlance and the NGO world, where ‘hackathons’ are held and computer language like ‘beta testing’ and ‘2.0’ are applied to all manner of activities.

#### SEARCHING FOR THE SOUL OF HACKING

The true cores of hacking though, do not correspond with either the criminal interpretation, or the Silicon Valley ‘Mark Zuckerberg’ interpretation. To seek the soul of hacking, we need to go deeper into the underlying impulses and dynamics.

#### EXPLORATION: THE DE-ALIENATION IMPULSE

A major foundation of hacking is the *exploration impulse*, the desire to explore and understand those

things that most people in society are not encouraged to explore or understand. It is thus a drive to *de-alienate* a world which might otherwise appear confusing and unwelcoming. For example, urban exploration, or ‘urbex’, crews explore abandoned buildings, infrastructure, underground train lines and logistics centre. Hardware hackers explore the moving parts of machines. Computer hackers explore lines of code.

In its positive interpretation, this adventuring is underpinned by a rebellious *curiosity*. Applying this mentality to the financial sector is useful, because many people are told that finance is something for experts, not something for ordinary people to either understand or be curious about. The perception that finance is ‘too complicated to understand’ subsequently serves to create a layer of protection for the financial sector, much like the perception that computers are too hard to understand forms a layer of protection for groups like Microsoft.

The desire to challenge those perceptions and explore, though, also happens to border on illegality a lot of the time, because roaming past set barriers can involve breaching boundaries encoded in law in society. There is a natural tendency towards *deviance* from social norms built into the hacker ethos. Given that powerful institutions tend to have a strong role in setting such social norms and laws, hacker exploration can occasionally veer into what is defined as ‘criminal’.

#### RATIONALISM MEETS ROMANTICISM

The exploration impulse also has two slightly contrasting dynamics. On the one hand, there is a *control* element. I want to analytically understand everything around me in order to be able to *control* my world better. I do not want to rely on traditional authorities or corporate marketers to tell me what the world is. In its positive form, we can call this ‘empowerment’.

On the other hand, exploration can have a romantic element, a desire to learn and experience things for the sheer joy of it, or to be able to feel closer to the world, or to feel more emotionally connected to things that otherwise do not allow you to experience them in an emotional way. Hacking can have a strange blend of analytical rationalism and emotional romanticism. In the case of coding, I may seek to intellectually understand code in order to gain empowerment, but perhaps in so doing I open up the ability to let go, to lose my defensiveness, and to emotionally *feel* the code.

This tension is quite well exemplified by the controversial ‘homeless hacker’ Adrian Lamo. On the one hand he can come across as a control freak, trying to decode everything around himself in an almost

anti-social drive to be completely self-sufficient and self-directed, doing anything except what is expected of him, including turning his back on the entire hacker community by handing in Private Manning to the US authorities. On the other hand, he can come across as a new age romantic, wandering the lands on Greyhound busses, sleeping in abandoned buildings, casually breaking into Yahoo! from internet cafes, in love with the sheer explorability of the world, trying to appreciate it in its raw, unmediated beauty.

#### PUCK CULTURE: JAMMING AND BUILDING

The figure of the hacker thus comes with certain unpredictability, an unstable identity. A core element of the original hacker ethic is the love of tinkering and do-it-yourself maker culture, but what distinguishes it from normal hobbyists is that there is a distinct *mischievous* element to it, often with a dark twist. There is an element of the trickster, like the mythological woodland sprite Puck. The creativity is not just about building new things, it is about playfully messing with things, bending rules, recombining elements, and especially, using elements of existing systems in ways they're not supposed to be used. Thus, for example, Richard Stallman's concept of 'copyleft' is considered a classic hack because it takes the rules of copyright and bends them to create a licence that opposes copyright.

In the realm of finance, such hacks can include the subversive use of shares for shareholder activism, the creation of activist hedge funds – such as Robin Hood Minor Asset Management – and mischievous artistic projects like Paolo Cirio's *Loophole for All* tax haven hack. More generally though, the do-it-yourself spirit of hacking extends into the realm of alternative currencies, peer-to-peer platforms, sharing economy technologies and co-operatives.

#### THE PROBLEMS OF DISRUPTION AND EMPOWERMENT

A friend of mine who works in the tech industry recently sent me an email saying, "after much deliberation I think my philosophy is that creative destruction targeted at unhelpful institutions is the most potent form of activism." This captures the creative hacker impulse, but it also exemplifies two key problems in the hacker narrative.

Firstly, it is this very element of messing with established boundaries to create 'disruption' that corporate innovation fetishists romanticise. The hacker impulse can be cast as a force for Schumpeterian change, the force that knocks existing corporations

down and replaces them with other corporations. Indeed, it is quite possible to be playful, curious and mischievous without really having any *deep* drive to rebel (or alter power relations) in society. All the Ivy League computer coders who call themselves 'hackers' are often only hackers in a weak, or contingent, sense, projecting a watered-down, entrepreneur-centric vision of hacking that casts clever and quirky innovation as a subversive goal in itself, even if the underlying intention may be to sell their 'hack' to Google.

Thus, while Mark Zuckerberg could perhaps have initially resembled a hacker, Mark Zuckerberg now merely represents the face of the new hipster business elite, highly conventional figures in new clothes. The real hacker to me, has to have *consistent subversive intent*, seeking to constantly empathise with societal underdogs and challenge status quo power structures.

Secondly, note the underlying individualistic notions of change built into my friend's email message. It is one thing to disrupt power structures, but the weakness is in showing how this translates into social empowerment more generally. As an individual, hacking offers an exciting narrative – *I personally can do something* – but struggles to articulate a broader explanation of how my individual empowerment can be extended to others.

The hacker drive for de-alienated self-empowerment throws up tricky issues. As people with a hacker impulse gain confidence, they can become increasingly intolerant towards conventions, but also towards institutions like large welfare systems, which are viewed as being alienating in their own way. When combined with the individualistic streak, this can make for a libertarian political impulse.

At its best, that can be a left-leaning libertarianism concerned with how to empower the underdog from the bottom up, showing solidarity with those in less empowered positions, similar to anarchist mutual aid. In its negative incarnation, though, hacker culture can fetishise *personal* liberty, a conservative 'don't tell me what to do' libertarianism associated with people who already have power and who do not particularly go out of their way to help spread it. We see this in the likes of libertarian activist Adam Kokesh, who says 'fuck you' to authorities, but without really offering much empathy to those who are not empowered, skilled, or connected enough to be as bold as he.

#### OPEN SOURCE: A HYBRID ECONOMY

One powerful social phenomenon to emerge from hacker culture, though, is the *open source* movement. It started with people working on *collective* software

projects, but as *individuals*, organised via open mailing lists rather than traditional leadership structures. Open source culture is an attempt to fuse elements of individualistic hacker ethics with overt public and community goals. It thus has potential to serve as a model for how to overcome the limitations of stand-alone hacker culture.

The goal of the original open source movement was to build alternatives to proprietary corporate software programmes that are protected by copyright laws. The idea was to create programmes with underlying code that was visible to all and available for use under open source ‘copyleft’ licences. The movement has since expanded into fields beyond software, from Creative Commons music to open source architectural design models. The underlying theme is to disrupt centralised authorities – like large corporates – but to do so by building useful, usable and accessible alternatives for people.

There remain many limitations to the concept. For example, open source culture is definitely technology-centric. I use great open source software like GIMP, Scribus, and Inkscape, but making software widely available does not guarantee anything like broad empowerment. For example, you need support structures to train people.

Furthermore, despite being sometimes cast as a covert ‘Marxist’ movement from some conservative quarters, the open source community itself carries lingering elements of conservative libertarian culture, particularly the idea that self-empowered individuals can shape the world by voluntarily building stuff and then allowing others to opt in. This dynamic has been seen clearly in the Bitcoin community, which operates on open source principles, but which has nevertheless developed a highly unequal demographic of users with unequal levels of access. In other words, Bitcoin arguably *replicates* elements of existing power structures.

The underlying potential is there though, and there is something authentically powerful about the open source framework. It may be the closest working model we have to an alternative hybrid economic system. It is definitely not entirely separate from the mainstream – after all, open source programmers often have day jobs at large tech companies, and large companies often use open source software – but it is building precedents that nevertheless challenges core precepts of the mainstream economic system. For example, it challenges the idea that people only work for their own gain and not for the public good, and that people demand payment, patents and power.

#### APPLYING THE CONCEPT OF OPEN SOURCE TO FINANCE

Open source culture thus might be a useful way of framing the initial broad changes we might want to see in the financial system. After all, we are stuck within a massively powerful incumbent system, and need to find ways to build anew from that starting point.

Software code is used to build rule systems that steer energy into activating hardware towards particular ends. So, extending this as an analogy, what might financial ‘code’ look like? A financial system, in a basic sense, is supposed to distribute claims on human energy and resources (‘money’), via financial instruments (often created by financial intermediaries like banks), into new economic production activities (‘investments’), in exchange for a return over time.

Here, for example, is a rough financial circuit: A person manages to earn a surplus of money, which they deposit into a pension fund, which in turn invests in shares and bonds (which are conduits to the real world assets of a corporation), which in turn return dividends and interest over time back to the pension fund, and finally back to the person.

Shares and bonds are extractive financial conduits that plug into a corporate structure, but if you look for how they are coded, you’d discover they are built from legal documents that are informed by regulations, acts of parliament, and social norms. They are supported by IT systems, payments systems and auxiliary services.

But it takes more than clearly-worded documentation to be able to create financial instruments. The core means of financial production, by which we mean the things that allow people to produce financial services (or build financial instruments), includes having access to networks of investors and companies, having access to specialist knowledge of financial techniques, and having access to information. It is these elements that banks and other financial intermediaries really compete over: They battle to monopolise relationships, monopolise information, and to monopolise specialist knowledge of financial techniques.

And indeed, that is why production of financial services mostly occurs within the towering concrete skyscrapers of the ‘financial sector’, spinners of webs of financial code that is mostly unknown to most people. We have very little direct access to the means of financial production ourselves, very little say in how financial institutions choose to direct money in society, and very little ability to monitor them.

We have, in essence, an intense concentration of power in financial intermediaries, who in turn reinforce and seek to preserve that power. And while I may be happy to accept a concentration of power in small

specialist industries like Swiss watchmaking, a concentration of power in the system responsible for distributing claims on human society's collective resources is not a good thing. It is systematically breaking our planetary hardware, whilst helping to fuel a culture of bland individualistic materialism in increasingly atomised communities.

#### OPENING ACCESS, RECONNECTING EMOTION, LIBERATING CREATIVITY

At core, Open Source is supposed to be a philosophy of access: access to the underlying code of a system, access to the means of producing that code, access to usage rights of the resultant products that might be created with such code, and (in keeping with the viral quality of copyleft) access to using those products as the means to produce new things. Perhaps the ethos is best illustrated with the example of Wikipedia. Wikipedia has:

- 1 - A production process that encourages participation and a sense of common ownership: We can contribute to Wikipedia, which is to say it explicitly gives us access to the means of production
- 2 - A distribution process that encourages widespread access to usage rights, rather than limited access: If you have an internet connection you can access the articles. We might call this a *commons*
- 3 - An accountability model that offers the ability to monitor and contest changes: An open production process is also one that is more transparent. You can change articles, but people can monitor, discuss and contest your changes
- 4 - A community built around it that maintains the ethic of collaboration and continued commitment to open access. It is more than just isolated individuals, it is a culture with a (roughly) common sense of purpose
- 5 - Open access to the underlying software, which can be tailored and altered if the current incarnation of Wikipedia does not suit all your needs. Look, for example, at Appropedia or Conservapedia

You can thus take on five conceptually separate, but mutualistic roles: Producer, consumer, validator, community member, or (competitive or complementary) breakaway. These same five elements can be the pillars underpinning a future system of Open Source Finance. So let us look briefly at each pillar in turn, along with examples of the types of initiatives that exemplify them.

#### PILLAR 1: ACCESS TO THE MEANS OF FINANCIAL PRODUCTION

Right now, production of financial services is limited to a closed, elite group of professionals –

bankers, fund managers, traders, and so on - who reap very large rewards. They might possess talent, but they are also known to not always act in the public interest, and to occasionally cause giant economic crashes. The goal of encouraging wider participation in financial production would be to bring more diversity into the system whilst empowering people.

Very few of us perceive ourselves as offering financial services when we deposit our money in banks. Mostly we perceive ourselves as passive recipients of services. Put another way, we frequently do not imagine we have the capability to produce financial services, even though the entire financial system is foundationally constructed from the actions of small-scale players depositing money into banks and funds, buying the products of companies that receive loans, and culturally validating the money system that the banks uphold.

Interestingly, one of the original movements to bring wider participation in financial life was the rise of *day-trading* by stay-at-home semi-professional traders using discount brokerages to play the stock and currency markets. Despite being portrayed by the industry as a movement for empowerment, it is entirely based on the same toxic mentality of short-term speculation encouraged by financial elites. Furthermore, the industry is run by brokers who reap far larger rewards from the system than the actual participants. Lastly, the participants do not offer any real services to society, other than the banal claim made by all speculators that they help to 'increase liquidity' in markets.

A much more meaningful movement is the peer-to-peer (P2P) finance movement. We all intuitively understand what P2P finance is: If you decide to lend money to your friend, it is a direct P2P action, and you directly perceive yourself as offering them a service. P2P finance platforms, such as Zopa, extend that concept beyond your circle of close contacts, so that you can directly offer a financial service to more distant people who request those services. In so doing, such platforms offer you access to an active, direct role in producing financial services, rather than an indirect, passive one.

There are also many interesting examples of actual open source financial *software* aimed at helping to fulfil the overall mission of an open financial system. Examples include Mifos, Cyclos, and Community Forge's Hamlets, all of which are designed to help people set up their own financial institutions or currency systems.

Certainly, currency is one active area of experimentation. The concept of 'producing' a currency is probably strange to most people, given that many people are inaccurately taught that currency just

emerges magically from the government. Designing alternative currencies, though, brings a much more acute awareness of how currency, and confidence in currency, has to be constructed. Bitcoin is fascinating to the public partly because of the incredulity at the idea that people can produce the currency themselves. In using such a currency I feel aware of my role in upholding – or producing – the system. The scope to construct currency goes far beyond crypto-currencies though: local currencies, time-banks, and mutual credit systems are emerging all over.

One final area to consider is the drive to add third party customisation on top of existing financial services. The Open Bank Project, for example, is trying to open up banks to third party apps that would allow a depositor to have much greater customisability of their bank account. It is not aimed at bypassing banks in the way that P2P is, but it is seeking to create an environment where an ecosystem of alternative systems can plug into the underlying infrastructure provided by banks.

#### PILLAR 2: WIDESPREAD DISTRIBUTION

Financial intermediaries like banks and funds serve as powerful gatekeepers to access to financing. To some extent this is a valid role - much like a publisher or music label will attempt to only publish books or music that they believe are high quality enough - but on the other hand, this leads to excessive power vested in the intermediaries, and systematic bias in what gets to survive. When combined with a lack of democratic accountability on the part of the intermediaries, you can have whole societies held hostage to the (arbitrary) whims, prejudices and interests of such intermediaries.

One such prejudice built into the current financial system is the way it tends to steer money to those who already have it. For example, huge amounts of money get lent to hedge funds, while entrepreneurs with small businesses that are useful to society, but that are not sexy like Facebook, get ignored by big investors and banks. Expanding access to financial services is thus a big front in the battle for economic democratisation.

*Financial inclusion* is a whole field in its own right, with a significant history of innovation, mistakes and political wrangling. This includes the credit union movement trying to extend finance into poorer communities that get overlooked by large banks. It also includes microfinance, and international development finance that offers concessionary loans or grants to poorer countries.

Financial inclusion also overlaps with the realm of ICT4D – information and communication technologies for development. One big area of right now, for example, is *mobile banking and payment systems*, which has important implications for international development. Well known innovations include M-Pesa in Kenya, a technology to use mobile phones as proto-bank accounts. These technologies do not necessarily guarantee inclusion, but they do have potential to expand access to lower cost financial services to people that most banks ignore.

On the cutting edge right now, though, is the rise of *crowdfunding*. In the dominant financial system, you have to don a suit and suck up to the small set of gatekeepers, hoping they will not exclude you. Crowdfunding though, has expanded access to receiving financial services to a whole host of people who previously would not have access, such as artists, small-scale filmmakers, activists, and entrepreneurs with little track record. It is no secret that crowdfunding can be most effectively used by those with existing social networks, but it has a lot of potential to serve as a micro redistribution system in society, offering people a direct way to transfer wealth to areas that traditional welfare systems might neglect.

#### PILLAR 3: THE ABILITY TO MONITOR

When we deposit money into large commercial banks, we are helping to provide them with a reserve buffer against which they extend new credit in the form of loans. Do you know where they lend to though? Chances are that you do not, because most banks will reveal their lending activity, under the guise of commercial secrecy and confidentiality. It is like they want to have their cake and eat it, claiming to be acting as intermediaries on your behalf, but without offering any accountability. And what about the money in your pension fund? Also very little accountability.

We have nascent examples of banks that buck the trend and that explicitly open themselves up to scrutiny. For example, small UK banks like Charity Bank and the Dutch Triodos Bank publish exactly what projects they lend to. This gives you the ability to hold them to account in a way that no other bank will allow.

Trying to bring more general transparency to the system of financial intermediaries is very difficult, but different interest groups are pushing for it. Governments value transparency because it allows them to monitor taxation and facilitate regulation, especially in an era where huge numbers of hidden inter-bank

derivative relationships can form intense webs of systemic risk. Activists want transparency so that they can be more effective watchdogs. Free-market crusaders value transparency in theory, seeing as though markets are supposed to only work when there is perfect information.

The transparency agenda goes beyond financial companies. Corporations in general are vehicles for extracting value out of assets and then distributing that value via financial instruments to shareholders and creditors. Corporate structures though, have reached a level of complexity approaching pure obfuscation. There can be no democratic accountability when you cannot see who owns what, and how the money flows. The corporate open data movement, exemplified by groups like OpenCorporates and OpenOil though, are offering new tools to shine a light on the shadowy world of tax havens, ownership structures and contracts.

There is something about the sheer scale of corporate-level finance that brings a culture of low accountability on the part of both large lenders and large borrowers. It is interesting to contrast this with peer-to-peer models: When people are treated as mere account numbers with credit scores by banks, the people in turn feel little accountability towards the banks. On the other hand, if an individual has directly placed trust in me, I feel much more compelled to respect that.

#### PILLAR 4: AN ETHOS OF NON-PRESCRIPTIVE COLLABORATION

The prevailing culture of finance is split into two toxic camps. On the one hand there are passive retail investors who put money into banks and pension funds but who do not expect much in the way of accountability. On the other hand, there is the high-flying world of glory-boy traders and corporate financiers who care little about financial inclusion.

People do not always want to have to take full responsibility for their financial life, but it would be great to encourage opportunities for more collaborative, creative participation. At the heart of open source movements is a deep DIY ethos. This is in part about the sheer creative joy of producing things, but it is also about asserting individual power over institutionalised arrangements and pre-established officialdom. It carries, as discussed earlier, the search to remove individual alienation: You are not a cog in a wheel, producing stuff you do not have a stake in, in order to consume stuff that you do not know the origins of.

This ethos of individual responsibility and creativity stands in contrast to the traditional passive

frame of finance that is frequently found on both the Right and Left of the political spectrum. Indeed, the debates around ‘socially useful finance’ are seldom about reducing people’s alienation from their financial lives. They are mostly about turning the existing financial sector into a slightly more benign dictatorship. The essence of open source though, is to band together, not via the enforced hierarchy of the corporation or bureaucracy, but as part of a likeminded community of individuals creatively offering services to each other.

It is very easy to romanticise that notion, but examples of this ethos are becoming more common. For example, the indie beer company BrewDog raised money through its ‘Equity for Punks’ share offering. Such an offering is probably only going to attract beer-lovers, but that is the point: you get together as a group with mutual appreciation for a project, and you finance it, and then when you are drinking the beer you will know you helped make it happen in a small way. Similarly, community shares offer local groups the ability to connect to, and finance projects that are meaningful to them in a local area, whether it be a solar co-operative, a pub, or a ferry boat service.

This underlying ethos is also found in crowdfunding platforms. They offer would-be crowdfunders the chance to connect personally to projects that excite them. That does not guarantee that such people offer equal levels of financing to all types of projects, but it does mean that they feel more connected to those things they do finance.

#### PILLAR 5: THE RIGHT TO FORK

No financial system is ever going to be perfect, and any particular model inevitably comes with tradeoffs. For example, deposit insurance was initially put in place to protect small-scale depositors, but it has subsequently contributed to people’s complacency towards banks. Our goal should not be to try design a stable utopia, but to build institutions that preserve peoples’ ability to challenge whatever dominant system is in place at any one time.

The right to dissent is a crucial component of a democratic society. In the open source movement, this right to dissent is referred to as the ‘Right to Fork’, the ability to take pre-existing code, and to modify it or use it as the basis for your own. The right to fork is supposed to be both a check on power, but also a force for diversity and creativity.

In the mainstream financial system, there are extensive blocks on any such right, many of them actively enforced by financial regulators. They make it hard

for new banks to start, and apply inappropriate regulation to small, new financial technologies. The battle for the right to fork therefore, is one that has to also be fought at the regulatory level.

It also needs to be instilled as a principle into the design of any alternatives to mainstream finance. I do not want to replace a world where I am forced to use national fiat currencies with one in which I am forced to use Bitcoin. The point is to create meaningful options for people.

#### BUILDING POSITIVE FREEDOM INTO OPEN SOURCE

Perhaps the biggest weakness of open source approaches though, is this assumption that this right to fork alone is enough to ensure that dissent is built into the system. To use the language of political philosophy, we might say the concept is based on *negative liberty*, the situation where nobody is directly blocking your freedom. It is exemplified by the phrase ‘nobody is stopping you’.

Merely saying one has the right to dissent, but without providing people with the tools to act on their theoretical freedom, can have conservative overtones. For dissent to be effective, it has to be *actionable*. Indeed, the mainstream financial sector can probably claim that the right to fork already exists. People are indeed free to voice their displeasure, even if they find it very difficult to actually *act* on their displeasure. The banks can say, *sure, you’re welcome to leave. Nobody is stopping you. Good luck out there.* It can have the feel of conservative free market ideology: *Nobody is forcing you to take this underpaid job. It’s your own choice. Get another job if you don’t like it.*

More recently, we have seen the politics of negative liberty played out on multiple levels in the Bitcoin community. The source code might be open, but there are few support structures for how to meaningfully deploy that into creating alternatives, and the existing Bitcoin community can be very unsupportive of attempts to create alternative crypto-currencies. Furthermore, there is increasingly a dog-eat-dog disregard for solidarity in the system, with triumphalist Bitcoin millionaires patting themselves on the back for being early adopters that outcompeted the slow, dim-witted individuals who were too ‘risk-averse’ to get involved early. And, much like the mainstream financial sector, the new Bitcoin elite is cloaking themselves in a layer of techy jargon that serves to preserve their power.

For dissent to be an actionable, empowering force, it has to be informed, constructive and effective, rather than reactive, regressive and theoretical.

Building the basis for that involves many different elements, but there is not scope in this essay to do them justice, other than to say one crucial element is meaningful *education*. It is very hard to articulate ideas about what’s wrong with a system when one cannot articulate how the current system operates. The ability to conceptualise alternatives relies on breaking down the wall of jargon that the financial sector cloaks itself in. It has to involve opening intellectual access to the deepest layers of financial code, from the cultural and political underpinnings of money itself, to the institutions, instruments and networks that move it around. Quite how we achieve that remains a work in progress.

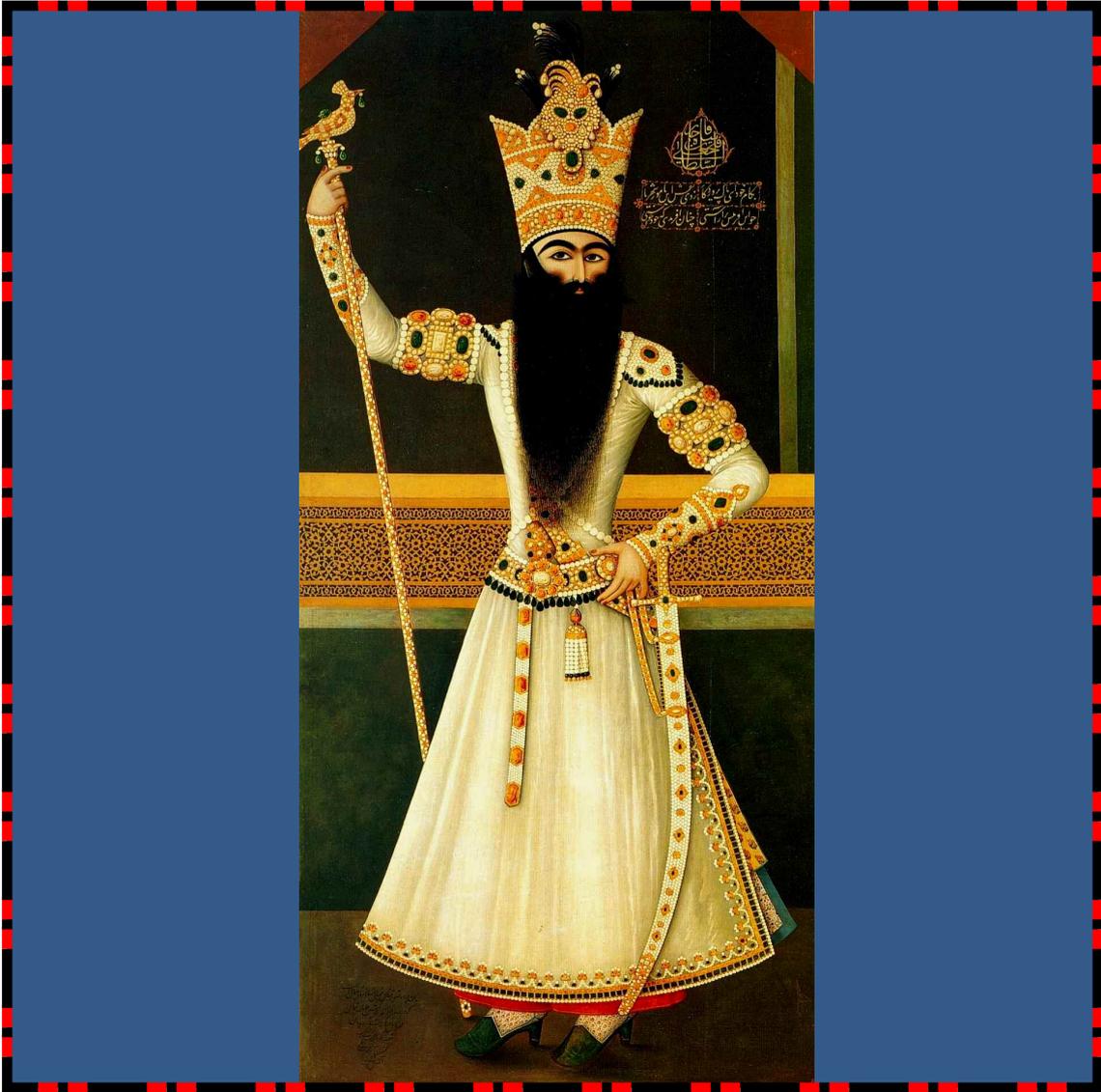
#### AHOY! WE SET SAIL FOR THE OPEN SEAS

When viewed in isolation, many of the examples and initiatives mentioned above perhaps do look insignificant. When viewed collectively as pioneers of potential future trends though, they point to something powerful. If indeed we can make inroads into making elements of the financial sector more authentically inclusive and authentically creative, we have a foothold from which to build and advocate more profound economic alternatives.

We may be in the early phase of a slow-moving revolution, which will only be perceptible in hindsight. As projects within these five pillars emerge, the infrastructure, norms and cultural acceptance for more open financial system may begin to emerge and coalesce into reality.

And so, a final word on hacking. The open source hacker ethic is powerful, but it needs to be extended and augmented. It is still too tied up in the ‘revenge of the nerds’ politics of the male geek, and relies too much on those who already have the resources to act as heroic Robin Hood figures. Rather than sticking with the stereotype of the outsider rogue male, hacker culture needs to be balanced (or perhaps *queered*) by a more warm and feminine spirit, and also needs much more focus on social and ecological processes, rather than just technical disruption. Building a holistic financial hacker culture is an exciting prospect going forward.





FATH ALI SHAH QAJAR, PAINTED BY MIHR 'ALI

JENNY QUILLIEN

## PARSING SYSTEMIC CHANGE: AND THREE BEGOT THE TEN THOUSAND THINGS



Dr. Jenny Quillien, Professor at New Mexico Highlands University, lives in Santa Fe, New Mexico. With an abiding interest in pattern languages and physical spaces, her recent books include: *Delight's Muse*: On Christopher Alexander's *The Nature of Order* and *Clever Digs*: how workspaces can enable thought. Email [jquillien@nmbu.edu](mailto:jquillien@nmbu.edu).

SYSTEMIC CHANGE, BROADLY FRAMED BY THE *SPANDA* editors, is the focus of the June 2015 issue: How and where does systemic change manifest? How does it unfold? What are the leverage points, the forces and dynamics at play? What are the conditions for its empowerment and enablement? How do agency and structure come into the picture? We would like to look at the subject from various perspectives and disciplines, in research and praxis, exploring the visible and the invisible, space and time, unity and diversity, level and scale, movement and rhythm.

Big topic. What I will do, after refreshing memories on the inherent nature of complex problems, is offer up for reflection one smidgen of some tough material – *Systematics* – by a tough-to-read author – J. G. Bennett. Frankly speaking, I do so with trepidation. Bennett, idiosyncratic to say the least, followed his own drummer far from institutional support and mainstream conversations. I don't think he was a kook. I think he was on to something. Then again, I have moments of doubt. Have I actually 'groked' his message? As Miles Davis once remarked, "If you understood everything I said, you'd be me." I'm certainly not Bennett, but here's the scoop: I suspect that Bennett nailed down the smallest (irreducible) bundles of interaction that, in a given domain, account for real systemic meaning. If so, we've got a gold mine. If I've got Bennett wrong, or if Bennett got it wrong, this exploration could still be a heuristic walk in the park.

### THE INHERENT NATURE OF COMPLEX SYSTEMIC CHANGE

We can all agree that the proper approach to any problem depends not on our comfort zone but on the inherent nature of the subject itself. Referring back to Warren Weaver's classic 1948 paper, we are not concerned here with *problems of simplicity* where we analyze two-variable situations (how does one quantity, say a gas pressure, depend primarily upon a second quantity, say, the volume of gas). We're looking at *problems of complexity* posited by Weaver as existing in two forms: disorganized and organized. Phenomena of disorganized complexity became manageable by using probability theory and statistical mechanics. By solving *problems of disorganized complexity* we are in a position to make intelligent predictions about the movement of atoms and stars or manage global telephone exchanges with variable frequencies of calls. On the other hand, *problems of organized complexity* cope with phenomena that elude such approaches and "deal simultaneously with a sizable number of factors which are interrelated into an organic whole."

### ON HETEROGENEITY

Suppose we were asked to arrange the following in two categories – distance, electric force, mass, entropy, beauty, melody. I think there are the strongest grounds for placing entropy alongside beauty and melody, and not with the first three. Entropy is only found when the parts are viewed in association, and it is by viewing or hearing the parts in association that beauty and melody are discerned. All three are features of arrangement.

ARTHUR EDDINGTON,  
*The Nature of the Physical  
World.*

The *Spanda* project addresses *organized complexity*. Such complexity arises not just from the multiplicity of variables but also from *heterogeneous* components interacting nonlinearly. Such interaction gives rise to new emergent behaviours that come out of previous

behaviours. The life sciences are here. To understand, for example, the aging process in biochemical terms or how a gene expresses itself in a growing child, we need a dozen or maybe a few dozen variables. These variables interact, not randomly but in an *organized* manner. Understanding culture, values and meaningfulness belongs here. Understanding new technologies, their impact, and constant renewal also belongs here.

Urban critic and analyst, Jane Jacobs, standing on the shoulders of Warren Weaver, famously tackled the domain of systemic change in cities as a problem of organized complexity. She outlined a general methodology where progress in understanding will come from:

a - first ‘preparing for analysis,’ where the concern is the “*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 observations in terms of *relational behaviours* and not just the mere presence of other specific variables;

d - focusing on specific processes and, like Sherlock Holmes, seeking ‘unaverage’ clues that reveal larger patterns;

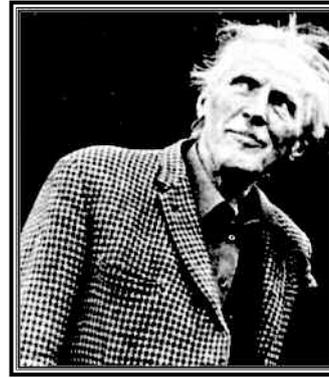
e - realizing that these variables “*do not exhibit one problem which if understood explains all. They can be analyzed into many such problems or segments which are also related with one another.*” And, “*when the segments are separated out the behaviours of a variable when in the presence of other variables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

Neither Weaver nor Jacobs knew how to explicate the isolation and identification of relevant ‘segments.’ For this, like poachers, we will head to Bennett’s patch for clues about appropriate tweezers and tweezing.

#### J. G. BENNETT AND HIS TRIADS

The English philosopher and polymath J. G. Bennett developed a way of parsing reality that reveals the dimensions of process and behaviour, i.e., how systemic change manifests and unfolds. Segments, his minimal unit of organizing and conditionality was triadic. Defined as short *meaning-filled* units (*emic* rather than *etic*) with three agents, ‘segments’ might simply be thought of as short plots with three actors which make sense within a given domain.

Actually, I turn to Bennett with apologies. In order to keep my own narrative brisk and to the point, I



J. G. Bennett (1897–1974).

cherry-pick relevant aspects of his vast and complex *systematics*, without doing it even the minimal justice of a synopsis. Suffice it to say, for my purposes here, that Bennett takes inspiration from the significance of number as a way to ‘unzip’ different aspects of relatedness. *Oneness* explores the ‘wholeness’ of a phenomenon, its ‘is-ness’ or ‘present-ness.’ *Two-ness* investigates polarity and complementarities, subject and object duality, effort and resistance. *Three-ness* displays the minimum condition for dynamic relationships of change. The ‘math’ is really about the underlying logic of relationships within a grouping. Bennett, not one to leave a stone unturned, continues on to *twelve-ness*. For now, I’m presenting his ‘law of three’<sup>1</sup> and skipping everything else. More impertinently, I eschew most of Bennett’s rather abstract labelling in favour of more home-spun vocabulary that keeps closer to our topic. I confess that I’m equally keen to tiptoe past neighbouring pits of quicksand: numerology and the morass of the Trinity. Also off the table will be references to others thinkers with a known interest in ‘three.’ Bennett was not a complete intellectual isolate of his times. Charles S. Pierce, George Mead, Alfred North Whitehead, Charles W. Morris all viewed signification as tridimensional. However, serious comparisons with these thinkers must remain a conversation for another day.

So, *segments*, as used here, are triadic: one ‘impulse’ (that’s Bennett’s term, defined as a disposition to a certain kind of action) acts on another ‘impulse’ through the medium of a third ‘impulse.’ These three impulses are imbued with fundamental characteristics. One affirms; it acts, we’ll label it ‘A.’ Another is receptive; is acted upon, or possibly resists, but is still on the receiving end, call it ‘R.’ The third mediates or reconciles; bringing together the affirming and receptive impulses, name it ‘M.’ The interaction of the three ‘impulses’ leads to an action or happening. Consider, as a simple example, the following event: A photographer (A, the affirming actor) puts an undeveloped

film (R, the receiving acted-upon) into a chemical bath (M, the mediating agent).

The symbols A, R, M, and their manipulation are really no more than shorthand for analytical statements about different realities which share similar underlying dynamics. With three ‘impulses,’ possible configurations are limited to a total of six. These six configurations carry action, moving all sorts of wild and woolly life merrily along. They dance, one snippet pulling the next one into existence. It’s a bit like speech. Segments and their interplay (syntax) demonstrate a generative power capable of continually novel utterances.

The six configurations of segments are organized according to which ‘impulse’ occupies the initiating position. As the examples will illustrate, which ‘impulse’ initiates proves germane to the subtlety of interaction that we wish to study. I’ll downplay the symbols and cruise along with mini-stories and their plots: first, the two configurations with A, the affirming force initiating, followed by the two with R, the receptive force initiating, and finally, the two with M, the reconciling force initiating.

A, the active impulse initiating

A → R → M

A → M → R

R, the receptive impulse initiating

R → A → M

R → M → A

M, the reconciling impulse initiating

M → A → R

M → R → A

Creation A → R → M

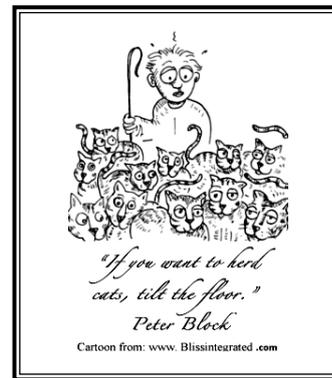


*One Day in the Life of a Writer.*  
From [www. laternpost](http://www.laternpost.com) 2012.

The first configuration, called CREATION A → R → M, makes perhaps the most obvious sense. For example, the *Spanda* contributors (A) produce through their writing and research (R) novel articles (M). Or, let’s imagine a field-trip to *Farmer’s Rain* (a real company but fictitious name) which offers top notch satellite information for weather

forecasts helping farmers decide when to irrigate and when to hold off. The founder, Alfred, is ‘A,’ the active impulse. Alfred, sensitive to his company’s need for additional managers, thoughtfully selects Roberto, a promising young scientist (Roberto is on the receiving end, so R), and grooms him through customized training in order to create new potential (M) for the company. Or, imagine an architect (A) revamping the physical layout of a firm conducting environmental studies (R), so that enhanced flow of information (M) between the specialists and the administrative support staff results.

Ordinary Automatic Pilot A → M → R

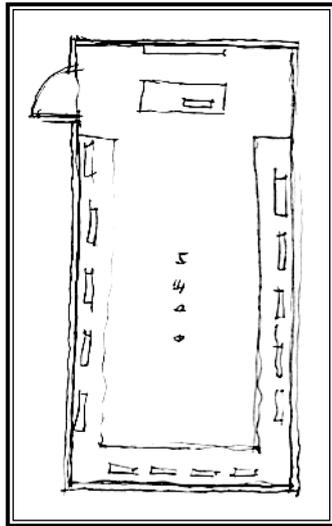


The second configuration, A → M → R with the active impulse (A) in the position of initiator, tells stories of ORDINARY AUTOMATIC PILOT which underpin the typical regularity and unfolding of everyday life. The relationships don’t produce anything new beyond our normal shuffling around – predictable, easy, legible, almost unnoticed.

Let’s conjure up a shared experience of a familiar layout to consider the automatic pilot effect. Here comes Alfred (A) rushing out of his office at *Farmer’s Rain* to make his plane for a water conservation conference. The airport doors glide open and Alfred finds himself ‘under the sway’ of ‘airport-ness’ (M) and is thereby effortlessly brought together with receptive impulses (R), which could be his passport and ticket, or the line for security clearance. Good airports are masterful at herding Alfred and other travelling cats.

It’s worth digging a bit deeper here. *Spanda* interests include questions of leverage points, agency, and structure within systemic change. Bennett allows us to come at those questions in the most basic and simple way. In some systems we *want* to reduce thought and options. The airport doesn’t want to limit Alfred’s professional creativity but both the airport management and Alfred himself agree, in this particular case, to curtail all possible meanderings and confusions in favour of efficiency

and speed. The point is that any organization, whatever its purpose, should think through how they want to ‘format’ experience; where should options be limited and where should they be open-ended.



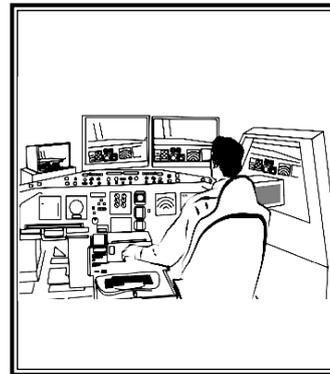
*Call Center Layout.*  
Courtesy David Week.  
From [www.latenpost.com](http://www.latenpost.com) 2012.

Another physical layout example. Architect David Week suggests that most call centres and helpdesks are poorly designed and would benefit from a simple revamping into a horseshoe configuration which would allow a supervisor easy scanning and allow each operator to lean either to the right or to the left for immediate help from colleagues. This same advice could apply to, say, a Citizens Watch On Nuclear Waste. There is such a group where I live but they have no call-in facility and not much clout. New Mexico (my state) fathered the nuclear bomb on Hiroshima, continues in ‘fine weaponry’ research, and is notorious for illegal contamination of soil and water. Imagine we set up a call centre in order to systematically collect citizen reports. We would have CREATION A→M→R: architect (A) designs space (R) for channelled communication (M) with an emergent ORDINARY AUTOMATIC PILOT A→M→R. Call operators (A) through the mediating power of the horseshoe layout (M) would automatically turn to neighbouring colleagues (R) for help.

The drama and juice in the CREATION plot resides in the ‘just rightness’ of the solution –a ‘lock and key’ arrangement made to order for the domain at hand. The configuration of ORDINARY AUTOMATIC PILOT serves the system through absorption of low level activities. This absorption actually eases the way for more demanding tasks.

Imagine the *Spanda* contributor (A) in her university office who, through a daily routine (M) turns on her computer and can, almost unthinkingly, e-mail in her submission (R) – all while keeping her conscious attention focused on the more difficult questions of the day.

Intensification R→A→M



*Flight Simulator.*  
[eit.edu.au](http://eit.edu.au).

The receptive impulse (R) now initiates. With INTENSIFICATION R→A→M, we just need to think of tales of self-development and their underlying dynamic to grasp what is at stake. Roberto, our young manager at *Farmer’s Rain*, eager to consolidate his skill base, is open to suggestions. His openness is what predominantly structures the event and casts him as the initiating receptive (R) ‘impulse.’ He attaches himself to Alfred, the more experienced manager whom he admires. Under Alfred’s tutelage (A) Roberto sets himself the learning challenge of rendering satellite imagery more legible to the layperson. This permits him to improve the company’s relationship with farmers and garner support from the general public. (M). Such relationships of receptivity–young recruit/experienced manager, patient/doctor, child/parent, or client/psychiatrist – summon other domain-specific units to deal with the risks and vulnerabilities, i.e., ethical code of conduct protocols. A meaty real-life example of this dynamic can be found by reading about Daniel Bassill who has led volunteer-based tutor/mentor programs in Chicago for 40 years<sup>2</sup>.

Thoughtful spatial layouts, just in being what they are, can also fit the INTENSIFICATION triad. Imagine a new welcoming coffee room at a university which now accommodates (R) new behaviour from the students (A). The students pick up on the idea that it’s a good option for finding helpful classmates when they’ve hit a snag with their homework, thereby strengthening a culture of learning and collaboration (M).

Identity Fades into View R→M→A



*The Beatles.*  
Drawing by Peter Balfour.

The second configuration with (R) in the initiating position, *IDENTITY FADES INTO VIEW R→M→A*, refers to the process by which an individual or group, through repeating an action or situation, becomes who they are.

Malcolm Gladwell, in *Outliers*, conducts a study of the wildly successful. There's no mention of Bennett, but a couple of chapters constitute an ode to the *R→M→A* triad, *IDENTITY FADES INTO VIEW*. The Beatles, before they were the famous Beatles (R), took whatever gigs they could get. It was Hamburg's red light district where, like slave labour, they played all night 'eight days a week' (M). Exhausting every musical trick they could think of, they invented new ones and became themselves (A). Young Bill Gates (R), by the time the world was ripe for the PC revolution, was 10,000 hours ahead of all potential contenders in hands-on experience (M) and became Bill Gates (A). Less well 'documented' than Gates might be the open-source software hero, Linus Torvalds who became curious about operating systems and, frustrated by the constraints of the MINIX licensing, began to work on his own operating system, which eventually led to the Linux kernel<sup>3</sup>. The reader can probably find personal examples. When I teach I sometimes invite Windy Denkoff to come and tell his story to my students. Windy, a young hippy 'tree-hugger' (R) stayed with his intuitions about living off the grid and seriously studied wind power (M) to become his best self (A) – an effective advocate of sustainable living and inventor of wind powered water pumps.

Complex systems often appear mysterious and elusive because of the subtleties of their interactions. The two triads with receptivity (R) in the initiating position, *INTENSIFICATION R→A→M* and *IDENTITIES FADING INTO VIEW R→M→A* are the heartbeat of many such relationships. These two dynamics can be easily confused. In *INTENSIFICATION* it is the moderating force (M) which is intensified. In *IDENTITIES FADING INTO VIEW* it is the receptive object

(R) which (or who) emerges in a new rendition of itself. In the organizational realm, these two triads are core to the acquisition of both individual and collective *thick* understanding which is necessary for abductive reasoning, innovative thinking, double-loop learning, and understanding pathologies of the whole. So, clearly, when we are looking for ways to help collectivities think more effectively about sustainability, these two triads merit special attention.

Gravity Applies *M→A→R*



*Medical Exam.*  
Drawing from changepeople.org.

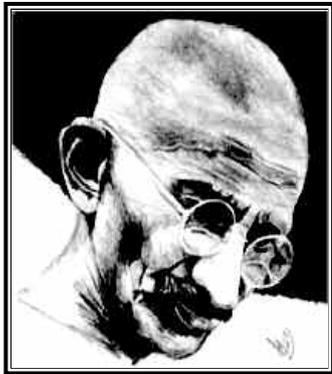
The mediating impulse (M) now leads. The *M→A→R* plot shows why the world cannot be completely capricious, hence the label *GRAVITY APPLIES*.

Back to our young manager, Roberto at *Farmer's Rain*, who now appears for his annual medical exam that includes a blood test. Blood, to be safely kept and analyzed, requires meticulous handling – no abandoning samples to sit in the sun on the window sill. Necessary protocols of care (M), acting through the company doctor (A) assert order and coordination (R) between the company and the laboratory that will analyze Roberto's blood. Roberto, after his exam, returns to his office to find a memo on travel expenses. The company's alarming cash flow report (M), acting through the boss (A), asserts increased control on the receptive underlings (R), who now curtail their hotel bills. To continue the theme of physical layouts, the reader might reflect on the rigidly structured layout of an airport (M) and how it creates the inescapable patterns of 'airport-ness' (A) which then impact the behaviour of the (R) receptive elements, i.e., the travellers and airport staff.

The *M→A→R* plot provides a conserving current running through a system. With inescapable power the moderator force (M, necessary rigor, financial stewardship, physical limitation, in our examples) structures events within guiding values. Complementing the *GRAVITY APPLIES M→A→R* plot with a different action, *ORDINARY*

AUTOMATIC PILOT  $A \rightarrow M \rightarrow R$  also provides a conserving current [(A) must ‘go through’ (M)], but here (M) protects the operating system from ad hoc ‘anything goes’ responses. It sustains processes, and propels events so that tomorrow will look very much like today.

Release into New Freedoms  $M \rightarrow R \rightarrow A$



*Ghandi.*  
Drawing by Sagarpuuro at  
deviantart.com.

The last plot in the series, RELEASE INTO NEW FREEDOMS  $M \rightarrow R \rightarrow A$ , involves the mediating impulse (M) as initiator, working on the opening of the receptive impulse, so as to reveal new possibilities. We have here the dynamic referred to by Peter Block when he remarked, “*Once a possibility has surfaced, you don’t have to work on it – it starts to work on you.*”

Gandhi’s philosophy of non-violent resistance, *satyagraha* (M), invited the members of armed opposition (R) to reflect upon their own nature and face their own choices in such a way that new possibilities of greater justice (A) were revealed. Gandhi’s philosophy (M) worked its magic in the mind of young Martin Luther King (R) and new possibilities (A) for political action emerged. In a summer camp in New Mexico where both Israeli and Palestinian youth were invited, debates repeatedly stalled. The discussants were then asked to not talk politics but simply prepare meals together (M), and through the opening of receptivity in the youth (R), new possibilities of communication (A) surfaced.

#### THE DANCE OF SYSTEMIC CHANGE

With some familiarity of Bennett’s ideas, one begins to see how triads combine, compound, and pull one another into existence. Bennett actually started with observing the dance of movements as a child learns to tie shoelaces. I’ll consider what I am doing this very minute.

1. GRAVITY APPLIES  $M \rightarrow A \rightarrow R$ : within a standard publishing SOP (length, permissions) (M) *Spanda* (A) invites potential contributors (R) to submit articles.
2. CREATION  $A \rightarrow R \rightarrow M$ : authors (A) put their thoughts to paper (R) and create articles (M).
3. IDENTITY FADES INTO VIEW  $R \rightarrow M \rightarrow A$ : as the contributors (R) revise and research their material (M), they hone themselves (A) as authors.
4. AUTOMATIC PILOT  $A \rightarrow M \rightarrow R$ : the *Spanda* editors (A) use their publishing platforms (M) to take care of the mechanical side of preparing the next issue (R).
5. INTENSIFICATION  $R \rightarrow A \rightarrow M$ : as the new *Spanda* issue (R) circulates among readers (A), understanding of systemic change (M) increases.
6. RELEASE INTO NEW FREEDOMS  $M \rightarrow R \rightarrow A$ : as authors and readers find their existing thoughts (M) sparked, extinguished, or modified (R), new possibilities of research and action (A) appear. These new emergent possibilities spark new segments...

For another illustration of sequencing consider how Elon Musk<sup>3</sup>, founder of Telsa, opened up his patents for electrical vehicles which spurred the growth of the clean car (CREATION  $A \rightarrow R \rightarrow M1$ ). This changed the playing field by driving down costs and promoting the development of more widespread electrical vehicle infrastructure (RELEASE INTO NEW FREEDOMS  $M1 \rightarrow R \rightarrow A2$ ). This enhanced infrastructure makes electrical vehicles more appealing and affordable which increases the evolution of the clean car in a revamped ecology of transportation (CREATION  $A2 \rightarrow R \rightarrow M2$ ). Of course, all of these reiterations would ultimately benefit Tesla (IDENTITY FADES INTO VIEW  $R \rightarrow M \rightarrow A$ ).

#### RECOGNITION

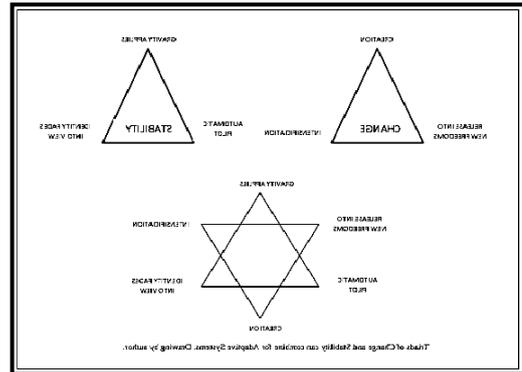
Next in my own learning tryst with Bennett was a re-discovery of favorite authors in a new light. Two such authors, who have much to say about systemic change and whose messages acquire additional weight when re-read in a Bennett-esque context, would be Steven Johnson and Howard Sherman.

Steven Johnson’s *Where Good Ideas Come from: the Natural History of Innovation* takes us through marvels of unfolding creativity – both natural biology and human invention. He starts with the surprise discovery of dense life forms on the coral reefs of the Indian Ocean amidst a surround of barren waters. The surprise provoked Darwin into thinking all those new Darwinian thoughts. From there Johnson. moves the reader on to the city and the Web as other hubs of innovation. His book stands witness to the oscillating ‘dance step’ CREATION to RELEASE INTO NEW FREEDOMS to more CREATION:  $A \rightarrow R \rightarrow M1 \rightarrow M \rightarrow R \rightarrow A \rightarrow A \rightarrow R \rightarrow M2$ .

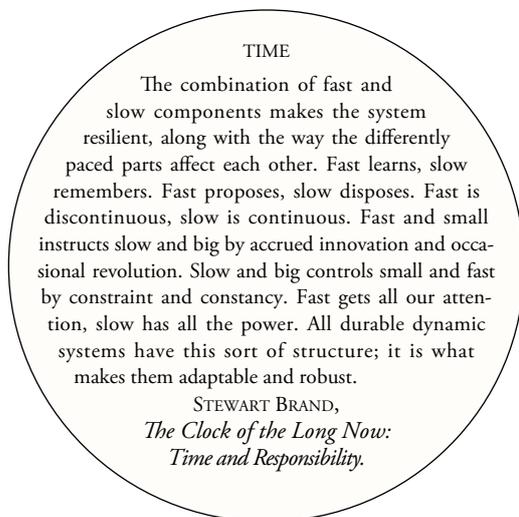
Consider: programmers write code to make electronic mailing lists easy – CREATION. Such ease of mailing lists increases the number of e-mail recipients which leads to information spillover – RELEASE INTO NEW FREEDOMS. These recipients, in turn, manipulate the additional information in unexpected ways – CREATION. Another example: programmers at Google write code to enhance search engine response in spite of incorrect spellings, thereby facilitating surfing and random finds of new information – CREATION leading to RELEASE INTO NEW FREEDOMS. As internet surfers find new sources of information, they, in turn, make new connections and improve their networks – CREATION.

Gaining familiarity, we can more comfortably separate content from the ‘empty boxes’ of the permutation algorithms. An example: the R element in the short ‘ballet steps’ shown above has the fixed character of being the *receptive* element but its functional meaning changes. Take the e-mail illustration. In the initial  $A \rightarrow R \rightarrow M1$  configuration, mailing list codes (R) receive the programmers’ modifications resulting in a new enhanced cyber realm. In the second  $M \rightarrow R \rightarrow A$  human receivers (R) get a lot more e-mail. In the third  $A \rightarrow R \rightarrow M2$  these same humans put this new connectivity (R) to novel uses, say, a chat room for local hikers wishing to join up or exchange of information on local Victory Gardens.

stable elements (principles/values and models), (b) the necessarily more discontinuous components (rules and behaviours), and (c) the feedback and interplay between them. The managerial art, when we combine the insights of Sherman and Bennett, resides in deftly balancing the three systemic ‘change’ triads and the three processual dimensions of a system dedicated to keeping itself what it is. Health of any complex system resides in the balance and cooperative interaction of all six configurations.



Triads of Change and Stability can combine for Adaptive Systems. Drawing by author.



Howard Sherman’s book, *Open Boundaries: creating business innovation through complexity*, examines organizational structures within complexity theory from the unusual standpoint of philosophy (Sherman was a professor thereof).

A constant theme in Sherman’s analysis – one shared by most systems watchers – is time. Organizational design (or repair), argues Sherman, depends on a clear understanding of (a) necessarily

Most philosophically and most poignantly, the configuration with the greatest gravitas and system significance turns out to be  $M \rightarrow A \rightarrow R$  GRAVITY APPLIES. This is implicit since there is no mention of Bennett but it clearly is the lynchpin in Sherman’s discussion of autopoiesis. The lower, faster changing, more concrete levels *must* continue to serve, facilitate, and energize the more abstract principles and values of the higher and slower levels. Sherman warns that an organization that unthinkingly messes with its governing concepts (M) risks losing its essence and self-destructing. [Enron, anyone? Separation of powers in the American government, anyone?]

Additionally, what in Bennett’s grammar would be INTENSIFICATION and IDENTITY FADES INTO VIEW, relates to the importance Sherman places on (a) a high ratio of information to infrastructure and (b) shared understanding, context, and ideas in defining organizational possibilities. Intriguingly, Sherman argues that the franchise system offers the best information/infrastructure ratio and is currently the best model of CAS (Complex Adaptive Systems) thinking in action – and, he adds, growth and employment figures bear this out. Now, what, dear sustainability readers, might we want to franchise besides hamburger joints and inexpensive haircuts?

## PRAXIS

“Nothing is as practical as a good theory,” quipped Kurt Lewin. My contention is that Bennett’s triads pack a praxis punch. In my fields of organizational analysis and management development, thinking Bennett-esque thoughts makes it easier (a) to identify weak areas that need shoring up for better overall organizational balance and (b) to beef up core competencies. INTENSIFICATION and IDENTITY FADES INTO VIEW for law firms, NGOs, environmental protection analysis – wherever performance depends on thick, in-depth, and often tacit knowledge. Many organizations, not just commercial ones, require advertising and marketing and the focus should be on CREATION and RELEASE INTO NEW FREEDOMS, so what workspace layout will most effectively support that? AUTOMATIC PILOT whenever performance needs routinization and transparent tools. [Your fountain pen is transparent – you’re oblivious to its existence since you’re busy writing – until it starts to leak and you have to focus on the tool rather than the task.] So, just how transparent or clunky is that website at *Farmer’s Rain* where customers should effortlessly have access to local conditions and estimates of water savings?

Industries and knowledge evolve. INTENSIFICATION often sources the next phase. Imagine if the New Mexican Citizen’s Watch On Nuclear Waste did set up a call center and did start to systematically collect input. Patterns would emerge leading to more effective use of the NGO’s slim resources. The segment dance would be CREATION→ORDINARY PILOT→INTENSIFICATION→RELEASE INTO NEW FREEDOMS→CREATION. Schools are ever so slowly wising up to what the games industry knows so well. Rule discovery is addictive. Kids are delighted to immerse themselves (IDENTIFY FADES INTO VIEW) with games so why not add some real content? The ever-increasing paramedical professions and medical insurance schemes are based on codifying the medical expert’s intuitive knowledge, i.e., a move to AUTOMATIC PILOT. When does that cease to be wise and appropriate? When do we ask whether such codification is actually serving Health? Back to Howard Sherman and his concern for guiding principles and values, GRAVITY APPLIES.

## NEXT QUESTIONS

My goal has to been to take up where Weaver and Jacobs left off with *problems of organized complexity*; to demonstrate a next methodological step with Bennett’s parsing of reality into meaningful units where, per Jane Jacobs’ request “the behaviors of a variable when in the presence of other variables

can be discerned” and the processes whereby “segments are also related with one another.” We’ve looked at stability and change, structure and time, leverage points and agency. The wrap up will be to look ahead at next questions.

Some readers may recall that the early engineers of information theory explicitly *excluded* semantics in order to make their problem space tractable and mathematizable. And credit where credit is due. It is remarkable, really, that Putin can benefit from a global ‘switchboard’ of great complexity and call Obama on his cell phone. However, within this solution space, whether Putin’s message is about blowing up the world or limiting carbon dioxide is irrelevant.

Bennett *includes* semantics with his syntax, embracing those oily hippopotamuses as the worthy opponents they truly are. Could we learn through case studies of Bennett’s symbolic calculus? I think so. How about documenting cases of hostility and arms escalation, translating them into the historic ‘dance’ of segments that actually took place and then doing the same with comparable situations where Peter Gabriel (yes, the musician known to be involved in human rights) refused to donate arms but instead supplied cameras to the beleaguered, which afforded them better coverage in the world press. How about comparing the guiding principles behind the privatization of trains in England, the polar opposite of subsidized rail maintenance in Switzerland, the high-tech (dare I also say aesthetic) rail unification of Japan, and the train-as-sick-joke in the United States.

Scale and scalability require more investigation. In this exposé we’ve jumped around from the one hour one person experience of being cajoled into obedience by the space layout at an airport to the large scale multi-year civil rights movements spurred by Gandhi’s philosophy. How do we move vertically from small to large and deal with segments inside of segments?

Thorny indeed is the problem of problem framing. In the arid mountains of New Mexico where I now live, water depletion is a systemic issue of grave concern. Like many, my thinking once circled around poor retention of rain, wasteful infrastructure, bizarre legal histories of water rights between New Mexico and Texas. I then learned the biggest culprit actually lay in real estate prices in California. It became lucrative for industrial dairy farmers in California to sell off their land for big bucks, pull up stakes, buy up cheap land in New Mexico, and plant acre upon acre of totally inappropriate water-gulping alfalfa. I had mis-framed.

General Electric guru-manager Jack Welch is known for the line, ‘If the rate of change on the outside

exceeds the rate of change on the inside, the end is near.’ Welsh assumed that he knew where inside ended and outside began – but, in fact, what we view as open or closed, how we define a domain, where we find or draw the boundaries is no simple feat. My argument so far has revolved around the methodological interest of Bennett’s triads as the *smallest* irreducible unit of study; however, since Bennett (perhaps because so much of his own life was hands-on and experiential) defines triads as necessarily meaningful *intra-systemically*, then they may also be of interest at the *largest* boundaries.

Charles Morris, one of those other ‘triadomaniacs,’ offers the following on boundaries. Morris, by the way, was less interested in social behaviours as such than in systems in which values and meaning were core components. I paraphrase:

If a system maintains itself through change, then it may be said to have boundaries. There are three possibilities of relation between one system and another. For its own maintenance a system may require an input of some sort from another system. Hence its posture is receptive and its boundaries permeable [sounds like Bennett’s R]. It may need to act positively on another system in order to gain some sort of control. Hence a dominant relation [Bennett’s A]. Finally, to keep its own boundaries sufficiently intact and maintain independence, it must include mechanisms of detachment [Bennett’s M].

The large, too, is perhaps a place to begin.

*The Tao begot One,  
One begot Two,  
Two begot Three,  
and Three begot the ten thousand things*  
TAO TE CHING




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<sup>1</sup> The answer to the question why and how events occur is given by the Law of Three. We may start with a brief statement of the law. Every event, of whatever nature and whatsoever scale, is composed of three elements and can be seen as the interaction of three forces corresponding to these elements. The coming together of these three components constitutes the event. It is also the cause of the event and the manner in which it happens. Each of the three components has a definite character which is always the same, and, for this reason they are sometimes called three forces or three qualities. Every event from the creation of the world down to the smallest and most insignificant happenings, from purely mental processes to purely physical ones, from events which have duration in time to these which can be conceived outside of space and time, all, without exception, can be seen as the combination of the same three components.

This law is by no means a new discovery. It has been formulated, misunderstood, lost, rediscovered, and misunderstood again in innumerable forms throughout the history of human thought. The Triad is the very centre and root of more than one philosophical system. It is clearly implied in many of the most important generalizations of natural science. The deep rooted and universal importance which, among all the races of the world, is attached to the number three is evidence of its antiquity. The Triad has entered into the profoundest dogmas of religion. It has perhaps never been so much disregarded and misunderstood as it is at the present day, so that the re-formulation and fresh development of the Law of Three are a necessary preliminary to any attempt at understanding man and the universe. Chapter II. The Law of Three (from an early version of *The Dramatic Universe*, Book 1, 1950).

<sup>2</sup> The story of Daniel Bassill can be found at <http://tutormentor.blogspot.com>

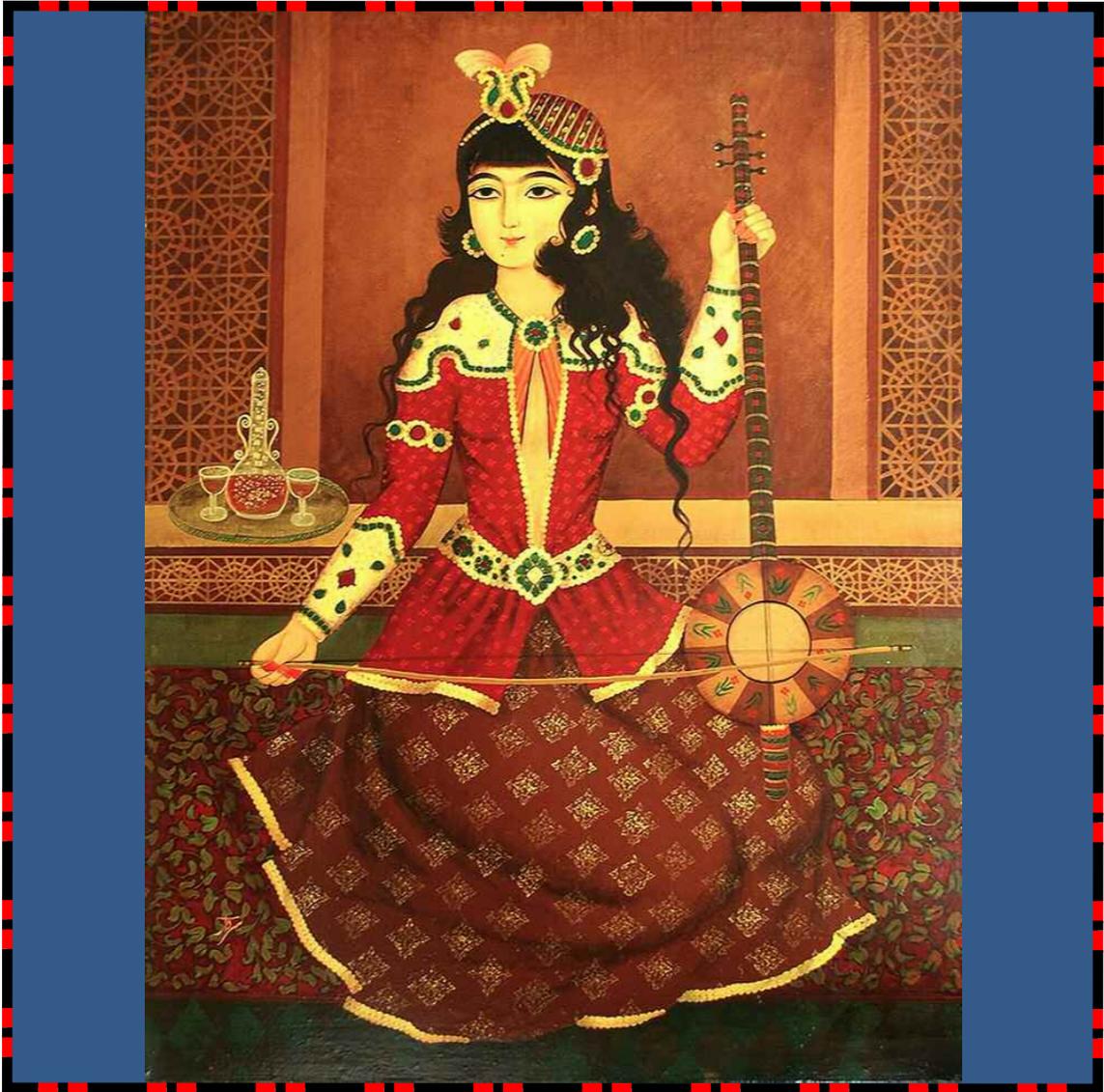
<sup>3</sup> *Harvard Business Review* has a story on Elon Musks and his patent decisions at <http://bit.ly/1ESC50U>.



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KEMANCHE PALYER

# RECONCEPTUALIZING SYSTEMIC CHANGE

## USING AN ECOSYSTEM APPROACH FROM PROCESS-FUNCTION ECOLOGY



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**W**E CARE ABOUT SYSTEMIC CHANGE BECAUSE TRULY complex socio-ecological systems are often intractable to the imposition of intentional change. This intractability derives in large part from certain intrinsic properties of complex systems, namely their nested and scale hierarchic structure and the fact that they are comprised, essentially, of processes and functions rather than objects and entities (Vasishth 2008). As such, they are harder to “move,” given that they are not things to be pulled or pushed, shoved or even levered into places we think more appropriate and better suited. Instead, as processes and functions, they need to be guided, and channelled, and deflected and cajoled.

Further, complex, organic systems, as opposed simple, mechanical systems, have certain properties that demand we think differently about realities and about our expectations of them. Rittel & Webber (1973) argue that such complex, open systems are best characterized as “wicked problems,” and lay out a taxonomy of properties that indicate we cannot hope to control or manage them in the ways we might manage mechanical systems.

In planning, and conventionally, change processes are characterized as gradual, directional and progressive. However, a more savvy understanding of evolutionary science shows us that change processes need to be thought of quite differently. The ideas from Succession Theory, Punctuated Equilibria,

Patch Dynamics and Symbiogenesis give us models of evolutionary change that must be approached in radically different ways.

These three memes – process-function ecology, “wicked problems” and ecological evolution – may together give us some interesting ways to begin to talk about systemic change in ways that lead to novel insights. When systems are viewed as nested, scale-hierarchic structures, and when they are conceived as constituted by processes and functions, and when we view change processes themselves as being driven by a sophisticated understanding of evolutionary dynamics, then we may come to a place where systemic change can be viewed as more closely approximating actual, pluralistic reality, rather than as the simplifications of reality that emerge from the more mechanical metaphors from classical physics.

### TELLING THE MORE-REAL FROM THE SOMEWHAT LESS-REAL

We are, at our core, sensory creatures. We tell the world about us, first and foremost, by our five primary senses. While it is true that we are as well cognitive, convention has biased us to trust what can be seen, heard, touched, smelled and tasted significantly more than that which is thought. Objectivity is valorised over subjectivity, and the empirical over the theorized. So it is not surprising that we take the physical, tangible world to be real, and the functional, processual world to be conceptual.

In this sense, and within this frame, people are taken to be real and relationships are considered constructs; objects are considered actual and the processes and functions that undergird them are taken to be conjectural. But, what if this is precisely where we err? What if it is that relationships, processes and functions are real, and people and objects and entities are constructs?

Certainly trees are real. The roots, trunks, branches, twigs and leaves have factual existence. But are these more real, more actual, more meaning-filled than the flows of carbon, water, oxygen, the processes of photosynthesis and microbial interaction without which no tree could conceivably have meaning?

There is a branch of ecology, called scale-hierarchic process-function ecology, which gives rise to a particular version of an ecosystem approach that has proven to be particularly useful in managing socio-ecological systems. The core conception behind such an ecosystem approach from process-function ecology is that of a scale-hierarchic organization of systems, sub-systems and supra-systems nested within and about each other (Vasishth 2008).

Conceptually, any named and purposively defined system of concern emerges from the relationships amongst its constitutive sub-systems, even as it itself relates responsively with other systems to inform its own, wider, supra-system. It may be useful to bear in mind that the degree of complexity for any named system of concern is known by the numbers and strengths of relationships it contains, rather than simply, and trivially, by the merely morphological number or size of its components (Allen & Starr 1982:185-186).

In such a scale hierarchic approach from within process-function ecology, socio-ecological systems exhibit distinct, functionally nested levels of organization that can usefully be named, based upon purpose, perspective, and the criteria used for observation. Functional nesting is not necessarily commensurate with spatial nesting since processes and functions don't always map reliably from more tangible structures and patterns (O'Neill et al. 1986:187-189).

Each level of organization relevant to purpose needs to be explicitly recognized in description, and each such level may well need to be described at more than just one or two functional scales. In ecology, for instance, some criteria-based levels of organization that have proven robust over time are represented by the ideas of gene, organism, population, community, landscape, ecosystem, biome and biosphere. Their usefulness as a basis for ordering inquiry is indicated by some of the sub-disciplines that have emerged within the science of ecology, such as biological ecology, population ecology, community ecology, landscape ecology, and ecosystem ecology.

These levels of organization are informed and constituted by processes and functions, and each level of organization interacts with its sub- and supra-systems in very particular, variable, but non-whimsical, ways. May's (1973) theoretical study of the relationships between complexity and stability, for example, underscores the conclusion that ecosystem connections are importantly non-random (Allen & Starr 1982:188).

Because these interactions are not arbitrary and because the strengths and frequencies of these interactions are often strongly differentiated. While

everything may be connectable to everything else, every thing is not equally connected to every thing else, and because particular interactions and exchanges can generally be associated with particular spatial and temporal scales, there are rules we can come to know as we attentively follow processes and functions across named levels of organization (Vasishth, 2008).

Then an ecological phenomenon is one that requires description at more than one level of organization, with each level requiring its own set of particularized tools and scales, and where observations of occurrence at one level of organization cannot casually be imputed to other levels. And an ecological view is one in which organization and occurrence is known to appear differently at different levels of organization and at different scales of description. What we can see of the world is sometimes dramatically contingent on the boundaries chosen in the first place.

#### SCALE HIERARCHIES AND PROCESS-FUNCTION ECOLOGY

The conceptual and practical issues faced in constructing scale hierarchies are fairly well understood, at least in fields other than planning. (Simon 1962, 1973; Koestler 1967; Allen & Starr 1982; O'Neill, et al 1986) There is no single way of constructing hierarchic descriptions of ecological phenomena, because the criteria by which such hierarchies might be constructed are quite contingent on purpose. However, once purpose is made explicit, there are usually only a few hierarchical constructions that prove useful.

Ecosystem ecologists have found frequency-based or rate-derived hierarchies particularly useful in working with natural phenomena at the ecosystem level of organization. The structural organization revealed by differences in process rates has proven a reliable and robust way of decomposing complex systems into useful levels of organization, and also into the sub-systems relevant to any one level. The conceptual core of this theory – that organization results, in effect if not in fact, from differences in process rates – was developed by Simon (1962, 1969, 1973), and further refined by Allen & Starr (1982), and O'Neill et al (1986).

Then the "natural" boundaries for systems of concern are known most usefully by changes in frequencies or rates in relevant processes. One instrumental implication of this for environmental planning is that there are no precise and durable boundaries to be found in nature, only gradients which themselves flux and shift over time. This should not, however,

be taken to mean that boundaries cannot reasonably be named – merely that ecological boundaries are roomy places rather than hard edges, and as such can only be named at some hazy, grainy scale of description. As Corn (1993) points out, the boundaries named by most experienced ecosystem ecologists when looking at the same system of concern with similar purposes in mind, fall within a fairly narrow spatial and temporal range. If there is no single boundary at which to point, there is certainly a namable zone that can reliably be known.

In landscape ecology for instance, such a zone is referred to as an ecotone – a region of transition from one landscape element or patch to another, such as between a forest and meadow. Ecotones are marked by highly concentrated changes in frequency, and thus in ecological structure, pattern and process. For ecosystem ecologists working at the landscape level, a boundary isn't a boundary but the thing of concern itself. In the management of social-ecological systems, however, and especially when no place has been made for ecological processes and functions, we conceive of a boundary as marking the limits of our interest, attention, and concern. It is where our concern with the world ends.

A rate-derived hierarchic scheme strongly suggests that the processes and functions which help us name systems and sub-systems by changes in frequency and strength, also inform the selection of levels of organization and scales of observation. In general, there is a fairly strong correlation between frequency, level of organization and spatio-temporal extent. Usually, systems at wider levels of organization have larger spatial extent, exhibit lower frequencies and change slowly, while smaller systems show higher frequencies and change more quickly. This general correlation, together with the fact that interactions amongst components of social-ecological systems are neither random nor undifferentiated but rather fairly well ordered, is what enables the development of ecosystem ecology in the first place.

One of the more useful arguments from this view, with considerable instrumental value for change planning, is that many of the apparent controversies which have persisted in ecological science – such as disagreements over the role of competition in nature, or the relationships between diversity and stability, or the role of perturbations in ecosystem dynamics – grow out of differences in the scale or level of organization at which differing observation sets were collected. And other errors arise when observations taken at a particular level or scale are generalized across levels, or read at some different scale (O'Neill et al 1986:186-212).

The term ecosystem is most usefully treated as a particular level of integration within a scale hierarchy. Ecosystem ecology, or process ecology, then becomes the study of processes and functions at an ecosystem level of integration, where these processes and functions reveal themselves most usefully in the flows of matter, energy, and information (Weiss, 1971; Rowe, 1961; Allen & Hoekstra, 1993). Then the various approaches to the study of ecosystem that have emerged over time can be characterized by the particulars of their emphasis on material systems, energetic systems, and information systems, all taken as acting within a scale hierarchic and nested organization of sub- and suprasystems, and all exhibiting their own particular developmental dynamics (evolutionary processes) and levels of integration.

Weiss (1971:31) takes ecosystem to represent one level of integration along the hierarchic continuum, “[...] as a paradigm of the principle of interdependencies, partly prestructured, partly in free system interaction, which make it possible for organisms to mesh harmoniously with their environment and with one another, both individually and in groups, so as to exist, persist, and thrive.”

Allen & Hoekstra (1993:90) insist that the definition of the ecosystem approach “compromises the integrity of organisms” as proper explanatory units of ecosystem processes.

“The failure of organisms to offer ecosystem explanations and predictions comes from their lack of discreteness in ecosystem function; organisms do not represent the functional parts (or ecosystems). The pathways in which organisms are subsumed are the functional parts.”

Taken in this sense, an ecosystem approach is most concerned with the generation of descriptions – descriptions that are grounded in relevant functional processes and pathways, respect the scales revealed by these pathways, and view named systems of concern as part of a nested hierarchic structure showing relationships both within and across levels of integration and description.

An ecosystem approach would argue that organisms and entities which lend themselves most readily to classification in planning, whether taken from a typological or a population view, are themselves mere manifestations of underlying and more constitutive functional processes in the ecosphere. These organisms and entities may provide us with criteria by which to observe and measure particular and more readily sensible aspects of our world, but do not, in themselves, provide an explanation of how nature occurs.

It was the early work of Eugene P. Odum, Golley (1993) suggests, which transformed the idea “into a concept with vast theoretical and applied significance”. This conception of nature as process-function ecology, with its recognition of flows and of change, is central to the present recognition of ecosystems as the “objects of concern” (Odum 1964) rather than the conventional view, which focuses only on individuals, communities, populations and landscapes.

#### CLOSED AND OPEN SYSTEMS: “WICKED PROBLEMS” IN AN ECOSYSTEM APPROACH

Taken differently, the proper distinction to be made here is between problems that deal with closed systems and those that reside in open systems. Rittel & Webber’s (1973) discussion of “tame” and “wicked” problems becomes useful in this. In their characterization, tame problems – closed systems – are problems that, however complicated, are amenable to definitive resolution under expert attention. These are questions to which answers can be worked out *and* to which there is a single correct answer for any given starting condition, or at least a single correct preferential ranking of multiple answers. Wicked problems, on the other hand, reside in open systems with no logically revealable starting point and no technically computable end state, where, in the language of games, the play is the thing. This is also to speak of nature, where if there is any directionality it is toward staying in play, and by implication, where the rewards are in keeping the game going (Axelrod 1984).

Rittel & Webber (1973) formulate a series of “properties” for such wicked problems. Abstracting from these, wicked problems are those that defy definitive description and can, perhaps must, always be multiply described. Besides, every formulation of such a problem leads to a different solution, and thus models or predictions of future states are highly contingent on what is taken to be the problem formulation or initial state. Wicked problems, belonging to open systems, have no logical stopping point, no inherent end state in which one could claim to have “solved” the problem. Nor, because of this, do they show any natural stage at which implemented solutions can definitively be tested for success or failure.

Further, and perhaps more significantly, “every wicked problem can be considered a symptom of another problem.” Taking this to the scale-hierarchical approach in ecosystem theory where a phenomenon or circumstance at one level of integration has functional connectivities with its supra- and sub-systems, what is taken to be a

problem at one level, may well be beneficial or even essential at another, and perhaps a whole different sort of problem at still another level. Finally, for purpose of this discussion, every wicked problem is unique. This, taken along with the absence of clear starting and end points, means that the method of trial and error, which rests most on the building of experiential learning, becomes less reliable and must at least be relocated within the methodological repertoire for planning with open systems (Holling, 1986).

#### TELLING EVOLUTIONARY CHANGE PROCESSES

There is an established tradition in planning thought to incorporate an understanding of evolution into how we might plan (e.g., Park 1936; McKenzie 1968). This tradition precedes Charles Darwin’s (1859) work on evolutionary selection, and is evidenced most recently in the domains of social science – particularly in sociology, economics, and futures research (e.g.: McKenzie 1968; Nelson & Winter 1982; Nozick 1993; Laszlo 1987; Allen 1990). But evolution and evolutionary conceptions of the world remain largely peripheral to both substantive and instrumental planning in the case of social-ecological systems.

Yet the very notion of planning, in any form, must rest squarely upon some conception of evolution. The world “moves,” and there are discernible patterns to this movement, and these patterns give us handles with which to plan (Krieger 1989). Then, how we understand evolutionary occurrence must influence how we conceive planning, for any critical claim to realism and rationality requires an explication of evolutionary occurrence in nature.

But developments in the theory and science of evolution – in ecology, biology, and paleontology particularly – give us good reasons to argue that current and conventional conceptions of evolution are often wrong. This matters significantly to planning, and more so to environmental planning, in how we conceive and deal with nature.

Any serious acknowledgment of evolution in planning must recognize not merely, and trivially, that change is inevitable and endemic to the world, but more, that the world as we know it could not happen, and indeed we would not be where we are, without certain particular sorts of change. And to recognize that the world happens evolutionarily, in this sense, requires us also to acknowledge that there must always be multiple – although never more than a few – potential futures legitimately open to us.

There have been a number of folk beliefs which cause evolution to be mistaken, both generally and

in planning, but I consider three of these to claim foundational priority. First, a belief that the individuals and events most accessible to our senses are discrete and singular natural entities; second, a belief that nature can, and indeed should, be taken apart from humans and human agency; and third, a persistent and enduring belief that natural change is gradual, continuous, directional, and progressive.

#### GETTING AT A MORE SAVVY UNDERSTANDING OF EVOLUTIONARY CHANGE

Any effort to deal with change processes in social-ecological systems that rests on such a view of how nature happens must be quite different from a process-function ecosystem view of nested, scaled and purposively named hierarchies.

Adopting such a view leads us to recognize a quite different set of understandings of what it might mean to be sustainable in our crafting of deliberated interventions. To illustrate this, I shall touch briefly on a few ideas from ecology theory and ecosystem thinking.

The first of these derives from the work of Eugene Odum on ecosystem succession and perturbation theory. The second can be found in the work of Niles Eldredge and Stephen Gould on punctuated equilibria and episodic speciation. The third emerges from the work of Pickett & White on patch dynamics. And the fourth is shown in the work of Lynn Margulis on symbiogenesis theory.

#### SUCCESSION AND PERTURBATION

Essentially, Odum's work on ecosystem theory tells us that ecosystems, as named units of nature, exhibit a tendency to succession – progressing from young, vigorous producers to stability-seeking, climax ecosystems.

Young ecosystems seek to capture and accumulate biomass, which is the produce of photosynthesis, so as to be better able to resist external disruptions. Older, climax ecosystems, having already accumulated biomass, tend to expend more of their produce of photosynthesis on maintaining their biomass.

Morphologically taken, this is perhaps similar to the biotic cycles of birth, life and death. However, in ecosystem theory this would be an inaccurate analogy, because pulsing and perturbations are an essential part of how homeostasis, or self-maintenance, occurs.

Successful ecosystems are those that are subject to episodic perturbations, which throw them back to some earlier stage of succession, and which yet have

sufficient resilience and redundancy in their functional relationships to cope with episodic disruption. Then, while there is inevitably a tendency to decay, it is the pulses and perturbations and disruptions, in fact, that fend off ultimate entropicification and assure an ongoing vitality to homeostatic ecosystems.

#### PUNCTUATED EQUILIBRIUM

A second idea from ecology theory I think relevant to understanding what sustainability might mean to planning is found in Niles Eldredge and Stephen Gould's work on punctuated equilibria.

Their argument is about the manner in which change occurs in nature. The conventional view of change, described in biology as phyletic gradualism, is that of a stately, gradual, and progressive unfolding.

Much of the effort in planning rests on just such a view of gradual natural change. The central place that we give to trends and the use that we make of projections are but one reflection of this view. As one example, a gradualist view of change would encourage us to believe that population growth is a smooth and knowable progression. Then, events such as the 'baby-boom' become freak occurrences, anomalies, blips on the curve taking us by surprise.

The view from punctuated equilibria, however, is rather one of episodic change – relatively long periods of dynamic stasis followed by brief periods of abrupt and sometimes radical change, followed by a relatively long period of dynamic stasis, punctuated again by some brief period of concentrated change.

In recognizing such a punctuated, episodic version of evolution, we come to acknowledge the essentially fits and starts nature of how change actually happens in an evolutionary world. Homeostasis, as self-regulating self-maintenance, requires perturbation – and external shocks and surprises are in fact the very things that allow complex systems to go about their business of enduring through time.

The moment we begin to view sporadic perturbation as an essential basis for homeostasis, not only then must we question the place we allow the status quo in our own deliberations, to question what it is we take to be the norm, but we must see that the metaphors of human life – of birth, life and death graduated smoothly upon a chronologic metric – are wholly inadequate to the life cycles of complex, homeostatic systems.

#### PATCH DYNAMICS

The work of Pickett & White (1985), amongst others, on the ideas of patch dynamics and perturbation

theory can be useful to us, as we seek to relocate the place we give to shocks and surprise in planning our interventions.

Intertidal ecosystems, for example, are ceaselessly pulsed by tides, by wave action, and by storms. Here it is perturbations that displace dominance relationships sufficiently – and often enough – to allow what would otherwise be subservient species to play catch up. Then we are able to recognize that while dominance relationships are certainly a fact of life, and may even have some value in allowing us to make orderly descriptions, they may, as well, be antithetical to homeostasis and to endurance.

#### SYMBIOGENESIS

Finally, the work of the Russian school of symbiogenesis, and that of Lynn Margulis (1991) on the role of symbiosis in the origination of new life forms, is also useful to planning in how it takes sustainability. Symbiogenesis theory challenges the conventional view of a competitive struggle for existence, governed by some measure of comparative fitness, as the essential mechanism in natural and evolutionary change.

It argues that evolutionary progress is not so much about finding superior levels of fitness as it is about moving toward ever more profound and more intricate relationships. A truly new species becomes nameable when the symbiotic relationships between two entities become so strong as to make it difficult, perhaps even meaningless, to tell the two apart.

Then, evolutionary change must be taken to happen, at least, as much through the formation and perfection of new symbiotic relationships as it does through any process of competitive selection. Put differently, evolutionary processes show not only a branching out (toward the future), but also a convergence (from the past).

As soon as we recognize that symbiosis is legitimately a basis for the emergence of new life forms, and not merely some freak aberration in an otherwise settle norm – in which change processes are powered by a system of fitness-based selection and rejection from within a set of otherwise random mutations – then we are liberated from the notion that change occurs when copious novel options are presented for a somewhat gladiatorial selection process, one in which we weed out the bad ideas and triumphantly hold up the good ones. Instead, change may as well emerge from the formation of novel symbiotic relationships, which expand the boundaries of the possible, rather than shrink them.

#### BRINGING IT ALL TOGETHER: TOWARD AN EVOLUTIONARY, ECOSYSTEM VIEW OF SYSTEMIC CHANGE

Given these three sets of ideas – the meme of an ecosystem approach based on process-function ecology, the meme of complex systems as “wicked problems,” and the meme of a more sophisticated understanding of evolutionary change processes – it follows that conventional conceptions of systemic change will not hold. Internalizing these three memes leads us to a place where we can think about change as panarchic (Gunderson & Holling 2002) and coevolutionary.

The commonly held notion that change processes are either continuous and gradual, or radical and disruptive – but always monotonic and directional – must be challenged. Instead we must take change processes to be episodic, multi-directional and opportunistic. The fact of the matter is, there are many forms of, and facets to, change. Thus, change management is a huge field. However, in the case of systemic change, and if we are concerned most particularly with change processes in “wicked problems” sorts of complex systems, then we come to Gunderson & Holling’s (2002: 5) idea of Panarchy as the art and science of governing nested scale-hierarchic systems, in “the interplay between change and persistence, between the predictable and unpredictable”, inter-linked in continual adaptive cycles of growth, accumulation, restructuring, and renewal.

The most germane philosophical roots of this particular notion of systemic change, as London (1996 [2015]) points out, are found in the ancient Chinese view of “reality as the dynamic interplay of two opposites – the yin and the yang. Their keen understanding of change is reflected in the term they use for “crisis” – *wei-ji* – which is composed of the characters for “danger” and “opportunity.”

There are two critical points embedded here – first, that reality, in the case of complex systems, is rarely singular; and second, that systemic change is a dynamic phenomenon, which is directionally variable. Then, the only way to respond to systemic change is by taking an adaptive management approach.

London (1996 [2015]) concludes that:

“What this literature shows is that there are at bottom two modes of viewing change: the reactive and the proactive. From one perspective, individuals and groups are the objects of change. They are at the receiving end, in the sense that change happens to them. From the other perspective, individuals and groups are the initiators of change and change follows from human volition.”

The important point, here, is that it is not a debate between these two views, nor is it a contest of any sort. To attempt to choose between them is to commit a Type Three Error – asking the wrong question. Rather, both, simultaneously and collectively, together, play out their conjoined dynamic, much as the yin and yang metaphor would lead us to see.

One final point that is likely worth making here has to do with the conceptions of “leadership” that can be deployed in efforts to “manage” change. Conventional views have held, rather unquestionably until recently, that what is needed in the face of flux and change is “strong leadership,” a “firm hand on the helm,” to navigate the turbulent waters, so to speak.

However the three memes deployed above, and the view of change that emerges from their deployment, may well lead us in a different direction – that of “distributed leadership.” Brafman & Beckstrom (2006) have argued persuasively for decentralized organizational leadership.

As discussed earlier, it is the relationships, the interactions that make it meaningful to name a particular system of concern. Objects and entities and organisms, and their actions, are secondary to the bounding of systems, sub-systems and supra-systems.

Spillane (2006: 84), points out:

“Interactions are the key to unlocking leadership practice from a distributed perspective. Leadership practice takes shape in the interactions of leaders, followers and their situation...From a distributed perspective, simply counting up the actions of leaders will not be sufficient on its own; the whole is more than the sum of the parts.”

Taken together, these conceptualizations from an ecosystem approach to systemic change processes give us a much more humble view of our role in managing such change. We are not in charge – the puppeteers. Rather we are tiny infinitesimal specks in a rather magnificent universe, residing within the very systems we seek to influence. As such, the best we can hope to do is to make what have been called “dinky little pokes,” influencing and tweaking the realities within which we occur, adaptively responding to the systemic responses that the changes we initiate themselves generate. We may indeed move the world this way and that, but we should expect that the world will then itself move otherwise, in response to our interventions. To be savvy managers of systemic change, we must not then turn around and express surprise at this sometimes unpredictable recalibration on the part of the world we seek to influence.



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WILLIAM E. SMITH

# MAKING THE INVISIBLE VISIBLE

## THE DYNAMIC INTERPLAY BETWEEN PURPOSE, POWER AND LEADERSHIP ORGANIZING COMPLEXITY



*Bill is an innovator of both theory and practice in the fields of leadership, organization and social development. He has created and implemented new approaches to organization for multinational corporations, for governments, the World Bank and the United Nations in many parts of the world.*

*Over the last seven years he has been developing the concepts, called AIC (Appreciation, Influence and Control), to the development of leaders to better match this global experience.*

*The story of his work is published in *The Creative Power: Transforming Ourselves, Our Organizations and Our World* (Routledge, 2009).*

*Only wholeness leads to clarity, Schiller.*

### INTRODUCTION

**T**HE PHILOSOPHICAL, THEORETICAL AND PRACTICAL base – on which the AIC Organizing Process described here is built – evolved from a ten-year action research process that applied systems concepts to the design of World Bank Projects. We named it AIC – appreciation, influence and control – after the three powers that emerged as central to both the theory and practice.

The research team discovered that two thirds of the projects we studied were failing, and the basic cause was a lack of common purpose and inadequate understanding and use of power relationships (Smith 1980). Subsequently, we have discovered that this finding applies not only to the World Bank but also to the design of any complex project. It appears that *power* is the invisible water in which we swim. We had no models of power that adequately encompassed its ubiquity and pervasiveness. Similarly, the concept of purpose was interpreted too narrowly as a goal-orientation. The existence of purpose in nature was even denied as a causal force in the evolution of science (Sermoniti 1998). Consequently, we emphasize purpose at its lowest level and overuse the most visible form of power: *control*.

We only see half of the power of *influence* – that which helps us gain control. We do not see the part of influence that increases our *appreciation* of the whole situation, and we do not value the power of appreciation to reframe and give meaning to all of our powers. In effect we only harness about one third of the power available to us, and this lack of understanding contributes significantly to the two-thirds failure rate.

The rate of failure may actually hide a form of success. All of us in the background, even unconsciously, work to achieve broader and higher levels of purpose that affect our own lives outside of the structures and strategies of the work for which we are paid. In pursuing our deeper, less conscious purposes we provide a complementary collective process that advances and improves the quality of life for ourselves, others and our world. We and our purposes, as individual/collective parts of humanity, provide the invisible source of power. When we make this power visible and release its capacity our work has shown that we can tackle the greatest issues of our time with great effectiveness.

Our action research program learned to create organizing processes centered in purpose and using control, influence and appreciative powers equally. In the process we made visible an even greater discovery: Purpose is our source of power i.e., it is purpose that creates the three fields of AIC powers that surround every project. The result of applying these concepts in practice greatly exceeded our expectations. There was an evolution in the time and space scale of the projects from single, short-term projects up to sector- and country-wide applications, with five to twenty years' time spans eventually tackling the role of the World Bank and its regional counterparts in Global Development with a fifty-year time span. The book *The Creative Power: Transforming Ourselves, our Organizations and Our World* (Smith 2009) describes the development, application and implications of the AIC philosophy and organizing process.

Reflecting back on this work we now realize that the big issues of our time – poverty, inequity, health and energy, for example – are our greatest issues precisely because they affect all people. We cannot solve them without the participation of everyone. Yet there are no commonly recognized or institutionalized processes

for linking individuals to such large issues. We realize that one of the most effective things we can do is to make visible to people the full extent of their own power and show them how they can link to these issues, at least through appreciation. We need a widely understood and practical reverse organizing process that grows from peoples' purposes to organizational and then societal purposes. We draw on Fantapie's (1942) work on entropy and syntropy to help understand and explain this.

Our individual/collective leadership provides this reverse, upward appreciative spiral. This spiral meets with the downward spiral for control – governments, social institutions, corporations – and meets in the middle in an influence process. This influence process produces a circular flow of influence that links both spirals and gives equal attention to power flows from influence to appreciation and from influence to control. This circular process, centered in influence, takes place recursively at every level of organization – within single individuals to meetings between individuals to meetings between strategic groups and policy-making between organizations. It breaks the current pattern that relies too heavily on the use of influence for control and which contributes so much to our failure to use our power effectively.

#### THEORETICAL AND PRACTICAL ROOTS

With hindsight it has been important to realize and acknowledge that the roots of the search that produced this body of work came from the kind of circular process envisaged here – something that happened naturally i.e., with no model, plan or process consciously applied. My first job with BOAC, Rome Airport, Fiumicino, became the best-performing airport on the airline's network of agency stations in six months, without spending extra funds and without management control (these agency stations were run by local staff and were not under the direct control of BOAC staff.). At the time neither I, nor anyone else, could understand what had happened. The experience was enough to persuade me to leave England and seek answers in the more organization – and management-friendly United States. There was something invisible in me, in the Rome airport and in the whole situation that produced that performance. But what was it, and what could it become?

An MBA specializing in Organizational Behavior, several years as a consultant for A.T. Kearney and an internal consultancy to the International Division of G.D. Searle gave no answer. I finally realized

that there was no existing answer; there was no book or gray-haired individual I could consult for an answer. It was with great trepidation that I realized I must find one myself. Despite having three children in high school, a perfectly good career and against most of my colleagues' advice I took the leap to tackle the problem by pursuing a Ph.D. in Social Systems Sciences at Wharton Graduate School of Business.

I chose that school because of the serendipitous discovery that three people whose work I knew separately and who seemed to provide the three vectors that could help me reach my goal were not only at the same school but also in the same department: Social Systems Sciences, known to its students as S. Russ Ackoff's<sup>3</sup> ideas on purposeful systems gave me the holistic systems space that seemed necessary to include in what my intuition told me was the right direction to pursue. Eric Trist, formerly of the Tavistock Institute, with his ideas on the joint-optimization of social and technical systems, also produced a key vector – especially as he was beginning to explore the design of ecological systems. In this vein he taught me that I would never find the answer to organizational performance by studying the inside of organizations. Hasan Ozbekan was also key in that his work led me to see that organization was not about the design of structures but the design of processes.

Serendipity again led me to Francis Lethem, who in Policy Advisory Service for the World Bank, was struggling with ideas on how to improve the performance of Bank projects in the newly-created social sectors of poverty, population and health.

#### DEVELOPMENT OF THE CONCEPTS AND PRACTICE

At that time the World Bank's project-planning process – called an appraisal process – was developed primarily from large physical infrastructure- and economic-planning projects and was regarded as one of its prime assets. Very much influenced by Robert McNamara's experience with analytical numbers-based systems approaches, the appraisal process proved inadequate for the newer, more social-oriented projects. The different perspective required for social projects caused misunderstandings and conflict between the new, more socially-oriented staff and the traditional physical infrastructure-oriented staff.

I used Eric Trist' and Fred Emery's ecological systems model to show the Bank that its approach was too narrowly focused on a project's internal environment i.e., it failed to take notice of events in the

transactional and contextual environments. As a result more than two thirds of all newer projects were failing to meet their goals (Smith 1980).

It was in designing approaches that took into account all three environments equally that I made the first significant leap in addressing the issues arising from my experience in Rome. The project staff, helping us to put our ideas into practice, found the idea of three environments very useful; but they had difficulty in the field using terms like “internal”, “transactional” and “contextual”. My linguistic training told me we needed action words instead of the more Latin abstract words. So I asked, “What do we do differently in each of those environments?”

The answer for the first two environments came within twenty minutes of our asking the question: We control elements in the internal environment, but we can only influence elements in the transactional environment. It took months to come up with a name for the contextual environment. What is it that we do with all those elements that affect our project or are affected by our project but which we can neither control nor influence? I finally borrowed the term from Sir Geoffrey Vickers, author of *Art of Judgement* (1965): We “appreciate” them. We understand them in all their aspects, the possibilities they create for us and the realities they surface for us<sup>1</sup>.

So the first breakthrough concluded that if the environment of a system consists of all the elements that the system cannot control, then system environment relationships are power relationships. The transactional environment becomes the part of the environment we can influence, and the appreciative environment becomes a third set of power relationships: those that affect our purpose but which we cannot control or influence.

Within months we were ready to make the second – and perhaps the most important – breakthrough of all: If system environment relationships are power relationships then each project has a field of control, contained within a field of influence and contained within a field of appreciation.

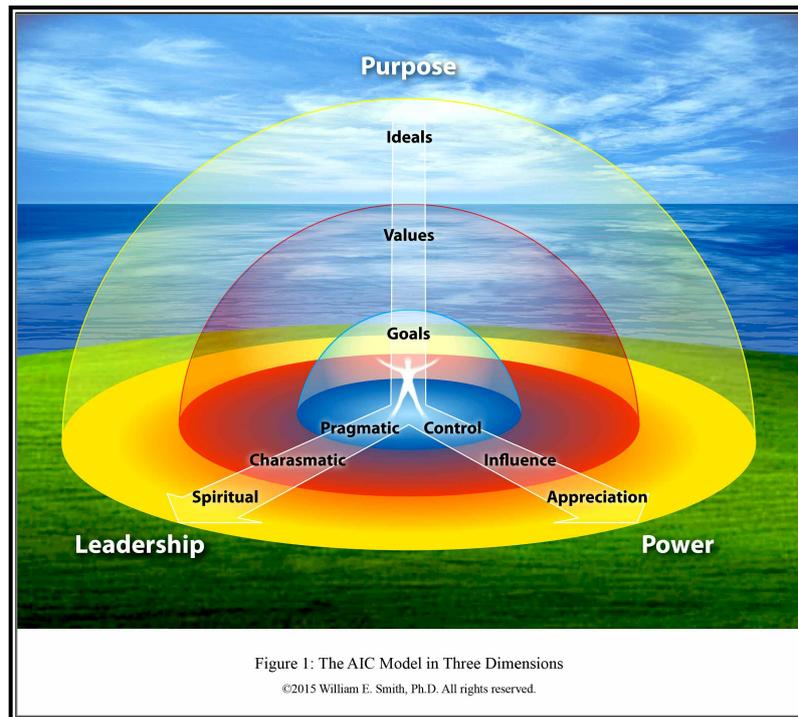


Figure 1: The AIC Model in Three Dimensions  
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#### WHERE DID THIS POWER COME FROM?

The answer came instantly and with great impact: Power comes from purpose.

Each power field is associated with a different level of purpose, as illustrated in FIGURE 1. What we typically think of as purpose is a *goal*, something we decide on and have control over. We don't see *values* – the purposes we serve with others – quite so clearly as goals, because we can only influence but not control them. *Ideals* provide an ever-open source of purpose that we can forever appreciate but never attain. It is even more difficult to see that ideals create a field of power that creates the conditions for the exercise of all other powers.

Each purpose and power requires a different kind of leadership process for its pursuit:

- 1 ~ Controlled goals require a pragmatic approach and rely on the ordering of certainties.
- 2 ~ Influencing values requires a more charismatic, relational approach that relies on weighing probabilities.
- 3 ~ Invoking ideals requires a greater mental-spiritual approach that relies on discovering new possibilities.

We realized that this process of integration of purpose, power and action is what we all do as leaders of our own lives in pursuit of our own purposes. Instead of just labelling this integration as the process, we substituted the more commonly understood term *leadership*. This labelling also gives us

new insight into leadership as the process that integrates purpose and power (FIGURE 1).

We envisaged three power fields around every project. We had to struggle to learn, in practice, what we had to do differently in each of those fields. The Bank's instinctive reaction was to develop analytical approaches for each environment. We soon found that the transactional/influenced environment was far too dynamic and time-consuming to track analytically; as soon as you had an analysis some elements or the relationships between them would change and you would have to re-analyze everything. We needed something beyond analysis. Our first attempts at analyzing the contextual/appreciative environment also drew a blank. It was difficult to come up with analyses that were relevant and helpful in the dynamic situations that occurred as the projects evolved.

It was then that we understood that we had to create a design process that carried out active appreciating and influence with the stakeholders, and the AIC organizing process was born. The process would contain built-in norms of appreciation, influence and control that guided interactions. We elevated our approach from two- and three-dimensional analysis, as illustrated in FIGURE 1, to evolve a four-dimensional, actor-centered process of engagement over time; and would extend to five-dimensional syntheses to account for the highest levels of purpose and meaning (see FIGURE 7 at the end of this paper).

Vickers' work, further developed by Eric Jantsch in *Design for Evolution* (1975), helped us with appreciation. The concept of stakeholders gave us the practical grounding for our approach to influence. Stanford Research Institute's Long Range Planning Service had come up with the concept of stakeholders; and at Wharton Howard Perlmutter, Eric Trist and others began to apply the concept to organizations as a good practical idea for addressing the "transactional" environment. I introduced the idea to the International Development community where it became the practical anchor for the influence process. Some four or five years later Ed Freeman, also at Wharton, wrote the first book on the approach: *Strategic Management: A Stakeholder Approach* (1984).

Together these three conceptual breakthroughs gave us a new and practical definition for social systems:

- 1 ~ A system is the set of all relationships that affect or are affected by the pursuit of purpose.
- 2 ~ The boundaries of the system are determined by what the system can control, influence and appreciate within the space and time constraints in which the purpose is conceived.

- 3 ~ An organization and its relevant boundaries form a whole system defined by degrees of power to achieve purpose within space and time constraints.

#### THE IMPACT IN PRACTICE

In the early stage of my involvement with the World Bank, after completing the desk research, my support group wanted me to gain field experience; so I was asked to take part in an evaluation of one of the first social projects completed by the Bank: the first Population Project in Kenya. This project gave me my first experience of the power of centering our understanding of organization in purpose.

The Population Project in Kenya was designed to reduce the annual birth-rate by 3%. The project was deemed a complete failure because it actually increased the birth-rate. It became one of the projects high up on the list of two thirds of projects that failed. Fortunately, I had not been trained in the World Bank's process of evaluation so I did not evaluate success by whether the promised outputs were delivered. I began with the purpose of the project and then in a series of interviews drew out the purpose of all the stakeholders involved in the project. When I followed this through I found that the World Bank had created a very successful maternal health and childcare program. In the long term this greater care of mothers and children would contribute to population decrease – but not in the space-time framework of five years in which such programs were evaluated. The people of Kenya had found a way to achieve purposes of value to them in spite of the constraints of the World Bank Program.

The very first direct- and large-scale application of AIC to the design of a program occurred as a response to the financial collapse of the electricity sector in Columbia. It was the first time that representatives from the entire country were brought together to tackle a serious issue. It was our first attempt to bring together the complementary process of linking individual to national purpose. It was published as a chapter in Weisbord's *Discovering Common Ground* (1992).

Years later, a World Bank evaluation team – who knew nothing of the original project – was conducting a study of the sector and they noticed something different in the way the Colombians went about their work. Following up on their insight, they discovered that a cadre of people from the original AIC workshops had developed approaches to policy problems that they referred to as being in the "spirit" of Santa Marta, the location of those first workshops. The use of the word "spirit" struck deeply. As a society, we use that word

all the time – team “spirit”, to feel in good “spirits”, that some artist’s performance is more “spiritual” than another’s. I understood then that all those uses were expressing some kind of appreciation, some essence of wholeness that resonated with the subject. I realized that the appreciated environment of any system resonated with the spirit, the essence of “wholeness” in that system. That is why we had such difficulty in explaining it as an “analytical” approach.

This insight gave me, finally, the explanation for what happened at Rome. Being an appreciative type and not being blessed, at the time, with the traditional training in management controls I naturally created appreciative space. Serendipitously, again, the Rome staff provided the degree of influence and control required. We ended up with an equal balance of appreciation, influence and control.

So now I understand appreciation as the spirit that holds the whole together:

- 1 ~ It is the equivalent of gravity in the physical world. It always attracts and never repels.
- 2 ~ It is the most extensive and least costly power: It costs nothing except the use of imagination, intuition and sensing.
- 3 ~ It still is the most invisible of the powers and can add most to the full use of our natural powers.

In Thailand, the most extensive project, AIC spread throughout the entire country to many sectors and became the national policy approach for development. It was used to create the eighth Five-Year National and Social Development Plan (1997-2001). It provided a new paradigm of people-centered, rather than economic-centered, planning in which the whole country was involved<sup>2</sup>. The success of the work in Thailand led to several international conferences on creating a new Development Paradigm that was more people- than economic-centered. A series of these conferences was held by the World Bank and its regional counterparts to reshape the role of the World Bank in Development.

Today, the AIC philosophy continues to expand and impact our world. Recent videos show how others are using the concepts and practice under the rubric of resilience and conflict resolution in Cambodia, Uganda and Zambia<sup>3</sup>.

#### COMPLEMENTARITY AND FRACTAL ORGANIZATION

The current phase of development of AIC focuses on how we can develop the leadership capacity to address any of the complex issues that face any region anywhere in the world. The issue is less like solving specific policy issues, as in Colombia, and

more like creating national capacities to address complex issues, as in Thailand, but with the specific recognition of the need for sustainable development of the leadership capacity to apply to any major issue.

Our capacity to do this emphasizes the role of two of nature’s most powerful organizing principles: complementarity and fractal dimensions. Complementarity was introduced by Niels Bohr (Bohr 2008) to explain and unify the differences between classical and quantum descriptions of physical reality.

In the most celebrated case of wave-particle duality, Bohr demonstrated how complementarity forces the observer to accept that contradictory outcomes produced by different experimental setups are complementary pictures of the same phenomenon. Some experimental setups always produce particles and some always produce waves. The different pictures taken together make up a whole.

Fantapie, one of Italy’s most famous mathematicians, suggested that the ultimate complementarity lies between two interacting forces: one for entropy and the other for syntropy (Fantapie 1942). Experiments using these concepts have confirmed the existence of a dual nature of matter producing two realities: one which is manifest as particles (the entropic nature) that flows forward in time and one which consists of probability waves (the syntropic nature) that flow backward in time. Di Corpo and Vannini (2014) illustrate the backward flow of time within black holes in a new syntropic interpretation of gravity and in anticipatory effects found in our autonomic nervous systems. The entropic side tends towards the dissipation of energy, disorder and homogeneity and better describes the organization of our physical world; while the syntropic side tends toward the concentration of energy and matter, an increase in organization and complexity and better describes the organization of life and our metaphysical side. “The entropy/syntropy theory posits that any system – organic or inorganic – vibrates between peaks of entropy and syntropy, acquiring in time specific resonances.” In nature there is a continuous interplay between the visible reality of entropy and the invisible reality of syntropy.

These concepts are very consistent with our efforts to see organizing as a dual spiral. The conscious, visible entropic process flows from control to influence and appreciation as *goals, values* and *ideals*. The invisible unconscious syntropic process flows from appreciation to influence and control as *instincts, emotions* and *motives*. Both meet in the present, the sphere that gives equal influence to the past and the future (see FIGURE 7).

It is this emphasis on syntropy that helps us explain how each of us contributes to success or progress –

in spite of the two-thirds failure rate – of the formal design of complex projects of which we are a part. It is syntropy based on collective, subconscious purpose that fills in the cracks left by the in-folding entropic spiral to control.

Fractal organization is the second natural process that helps account for such hidden sources of success. The fractal images help us visualize the complementary processes a little better. Fractals are simple, basic patterns repeated at an ever-increasing scale. What appears to be a very complex image actually contains very small amounts of information. FIGURE 2 shows how one small shape, a simple 'Y' figure, is iterated over and over again to produce the complexity of a living tree. What is learned at one level is passed on to other levels – just as nurses work on the nerves in one of our faulty limbs to educate the nerves in our entire brain that control the limb.

FIGURE 3 shows the base AIC fractal of a single purpose. The large (A), (I) and (C) refer to purpose as appreciative, influence and control ends. The small (a), (i) and (c) refer to the appreciative, influence and control means used to pursue those ends. So, (A-a) is the power that uses the most open ends and the most open means. (C-c) is the power that has the most closed end and uses the most closed means.

Imagine the centre of cell (I-i), influence ends using influence means, as the centre through which purpose passes as it links to all other levels of purpose. The blue (entropic) wave of control that folds

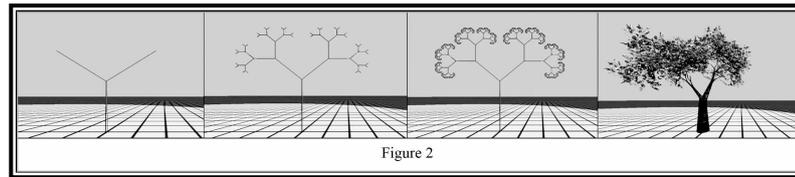


Figure 2

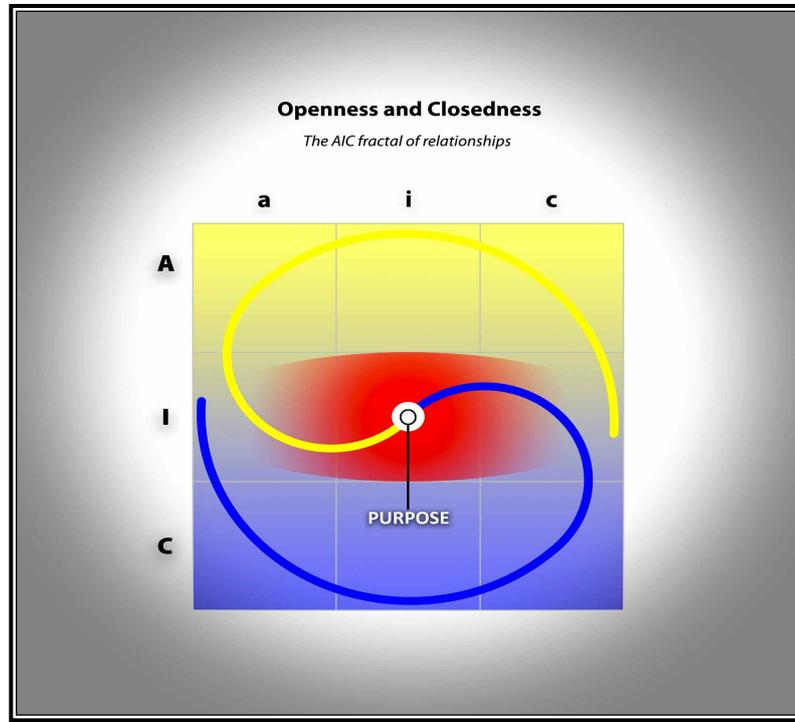
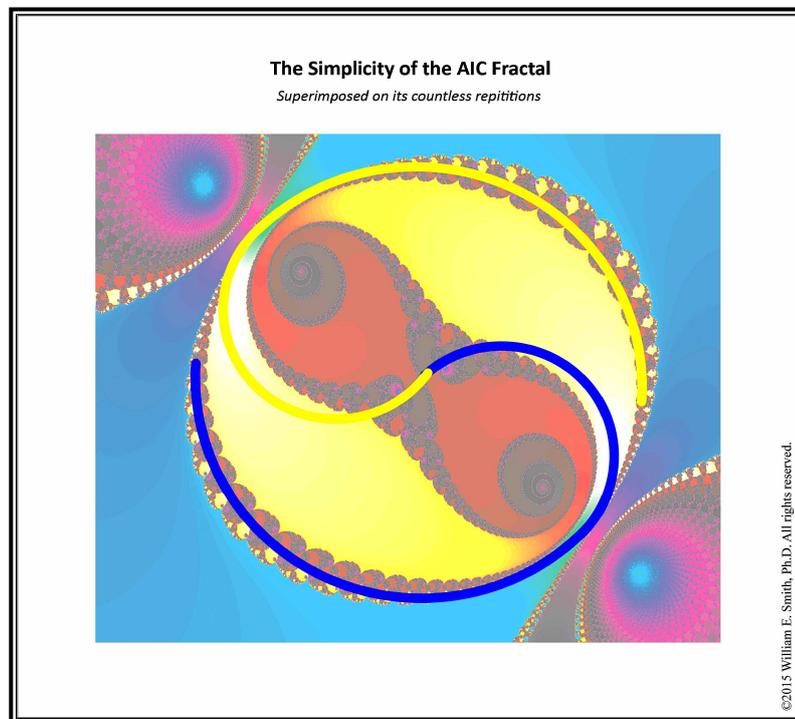


FIGURE 3



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FIGURE 4

inward and the yellow (syntropic) wave of appreciation that folds outward are the waves of energy produced by purpose at that particular level (also see FIGURE 7 for a different perspective.). The cell (I-i) is the point of engagement, the centre of influence and the centre of the organizing process. It is the point of potential for conscious transformation when equal attention is given to both appreciative and control waves. Such transformations can take us into higher or lower dimensions, as illustrated in the fractal image in FIGURE 4.

These illustrations help us understand that there is no beginning or end to the organizing process. There is only a centring in purpose. The ideal organizing process is one that improves this central process of engagement by mediating the effects of both entropic control and syntropic appreciative powers.

A practical implication of this fractal organization is that we can represent all possible types of power by the nine powers (A-a) to (C-c), and between each is an infinite number of fractal divisions. Just as there are thousands of shadings of colour that can be made from the three primary colours of light – green red and blue – so can we make thousands of combinations of power from the base powers A, I and C<sup>4</sup>.

Each purpose produces its own unique pattern of power. The following illustrations give typical names to each type of power and show the pattern associated with the highest possible levels of control, influence and appreciative purposes.

There are 362,880 possible patterns fall between the extremes of these pure patterns, each representing a slightly different purpose<sup>5</sup>.

FIGURE 5 shows the power preferences for an organization with the highest possible preference for control, for example, a well-established organization in a stable environment with a low risk profile.

An organization pursuing the highest possible appreciative purposes e.g., a company that creates

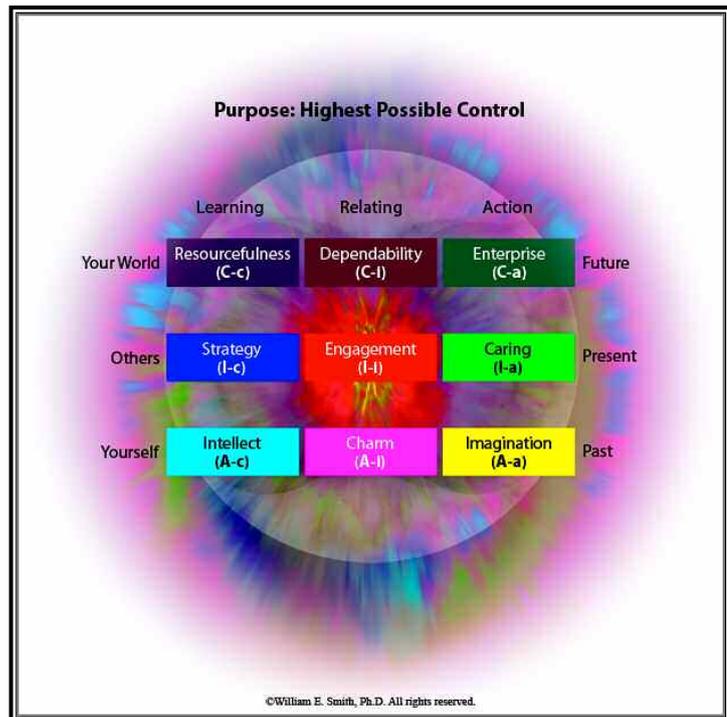


FIGURE 5

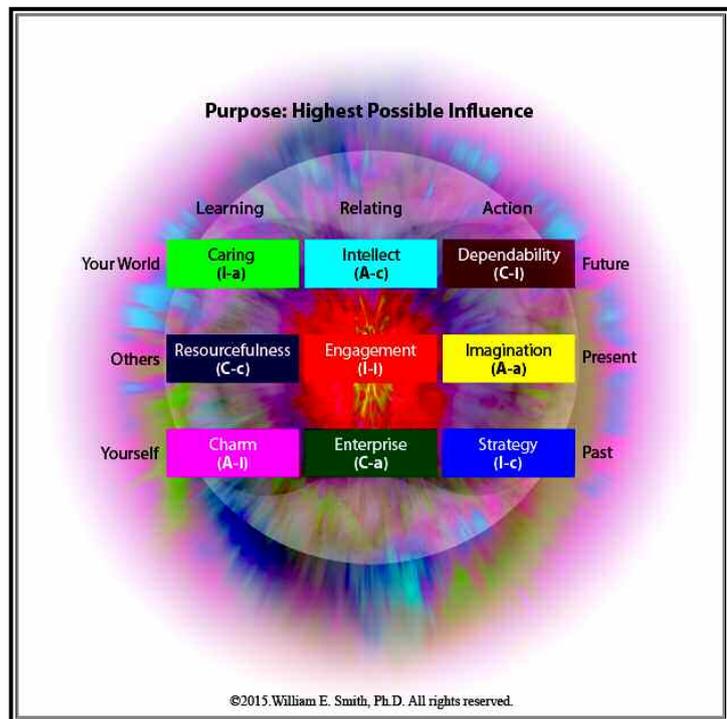


FIGURE 6

products for the mind or spirit. It operates in new fields with new technologies, arts or fashion and relies on creative people for success. This company's

profile would be completely reversed with the use of imagination first (A-a) and resourcefulness (C-c) last.

An organization pursuing the highest possible influence purposes, for example, whose mission is to persuade others in very dynamic markets, and relies on charismatic staff, would have preferences similar to FIGURE 6.

Note, that this pure influence map has an equal distribution of (A), (I) and (C) ends and (a), (i) and (c) means on every row, column and diagonal (it's a magic square.). This emphasizes and illustrates the role of influence as a field of balance between appreciation and control<sup>6</sup>.

#### SUMMARY: AUGMENTING OUR LEADERSHIP CAPACITY

These recent developments, building fractal complementarity more consciously into our organizing process, help us to understand how to overcome the systemic failures that affect two thirds failure of our most complex projects.

The following notes summarize the major principles and helpful practices involved-without going into a complete set of procedural details – on organizing an AIC program. Such detailed procedures are contained in the articles on Columbia and Thailand. Recent work with Blake Ratner has also produced an extensive manual on design of the AIC approach.

In making this summary, we imagine helping a region (at least one million people) to address a major issue that affects the whole region. The aim here is to emphasize the concepts and key practices that most help in avoiding the primary causes of project failure and which contribute most to the development of a sustainable leadership capacity to address any new major issue the region might face. FIGURE 7, described in detail below, helps us to visualize the summary.

#### BASIC PRINCIPLES:

1 ~ Purpose is the source of our power. It is expressed in at least five dimensions (1: Ends, 2: Means, 3: Goals, 4: Values and 5: Ideals. Unconscious purpose is expressed as complementary subconscious instincts, emotions and motives.)

2 ~ Power is our capacity to achieve our purpose. Every purpose from ends to ideals creates three fields of power: a field it controls, a field it can influence or be influenced by and an appreciative field that consists of all relationships that affect or are affected by the purpose but which it cannot control all influence.

3 ~ Leadership is the process of linking purpose and power to the demands of a situation in a particular spacetime frame.

#### BASIC PRACTICE:

The program to address the major issue develops in three phases which would then re-iterate themselves to repeat the process on the same or new issues to produce sustainable leadership capacity.

1 ~ An appreciative phase discovers the future possibilities and reinterprets the past realities evoked by these possibilities. This complementary opposition between possibilities and realities provides the tension that in turns fuels appreciative power. In practice participants ask, "What ideally would we like our region to become?" It follows up with the complementary question, "If we were to pursue these ends what realities would surface and have to be addressed?"

2 ~ To avoid project failure the process begins with a small group whose task is to test out the degree of interest in the purpose and recruit people who have some influence on the issue. In their recruitment they try to ensure that each new recruit receives at least three times the value of their investment in the program. This informal assessment often consists of such items as interest in the topic itself, the opportunity to work with highly qualified people and the opportunity to contribute to a larger purpose. Often just one of these can give the recruit the three-times value for their investment.

3 ~ The influence phase begins once the organizers can say to themselves that this group of people recruited, collectively, has the influence necessary to achieve the purpose. The complementary tension here is between the different values of the recruits and the emotions that they bring out in the process. This is dealt with in part by the prior appreciative process, which helps build trust. It is also helped by forming a design group of 7-15 people who carry out a small version, a rehearsal, of the full workshop we call a "design workshop" that all recruits will eventually attend. The objective is to check out the purpose, try out the process and see what lines of action emerge. The results will tell them if the presenting purpose needs to be modified, whether the lines of action suggest the need for new or different recruits.

4 ~ When satisfied with the purpose and the recruits, a full workshop is held with all recruits. In fractal fashion, the workshop is divided into the same three phases. The appreciative phase builds trust. The influence phase ensures that all value differences are surfaced as priorities, and that the positive and negative consequences of all are examined. The control phase allows people with similar responsibilities to work together to produce their own response to the challenges, taking into account the sources of influence and appreciation they have learned about in the workshop.

5 ~ The control phase follows up with support to the action teams and pays particular attention to helping them with the influence part of their plans i.e. gaining or giving support to others. The tension in this phase lies between the goals selected and the actors' motives to pursue them. The building of influence and appreciative networks around these actors helps them in this process of motivation. Such regular follow-up events make a conscious effort to help everybody appreciate the contextual impact of their efforts. They begin the process of creating a sustainable leadership support system that will grow in capacity to address any issue the region might face.

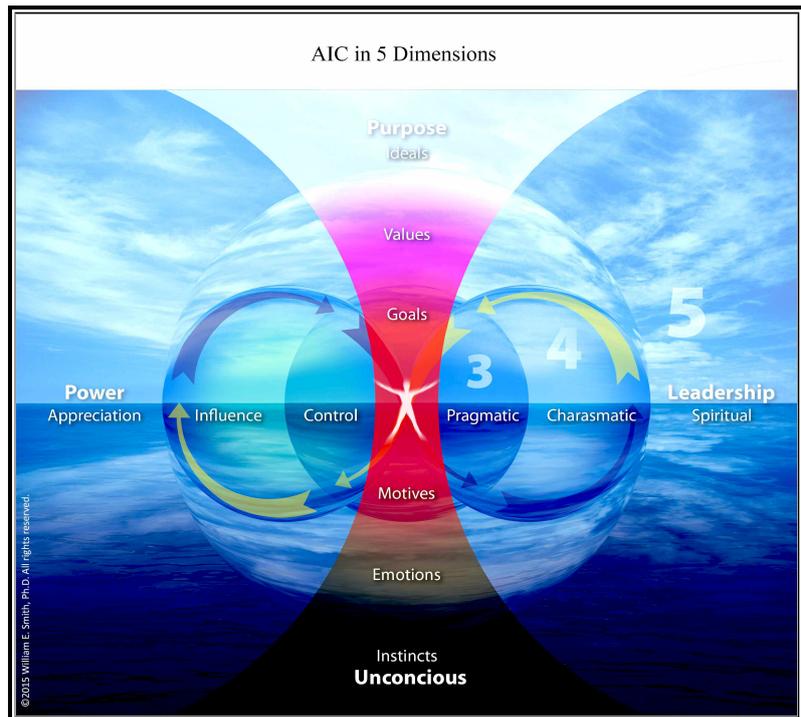


FIGURE 7

6 ~ FIGURE 7 shows leadership as a three-dimensional process that links power with purpose and enables us to use much more of the power available to us than does traditional approaches. As our practice evolved we needed maps and mindsets that allowed for more dimensions. In practice we began to realize that the fractal complementarity of our evolving approach could not be explained in less than five dimensions.

1 ~ FIGURE 7 illustrates that additional dimensionality. It shows how the dynamic flows of influence, represented by the blue and yellow arrows from our fractal images FIGURE 3 and 4, provide a fourth dimension of timespace, an exponential increase in power that adds the capacity to mediate through the use of our values and emotions.

2 ~ The square frame separating the whole image from the text represents the limits of spacetime in expressing the fifth dimension. We can only see arcs, not the whole of the circles that lies outside our spacetime frame. This appreciative space remains open beyond the current space and time parameters. Yet we can still sense and feel the appreciative complementarity between the open possibilities created by ideal ends and the realities evoked by our basic instincts.

3 ~ The first whole circle bounds the current spacetime cycle, which is represented as two opposing circles. The two circles represent the complementarity

of the values that support (+) the purpose and those that oppose or constrain (-) its pursuit. The arrows trace the edges of these two circles as the wave of positive (entropic) and negative flows of feed-forward and feedback energy (syntropic). The greater the value differences at play in this cycle the greater are the emotions created.

4 ~ The control circle in the centre represents the portion of the full-time cycle that can bring things under control. It is the third dimension of known ends and means in a known spacetime frame: it is "what you see is what you get". The complementarity takes place between the expressed goals of the organizing effort and the motives of the individuals who have to carry out the activities necessary.

We develop sustainable leadership capacity by improving the process of engagement between the ideals values and goals we obtain from our external world and the invisible motives, emotions and instincts that represent our internal collective human wisdom. We must create conditions in every phase of organizing that support our full use of the natural complementary forces each phase produces. The invisible forces that helped us create success in spite of failure are now more consciously harnessed to achieve success with far less failure and far greater returns.



<sup>1</sup> In 1984 David Cooperider came up with concept of Appreciative Inquiry that has since become very popular. It differs from the AIC concept in that it stresses the positive. For AIC, appreciation at its highest level is beyond the positive and negative. Appreciation is our relationship to the whole, not just the positive part of the whole. It accepts the whole as it is. Appreciation at the influence level, however, does have positive and negative implications. AIC holds that, at this level, both are essential elements in creating the tension that produces influence power. Influence is the flow between supportive (+) elements and constraining elements (-).

<sup>2</sup> “The Role of ODII and AIC in Thailand” tells the story of Khun Paiboon and his role in encouraging the application of AIC as a process at the village level and ultimately up to the level of the national government itself.

<sup>3</sup> Ratner and Smith 2014. *Collaborating for Resilience: A Practitioner’s guide*. This combination forms a magic square in which every row, cell and diagonal has an equal amount of appreciation, influence and control i.e. every row, column and diagonal contains an A), (I) or (C) end and (a), (i) or (c) means. There are eight combinations that produce this effect. Rotate it (90°) four times to get a different magic square and flip each of these rotations horizontally to arrive at all eight magic squares.

<sup>4</sup> The colours used to represent the powers are accurate. The central colours represented by (I-a), (I-i) and (I-c) are the three light primaries green, red and blue. The three appreciative colours (A-a), (A-i) and (A-c) are obtained by adding light i.e. adding the primaries together and the three control colours are obtained by subtracting light from the primaries. See “How Maps Work”: <<http://bit.ly/11LJJoW>>, or go to <<http://bit.ly/1eaP4uM>> to create your own map [Retrieved 15 May 2015].

<sup>5</sup> This combination forms a magic square in which every row, cell and diagonal has an equal amount of appreciation, influence and control i.e., every row, column and diagonal contains an A), (I) or (C) end and (a), (i) or (c) means. There are eight combinations that produce this effect. You can rotate it (90°) four times to get a different magic square and you can flip each of these rotations horizontally to arrive at all eight magic squares.



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# LANGUAGE AS CLUE

## THE EFFECT OF PARADIGMS ON CREATING SYSTEMIC CHANGE IN BUSINESS



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♦

### EXECUTIVE SUMMARY

**P**ARADIGM CHANGE IS A FREQUENT SUBJECT AMONG business practitioners, although it is often difficult to define change in terms of paradigm direction. This paper outlines four paradigms at work in the thinking of today’s business agents. Clarity comes in part from articulating the differences in language and practices that are based in different paradigms. In addition to discussion of the four paradigms in their relationship to change, this paper also examines the origin and applied use of each, along with the principles and instruments that each tends to draw upon. Examples of language that represent the metaphors of each paradigm are offered, as are practices that have developed from each and the effects of each paradigm and its set of practices on organizations, many of which are unintended and may even exacerbate the very situations that they are intended to improve. The overall intention of these comparisons is to improve discernment in an organization’s choice of practices and to facilitate shifts in paradigms and the ableness in individuals to create such shifts.

### INTRODUCTION

We are fooled into thinking that language is an instrument working at our beck and call, expressing our ideas and thoughts as they arise in us. Interpretation of experience makes it seem that we choose our words and offer them up to those who listen, as if words are neutral and passive in the process. But what if it is really the other way around? What if we are tricked into using the words that seem handy to our purpose? What if we are actually blind to how they are framing our thinking and putting thoughts into our heads and mouths? What if we are slaves to our words and the instruments for them rather than their masters? This is what I postulate in this paper. The good news is that we have a choice. We can discover in language clues to our paradigms and the boundaries they impose, which will give us the power to change the paradigms we work within.

I offer business examples to illustrate the four major paradigms, presented as metaphors that are currently active in modern society. I use the metaphors and the language they evoke as a means to understand how language and paradigms affect our understanding of systems change and the working of systems. There is a short description of the sources and use of each paradigm, and what we lose when we apply inappropriate metaphors in our attempts to understand our world and bring change into it. I argue that inappropriate paradigms and their attendant metaphors are a primary source of our inability to manage climate change, ecosystem degradation, human societal health, and even business success. And yet we need paradigms, for without them our thinking processes would be fragmented and dispersed. Thus we must increase our consciousness of the effects of paradigms and metaphors on our worldview and take charge of their use.

### HOW DO PARADIGMS WORK?

What we *see* and *think* is dictated by a worldview, a framing, which excludes some information and constantly interprets a scene, prior to our even “receiving the information” in our brains. In fact, we do not actually see; instead we interpret visual information based on the metaphors and paradigms we

hold. What we think of as seeing is an indirect process, although it seems direct. Eyes see! But eyes only pick up information that is then passed through our firmly held interpretations of all related subjects. We think we see an action in a person and know the intentions behind it. Science has shown us that this is not the case. We have invisible filters, or *lenses*, that govern what we see and how we make meaning of things.

If you have ever seen the work of a great photographer who used lenses to make subtle or sophisticated changes in different prints of the same image, you have experienced an example of the power of filters. They can significantly bend and rearrange how we see things even though the literal photo never changes. The place or persons photographed are constant. We frequently see this in politics, as well, where the same event can have radically different meanings, depending on which party or spokesperson is describing it. In each person's mind, one or another paradigm is working as a filter or lens.

A paradigm is a tightly knit cosmology that frames how we see everything we look at, hear, or otherwise experience. It is held together by our beliefs about the working of "REALITY," which are held as dominant agreements that bind communities of place or interest. Paradigms then become pattern generators in thinking, perception, and language, and therefore of action.

#### THE PARADIGM-FRAMING EFFECTS OF ENGLISH AND OTHER ALPHABET LANGUAGES

Language is one of the lenses that shape our experience. Language evokes or presents metaphors depending on the culture, and it forms in ways that are paradigm based and more or less directly correlated. English and other alphabetic languages require us to think metaphorically because they are abstract. For example, the letters D-O-G in English do not look like the object or idea that they represent. There is no animal shape in the three isolated letters. They are entirely an abstraction, designated to stand for the idea of a barking animal. We cannot make sense of them except through an intermediary process that evokes the symbolic or metaphoric idea of an entity whose name is "dog."

In contrast, the non-alphabetic Asian languages are based on ideograms, each of which is the sketch of a specific, concrete situation and its dynamics. No metaphoric translation is required. The need in English for metaphor in alphabetic languages and the requirement of a cultural filter to make sense of complexity in the world around us sets us up – if we do not develop our capacity

for reflection – to be misled into fragmented images of the world around us. On all of us, paradigms are working silently and invisibly; particularly through our languaging process.

#### FOUR MODERN PARADIGMS

There are four paradigms actively at work in our culture and in any business, in the twenty-first century. I call them, the "machine paradigm," "behavioural paradigm," "human potential paradigm," and "regenerative paradigm." I will describe each in turn and look at its source and patterns, including the language that defines it – and us – as we work to create systemic change.

#### THE MACHINE PARADIGM

*Source:* The machine paradigm arose in the eighteenth century with the industrial revolution, when the life-changing successes of vastly improved mechanical production made machines seem magical, even alive. At precisely the same time, Francis Bacon was proposing many scientific principles, using the mechanical metaphors he saw in the new mass production processes and improved productivity measures that resulted to describe nature and its work. Nature was a machine, a clock, or other inanimate device, made alive by the addition of the energy that was imported to run it.

Where this paradigm makes sense is in the world of machines, which includes devices as different as computers, assembly lines, rockets, and electrical systems. Its goal is the idea that, with intelligent intervention, humans can extend the life or effectiveness of a machine beyond its average or predicted use. The starting place for increasingly longer or broader extension is the understanding of each microscopic element that makes up the machine and the impact of these parts on one another. From this understanding it is possible to invent ways to improve the machine by replacing its parts or redesigning their work. For this purpose, working from the paradigm can be very useful.

*Scientific Belief:* The mechanical paradigm takes its direction from the laws of thermodynamics, a branch of physics concerned with energy and work appropriate to machines. Within thermodynamics, machines and the parts of machines are understood to be subject to general constraints, which are common to all materials and not the peculiar properties of particular materials. The father of this idea was the nineteenth-century French physicist Nicolas Léonard Sadi Carnot, who believed that the efficiency of combustion engines was the key that could help France win the Napoleonic Wars. His new way of thinking made machines preeminent

and thought of as ruled wholly by general physical laws, with no differentiating characteristics. All machines are the same as far as physics is concerned.

Another source for this paradigm, particularly as it is applied to humans, is system dynamics, which emerged in the 1990s. You may be aware of this adoption of the machine paradigm in its expression as systems thinking, often called “systems dynamics”, especially if you have been exposed to the work that MIT Sloan has promoted in this regard. The machine version of systems thinking is drawn from Jay Forrester’s work on artificial intelligence and the study of machines as a metaphor for the living world.

*Instruments:* The philosopher Sir Francis Bacon took the ideas of Carnot and used them to create a method for studying all objects, alive or not alive. He imbedded the laws of the mechanical world into the broader world via empiricism or the scientific method, which is now the basis of research in virtually all universities and laboratories. The methods of the mechanical paradigm in this context are reductionism (break a thing down to its smallest atom), problem-solving (start with a problem and then solve it), and managing all variance to bring performance back toward a posited ideal. These methods are of extraordinary use in the world of non-living objects, but they are neither accurate nor useful when transferred to the living world.

#### MECHANICAL PARADIGM LANGUAGE AND BUSINESS PRACTICES

Terms that are clues to the machine paradigm include *feedback, procedures, standards, alignment, supply chain, causal loops, parts, and elements.*” All of these are present literally in mechanical systems, but not in living systems, even though we have come to see them as present their by transference. For example, there are no “parts” in nature. Even though we speak of trunk, limb, and leaf as *parts* of a tree, there are no dividing lines among them, and we do not have the ability to tell where one stops and another starts. They are related to one another as a living continuum, as are the totalities of all living systems. We may speak of supply-chains as part of the business world, but chains exist only in machines, never within the living systems that we call *businesses* and *economies*. In living systems and human organizations, chains, parts, and all of the terms above are metaphors borrowed from the machine world and applied inappropriately.

However, many current business practices are drawn from these metaphors, including Peer/360° feedback and problem solving as the basis of creative pursuits that break questions and situations into parts as if they were machines. Nature does not

work from problems; its way of keeping a system healthy and evolving is an interactive dynamic.

The most toxic machine paradigm practice in businesses and other organizations is *feedback*. In machines, feedback processes employ governors to detect overload or runaway energy flows and them down. For example, a governor can shut off electrical power to an appliance in case of a surge or gas from a pump when a tank is full. The governor provides a failsafe when a substance or action moves unsafely or outside of prescribed performance limits, e.g., out of bounds or outside of standards. Feedback is the mechanism for managing or controlling for nonconforming events.

Clearly, feedback is essential for the safe and convenient operation of nonliving machinery, which cannot otherwise be self-managing. It is likely just as obvious that feedback has been inappropriately transferred to human organization and regulatory processes, where it mechanizes relationships and sends discouraging signals to individuals when they behave out of standard. In the living world, working from the mechanical metaphors limits imagination, creativity, and initiative and inevitably cuts off access to more inclusive paradigms.

#### EFFECTS OF APPLYING THE MACHINE PARADIGM TO LIVING SYSTEMS

Just as machines are seen as “the same,” subject to the universal natural laws that govern the physical world, the machine paradigm applied to organizations tends to invite us to *commoditize* people. It reduces the flexibility to change roles and create different ways to work, they stop expecting much from themselves. This causes a business to be less resilient in the face of change, which seems inevitable. People learn to shun change and value and expect permanence. It is often said that people “resist” or “fear” change. When they are managed as machines, with the practices of this paradigm, resistance feels accurate because standards flatten any opportunity to contribute. What is actually true it that people resist and fear “imposed change”, but imposition is the only possible approach to change in an operation conceived of as a machine, whose people are mostly identical parts.

Mechanization of work, tends to reduce or eradicates the experience of *caring*, which comes from being connected to others and to contributions associated with significance. When people are seen as just like each other and treated as cogs in a machine, it is difficult for them to feel that they are valued contributors and therefore difficult for them to care about work.

The machine paradigm teaches people not to think but to wait for and expect external direction. The

top-down managing practice, which is a primary structure of this paradigm, is extremely hierarchical. All decisions and planning are conducted from the top down. Yet, managers are surprised that people do not work independently when asked to be in teams. It takes a significant re-education and restructuring of work for self-initiative to return.

#### THE BEHAVIORAL PARADIGM

The second paradigm in modern culture emerged after the machine paradigm had taken solid hold, carrying over the idea formulated by thermodynamics that objects need external inputs to work (gas into a car, electricity into a radio) but shifting the input from fuel or energy sources to the manipulative management of one person or group by another. The basic premise of the behavioural paradigm is that people and groups are externally determined by the consequences of their actions and that the introduction of behaviour intercedents can give us the power to control them based on their reactivity to pleasure and pain. Managing these stimuli can produce predictable responses that are beneficial to others, although not necessarily to the person who is being manipulated. The behavioural paradigm has as its goal the prediction and control of behaviour.

*Source:* John B. Watson, who originated the field of behaviourism, emphasized the external behaviour of people and their reactions in given situations, rather than their internal, mental states. In his opinion, the analysis of behaviours and reactions was the only objective method for developing insight into human actions. This outlook – combined with the complementary ideas of determinism, evolutionary continuism, and empiricism – has contributed to what is now called “radical behaviourism.”

Watson’s behaviourism rejected the study of consciousness. In fact, he was convinced that it actually could not be studied, and that past attempts to do so had only hindered the advancement of psychological theories. He felt that introspection was faulty at best and rewarded researchers with nothing but infinitely more issues to be resolved. He pushed for a psychology that would no longer be considered the science of the “mind” and insisted that even the existence of a mental life is false. Thus individuals are only the sums of their behaviours.

Watson’s work became relevant to business when he made a promise and later a deal with leading industrialists, who were benefiting greatly from the industrial revolution and the marketing of goods to a newly rising middle class. Contrary to the way machines worked, human producers

were problematic. They were emotional and unpredictable, and managing them consumed energy. Watson promised that in return for funding to build a lab, he would show industrialists how to control people and their behaviours, making them as docile as the powerful machines they operated.

The industrialists bought the idea, and Watson set up his lab at Johns Hopkins University to study motivation and behaviour. His successful selling of the theory that rats and humans were interchangeable in the development of motivation theory affected the basic operation of industrial organizations and influenced hundreds of doctoral students, including B. F. Skinner. Thus, since the mid-1950s, the faulty reduction of the human mind to rat brain has been rampant in business, education and even parenting. (A footnote to this story is Watson’s experimentation on orphans and the children in his own extended family, which led to their long-term mental illness and caused Watson to lose his teaching positions.)

*Use:* The behavioural paradigm has as its goal the prediction and control of behaviour, with the intention to manipulate outcomes in others. The intention is to discover how to manipulate human behaviour through the study of rat behaviour. In fact, behavioural science still draws inferences about human behaviour from studies of lower-order mammals.

*Scientific Direction:* The behavioural paradigm’s guiding theory is that people are not self- and internally motivated, that all behaviour is the outcome of avoiding pain and seeking pleasure. Its guiding principle is to find what external stimulus produces what reactive response and, as in the physical sciences, to find a general description of how behaviour works, independent of the unique behaviours of specific individuals.

*Instruments:* Because the foundation of this paradigm is that there is no inner life, no human mind, its method is to detect with observation via the senses and sense-based instruments, which are considered to be reliably objective. Controlled studies, usually in a laboratory as described above, are the core instrument. Adopted from physical science, studies always start with hypotheses and attempt to disprove them, based on what is in physical existence and can be present to the senses. However, as stated in the introduction to this article, all human events are observed through filters that give them shape and meaning. Thus the major flaw in this work is the observers’ unawareness that their findings on human behaviour have been framed by a world view based almost entirely on the study of lower-order mammals trapped in cages.

#### BEHAVIOURAL PARADIGM LANGUAGE AND BUSINESS PRACTICES

Terms that are clues to the behavioural paradigm include *influence, incentivize, train, role model, top or bottom of class, best in class, winning, and win/win*. There are two assumptions embedded in this language. The first is the idea that there are external ideals that everyone should meet. The second is the idea that people can be manoeuvred toward ideal behaviour by external reinforcement and forces. Influence, incentives, and role models, along with rating and ranking, are based on manipulating others for our own ends, even when these are supposedly good ends.

Because the intention is to manipulate others with the use of pain and pleasure, the primary business instruments are incentives, rewards, recognition, rating, and ranking. These practices are most often applied without examination of the paradigm's assumption that lower-order animal behaviours translate directly to human behaviour. Performance Reviews are based on the promise of external control, even when others give input, and the assumption that everyone moves toward the same ideals. Modern neuroscience has confirmed this is not the case.

#### EFFECTS OF APPLYING THE BEHAVIOURIST PARADIGM TO LIVING SYSTEMS

This paradigm, as played out in business, promotes internal considering, which causes individuals to focus on themselves and the potential effect of every outcome on them alone. When people are internally considering, they have no thoughts about the greater good or the value of their actions for others. Everything is considered from a personal bias.

Behavioural systems that are set up primarily as managing systems drive and accelerate internal considering because they do not put people in control of their own destinies, with the ability to affect outcomes. Two of the primary methods in this kind of system are incentives and rewards, which are based on results that are tied to the performance measures of management. They make recognition seem scarce because others determine the few who are to be acknowledged and therefore valued. When a few are set up as role models, the default concern becomes, "all about me and the effects on me."

Another effect of managing systems is to cause people to seek to "beat the game". The goal is winning and some become winners, good at meeting the conditions. With limited rewards, high stakes, and secretiveness, a lot of innovative energy is put to winning. Even when it is a win-win for the company

and the individual, people are likely to modify their behavior to win, thinking less about their contribution to an end larger than themselves.

Managing systems also reduce motivation, particularly intrinsic motivation. The focus is external, as is intended by the behavior systems. But when people are tantalized by the carrot at the end of the stick, they do not motivate themselves or pursue personal agency applied to grander work. They pursue the carrot.

#### THE HUMAN POTENTIAL OR HUMANIST PARADIGM

According to Wikipedia, the human potential movement arose out of the counter culture milieu of the 1960s and formed around the concept of cultivating extraordinary potential that its advocates believe to lie largely untapped in all people. The movement took as its premise the belief that through the development of "human potential," humans can experience an exceptional quality of life filled with happiness, creativity, and fulfilment. As a corollary, those who begin to unleash this assumed potential often find themselves directing their actions within society towards assisting others to release their potential. Adherents believe that the net effect of individuals cultivating their potential will bring about positive social change at large<sup>1</sup>.

Core to this movement was the *ableness* of humans to be aware of and manage not only their own behaviour but also their inner mind and motivation. Most of this movement's emergence was a reaction to the behavioural psychology of the previous decades.

*Source of the Theory:* Great thinkers and teachers of the twentieth century – including Abraham Maslow, Virginia Satir, Carol Rogers, and many others – rejected most of the ideas of the behaviourists. They felt that humans could be completely self-determining and could change themselves in order to achieve change in the world beyond their apparent potential.

*Primary Use:* The goal of the humanist paradigm is personal and human growth for each individual. As compared to the source of behaviourist theory, the human potential theory was developed by a movement, where hundreds of people almost simultaneously created Humanist Psychology. The ground was the self, the individuated person who is not fixed or limited from birth, who is characterized instead with unique potential that can be realized when it is intentionally developed.

*Direction and Means of Study:* The humanistic movement seeks to build programs and practices to realize the unique potential of every human being. Because personal development is the cornerstone of its work, the movement eschews all external motivation in

favour of reflective practice, including meditation. Humans are seen to have agency, free will, and self-accountability. Personal growth is possible throughout one's life.

Pursuing potential is motivational, even more so than external conditions of pain and pleasure and can override the control that external force places on humans. In the last decade, it has become increasingly possible to conduct research on inner experiences, through fMRI, action research, and surveys. This research has the potential to move beyond the generalizations of the machine and behavioural paradigms in order to develop more powerful applications for the development of individuals. However, it is also at risk of becoming a resource for the commoditization of individuals, based on the assumptions that motivation always arises from internal sources and that all people respond in similar ways to educational and development processes.

#### HUMAN POTENTIAL PARADIGM LANGUAGE AND BUSINESS PRACTICES

Language clues to the human potential paradigm include speech about *family systems, personal interactions, gestalts, mirroring, anchoring, whole persons, uniqueness, self-organizing, self-accountability, and human stewardship for the environment.*

Business practices include the development of emotional intelligence, application of neuroscience, leadership for development, team building including survival courses, mentoring and coaching. They often include applications of therapy and counselling, such as defining types and strengths, and even martial arts as a new field of practice.

#### EFFECTS OF APPLYING THE HUMAN POTENTIAL PARADIGM TO LIVING SYSTEMS

Practices of the human potential paradigm tend to awaken personal agency. People feel that they can stretch and grow. They are often invited to be self-initiating, and this further fosters the sense of power over one's future. Maybe more importantly to business, it increases the desire to contribute and make a difference. All persons are seen as *growable*, and so mistakes are tolerated and often included, even risk taking.

Where behaviourist practices increase external motivation expectations (What's in it for me? What have you done for me lately?) the humanist practices escalate motivation that is intrinsically evoked by oneself on oneself. Because most of these practices foster teamwork and engagement, along with far less divisive competition, this

paradigm tends to create a sense of belonging and to result in far less reactivity. All of the human potential practice effects combined, fostering self-determination with personal agency, are more intrinsically motivational and team building, ensure more mental space and will for innovation within an organization.

#### THE REGENERATIVE PARADIGM

The regenerative paradigm is based in a living systems cosmology. Humans exist embedded in an ecosystem that is alive with potential at all levels, from microscopic to planetary. They cannot be separated from this system, and they have unique work to do within it. Each entity in the system is interdependent with the greater system. Its work is complex and dynamic and must be studied as a living whole, not broken into parts by dissection or reductionism.

*Source:* The theory base for all who work in the regenerative world is the study of ecology and holistic sciences. The goal is to reveal and support the expression of the essence of each living entity, whether a person, a watershed, or a business. Each is unique. The method is to learn to see nodes or keystone processes. For example, when wolves were removed from Yellowstone National Park in the United States, the entire system collapsed, including rivers and the ecosystems surrounding them. When wolves were reintroduced, the system regenerated itself. The wolves were a keystone species, essential to the working of the system. The same kind of effect can be seen in a business's work system, where customers' lives are the source of growth and the keystone of responsibility and innovation. Learning this nature of nodal thinking is the ground of the paradigm. A core capability is learning to see nature as a master designer and humans as integral entities that can develop energies to make the system healthier.

*Science Direction:* Study and validation of the work of living systems is the source of the paradigm. The work of James Miller and Living Systems points to the overall uselessness of reductionism in understanding the work of living systems. The evolutionary biologist Elizabeth Sahtouris has also been a major developer of theory in this field, as have James Gleck and his Gaia theory of the Earth as a whole, living organism, and Rachel Carson, author of *Silent Spring*.

*Instruments:* This paradigm's instruments include building human capability for the intentional evolution of living systems and exploring nonlinear reciprocity and the capacity for intentional evolution toward the realization of the potential of all entities with systemic stakes in the outcome. The use of technology such as Google maps has enabled time-lapse

photography that reveals the changes of in ecosystems over time, making the largest living systems seem less static.

#### REGENERATIVE PARADIGM LANGUAGE AND BUSINESS PRACTICES

Language clues to the regenerative paradigm include the terms, *working*, *imaging*, and other verbs that end in “-ing” and describe processes; *nested wholes*, *regenerative*. Regenerative practitioners use the less anthropocentric term *lifeshed* in place of watershed.

Regenerative business practices include all that image work as a “value-adding process,” in which value increases and extends as the result of each interaction and transaction and in which systems frameworks reveal the complexity and dynamics of living systems.

#### EFFECTS OF WORKING WITHIN THE REGENERATIVE SYSTEM PARADIGM

Courage in the face of difficulty – one practice that has been very effective, introduced by Carol Sanford Institute, is “promises beyond ableness.” Within the context of a strategic direction, organization members are each asked to find a contribution they want to make that is beyond what they feel they are capable of and their current ableness to deliver. In spite of this gap, those who make promises beyond ableness want to grow and learn in order to make the offering. They are self-directed in achieving the ends they pursue, and they almost always succeed beyond their own expectations and increase their capability for the next round of work and promises.

Another effect is the removal of hierarchies and development of work “self to self,” rather than role to role. People talk to one another without the constraints of rank or authority; only the quality of ideas matters. All parties judge ideas based on the outcomes for a greater whole, and not their own benefit. Without boss-and-subordinate’ roles in mind, creativity grows and the political position disappears.

When intention is focused on producing a regenerative process, global imperatives can be imbedded in strategy from the beginning. They are not a separate function of the few, but the pervasive work of all, part of every conversation to determine which the decision and choices are integral with the imperatives of a vital and viable society and planet.



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<sup>1</sup> Wikipedia contributors 2015, “Human Potential Movement.”



FATH ALI SHAH QAJAR, PAINTED BY MIHR 'ALI

## SYSTEMIC CHANGE: THE ROLE OF 'CREATIVE STYLE'



*A graduate of the Royal College of Art, Denis Postle initially pursued a career at the BBC and with independent TV in the UK as a filmmaker, writing and directing broadcast documentaries about MIT, Carl Jung, Moonrocks, Paul Ehrlich, Catastrophe Theory, High Energy Physics, Doctors, Human Nature and Cooperative*

*Inquiry. Two decades later, after training as a facilitator, he developed a form of psychopractice in which he draws on creative lifework as a film-maker, musician, photographer, graphic artist, grandfather and, until recently, ship owner.*

*His successful psychopractice has included publication in eight editions of an introduction to humanistic psychology, The Mind Gymnasium. His therapeutic work settled on the creative margins of the psychotherapy mainstream and this orientation led to a decade and a half of activism confronting the psychological therapies' love affair with the State. In 1995 Denis was a co-founder of the Independent Practitioners Network (IPN), a non-hierarchical, commons-structured way of delivering practitioner civic accountability. Along with two books about the vicissitudes of 'state regulation' Regulating the Psychological Therapies – From Taxonomy to Taxidermy and Therapy Futures: Obstacles and Opportunities, this active political experience has more recently nourished an understanding of the vernacular capability and resilience that enable us meet human condition challenges; that has taken the form of adding another commons to the list of classic commons of ocean, sky and forests; a 'psyCommons' – the ordinary wisdom and shared power threaded through daily life.*

### INTRODUCTION

**T**HE INVITATION TO EXPLORE AND WRITE ABOUT systemic change was one I welcomed. Why did I opt to write about Professor Michael Kirton's Adaption Innovation Theory (A-I Theory)? There are two main reasons: first, it has been a valuable aid across recent decades in navigating a variety of systemic change; and secondly, it explained my own life in often uncomfortable detail.

A-I Theory accounts very effectively for a significant proportion of the harmonies and disagreements in groups and teams, as we deal with challenges, not least those that merit being called systemic change.



FIGURE 1 - Bruno Postle, *Homemaker* computer-generated domestic building<sup>1</sup>.

Beginning in the 1970s, Michel Kirton built up an extensive and well-validated body of research into problem-solving and creativity, the outcome of which was his Adaption Innovation Theory and a way of measuring it, the KAI questionnaire<sup>2</sup>. While the generalities of A-I Theory were accessible through Michael's publications, the nuances and practical uses of the theory were, and remain, only accessible via a five-day licensing training. As a licensed user and author of an earlier introduction that Michael agreed line by line, I feel able to step outside of this highly structured knowledge (itself a statement that the theory accounts for!) and assemble a user-friendly account of A-I Theory, one which you may find sheds light on current challenges and past successes and failures with regard to systemic change.

Before we come to the A-I Theory perspectives on systemic change, a word on what it is, and what it is not. A-I Theory consists of two ingredients, one a proposal that we approach problem-solving from a very stable preference of *creative style*<sup>3</sup>, of which there is a spectrum that ranges from Adaptive to Innovative; and secondly, a questionnaire through which we can identify our preferred creative style. A-I style is an indicator of our problem-solving comfort zone, our preferred approach, it says nothing about the *level* of our problem-solving/creative capacities<sup>4</sup>.

An early and striking realization that A-I opened up for me was how it honours the diversity of creative styles, validating all styles of creativity, and correcting the notion that innovation has some primary creative value. For me it demolishes the idea that art is an elite celebration of innovation, rather than art being, as the Balinese apparently used to argue – more a matter of doing everything as well as possible.

This honouring of diversity is a central A-I Theory notion – that as a group, or team or organization engaged in the daily task of generating and surviving systemic change, we will bring a wide range of creative styles to the task.

First, however, I must present some basic information about the approach.

#### A SPECTRUM OF CREATIVE STYLES

The spectrum of creative styles is usually displayed as a scale from Adaptive to Innovative in a normal distribution, i.e. that around two-thirds of the population lies around the middle of the scale. The scale gives a KAI score of 32 as the extreme of Adaptivity, and one of 160 as the extreme of Innovative style, with a mean of around 96.

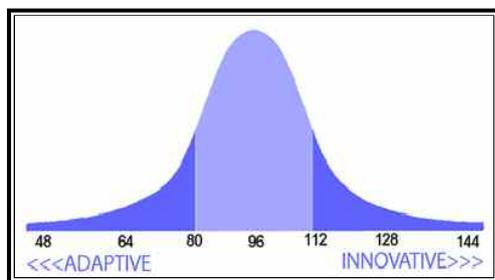


FIGURE 2 - Creative style spectrum.

There are many windows into the human condition and A-I Theory is only one of them: however, the spectrum of creative styles and how they affect relationships do seem to have a major influence on how we handle systemic change. How so?

*Adaptors tend to accept the problems as defined by consensus, accepting generally agreed constraints. Early resolution of problems, limiting disruption, and immediate increased efficiency are their more important considerations.*

*Innovators tend to reject the generally accepted perception of problems and redefine them. Their view of the problem may be hard to get across. They seem less concerned with immediate efficiency, looking to possible long-term gains<sup>5</sup>.*

It is useful to keep in mind that no point on the scale, no creative style, is more valuable than any other, and secondly, it does not mean that the concentration of people in the middle of the scale are a mix of adaptive and innovative. A-I Theory is about relationships, and measurement via the A-I questionnaire points to the likely relationships between people with different creative styles; how, from our preferred creative style, we relate to other different styles. It is these

relationships that are important, not the classification in itself. Wherever we are on the spectrum of creative styles, to some people we will seem more innovative and to others more adaptive.

There have been several reasons why I have come to value A-I Theory. First, a postgraduate art school education endorsed a strongly innovative creative style that A-I helped me recognize. In my later facilitation work I learned that if I was able to give an account of A-I Theory that was accessible enough and detailed enough, something like the one that you are reading. People in the groups with whom I was working – for instance, police officers – could guess their A-I score very accurately. For me this strongly confirmed the value of the A-I Theory proposals.

#### CREATIVE STYLE PREFERENCES

Before we come to how A-I theory may be of practical use in meeting the challenges of systemic change, I will expand this outline and invite readers to make a guess as to your creative style.

Here is how I have previously presented it<sup>6</sup>.

If your approach to bringing about change is ADAPTIVE, you will be more likely than Innovators:

- ~ to prefer improvement of existing structures over mould-breaking change;
- ~ to start work only on projects or schemes that you can complete;
- ~ to calculate decisions finely, taking care about the consequences of your choices;
- ~ to accept change in so far as it improves or strengthens the status quo;
- ~ to be methodical and prudent;
- ~ to ensure widespread support for proposed changes before offering them;
- ~ to put a high value on being efficient within a system;
- ~ to resist 'sticking your neck out' against prevailing opinion;
- ~ to reject, or be very sceptical of, changes that challenge the cohesion of the group;
- ~ to be interested in solving problems rather than looking for them;
- ~ to appear tolerant of boredom;
- ~ to respond to criticism from close colleagues with greater conformity;
- ~ to see innovative ideas for change as threatening or unsafe.

*Adaptive ideas are more likely to be accepted and pay off immediately.*

If your approach to bringing about change is INNOVATIVE, you will be more likely than Adaptors:

- ~ to prefer mould-breaking change over improvement of existing structures;
- ~ to be reckless or neglectful of the consequences of your actions;
- ~ to see the 'status quo' as needing complete transformation;
- ~ to be seen as undisciplined and reckless;
- ~ to assume that ideas for radical change are self-evidently valuable;
- ~ to put greater value on thinking up new schemes than on implementing them;
- ~ to question basic assumptions about any problem that is being worked on;
- ~ to feel free to criticize proposals for change from any source without regard to the subsequent cohesion of the group;
- ~ to enjoy seeking out problems;
- ~ to become bored with routine;
- ~ to prefer to delegate routine tasks;
- ~ to live with rejection and hostility;
- ~ to see criticism from close colleagues as a challenge;
- ~ to tend to see Adaptive ideas for change as no change at all.

*Innovative ideas are more likely to be rejected – if they pay off they are more likely to be 'visible'.*

Here are some samples of what Michael Kirton says about A-I theory:

*Everyone brings about change, including change in the structure they use to do so. Adaptors are likely to do so as an outcome of solving problems with the help of the prevailing structure; innovators are liable to bring about change by first altering the prevailing structure<sup>7</sup>.*

*The more adaptive prefer their problems to be associated with more structure, and with more of this structure consensually agreed, than those who are more innovative. The more innovative are more tolerant, at least while in the pursuit of a solution, of a looser guiding structure<sup>8</sup>.*

*Too much structure and adaptive efficiency boomerangs; although continuing to become more efficient, it can be trapped within an inappropriate paradigm or one in dire need of reform. In such cases, it is time for the innovator to come to the rescue, for the innovator is more inclined to solve problems as much despite rules, as by their use – an inconvenience when the paradigm seems to rule supremely well<sup>9</sup>.*

*Adaptors more readily anticipate challenges and threats from within the system (often devising, in good time, plans to economise, downsize, etc.), whereas innovators are more ready to anticipate events that might beckon or threaten from outside, such as the earlier signs of changing taste and markets, or significant advances in technology that have not yet been fully exploited<sup>10</sup>.*

At this point I am hoping you will have made a guess about your own creative style *and only your creative style* – not how creative you are, or are perceived to be.

Perhaps you believe that you are not at all creative? Really? As Kirton insists:

*[...] to describe someone with an intact cortex as uncreative is an elitist view; to describe a person as incapable of problem solving is absurd. Problem solving can be measured in terms of its level or its style but no one can be dismissed as not being able to do it<sup>11</sup>.*

#### A - I THEORY AND SYSTEMIC CHANGE

So how does A-I theory help us engage with systemic change? I warmed to Kirton's proposal that when any of us sit down with another person or persons to deal with a problem or task, we have what he calls 'Problem A'; however, we immediately generate a second problem – i.e., how, between us, we approach the task, or 'Problem B', as he calls it. Intense or exclusive focus on problem A can generate disagreement and division. A-I Theory offers help in attending to Problem B, i.e., how we approach the foreground task. Given the amount of emphasis on 'process' in much corporate training, this might seem an unremarkable take on group cooperation; however, a key element of the A-I approach enters the scene – *diversity*, the range of different creative styles in the room, and just as important, the possible lack of diversity, or diversity that is inadequate to the task.

Kirton reports that extensive research, and the use of A-I Theory in groups and teams, show that while discussions with other people in the same 'creative style comfort zone' (i.e., 10 points more or less adaptive or innovative than us) are likely to flow and lead to direct agreement, with people who are 20 points more or less innovative or adaptive, we will need to take great care to understand their concerns, and are likely to struggle to find common ground. So far as there are people in the group who are 30-40 or more points more innovative or adaptive than us, we may appear to each other to be from some other planet.

A common experience in pursuing projects is to give full attention and commitment to problem A, while neglecting or being unaware that problem B, our unacknowledged divergence of creative style is undermining our capability. Showing up full of energy and enthusiasm for an enterprise only to leave meetings feeling thoroughly de-motivated is, I assume, a common experience. A-I Theory suggests that this is likely to be due to ignorance of, or insufficient attention to, the diversity of creative styles in the composition of the group.

Managers and corporate Human Resources departments can carefully tailor the composition of a group's creative styles to match the demands of the work they are being paid to do, and A-I Theory has

been widely used for this purpose. Outside of such resources, in our local engagement with others, how can we use it to be more effective, more caring, more intelligent about the systemic change we confront or are being confronted by?

#### POLICY AND UNDERSTANDING

Kirton's published work contains a variety of accounts of the use of A-I Theory that are well grounded in statistical validation, but A-I Theory also has generic qualitative value. Here, from my experience, are two examples of how it can contribute to shaping policy and understanding what is going on in systemic change processes – one a success, and the other, as of this moment, a failure.

CASE STUDY I: State regulation of the psychological therapies.

Systemic change in the psychopractice culture in the UK started to gather momentum two decades ago when professional training bodies for psychotherapy, psychoanalysis and counselling began to behave as trade associations more concerned with market share than, as was often claimed, client/service user protection. These professional trade associations were moving the field from a rich diversity of ways of practising, to tight rule-bound and strictly administered enclosures with a high price for entry and qualification. How did A-I Theory help here?

Professional trade associations are, of course, entitled to organize themselves as they wish, but two issues raised concerns for psychological practitioners who, due to preference or origins, were out of the mainstream: the identification of such outsiders as 'charlatans', and the appointment of CEOs to head these psychopractice organizations and install more of a business culture.

While there was no way to directly evidence the intuition, it seemed as though the devotees of these enclosures, and the structures of authority that they were accumulating, amounted to a strong bias towards adaptivity, with 'charlatan' being another name for 'high innovator'.

This systemic change deepened, with professional trade association membership becoming more and more a prerequisite for National Health Service employment. Some independent practitioners, a few dozen at first and later several hundred felt marginalized and saw the professionalization process as detrimental to the public interest. At any rate we found each other, and as you might guess (direct evidence being lacking) we appear to have been a lot more innovative than the proponents of professionalization.

Systemic change was not only in the air but also underfoot: we felt in danger of being ethically and

economically damaged by an aggressive form of regulation. Several conferences were organized, and counter-cultural ways of defining civic accountability emerged. The advent of email helped coalesce this opposition to the systemic change that we saw as both incongruent with core therapeutic values and not in the public interest.

It was of course legitimate for the professional trade associations to be diligent about improving rules and regulations about who was qualified as a practitioner and how to deal with miscreants – more and tighter structures of authority and gate-keeping – i.e., more adaptive. To practitioners of a more innovative creative style, however, this looked to be the capture and enclosure of public territory that in the public interest needed to be kept open – open to innovation and with civic accountability based on looser, more fluid arrangements.

As a focus for resistance to state regulation of the psychological therapies we were learning that systemic change can be incremental, a tide coming in; but we also learned that there can be trigger points, inflection points, in which a system might be poised to abruptly change from one paradigm to another.

In the present story such a trigger point occurred when, after years of lobbying for state regulation by the psychological trade associations, the government delegated the task to a newly created regulator, the Health Professions Council (HPC). The capture and regulation of psychological therapy practitioners (but not their trade associations, which is another story) was to be undertaken by a proxy of the State.

This of course is a much bigger story than there is space for here<sup>12</sup>. What has become known as the 'audit culture'<sup>13</sup>, in which the methods of financial accounting have been applied to education, healthcare, medicine, academia, policing and social work, entered the scene.

The HPC turned out to be institutionally transparent, and as its process of capture of psychological therapy practitioners proceeded, the fine grain of its institutional instrumentality and devotion to an audit culture of rules, standards and the quasi-legal enforcement of them became apparent. It was, indeed, a Regulator – adaptivity personified. Resistance intensified.

While the mainstream therapy organizations tried hard to get the best deal from the Regulator, the ('scientific') psychologists capitulated and signed up to HPC regulation. Despite heroic efforts on the part of some individuals, the communities of non-mainstream practitioners were neither effective nor large enough to do more than deflect the worst aspects of capture by the HPC – for example, the wholesale transfer of membership lists.

Eventually, however, the HPC's attempt to regulate the psychological therapies in the UK failed. Paradoxically, this was due to what has subsequently seemed an object lesson in resistance to systemic change; a maverick group of psychoanalysts hired counsel and set about a highly adaptive process of checking the legality of the details of the HPC's regulatory protocol. They found major errors of due process in it and threatened a Judicial Review. End of story.

#### CASE STUDY II: Revising a constitution

A second story tells of how what appeared to be quite a modest proposal for systemic change was rejected. The number of participants in a network of practitioners organized as a commons was in decline – how could this be arrested and reversed?

One of the constituent groups in the organization came up with a proposal for a change of 'governance' as a way of, for our purposes here, dealing with 'free-riding'. The proposals for this were presented and subsequently developed and improved at a national caucus of the organization and, in line with the constitution, the proposals went forward for ratification at a succeeding caucus.

Amid claims that it was exclusionary and created a 'hierarchy', this caucus rejected the proposed change to the constitution, even though this 'hierarchy' was to be composed entirely of existing committed participants.

I necessarily leave out the detail of how this setback had arisen. Subsequent reflection showed that the proposal for reform was coming from people who were perceived, probably correctly, as having a certain (and public) 'maverick' status, i.e., as significantly more innovative in creative style than the organization's general population. However, the first caucus had been in principle representative of the organizational consensus around these matters, and in addition the proposals did not seem unduly contentious.

Something had slipped under the radar. With hindsight it became clear that no one noticed that in calling for a shift of 'governance', people more adaptive than the originators of this name change would see this new descriptor as pointing to a threatening level of systemic change.

This writing has reinforced my own understanding of something which often sinks out of reach, i.e. that highly innovative people who are inclined to approach systemic change by calling for the basis of current forms of organization to be changed, a classic innovative tendency, are often likely to be disappointed. Alongside this it can be said that if a group holds too strongly to existing structure and is

not able to give adequate attention to innovative proposals, however poorly they might be framed, the recipe for decline that was being challenged may be confirmed.

However, humility is often in order at these times, as Michael Kirton argues:

*We all have the tendency, in most situations with which we are familiar, to fancy our own style preference – seeing its virtues clearly but just as clearly seeing the faults of others' different style preference. It appears somewhat more difficult to see the faults emanating from one's own style and the advantages of a different style<sup>4</sup>.*

He also strongly emphasizes, as is exemplified in the above examples, the paradox of structure:

*[...] that it is, at one and the same time, both enabling and limiting. We endeavour constantly to exploit structure and manipulate its limits. Adaptors and innovators do so differently. One way of summing up these differences is to say that the more adaptive prefer to solve problems by the use of rules and the more innovative do so despite the rules. Here, 'rules' are used to represent all cognitive structures. Examples of other terms are theories, policies, precedents, terms of reference, and paradigms<sup>5</sup>.*

#### C O P I N G   B E H A V I O U R

Kirton's research asserts that the A-I Theory of creative style preference is established early and is stable, i.e. it does not change over time.

*The theory assumes that adaptation–innovation is a characteristic that is stable, indeed highly impervious to change. There is much evidence in support of this assumption – [...]. It shows that people do not change with age or experience or from culture to culture<sup>6</sup>.*

Since across a life we are inevitably faced with occasions when we sometimes have to operate in our creative style comfort zone and sometimes out of it, how do we deal with this? To quote Kirton again:

*Whenever I ask you for help, and you agree, we are each instantly faced with two problems. Problem A is the reason we have formed the group – the reason for the formation of any group of living creatures – for mutual self-help. But we have also acquired Problem B; how to manage each other<sup>7</sup>.*

One common and tempting option in dealing with diversity is to have a quarrel, or to try to induce harmony via some charismatic magic. However, as Kirton points out, at work, in families and other institutions where our social and other needs are met or can be expected to be met, the awkward uncomfortable differences of creative style are handled through *coping behaviour*. We can learn to lean out of our comfort zones towards a style of problem-solving that may be unappetizing or give us difficulty. This coping comes at a cost, and if it is not temporary, can be debilitating. Coping is akin to sorting items on a high shelf while standing too far away: it is possible, but it is a relief to stop.

Two examples. Suppose I am listening to a proposal for systemic change in my organization from a person who has been invited to help us find a way out of an impasse, e.g. do we expand? Or consolidate? My coping behaviour might include keeping quiet about the ‘weird outfit’ they are wearing, being patient with the number of times they use words such as ‘new’, ‘breakthrough’ or ‘brainstorm’, but also listening past these irritating examples of what I have come to think of as ‘blue skies thinking’ and try to take in and digest the specifics of the proposals. This is coping from a more adaptive position.

Suppose I am a practitioner invited to help another group which also has an impasse. Their work requires a combination of courageous self-direction and responsibility but also strict compliance with the rules which they are employed to implement. At work they are subject to a necessary top down command culture but how do they manage their living quarters? By consensus? Or by deferring to the appointed leader?

That they will expect that I come with a bouquet of ideas from which they will choose something can be anticipated. However sitting in the meeting and listening to the consensus bonding that is in place in the group underlines the extent to which I am considerably more innovative than the group mean. Coping behaviour for me in this situation means that I need to unequivocally validate the consensus, underline its strength and ask about its limitations. Leaning towards the group’s highly adaptive creative style makes it more likely that, because the group has ownership of it, a solution that can be implemented will arise from within the discussions.

#### BRIDGING

The range of diversity in creative styles in a large workplace means that a significant number of people will have difficulty with, or find it impossible to appreciate or work with, creative styles that are far away from their own, and yet there is work to be done. If we leave aside bullying and coercion and the damage that can result, how can cooperation be facilitated? Kirton introduces the possibility of *bridging* identifying people in a group who can help those of us with divergent creative styles to be patient with, and communicate with, ‘difficult’ others.

Writing this, I recalled working with a major auto manufacturer on the introduction of a quality management regime. After some difficulties, the manufacturer discovered that implementation of the new quality system required finding ‘Champions’ employees who could bridge between the innovative designers of the quality systems and the

more adaptive people who had to implement the structural change.

#### ORGANIZATIONAL CLIMATE <sup>18</sup>

While decisions about systemic change ultimately arise from individuals sitting down to discuss, agree, modify or reject proposals for them, other considerations also arise – and chief among them as Kirton points out, is organizational climate. To see what this can mean, let us look at a hypothetical organization.

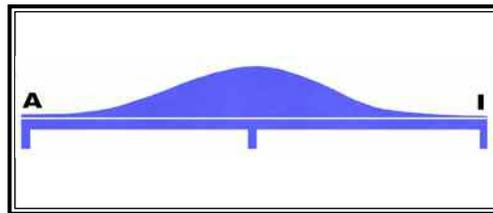


FIGURE 3 - *Organizational climate balanced between adaptation and innovation.*

In this organization there is probably enough of a spread of different creative styles to support efficient, economic pursuit of the organization’s aims. A need for greater consolidation will find sufficient more adaptive people to support it; in a crisis, if evolution of the existing organization is not sufficient and out-of-the-box solutions are *required*, enough more innovative people will be on hand to devise new structures. In a well-enough resourced organization, this mix of different styles can be the intentional result of hiring policy. As an eminent industrialist once told me, ‘I appoint a particular kind of person to build and open a factory, but it takes a very different style to manage it well once it is running’.

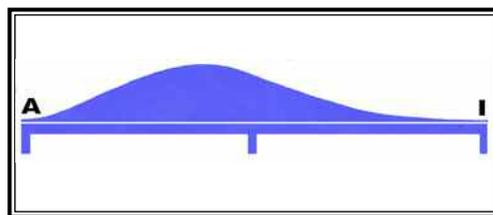


FIGURE 4 - *Organizational climate biased towards adaptivity.*

Here is an organizational climate that may have evolved in the direction of more adaptivity to match the tasks at hand; it could also have suffered drift in that direction if, as innovative voices found their influence fading and with it their satisfaction, they felt marginalized and so quit. Such a climate might

find itself struggling if it is assailed by economic challenges that require substantially more innovative problem-solving, especially if there is urgency driving them.

It may be worth noting, however, that a problem-solving climate leaning towards adaptivity is probably common in publishers who need to be very adaptive to produce and sell books successfully, but who depend for innovation on freelance authors.

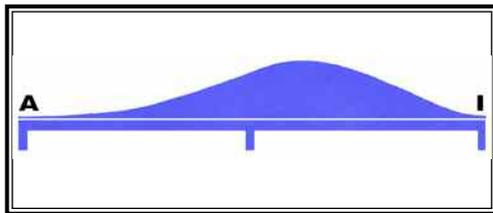


FIGURE 5 - *Organizational climate biased towards innovation.*

To complete this set of profiles, here (FIGURE 5) is an image of an organization composed of clusters of more innovative people – perhaps an advertising agency generating TV and radio production, or a group of highly autonomous individuals who have come together for a short-term event such as a conference, think-tank meeting or musicians for a public performance. Temporary resources for such occasions can be provided by a few more adaptive people. However, such innovator-driven enterprises can be vulnerable to the departure of the few more adaptive key people who hold the structure together.

#### NICHE AND SYSTEMIC CHANGE

One of the ways in which more innovative people survive in what is often a relatively hostile, more adaptive climate is to find a niche, a speciality from which they can venture out across the boundaries of organizations, ‘do their thing’ and leave. You only have to look again at the normal distribution of the adaptive/innovator spectrum to see that high innovators are often likely to be faced with disappointment and hostility. This appears to be less of a problem for highly adaptive people:

*When asked to list the disadvantages of their preference, groups of high Adaptors commonly can't think of any, whereas a similar group of Innovators will quickly compile a long catalogue of rejections, humiliation, marginalization, and lack of appreciation<sup>19</sup>.*

A little more on niche. A group of police officers I mentioned earlier were wary about revealing to

each other their preferred creative style, but when they did so they were relieved to see that, and except for one officer, they clustered together on the more adaptive side of the mean. The exception was an officer with a creative style that was notably different and much more innovative. As the group knew but I did not until he said so. He was the police authority press and public liaison officer, i.e. a person who needed to function inside *and* outside the boundaries of the policing culture, and in another aspect of A-I Theory, was able to translate between them. As the group acknowledged, this was an indication of a well-judged career/hiring decision.

Might there be an equivalent niche for high adaptors? Two instances from work with a retail bank shed light on a very different culture. Cashier training involved, among other things, handling foreign currency. Even though this was a bank, it became clear to the trainers that importing a convincing-enough amount of dollar bills for the training was going to be highly problematic. One of the trainers, whom we can assume was more innovative than the bank staff, improvised, using a photo copier, a large pile of ‘dollars’ that were adequate for the photography required. However, the trainers had then to cope with the banking officials going into shock at the presence of such large amounts of ‘counterfeit’ currency!

A retail banking culture necessarily entails work that requires a highly adaptive approach to rules and regulations. Outside the window of the bank training centre was another instance of how such a highly adaptive culture can be manifest. Several men were on their knees in the grass outside; on closer inspection it became apparent they were removing the daisies that someone in the management felt were disfiguring the lawns.

#### ORGANISATIONAL CLIMATE AND A-I THEORY – CAVEATS

It would be a pity if this account of A-I theory, through idealizing or oversimplifying organizations so as to better grasp the big picture of systemic change, inadvertently glossed over the economic or internal power struggles and other imperatives such as peer pressure that keep us in roles and jobs that might be better done by other people. Consider, for instance, coping with living or working in an organization where most people around us are 20 points more adaptive or innovative than we are but where, due to loyalty or poverty, this is a situation we are unwilling or unable to leave. The erosion of self-esteem that coping with this can entail is likely to be exhausting and, over time, health damaging.

When we meet with another person or persons, to deal with a problem or proposal, the diversity or match of creative styles, the relationship between us, is likely to have a multiplicity of other influences<sup>20</sup>. If we are to appreciate the value (and limitations) of A-I Theory, what might be other worldly influences on systemic change that could slip through our fingers?

One of the aspects of capital accumulation that feeds extremes of privilege and wealth in the UK and the US – private schooling – is likely to ensure that social class will be a factor in both the choice of ‘Problem A’ and the resolution of ‘Problem B’. Along with this, the relative emotional competence of the participants is also vital; how aware are participants of the extent to which they may still be in the grip of the dynamics of their parenting? How aware are they of the influence of any distortions and distresses of this upbringing, and the likelihood of it being re-stimulated by present events? How free of dominance and subordination are they? And then there is gender balance too, or lack of it – how might it be driving or inhibiting cooperation or compliance? There is also the further possibility of tuning out of the tension of reaching agreement, of not being fully present, since we are all entitled to survive; sometimes it may be the best we can do.

C O D A

Finally, what might we take away from this account of A-I Theory?

- Systemic change is not necessarily a universal good; resistance can be as relevant as the promotion of it. Both tend to be ubiquitous, occurring in couples, between friends, in groups and corporations, and countries.

- Challenging problems are likely to be best resolved through a diverse collection of creative styles.

- People around the mean of the creative style spectrum whose style is a good match for the work they do or the life they lead are likely to try to restrict systemic change to evolution or incremental adjustments of the mainstream, or something to be absorbed into it.

- Because our perception of imminent or prospective change is likely to be widely different, communication between people with divergent creative styles needs care and patience.

- Whether we are seen as either bone-headedly picky about compliance with rules and protocols or, by contrast, flaky fantasists replete with unimplemented schemes, the one-third of us with non-mainstream A-I Theory preferences are also essential.

Whatever our creative style, from time to time we are all likely to want to be inspired and moved by innovation, a novel or a poem or a film that lets fresh light into the human condition. Equally, we are continually dependent on adaptive diligence; we all want the passengers in these aircraft in the air over Europe at the moment I am writing this to reach each of their destinations safely and on time.



FIGURE 6 - FlightRadar24.com.

<sup>1</sup> Homemaker software is an innovative approach to housing that integrates myriad iterations of individual living preferences to produce people-friendly urban spaces. Bruno Postle writes: *The Homemaker software establishes a new technique for the design of domestic buildings. It lets anybody assemble a Pattern Language that represents both general human needs and specific preferences; and then uses evolution to find a building that best fits this Pattern Language in the context of neighbouring buildings, of daylight and with minimal construction cost. This approach can create ordinary buildings that are diverse, dense, practical, adaptable, humane, ecological*

and, maybe as a result, simply better. Postle, B., *Patterns* <http://tinyurl.com/ooxufcd>.

<sup>2</sup> Kirton 2004.

<sup>3</sup> Kirton's research strongly supports creative style as being intrinsic and not something we learn. Though it can obviously be reinforced or inhibited by experience, our creative style preference lives in us, and we tend to live through it in relationships with other people.

<sup>4</sup> While this article focuses on problem-solving, A-I Theory also has a role in problem sensing and problem definition.

<sup>5</sup> Kirton 2004, Kindle Edition Locations: 1741.

<sup>6</sup> Postle 2003.

<sup>7</sup> Kirton 2004, Kindle Edition Locations: 1530-1542.

<sup>8</sup> Kirton 2004, Kindle Edition Locations: 390-400.

<sup>9</sup> Kirton, M. J. (2004-06-02). Kindle Edition Locations: 926-930.

<sup>10</sup> Kirton, M. J. (2004-06-02). Kindle Edition Locations: 429-433.

<sup>11</sup> Kirton, 2004, Kindle Edition Locations: 1421-1425.

<sup>12</sup> See Haney 2012, Postle 2007 and Postle 2012.

<sup>13</sup> Strathern 2000.

<sup>14</sup> Kirton, 2004, Kindle Edition Locations: 1664-1673.

<sup>15</sup> Kirton, 2004, Kindle Edition Locations: 402-407.

<sup>16</sup> Kirton, 2004, Kindle Edition Locations: 1404-1406.

<sup>17</sup> Kirton, 2004, Kindle Edition Locations: 408-414.

<sup>18</sup> While it could be argued that 'climate' might be better reserved for over-arching influences such as politics, economics and environment, here I follow Kirton's tendency to use climate and culture co-terminously.

<sup>19</sup> Postle 2003: 801.

<sup>20</sup> *The Social Network* 2010, Columbia Pictures.

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DAF PLYER

# ENSEMBLES OF DRAMATIC SYSTEMIC CHANGE

## FROM PLANETARY TRAGEDY TO GLOBAL THRIVING IN THREE STAGES



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**M**ODELS OF GLOBAL ACTIVISM TO SECURE A THRIVING future for peoples and planet must be based on authentically pan-cultural foundations if they are to speak to, and for, all humanity. As a common cultural language, Art is a potential pan-cultural source for global activism, and the art form of Drama has obvious ‘rightness of fit’ for activism for our planetary tragedy of the end of a planet adaptable to life because of the way humans are acting – not all humans, but enough tragic cultural actors to do the cosmic damage.

The word “drama” comes from a Greek verb, *dran*, meaning to do, to act, and theatre and theory come from the same root word, meaning to behold, to speculate, a spectacle. In the Hellenistic amphitheatre, the first public sphere in Western culture<sup>1</sup>, the public ‘beheld’ on stage a theory of what to do about a tragic situation driven by actions by empowered cultural actors, and how to act ‘dramatically’ to reverse heading for a tragic future of mass failure to thrive and secure the mutual thriving of humans and nature.

It is the only such theory that exists. One formal dramatic definition of ancient Greek tragedy is ‘a drama of cosmic death’<sup>2</sup>. There is, quite simply, no other theory but the dramatic theory from the

Hellenistic amphitheatre of what to do when empowered cultural actors are making cosmic death play out for terrifying real and how to act dramatically to stop cosmic death dead in its tracks before it stops us in ours, the specific acts that have the vital power to wrest people and planet from the maw of extinction and secure the mutual thriving of humans and nature.

What if the theory works? What if ‘doing’ a modern adaptation of the Acts presented on stage in the public sphere of the amphitheatre can reverse cosmic death into total vitality for all living kind? We would prove Shakespeare’s Puck right a thousand times over about what fools we mortals be if we did not apply the only theory there is for how to do what we have to do.

In this essay, I present a model of ‘dramatic activism’ to secure a thrivable future derived from my drama based theory of sustainability, the Dran Model (after Greek *dran*), organized around the three (yes, three) archetypal dramatic forms presented in the public sphere of the Hellenistic amphitheatre. I reinvent each archetypal dramatic form from the Hellenistic amphitheatre into one “Act” of a single, transformational three Act arc of the stages of ‘dramatic change’ from a tragic state to a thriving, eudaimonic state (similar to a three act structure for a play).

In addition to the three acts of the three stages, my dramatic activism model takes its cue from the theatrical concept of an Ensemble as the organizing idea of activist groups. While formal definitions of theatre ensembles differ, there are certain characteristics of theatre Ensembles that are the basis for the Dran Model of activism. Ensembles are egalitarian; all actors play both leading and supporting roles. Ensembles collaboratively co-develop their own language and style that is the unique synergy of the unique actors in the ensemble, making ensembles holistic, no one actor able to be removed or replaced without the whole being radically altered, and ensembles often develop their own unique form of theatre and a new theatrical form via their collaborative creative process.

In the Dran Model of Activism, cultural actors form Ensembles to engage with the three acts of dramatic, transformational change, each in their own creative, unique way, developing their own “Throughlines” of action through all three stages of all three acts.

Ensembles may be an organization or a group with the organization, a community, a church, an educational institution, a neighbourhood, a family, a social network, a Transition group, an arts collective – the point is a group with an interest in, commitment to, creating their own way of doing the three acts of the three stages.

The result is a “diversity in unity” model of unique Ensemble Throughlines all ‘doing’ (“dranning”) the same three dramatic acts, giving concreteness and coherence to the urgent plea for “dramatic action” on our planetary emergency in thrivability, and giving us an overarching organizing structure for a global activist movement.

Let us enter the amphitheatre and begin to put together the three stages of dramatic action to reverse cosmic death into planetary vitality springing up all over, emphasis on Spring.

*Cue: The Ecology of the amphitheatre*

Not only was the amphitheatre a civic space and public sphere. It was an ecological civic space and public sphere.

The two gods identified with the amphitheatre were Dionysus and Pan, both ecological archetypes.

Taking Dionysus first, identified with the fall harvest and the spring planting, Dionysus embodied and enacted all the ‘stages’ of cyclical ecological process, falling apart and breaking down, as all plant matter does after the peak growth of summer in the season of Fall, and as all living matter does in the biological processes of death. Dionysus was believed then to go through a dark stage corresponding to the darkest season and ‘dead’ of winter, and then ‘spring’ back to life as nature does in the Spring, leading

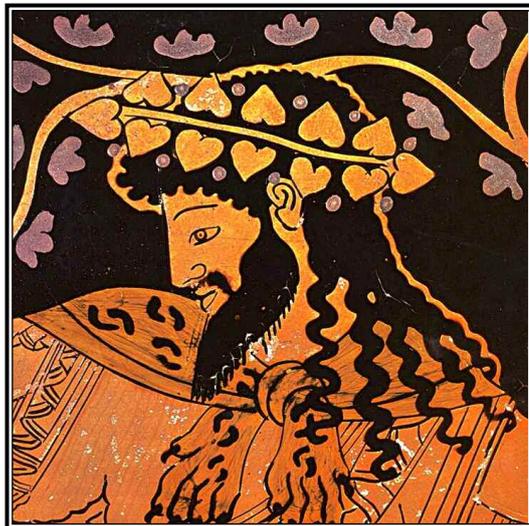
Jungian Karl Kerenyi to call Dionysus the “archetype of indestructible life<sup>3</sup>.” In our environmentally unsustainable era, we might see Dionysus as an archetype of Sustainability and resilience.

The stages of cyclical ecological process were reified into dramatic stages in the amphitheatre. Tragedy, with its signature act of ‘the tragic fall,’ is the dramatic mirror to the season of Fall, the post-peak, breakdown, ‘falling’ apart stage in cyclical ecological process; and the dramatic mirror to the ecological form of death in resilient, renewable ecological process as a stage of ‘indestructible life.’ Comedy, rooted in the fertility rites of Spring, is the dramatic mirror to the revival and renewal of life in the Spring. “Comedy” comes from *comos* meaning revel, revelry<sup>4</sup>. The ecological root metaphor of Comedy is a ‘revelry of renewal springing up all over.’

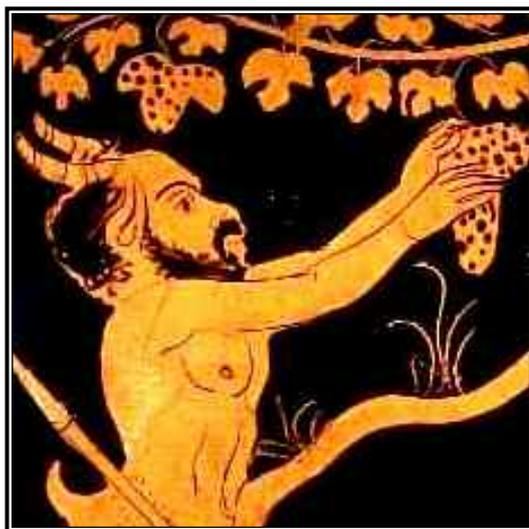
The other god identified with the Hellenistic amphitheatre, Pan, was the ancient Greek nature fertility god.

In Hellenistic cosmology, Pan was believed to have the power to keep nature fecund and flourishing and thriving. The word “thrive” means “grasp to one’s self<sup>5</sup>,” Pan ‘grasped to himself’ all the biodiversity of nature in a loving biophilic embrace. With his affection and affinity

for the biodiversity of nature, Pan is the natural choice for an archetype of the sociobiological concept, Biophilia, introduced by Edward O. Wilson, defined as an innate, instinctive affinity for other species and attraction to the resplendently creative biodiversity all around us. Pan had his own play in the amphitheatre, a Sacred Comedy that has a long history of censorship in Western culture.



*Dionysus, vase ca. 430 BC, red-figure.*



*Pan ‘grasping to himself’ the fruits of the earth, vase ca. 430 BC, red-figure.*

Which is all to say that Drama in the Amphitheatre is the archetypal root source for the ecological, biophilic, sustainable, resilient, politics we need for the great act of reversing cosmic death into planetary vitality.

*Cue: The Three Dramatic Patterns*

There were three dramatic forms presented in the public sphere of the Amphitheatre, and they were always presented in the same set and sacred sequence<sup>6</sup>: Tragedy, Sacred Comedy (Pan's Play), Comedy. Interestingly, the Sacred Comedy was crafted by a Tragedian, pointing us toward the important idea of the three stages as connected and contiguous, forming a holistic unity of action, no one stage able to be removed without fundamentally altering the whole.

The dramatic arc of action is a transformational arc of action that begins in Tragedy and ends in Comedy. Begins with a drama of cosmic death playing out and ends with a revelry of renewal springing up all over, with a middle, suggestively transitional, stage in-between in which biophilia and the sacredness of nature play a critical part.

Sacha Kagan has developed an arts-based theory of Sustainability ordered around the idea of pattern recognition. Dramatic activism properly begins here, with three dramatic patterns of action, one for each stage, that we need to recognize as the dramatic key to transcending extinction and reversing cosmic death into planetary vitality springing up all over. Each dramatic form (Tragedy, Tragedian's Sacred Comedy, Comedy) is characterized by its own specific pattern of dramatic action.

The first thing to say about the three dramatic patterns of action is that they are eudaimonic patterns of action, concerned with the deeper idea of "happiness" as eudaimonic happiness from the Greek *eudaimonia* for which there is no adequate single word translation. Happiness, collective well-being, thriving, human flourishing and even simply 'wisdom' are all translations of the Greek idea<sup>7</sup>. The prefix *eu* in Greek always refers to the ideal (as in euphoria, euphonious). "Eudaimonia" is the ideal human condition of collective well-being, existential delight, thriving on and flourishing forward for many future living generations.

The second thing to say about all three dramatic patterns is that they are characterized by reversal. Reversal is the pattern of action in all three stages, each stage its own eudaimonic reversal. Reversal and Recognition are integral to Aristotle's theory of drama developed in his *Poetics* and the critical core elements of Aristotle's idea of a "unified plot."

The Reversals that characterize all three dramatic, eudaimonic patterns are not arbitrary, but, like

everything in the amphitheatre of Dionysus and Pan, grounded in and reflections of ecological process. The earth revolves, making 'reversals' of night into day, sunrise and sunset, winter solstice to summer solstice, and so on. In seasonal and cyclical ecological process that Dionysus embodies and enacts, the most 'dramatic' moment is the sudden change of state and stage, the reversal from peak to fall (mirrored in Tragedy) and 'dead' of winter to the renewal of life in the Spring (Comedy). In the deep underground alchemy of earth in the 'acts' of humus, living matter that has died is 'turned' into energy and fuel for new life to spring up. Dionysus was specifically identified with this earth, the chthonic earth where death is reversed and turned into new life in the active process of 'indestructible life'.

These Reversals in the biosphere and ecosphere are a gaian strategy for sustaining the thriving of all life on earth, moving us to the idea of Reversal as a sustainable act. "Reverse to revive" is one of the acts in the gaian 'art' of sustainable living process and how the gaian whole achieves its homeostatic balance that is the key to sustaining life.

It seems to me that a political movement to sustain all life on earth should take its cue from earth as to how to act to sustain life, and Reverse to Revive, as Gaia does.

Creating that movement begins with the three Acts that revolve around the three dramatic patterns of reversal. The Acts are:

- ~ Act One: Liberate from the tragic pattern.
- ~ Act Two: Validate the contingent pattern.
- ~ Act Three: Activate the comedic pattern.

Taking them Act by Act, pattern by pattern, activism by activism:

#### ACT ONE

As with moonwalks and spiritual journeys, the first step is the critical one: to recognize the tragic pattern playing out in the specific tragic situation one is in. To see an unfolding tragic reality in terms of the tragic pattern.

So far, we have not seen any of our environmental problems, crises, issues, or global planetary crisis in thrivability in terms of the tragic pattern.

The tragic pattern is a synergistic fusion of ecological process and the human eudaimonic quest, a reversal (the ecological pattern of action) of sources of happiness (the eudaimonic quest) into the extreme opposite, with "happiness" as the more complex eudaimonic cluster of happiness, well-being, thriving and human flourishing, and "sources" broad and inclusively defined. The tragic pattern, then, is a reversal

of physical sources for human thriving, operative definitions of happiness and health, and hegemonic cultural eudaimonic paradigms of ‘the good life’ actively reversing to their extreme opposite, drivers of misery and despair, systemic toxicity and illness, and human perishing. Eudaimonic hegemonies reversing into drivers of tragedy.

Or, to coin a word, tragiogenic drivers of cultural systems, long standing eudaimonic hegemonies reversing into generating, proliferating, creating and causing tragic human experiences of suffering, anguish, pain and loss. Eudaimonic hegemonies reversing into tragiogenic drivers of systems.

Put more simply, the tragic pattern is a reversal of sources for human thriving into drivers of mass failure to thrive.

There is the dramatic theory of, unified plot for, and explanation of our global environmental emergency and planetary crisis in thrivability right there: we are trapped in the tragic pattern, caught in the tragic cycle of eudaimonic reversals as fossil fuels, which once were and have been sources for human thriving and improving the standard of living, but are now turning against us and reversing on us into drivers of mass failure to thrive.

One need not, and should not, be limited to fossil fuels as the reversed tragiogenic drivers. Rather, the way to engage with the tragic pattern for global activism is to recognize, identify and name all the eudaimonic hegemonies that are reversing into tragiogenic drivers in cultural and living systems on our historical and generational watch.

The tragic pattern is a “wicked problem” of multiple eudaimonic sources and paradigms reversing in different ways in multiple cultural systems all at the same time. In the amphitheatre, a tragedy was a tragedian’s theory of what specific source of happiness, what eudaimonic paradigm, was reversing in what areas of cultural, civic life, why it was reversing, and how it was reversing, driven by what cultural actors. All these dimensions of what eudaimonic sources, where (what living systems), how (the reversal itself), why (the drivers), and who (what cultural actors) are involved in tragic pattern recognition. The tragic pattern helps to order the wicked problem of driving ourselves toward catastrophic biosphere breakdown and civilizational collapse into a manageable and understandable pattern, and radically redefines the problem from ‘human versus environment’ to a human centric problem with eudaimonic paradigms.

A great deal of eudaimonic problematizing has been done; “happiness” is an identified problem in

sustainability discourse, from materialistic happiness and consumerism, with the eudaimonic economic revolution of economies of well-being, ecological economics, and linking sustainability with happiness as solutions. Missing is the dynamic action pattern of reversal that unifies into a single whole all the drivers of our planetary crisis in thrivability and makes it clear that our sources of happiness have “turned against us,” catalyzing systemic eudaimonic change. Until and unless we develop a critical measure of collective tragic pattern recognition, in the pursuit of happiness we will drive ourselves toward catastrophe – the plot point.

“Catastrophe” was originally a dramatic term for the specific plot point in ancient Greek tragedy of a final (*cata*) turn (*strophe*) in the unfolding tragic plot when the tragic protagonist finally recognizes and sees how the tragic pattern has played out in their specific tragic situation. In Western philosophy, “catastrophe” is formally defined as too late to act. In the archetypal tragic plot, the tragic protagonist fails to see the tragic pattern as it is happening until too late to act to avert his tragic fate (whatever it is). The plot point of catastrophe is a catastrophic, totalizing loss of agency that results directly from tragic pattern recognition failure.

The dramatic plot point of catastrophe is when the tragic fall happens on stage. It is a catastrophic tragic fall into tragic pattern recognition that comes too late to act.

At exactly the same moment, the other tragic fall happens in the public gathered in the amphitheatre. Two tragic falls took place in the amphitheatre with the presentation of tragedy, one on stage and the other in the public ‘beholding’ the tragedy on stage. Both are tragic falls into dramatic consciousness of how the tragic pattern has played out this time (and this time). The difference – and it is the difference – is that the ‘tumble to the truth’ in the public of how the tragic pattern has played out comes in time to act. For the public, their tragic fall into recognition is cathartic and was catharsis.

“Catharsis” means to detoxify, to cleanse, to purge. In theatre, catharsis is controversial, but its general meaning is “uplifting and beneficial” and clarifying, including intellectually clarifying, fully apprehending a tragic situation and finally seeing it clearly. Global leader, Vaclav Havel, who began his life as a playwright, saw catharsis as part of the politics of hope, an uplifting experience and shift from despair over our tragic worst on the global political stage to awakening and catalyzing hope. In Havel’s view, the mysterious process of catharsis transforms us into “positive heroes” who then go forth and act.

The critical point is that catharsis is contingent upon recognition of the tragic reversal(s) active in a specific tragic situation, and that there is a form of 'tragic fall' that is beneficial, salutary and has to do with critical consciousness. Tragic pattern recognition is the key to cathartic detoxification of despair, hopelessness, and awakens the politics of hope, turning us into positive heroes of liberating ourselves from driving ourselves toward mass failure to thrive. Perhaps the reason that recognition of the reversal is cathartic is that reversal is a pattern of action in living biosphere and ecosphere that sustains us, and somewhere deep beneath the scrim of reason and even perhaps language the human organism recognizes that where there is one kind of reversal, from peak to fall, there is the other reversal, death to springing back to life.

Turning to the activism of this stage, a new frame for environmental activism as liberation from the tragic pattern replaces the ineffective and uninspiring rhetoric of limits and not crossing critical numerical thresholds of global green house gases that will never work. Why will the environmental rhetoric of limits never work? Framing the planet as limiting human potentials and possibilities is a negative frame that signifies the planet as imprisoning. No prisoner would save their prison; no oppressed their oppressor, why would global citizens act to save a planet that limits and restricts us? There is also something morally distressing about framing as limiting the biosphere that so generously and freely sustains all life on earth including our very own. We need a new frame of meeting ideal levels as the way to freedom, a new rhetoric of "liberty levels" and "thresholds to freedom," specific numbers that, when we reach them, we are "home free," liberated from driving ourselves toward cosmic death. Set as the salutary, positive activist aim to be free from the cycle of futility in which it is futile to try to thrive the way we have and thrive otherwise.

Ensembles devise their own creative engagement with the common aim of liberation from the tragic pattern, liberating whoever (self, human others, all humanity) and/or whatever (species, habitat, nation, bioregion) they aspire and desire to liberate from the tragic pattern of reversals. Liberate a wetland and its entire species from the tragic reversal of "endless growth" into "end of all life on earth" by blocking a developer. Liberate a community from the (many) tragic reversals of disaster capitalism. Identify how your organization is trapped in the tragic pattern and craft your own Throughline of action of liberation from it. The creative choices have no limit, from reversing arrows on protest placards to tweet @#hashtagtragicreversal to a dance performance combined with

spoken word to a scientific statistical chart of 'carbon up, happiness down.' The point is (first) to liberate environmental activism from the doomed rhetoric of limits with a new idea of our common environmental act as liberation from the tragic pattern, freedom from the cycle of futility; second, for groups of all kinds (Ensembles) to develop their own unique ways to engage with cathartic tragic pattern recognition and liberation, and (third) to develop collective tragic pattern recognition in the public sphere in the interests of detoxifying cultural and living systems from the tragic pattern infecting and afflicting all our attempts to thrive in life.

#### ACT TWO

In the amphitheatre, the stage that follows on Tragedy is the Sacred Comedy set in Pan's sacred realm of nature, reified into the contingent eudaimonic pattern. The critical idea, here, is that human thriving is entirely contingent on the thriving of ecosystems. 'Grasping to ourselves' (thrive) the eudaimonic contingency and the inherent mutuality of human thriving with ecological thriving is what we recognize in this stage.

The eudaimonic reversal in this stage is from anthropocentric to ecocentric, from invalid and flawed 'apart from nature' eudaimonic paradigms human thriving to the mutual thriving of humans and nature.

The act of this stage is to validate and value the contingent, inherent mutuality and develop new eudaimonic paradigms that reflect the inherent mutuality. There are two primary ways that we do this, and both are expressions of biophilia. One is political, the other is cognitive, having to do with learning and cognition and "recognition" in a special sense.

Taking political biophilia first, in this stage of the Dran Model, we uphold the inalienable right to the direct experience of the natural world unmediated by human technology. The unalienable right to biophilia, to the experience of our innate, inborn, affinity for the living biodiversity all around us, as the next evolution of the US historical concept of "the unalienable right to happiness" taken to the inclusive species level of a human biological instinctive love for the natural world. The unalienable right to experience Spring and not "Spring Inc.," a proprietary corporate owned technology in which we have to 'pay the man' for (say) robot bees to pollinate our backyard garden. The eudaimonic Mutuality that we recognize, grasp to ourselves, and protect, is between humans and nature itself, and we uphold the unalienable right to biophilia, to love this living universe in all its awesome majesty and splendor, as a critical part of human thriving.

We make a new sacred covenant and social contract that upholds the inherent, inviolable, indivisible Mutuality of human thriving with the thriving of the great gaian biosphere and ecosphere, a new gaian eudaimonic covenant and contract in which we recognize and assert the unalienable right to biophilia.

Cognitive biophilia flows from tragic pattern recognition and is “eudaimonic re-cognition,” a radical rethinking of how to thrive and flourish in the biosphere, activated and driven by ‘panoramic’ biophilia. Because we developed tragic pattern recognition in the first stage, we now know what eudaimonic sources and paradigms have already or are actively reversing into tragiogenic drivers of mass failure to thrive, civilizational collapse, and biosphere breakdown. We know the ‘catastrophic’ consequences of getting our eudaimonic paradigms wrong – and that we can get them wrong, and we know that we need new eudaimonic paradigms and sources as the drivers of our cultural systems to replace the tragically reversing/reversed ones.

We turn to ‘nature as our teacher’ for how to thrive, here, in the biosphere and ecosphere. We reverse our source ‘expertise knowledge’ for how to thrive and flourish on earth, in the biosphere, from ourselves to nature. We grasp to ourselves that gaia is the genius at sustaining the thriving and thriving (not precisely the same thing) of the ‘panoramic’ Commons, and so we look to Gaia for the patterns of action and interaction on the interdependent web of life that are the expression of the gaian genius for thriving.

We ask a new question about ecological value. Rather than ask, what are ecosystems worth to us? We ask, How can humanity become Earth-worthy, worth being sustained in life and by life? How does humanity become an asset to Gaia? How do we reverse being ‘bad’ environmental actors into becoming a gaian good?

We ask, how can I, a human being, become as skillful and masterful at sustaining life as the gaian genius all around me is? A radical new and reversed idea of “Mastery” develops in this stage, from the patriarchal (and hubristic) doctrine of “Man’s” Mastery over nature, conceived as female, to the artistic idea of “Mastery” as the skilful mastery of an art. The art that we seek to master is the gaian, biosphere art of sustaining life. We reverse patriarchal Mastery into apprenticing ourselves to the gaian genius all around us in the interests of mastering the art of thriving, here, in the biosphere Commons, as one species ‘actor’ in the great Gaian Ensemble.

The activism of this stage includes many familiar environmental acts already in the repertoire of saving habitats, species, the growing Nature’s Rights movement, ecological economics, technological

Biomimicry, and evidentially Ecospirituality and Sacred Activism. It gives us some specific activist acts for the Sacred Activism repertoire of a new eudaimonic covenant and contract, recognizing as sacrosanct and inviolable the contingent mutuality, protecting biophilia from being alienated, becoming Earthworthy and a gaian good, and points to a new value of nature to humanity, which is learning from gaia the art of thriving here (the new Mastery).

It is also a critical transitional stage to the next act.

### ACT THREE

In this stage, we activate the new eudaimonic drivers of systems that we have developed with our eudaimonic recognitions and re-cognitions from the previous two stages. We ‘plant’ the new eudaimonic paradigms in a distributed, ubiquitous pattern so that they spring up all over. This is not romantic; it is a deliberate and strategic imitation of gaia’s pattern of action to revitalize and renew life.

Dramatically speaking, this vernal, spring-like pattern of ubiquitous distribution of revitalizing, renewing eudaimonic drivers of systems is the comedic pattern that finally reverses the tragic pattern of driving ourselves toward cosmic death into making planetary vitality spring up all over. It is the reversal that activates a global eudaimonic revolution.

It is a revolution modelled on ecological process and the pattern of spring, and is the ultimate reversal of the tragic pattern into the revitalizing comedic pattern of a revelry of renewal springing up all over. It is not a model of revolution as liberation of the oppressed from oppressors; it is liberation from the tragic pattern. It is not a human idea of how to revive planetary vitality, it is the gaian strategy for planetary vitality that we deliberately imitate. In this final stage, our dramatic re-cognition, our comedic recognition, is that “rational action” is not the solution to tragic situations or liberating ourselves from the tragic pattern, comedic action is because comedic action is modelled on ecological process, as rational action is not. The gaian genius for sustaining life is not ‘rational,’ it is abundantly, wildly creative, and that abundant, wild gaian creativity is what the global eudaimonic revolution imitates.

In the classical comic plot, a comic hero proposes to do something that the status quo says is impossible to do. The comic hero always succeeds. Comic heroes are the archetypes of audacious and undaunted optimism. The trick to their success is one form of comedic reversal: comic heroes reverse setbacks into springing forward. They take every ‘failure’ of their plans for fulfilling their heart’s desire and make a new and better plan, in continuous reversals of setbacks to springing forward.

In this stage of dramatic activism, we entertain 'wild' notions of how to thrive and flourish Otherwise, and the status quo dismisses them as impossible. Skyscrapers as farms? A sharing economy? Growing buildings from mushrooms? But we offer these, and many other, wild ideas in the full confidence that wild notions are one of the gaian strategies for thriving here. We take our impassioned biophilic observation of gaia's genius for thriving here from the previous stage, and frame 'wild' ideas for how to thrive and flourish as further expressions of the new Mastery, our earnest endeavour to be as skilled at thriving and flourishing as Gaia is.

Audaciously optimistic and confidently wild, we create a new and better plan than "save the planet" or "bring the carbon down" or "belief in the scientific reality of human caused global warming" as the activist aim, and develop a new aspirational activist call to seize this once in humanity chance at the best world ever, a eudaimonic utopia of total thriving, and reverse the mad 20th century tragedy of mutually assured destruction of all kinds into a new world comedy of mutually assured vitality for all Livingkind. We replace catastrophic "endless growth" with "perpetual thriving." We radically reframe 'securing planetary vitality' into seizing a once in humanity chance at utopia for real, a new world in which the mutual thriving of people and planet is assured and secured. The 20th century was the era of mutually assured destruction of all kinds. In the 21st century, we reverse that 'madness' into an ideal global condition of mutually assured vitality for humans and habitats, persons and places, springing up all over a planet held sacred and cared for by all.

That reversal is the global eudaimonic revolution. It springs up all over, with Ensembles of all kinds creating their Throughlines of abundantly creative wild ideas for how to Thrive Otherwise, and seize this once in humanity chance at creating a life sustaining global civilization that will be a joy to live in.

Our great act, the great reversal of mutually assured destruction into mutually assured vitality, is made of three Acts, countless Ensembles, and diverse Throughlines to Thriving Otherwise on the planet with each other and all living others. It is the greatest theatre production in human history, and the director is Gaia.

The theatre critic who reviews our human performance is the same theatre critic who gave the reviews for actors in the amphitheatre: Pan.

Pan, fertility god and archetype of biophilia, was the ancient Greek god of theatre criticism. His standards for human performance in his sacred realm of nature were: show me your love for life. Show me what your biophilia can do. Show me how

you act to secure and sustain indestructible life. Show me what brilliant gaian actors humans can be. That's a cue. It is time to enter the amphitheatre. It is also time to revive it.

#### CODA: REVIVING THE AMPHITHEATRE

In virtually every book of classical scholarship about the amphitheatre I have read, I always read that 'there is no modern equivalent' for the great dramatic festival held in the amphitheatre when the three stages of Tragedy, Sacred Comedy, and Comedy, were presented.

The role of Artists in dramatic activism to reverse cosmic death into perpetual thriving is to revive and reinvent the artistic presentation of the three stages that took place in the amphitheatre of Dionysus and Pan. Not to limit the revival and reinvention to dramatic performance or performance art, but to create Arts Throughlines that creatively expresses the essential qualities of the three stages. To create a new version of the ecological, artistic public sphere of the amphitheatre that revolves around the three dramatic patterns.

There is no limit to how artists might revive the amphitheatre, an artistic public sphere that expresses the human experience of being caught in the tragic pattern, the biophilic awe at gaian genius and beauty and brilliance, celebrates wild ideas for how to Thrive Otherwise, and shows us comic heroes of the eudaimonic revolution who never give up, and turn even the biggest setback ever, the end of a planet adaptable to life, into springing forward into the best world ever, a global utopia of mutually assured and secured thriving for all. We need artists to help us see the tragic pattern and express our feelings about being trapped in it and awaken our desire for liberation from it. We need artists who keep our panoramic biophilia for this beautiful, battered biosphere robust and unalienable. We need artists to remind us that wild things happen, and one wild thing that happened in this galaxy was earth.

That, too, is a cue.



<sup>1</sup> Balme 2014, *The Theatrical Public Sphere*: 28.

<sup>2</sup> Courtney 1990, *Drama and Intelligence*: 5.

<sup>3</sup> Kerenyi 1976, *Dionysios: Archetype of Indestructible Life*.

<sup>4</sup> Langer, 1953, *Feeling and Form*: 331.

<sup>5</sup> Edwards 2010, *Thriving Beyond Sustainability*: 149 .

<sup>6</sup> The original sequence was sustained over the course of the approximate ten days of the Athenian drama event, City Dionysia, with the first five days dedicated to the presentation of Tragedies with the Sacred Comedy cycling through them followed by Comedies. I have extrapolated and streamlined into a three stage sequence.

<sup>7</sup> Nussbaum 1993, *Therapy of Desire*: 15.

<sup>8</sup> Carlson 1984/1993, *Theories of the Theatre*: 18-19.

<sup>9</sup> Havel, in Gerould, 2000, *Theatre/Theory/Theatre*: 498.



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## LIVING SYSTEMS THEORY AND THE PRACTICE OF STEWARDING CHANGE



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Beyond the strategies and tactics of changing what already exists, however, there are also signs of a broadly felt yearning for greater richness and depth of experience, raising questions about *what kind of change* is desired. Wherever people are gathered, and at whatever scale, there is an emergent longing for change that is *generative* – bringing something new into being, creating a preferred future – and even for change that is *regenerative*, healing what has been wounded in our communities and ourselves by the structures we have inherited.

To contribute to this inquiry into the multiple levels and possibilities of systemic change, this article will expand on the following observations that have emerged from our research and our work of the past several decades. These observations represent a weaving of our two perspectives, the intersection where the sage and the scientist meet<sup>1</sup>. Our belief is that this is where the future lies, bringing these two deep life inquiries into balance again.

A - ORGANIZATIONS AND COMMUNITIES AS LIVING SYSTEMS:

Organizations and communities exhibit core patterns common to all living systems. Those patterns provide the foundation of a useful and rational theory of change, helping us understand how living systems function and how we can influence them. Importantly, they help us see that the more relevant question is not “how can we change this system?” but “how can we support the system’s intrinsic ability to thrive?”

B - THE MYTHIC DIMENSION OF LIFE: As we acknowledge aliveness in our organizations and communities, this opens the door to the narrative, subjective, wonder-filled dimension of life, adding powerful generativity and regenerativity to the theory of change. This is the richness and depth of experience so many of us are craving.

C - THE ROLE OF PLACE: It is through a sense of place – of being rooted in and nourished by place, of weaving our own story together with the stories of the places we belong to – that we reconnect with the experience of the generative, mythic dimension of life most directly. With this insight, the living systems patterns take on new meaning in our lives and our work.

D - THE CALL TO STEWARDSHIP: To embrace the living systems perspective in both its rational and mythic aspects, the leader’s role must shift from conductor of

**H**OW DO WE CREATE MEANINGFUL CHANGE WITHIN our organizations and communities? What perspectives and practices are necessary to make an intentional, substantive and lasting difference in these systems, particularly when their complexity puts them beyond the power of command and control?

This may be the paramount question of our times, as awareness of the complex, systemic nature of society’s problems increases along with the growing urgency to solve them.

In fact, the inquiry has broad relevance, extending from the multinational corporation to the mom-and-pop shop, from the sprawling metropolis to the rural hamlet. In each of these, there is the urge – and the ongoing imperative – to improve, to grow, to evolve, to adapt, to innovate. A practical theory of change is useful at each of these levels.

change to cultivator or steward, creating the fertile conditions for life to thrive and for change to emerge.

E - THE NEED FOR PRACTICE GROUNDS: Such stewardship is less a position or a title and more an ongoing practice – one that can be undertaken by anyone in any context, and one that calls for dedicated practice grounds that are a) guided by informed intention, b) woven with story, art and inspiration, and c) rooted in place. Two examples of such practice grounds will be described below.

Together, these observations have the potential to shift not only *how* we seek to effect change but *why* and *to what end*. We are moving from the industrial age and the age of information and technology to what might be called the biological age, in which we are asking: how do we craft spaces for life to thrive and align our thinking with how nature thinks? In these times, the true work of any change effort is to create generative places where people can learn, ideas can grow and life can flourish at every level. The goal is less to manage change as a distinct before-and-after scenario and more to recognize change as the nature of life and to embrace our role in hosting it as an ongoing, inspired practice.

Not only is this the pathway to intentional, substantive and lasting systemic change and to the greater richness and depth of experience many of us seek – our conviction is that these perspectives and practices are vitally needed if humanity is to find its way forward.

#### A - ORGANIZATIONS AND COMMUNITIES AS LIVING SYSTEMS

For over a century, the dominant assumption within management theory has been that organizations operate like machines. That line of thinking extended to economies and communities and to all aspects of our lives – even ourselves. It also extended to theories of change, leading to approaches like “re-engineering,” “driving” change, and change “management,” all based on the assumption that human systems can best be altered by adjusting so many gears.

Of course, there is truth within the mechanistic paradigm and some degree of effectiveness to the change theories it spawned. But there is also reason to believe that this worldview is linked to many

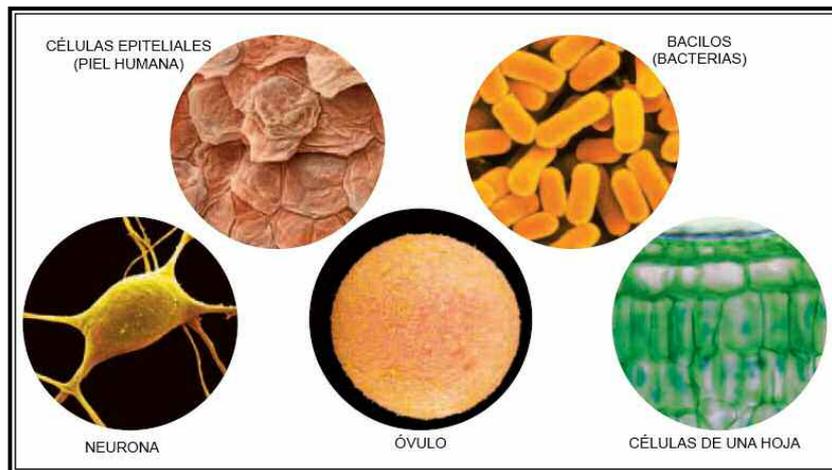
of society’s most pernicious problems, like poverty, environmental degradation, social unrest and epidemic suicide rates. There is the growing sense that it leads us inevitably to those outcomes and blinds us to alternative routes.

Yet the past three decades have witnessed a mounting body of literature and experience demonstrating that organizations and communities exhibit core characteristics and tendencies common to all living systems - and that this recognition offers a more accurate understanding of what we are working with and how we can influence it<sup>2</sup>.

Although theories abound and there is little consensus about the definitive list of characteristics, we outline here the set of four properties we have found to be widely cited across the literature in both biology and management theory and also universally present across the organizations and communities with which we have worked. Whether it is your body, a rain-forest, an organization, or a community, these are the factors at play:

1 - DIVERGENT PARTS: In every living system, there are individual parts.

This is the cells in our bodies and the people in an organization or community. It is “who I am” within the system - how each part serves the system and how they are served by it.



Diverse types of human cells. Photo courtesy of: <<http://bit.ly/1H9LFWK>>.

Generally, the more diverse and self-expressive the parts are able to be, the more resilient, adaptive and creative the living system is likely to be.

2 - A PATTERN OF RELATIONSHIP: The divergent parts are connected and supported in a pattern of responsive relationship with each other and with context.

In our bodies, this is the circulatory, digestive and immune systems, and the supportive skeletal structure. In organizations, this is the patterns and infrastructure of information-sharing, decision-making and getting things done: the org chart, processes, meetings, shared vocabulary, office design. In a community, it is roads and traffic rules, retail infrastructure, governance systems, the culture of the commons. This is “how we are together” within and around the system.

Generally, the more open and free-flowing the interactions, the more resilient, adaptive and creative the living system is likely to be.

3 - A CONVERGENT WHOLE: The divergent parts come together in relationship to form a convergent whole with new characteristics and capabilities.

This is the level not of your cells, but of you and your body. It is the level not of the individuals but of the organization or community that they create together. It is here that we find the phenomenon of emergence, in which new capabilities are created. This is the great promise of living systems – that new things become possible and new forms take shape. You can think, feel and move – capabilities not found at the level of your cells. Similarly, an organization or community is able to complete complex tasks and maintain order, even when those functions lie beyond the abilities of the people who comprise it.

Just as the living system needs the seeming chaos of divergence, it also needs convergent order at the level of the whole. *You* remain recognizably *you* even as your cells are continuously replaced. An organization remains focused on shared purpose even as people come and go. A community retains its character across generations. This is “who and why we are together” as a system.

Generally, the more convergence there is at the level of the whole, the more resilient, adaptive and creative the living system is likely to be.

4 - SELF-INTEGRATION: The entire process is self-organizing, set into motion by life itself.

In a dynamic, moment-by-moment interplay of the first three properties, the living system is able to self-organize in order to innovate, adapt and ultimately create higher, more complex forms of life (none of which can be done by a machine). Importantly, the process must be *self-integrative* – integrating parts into relationship and wholeness without an external engineer. Even the single-celled amoeba involves too much complexity for us to orchestrate manually. And in effortlessly self-organizing, that amoeba demonstrates astonishing intelligence, creativity and even beauty. With the right fertile conditions in place – the right levels of divergence and convergence, and the right supportive

structure and flow of interactions – our organizations and communities are poised similarly to astonish us with their self-organized wisdom, creativity and ease.

These are the design principles we have to work with in seeking to change any living organization or community, suggesting questions like:

- What will it look like when each of us is able to express our full divergence in service of our common goals? When we can bring the best of ourselves – our talents, our ability to identify opportunities and contribute solutions, our drive for meaning, our authenticity, quirks and passion, our sense of agency and choice? And what will that take?
- What will it look like when our interactions are open, flowing and efficient? When our infrastructure and processes support not only information sharing, decision-making, effective action and trust but playfulness, learning and joy? What will that take?
- What is the emergent shared identity – the unifying story and collective service to customer, community or cause – that will hold us together powerfully, as citizens, employees, customers, community members? And how will we live that story?

In many ways, these design principles are already well known. We’ve long understood the importance of employee engagement, effective process, and shared purpose, for example. But recognizing life and the systemic nature of organizations and communities brings new depth, detail and possibility to each of these strategic categories. Beyond that, it invites us to acknowledge that, presumably, the intention of our change efforts is to enable more thriving for more of the system. Naming this as our explicit intention has tremendous power. On this basis, our question shifts from “how can we change this system?” (somehow a violent proposition) to “how can we support and enhance the system’s inherent and ongoing ability to thrive, at every level?”

## B - THE MYTHIC DIMENSION OF LIFE

The living systems lens gives us an expanded view of organizations and communities and how we can influence them. But if we see the properties it reveals as merely a tactical checklist, then we will not have moved beyond the mechanistic paradigm, with all its shortcomings, and we will not find our way to truly generative change - or to healing the wounds of society. Something more is needed.

As we look deeply through the living systems lens, we begin to be able to draw on a broader form of knowing that some call a “mythic worldview.” Author

Karen Armstrong writes that in most pre-industrial cultures, “there were two recognized ways of thinking, speaking, and coming to know our world. The Greeks called them *mythos* and *logos*. Both were essential and neither was considered superior to the other. They were not in conflict but complementary<sup>3</sup>.” *Logos* was the voice of reason, and timeless *mythos* the language of the imagination and our felt life together. This is not about myth as naive and unrealistic parable. It refers to the aspects of our lives that exist alongside and apart from reason – things like love, beauty, inspiration, meaning and purpose – recognizing them as different but equally valid expressions of what is true.

What is most wounded in our world is our connection to this dimension of life. With the rise of the industrial economy, we created a world out of balance. Scientific *logos* quickly rose to dominance and our subjective experience fell into disrepute. With the loss of the mythic life, we no longer had access to the experience of *ekstasis* – that is, the ability to step out from the norm and allow life to live through us so we may feel wonder, reverence, gratitude and awe at the mystery of life within and around us.

For too long, we have relied upon the harsh glare of the flashlight to illuminate our world and failed to realize how much it blinded us from seeing the subtle and opaque forms of the mythic world that the flickering light of the candle brings into view. To truly understand and influence a living organization or community, and to heal our collective wounds, we must bring these two ways of knowing – and seeing – back into balance.

In embracing the living systems lens, then, the work is not only to enable intellectual awareness. It is also to invite an expanded set of beliefs: belief that there is vibrant aliveness and creativity within and around us (this alone is cause for celebration!); that place, art and nature have a vital role to play in every sphere of our lives; that we can (and must) shape and live into an unfolding epic narrative; that thriving is possible and we are worthy of it.

With these beliefs, we open up to new conversations, new priorities, new possibilities, new relationships, new agreements, new actions, new business models, new architecture, new governance – all more fully aligned with life. We step together into wise, compassionate and meaning-filled engagement with life, wherever we find it – and we find it everywhere.

#### C - THE ROLE OF PLACE

The mechanistic worldview often overlooks the role of place - after all, place makes little difference

to a machine. Yet all living systems are rooted in and nourished by the places from which they grow, and we and our organizations and communities are no exception. Indeed, it is primarily through a sense of place that we reconnect with the rich soil of narrative and meaning, grounding us in the mythic dimensions of our lives. Most of us want to belong not only to a job or even a career; we want to belong to a story, and particularly to a story that is both place-based and mythic in its possibilities.

In guiding this deepening connection with place in a variety of contexts, we have discovered that the patterns of living systems take on new power and meaning:

#### 1 - HOMECOMING

Where the rational mind seeks ways to nurture Divergent Parts, the mythic imagination invites us to explore the parallel pattern of Homecoming, in which we ask: where is home and how do I find my way there? To come home to ourselves is to find our own personal myth and to rediscover how our enchantment with nature, art and community connects us with the whole of life. Most of our leadership metaphors are focused on growing up and upward mobility and the ladder of success. What if we balanced this upward organic motion with also growing down? To grow down is to have an embodied experience of place and to become rooted in and native to the ground we find ourselves on.



Photo credit: Ben Wolfe.

In exploring and cultivating the pattern of Homecoming, we may ask: what is this place asking of me? What is my gift and what am I uniquely called to do? How can I set a context for others to understand my perspective and what can I learn from

noticing the felt life that is unfolding within my own interior landscapes of place?

## 2 ~ BELONGING

As the rational mind explores patterns of Relationship, the mythic imagination discovers the companion pattern of Belonging. The urge to belong to a place is basic to the tissue that connects all of life – a pattern of aliveness that brings us into alignment with the ecology of nature. With Belonging, we reach for an empathic resonance with our world.

Here, we may ask: what do we hold sacred in our relationships with each other – and with the human and more than human world? How do I belong to this place in ways I don't belong anywhere else?

## 3 ~ REGENERATIVITY

While the rational mind explores ways to create Convergent Wholeness from Divergent Parts - enabling new capabilities to emerge and creating something new together – the mythic imagination embraces the parallel pattern of Regenerativity. Regeneration happens when we create beauty through seeing all that we do as a form of craft and embracing craftsmanship as the expression of place through the hands and the heart as well as the head. It happens when our career becomes a calling and vocation and we see ourselves as the instrument for the change we want to see in the world. With Regenerativity, we find trust in the conscious evolution of life, including the sense that we can approach life's challenges with grace and ease and an appreciation for life's natural unfolding.



Photo courtesy of City Repair Project, Portland, Oregon.

Therefore, to be regenerative is to ask: what are we called to create together? What is the tone of the place that we are creating from, and how can we carry this tone within our work? Where are the places we go to find beauty and how can we craft our work in a beautiful way?

## 4 ~ TRANSFORMATIVE CELEBRATION

Where the rational mind recognizes the Self-Integrating, animating spark of life, connecting with place and the mythic imagination reveals the corresponding pattern of Transformative Celebration. Whenever we gather together and enliven the senses through art, music, storytelling, poetry and movement, we are engaging the life-generating forces of Transformative Celebration, which includes ritual and the spirit of Carnival. Like the bright green blades of grass rising up through concrete, this is the upturning of the established order and making a place in the world for the raw, unformed impulse of life to burst through. The sense of gathering together on the public square or in the commons, of bringing together diverse energies, and of expressing the democratic spirit are a catharsis of this energy. The experience of it reinstates our sense of home for ourselves in the larger world and in the universe.

Nurturing these patterns of life begins with coming together and telling our stories – with connecting people through their common care for a certain place, drawing on their stories of relationship with place, and inviting them to craft new stories of what is possible. Recounting these larger-than-life narratives of place is itself an act of joyous celebration, lighting a path to generativity and transformation. And in this way, we may also steward the discovery and articulation of an overarching, shared narrative of place.

By realizing that place is not an object or a backdrop, but a power and a presence, we can partner with it in a way that helps us craft our organizations and communities as spaces for life, opening our hearts to the experience of beauty, aliveness and possibility.

## D - THE CALL TO STEWARDSHIP

As we recognize the life in our organizations and communities, our own role becomes clear: we are to be faithful gardeners or stewards, cultivating change more than conducting it. Our task is to combine living systems perspectives and design principles with the power of story, meaning, beauty and place. In this way, we find the means to respond to three calls:

- to an inner call to come home to ourselves, to our gifts, and to the places and stories that shape us;
- to our yearning for belonging and flow, which includes seeing the sacredness in our relationships;
- and to a calling or purpose that propels us into transformative action together.

In these ways, stewardship is less a role and more a commitment to tend to these fertile conditions, offered from a stance of reverence for the life in each of us and for the life between us, as well as for the transcendent potential that we may express together. It is a continuously unfolding inquiry, asking: “What conditions are needed in this moment, within these circumstances, to support life’s ability to thrive as fully as possible at every level?” And it is a purposeful set of responsive actions.

There is a challenging paradox woven into stewardship: it is a call at times to trust life’s process of emergence, passively “holding space,” while at other times it involves actively intervening and even on occasion making way for death. In the context of life’s eternal cycles of germination, growth and decay, stewardship calls for both patient detachment and fierce determination at every stage of life.

Throughout, stewardship is fundamentally collaborative. It embraces uncertainty and invites learning, innovation and play. It recognizes emergent collective wisdom, developing individual and collective disciplines to listen for the voice of the whole even as it honours the needs of the parts. It demands intentional crafting of structures and systems. It necessarily takes a holistic view – which in organizations means linking purpose with passion, brand with culture, and worker with customer and community. Most of all, the steward *invites* change, rather than mandating it, taking steps to sense and support the change that is waiting to be expressed.

What, then, of management and leadership?

To understand what differentiates managers, leaders and the emerging work of stewardship, we might take as our point of reference the image of an oak tree.

Leaves and branches symbolize the first level of learning and change. They represent the useful, surface-level busyness of the day-to-day, with its focus on managing the parts rather than the system as a whole through tactics, action plans, performance goals, and expert-driven solutions in a push to achieve certain outcomes.

There are also aspects of change that call for leadership. There, we direct our attention down a little, to the trunk and lower limbs. And our focus shifts from efficiency to effectiveness as we begin to look at structures, strategies and processes.

While intervening around strategies and structures can bring about significant and long lasting results, if we seek transformative, systemic change, we need to look to the soil and the root systems underneath the tree. Here, we shift from managing the parts and leading for effectiveness to stewarding

the health of the whole, in all its potential. The fertility of the soil is critical in enabling the acorn to realize its destiny as a sturdy oak – to make the dramatic changes that are expressions of its true nature. The regenerative character of roots then gives the tree resilience and strength to grow. Communities and organizations are also composed of this interconnected and fragile lattice-work of root structures: neighbourhoods, associations, networks and relationships. Too often, we believe that these systems are inexhaustible, much as the farmers on the Western Plains believed the soil was indestructible as they turned the sod toward the hot sun and witnessed the land die just as they hoped to prosper from it.

With this metaphor, we see that management and leadership are necessary, but only stewardship guides us towards those questions that are at the ‘root’ of transformative change – questions of beauty, gifts, courage, values and purpose – questions that contribute to building fertile ground and manifesting new possibilities for the future<sup>4,5</sup>.

This is true not only for the dramatically heralded change initiative. The nature of any living system is continuous change. More than that, the living systems lens reveals that our purpose in coming together in organization and community is to create ever more thriving, transforming and being transformed through interaction, contribution and learning. *We come together to be transformed.* From this perspective, stewardship is always an appropriate and potent stance.

#### E - THE NEED FOR PRACTICE GROUNDS

Such stewardship is not a discrete set of competencies that can be trained and certified. It is not a “to do” list. Instead, it is an ongoing personal practice, like a martial arts or spiritual practice, ever unfolding as the context changes, as the life you are cultivating unfolds, and as *you* grow and evolve through the process. It is the practice of growing into wisdom, compassion and the ability to sense and support what is needed.

It may also be thought of as a form of craft, in which we build a reservoir of practical knowledge based on direct experience. This kind of knowing is transmitted primarily through intuition and imitation and involves the integration of the intellect with the heart and the hand.

Both views of stewardship call for practice grounds – spaces and times of shared learning, experimentation and reflection, where we can try on new perspectives and behaviours for size and where they can be reinforced over time. In such spaces, we may practice the skills and techniques needed for generative conversa-

tions, for example, for participatory organizing structures, and for sensing the voice of the whole. Like a greenhouse, these must be spaces for renewal and relationship with both people and place, where we may be nourished by nature and the arts and where we may continually refine our attunement to the underlying patterns of life. To varying degrees, we find examples of such practice grounds in many places: in the social lab



Photo credit: Phile Beauchemin.

movement<sup>6</sup>, in collective impact gatherings<sup>7</sup>, in Art of Hosting events<sup>8</sup>, in Open Agile Adoption<sup>9</sup>.

To add to these examples, we will describe two forms of practice grounds that are in the early stages of development as the culmination of our work to date. In both, change is invited and nurtured for individuals, organizations and community. Both are a) guided by the explicit intention to align with life's patterns and propensities, b) woven with story, art and inspiration, and c) rooted in place. And both are intended to be piloted and then propagated in multiple locations.

The first form of practice grounds is a *learning festival* exploring what it means to craft a city as a "space for life."

The spirit of festival, or Carnival, is the embodiment of the pattern of Transformative Celebration. Whenever we create places for people to become more whole, we are invoking the spirit of Carnival. Carnival is an event, but it is also a state of being – celebrating the whole of life, including its darker tones. Carnival is the expression of the poetic spirit that clears away the old order to open space for the regenerative force of life to flow through. As such, Carnival raises our spirits, awakens our senses and helps us see and act in new ways, often through playfulness, ceremony and celebration.

These are some of the core questions shaping the festival project:

- ~ If we believe narratives of life, stewardship and thriving are needed, what experiences will help people imagine and integrate these guiding stories?
- ~ If we believe that the city (or town, or even village) is a powerful scale for working with life-centered narratives, what experiences will help us fathom – and therefore more naturally steward – the city, in all its complexity?
- ~ If we believe festival is the form of learning most suited to this exploration, how can this type of gathering go beyond play alone to support powerful learning and transformation?
- ~ If we believe that deepening our connection with place is an important part of moving into life-centered narratives, then how can we invite people into a deeply local and personal experience of place within a planetary perspective?

In all, this is the project's core inquiry: Within the dynamic, artful and participatory learning structures that festival offers,

with its power to ignite a transformation of consciousness, what is the usefulness of a living systems lens to reveal key guiding principles and to support targeted prototyping and action?

The second project is an *action-learning cohort* made up of 20 to 25 organizational and community leaders. Over the course of 7 to 9 months, they will move through a regular rhythm of multi-day, reflective learning events, along with on-the-ground prototyping and application in between. Specifically, an overview of the four living systems patterns will be shared at an opening event. Then the subsequent four gatherings will dive more deeply into each of the patterns in turn, with a final gathering focusing on integration and celebration. Each of these gatherings will integrate the expressive power of art, music, story and time in nature.

Although living systems principles will provide a clear path and directionality to the process, the specific learning outcomes and impact cannot truly be plotted in advance. They will emerge as a function of each participant's context, of their interactions with others in the cohort, of their experience of nature, art and place, and of the prototyping that takes place between gatherings.

In this way, we see the action-learning cohort as a collective inquiry into the active conditions needed for generative change. This will enable participants to discover new ways of understanding their influence in complex community systems and of seeing and

acting on opportunities to shift their organizations toward greater resilience and cross-system impact.

Our aim with these two projects is to support the pioneering of a new community stewardship model in which communities invest in the uniqueness of their place and the capacity of their own citizens.

#### MOVING FORWARD

So, where do you begin? What is a good first step in inviting change using these perspectives and practices?

The sage would say that perhaps it is first to ‘walk in beauty’ and in so doing to fill every space we are in a beautiful way. The power of beauty is that it stands at the threshold of the visible and the invisible, where science and the mythic world meet. Seeing the world as beautiful helps us see the patterns, connections, relationships and movements of life that are often invisible to the untrained eye. The word beauty itself is closely related to both calling and compassion. As such, beauty lies at the root of what it means to be truly compassionate and truly alive. It is our call to life. To be regenerative is to return the world to beauty.

Building on the possibilities beauty unveils, the scientist would propose engaging in these generative conversations:

- What will it look like when each of us is able to bring the best of ourselves? When we each feel deeply at home?
- What will it look like when our interactions support not only information sharing, decision-making, effective action and trust but playfulness, learning and joy? When our patterns of belonging are infused with a sense of sacredness?
- What is the calling or purpose – the emergent, unifying story – that propels us into transformative action together, as citizens, employees, customers, community members? And how will we live that story?

Any of these questions offers a viable starting point, with the promise of growing from there.

Our greatest challenge is not lack of answers to these questions. The world has exploded with new, life-aligned strategies and tactics – things like Agile project management, new forms of shared ownership, and participatory governance – and even more discovery awaits us in our conversations and imaginings. Instead, the real challenge is to find the collective will and courage to embark on these new paths, to create space and time to learn from our experimentation, and to focus not only on changing the system but on changing ourselves along the way. The real question

is: *how do we need to see* and *who do we need to be* in order to choose the most appropriate tactics and to steward their implementation well?

#### CONCLUSION

It is in the ecotone between scientific observation and mythic inspiration that we find a pathway to meaningful change. Here, we discover a view of the world that is transformative, organic and whole. We see that our organizations and communities have the potential to be places where we are nourished by our relationships and by the opportunity to contribute and develop our gifts. Where we can be held lovingly by people and place. Where we can grow into wisdom alongside each other, with trust that this is the most direct path to effective action. Where we can experience beauty, wholeness and healing. And where these are the express purposes of coming together.

Viewed in this way, stewarding change – *stewarding life* – becomes even more than an inquiry and a practice. It is a quest. A hero’s journey. A choose-your-own-adventure story. The challenges we face in our organizations, in our communities and in the world call for nothing less. And our own hearts crave nothing more.



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<sup>1</sup> Our distinct perspectives are elaborated in Michael Jones’ book *The Soul of Place*, in Michelle Holliday’s slideshow, *Humanity 4.0*, and in her TEDx, “The Pattern of Living Systems”.

<sup>2</sup> For example: Capra 1996, *The Web of Life*; de Geus 1999, *The Living Company*; Macy 1997, Wheatley 2006, *Leadership and the New Science*.

<sup>3</sup> Armstrong 2009, *The Case for God*: xi.

<sup>4</sup> Jones 2014, *The Soul of Place*: 91-98.

<sup>5</sup> Holliday 2015, “What You See Is What You Get”.

<sup>6</sup> <[www.social-labs.org](http://www.social-labs.org)> [retrieved 1 May 2015].

<sup>7</sup> <[www.fsg.org](http://www.fsg.org)> [retrieved 1 May 2015].

<sup>8</sup> <[www.artofhosting.org](http://www.artofhosting.org)> [retrieved 1 May 2015].

<sup>9</sup> <[www.newtechusa.net/open-agile-adoption/](http://www.newtechusa.net/open-agile-adoption/)> [retrieved 1 May 2015].



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KEMANCHE PALYER

## LIVING SYSTEMS, SEEING SYSTEMS, BEING SYSTEMS: LEARNING TO BE THE SYSTEM THAT WE WISH TO SEE IN THE WORLD



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This is not a strategy for the inclusive fitness of human beings. One of the main challenges to humanity at this juncture in our collective history is to find systemic alternatives to either adapting the world to us to the point of overload, or adapting ourselves to the world to the point of evanescence. The options in this third direction must promote systemic sustainability, that is, integral approaches to human relationships between ourselves and other systems based on co-adaptation – strategies for adapting *with* the world, rather than either adapting ourselves to it or forcibly adapting it to us.

### SYSTEMS THINKING: AS IF LIFE MATTERED

IT IS A MODERN DAY TRUISM TO STATE THAT OUR WORLD is ever more interconnected, interrelated, and interdependent. The progress of far reaching social structures with powerful technologies has allowed us to change the face of the earth, and now we're already looking to Mars for further conquest<sup>1</sup>. Historically speaking, humankind has more or less consciously pursued the strategy of adapting the environment to its needs in order to gain mastery over nature. We have moulded and modified our surroundings however we please in order to be more comfortable. By the second decade of the third millennium, this strategy of adapting the environment to us in accordance with our every whim has brought us over the threshold of the carrying capacity of the life support systems of planet Earth ... and still we continue our planet plundering ways.

It would be incorrect to assume that the only alternative to adapting the environment to us is to adapt ourselves to the environment. And yet, there are those who argue that this is, indeed, the only way forward, pointing out that “you hear about the death of nature and it's true, but nature will be able to reconstitute itself once the top of the food chain is loped off – meaning us.”<sup>2</sup> In other words, since life may actually go on much better without human beings, our greatest contribution to cosmic evolution may be to ensure a healthy planetary ecosystem by removing its prime threat – the human race!

### TOWARD A TECHNOLOGY OF HUMANE INTERACTION

Technology is often portrayed as something apart from culture, acting upon individuals and societies in dehumanizing ways. It has been demonized as the machines, tools, and material objects of human production that bend us to their mechanistic will in a relentless drive for increased efficiency, effectiveness, efficacy, and subjugation of nature. The casualties left by the wayside are feared to be ethics, aesthetics, spirituality, and humankindness. Fifty years ago, Jacques Ellul warned of this malevolent aspect of technology, writing reprovingly of how “the machine tends not only to create a new human environment, but also to modify man's very essence.”<sup>3</sup>

There is a problem with such views, generally identified with technological determinism. The problem is that they separate technology from culture when in fact, technology is best conceived as a form of *crystallized culture*. Tornatzky defines technology “any tool or technique, any physical equipment or method of doing or making, by which human capability is extended.”<sup>4</sup> With this definition in mind, the term technology should be understood to pertain to a complex system composed of people, organizations, role structures, skills, and knowledge bases, in addition to the hardware produced in workshops and factories.

People produce technology – more specifically, individuals and groups in particular cultures produce specific technologies. What they produce, as well as how they produce it, reflects and embodies the values of their culture. That is why technology transfer

LOW-TECH	small-scale technologies which do not require complex infrastructure, are relatively simple to use, cost little to construct or obtain and next to nothing to operate.
HIGH-TECH	sophisticated technologies which require complex infrastructures, technical expertise to construct and/or use, and are often costly to obtain and operate.
HARD-TECH	the tools, implements, machines, devices and equipments that are the physical embodiment of technology, and/or technological process based on engineering techniques and principles: 'know-how'.
SOFT-TECH	the 'scaffolding' (support systems, group processes techniques, design methodologies, decision making processes) for individual and collective self-determination: 'know-why' and 'know-what for'.

TABLE 1 - *Four Types of Technology.*

ALTERNATIVE	equipment or organizational forms that represent viable alternatives to existing 'main-stream' technologies. For example, small-scale organic farming instead of large-scale energy-intensive cultivation techniques.
INTERMEDIATE	technologies that stand halfway between traditional and modern technologies. The ox-drawn plough is an intermediate technology; more sophisticated than the traditional hoe, but less complex than the tractor.
APPROPRIATE	technologies characterized by organizational simplicity, high adaptability to a particular social or cultural environment, sparing use of natural resources, low cost of final product, and/or high potential for employment.
BLENDED	a form of appropriate technologies designed for culturally sensitive introduction in societies other than those in which it originated. Technologies that have been adapted to the norms and values of local cultural conditions.

TABLE 2 - *Four Means of Technology.*

is no longer considered a legitimate activity; it implies cultural hegemony. When we transfer a technology to others, even within our same culture, we impose our values and our beliefs no less than our artefacts of production.

TABLES 1 and 2 show various formulations of technology which can be combined. For example, one could develop an Appropriate form of Soft Technology through an innovation in collective decision making for a specific local self-governance system by drawing on and incorporating traditional approaches to collective self-determination.

Or by repurposing used plastic soft drink bottles to capture and channel light into dark housing spaces one can innovate a Alternative form of Low Technology for sky-lighting. Whatever the combination, the systemic impact of the innovation must be considered. The development and use of technologies that serve to obtain immediate objectives without consideration of whether or not they connect us to life is an expression of a non-systemic consciousness and the lack of well developed relational intelligence<sup>5</sup>. If we are concerned about the dehumanization of work and the malevolent pressures of efficiency and profit maximization

in the wake of industrialization and technological advance, we need only realize that these are the very values with which *we* imbue our technological systems. Rather than charge technology with irresponsible conduct, we need consider why it is that we have not met the challenge of matching technological intelligence with a commensurate advancement in relational intelligence and systemic consciousness. As Aurelio Peccei noted in 1977, the development of such wisdom is essential in giving direction to technological developments for the benefit of humankind, and indeed, one might add, for re-stabilizing the well-being of Earth herself given the impact of human presence. TABLE 3 suggests an emerging trend in systemic innovations that draw on Hard and Soft Technologies, respectively.

		PRESENT	FUTURE
SOFT		Intellectual Technologies	Technologies of Human Interaction
HARD		Manufacturing Technologies	Ecosystemic Technologies

TABLE 3 - *Evolving Orientations of Hard and Soft Technologies.*

The central challenge to systemic change agents of today and for tomorrow is the development and nurturing of relational intelligence applied to systemic innovation. The specific challenge is to consciously create Technologies of Organizational Communion (TOC) to contextualize and humanize the Technologies of Information and Communication (TIC) through which we operate so much of our contemporary social, economic and political networks. To emerge a glocal eco-civilization<sup>6</sup> we need both the connective and distributive power of TIC and the humanizing and relational power of TOC, *combined*. In this way, each TIC we produce will embody an evolutionary, planetary, and thriving ethic that affirms life – and the quality of living it. In short, the challenge of developing a TOC for each TIC that is innovated is a challenge to

our cultures; one to which only a life-affirming evolutionary ethos is appropriate. This is central to the emerging area of research and development focused on systemic innovation.

THE ROLE OF HUMANS ON EARTH: CONNECTORS, CONVENERS, CURATORS OR KILLERS?

As we engage with the process of ushering in the conditions for the emergence of a thrivable planet – listening into the nurturance spaces and seeking the systemic leverage points for the emergence of a glocal eco-civilization – it will be increasingly important for our species to continue to explore ways of fitting our individual melodies together to create sustaining and enduring harmonies with the broader symphony of life on Earth. This is more than just a nice metaphor: it is the essence of *syntony*. As an organizing force in societal evolution, syntony involves an embodiment and manifestation of conscious evolution: when conscious intention aligns with evolutionary purpose, we can foster and design evolutionarily consonant pathways of human development in partnership with Earth. It is the effort to cultivate these dynamics that constitutes what is often called a *syntony quest* (A. Laszlo 1999). To engage in a syntony quest, we have to learn certain skills, to develop and practice certain competencies, and to manifest a willingness to think and act interactively. The notion of “will” – of active intention and passionate purpose – is crucial here. In fact, it is what makes the difference between merely seeking harmony and consciously curating a constantly emerging dynamic of syntony.

Kingsley Dennis makes the case for post-Millennials to be called The Phoenix Generation in his book by that name, the subtitle to which is *A New Era of Connection, Compassion, and Consciousness*. This era is only just dawning now, but already intimations of hope, pragmatism, and spiritual awakening can be sensed in many young people. As cyber-cowboy novelist and technology futurist William Gibson noted, “the future is already here – it’s just not evenly distributed.”<sup>7</sup> Know where to look for it, how to recognize it, what to do with it, and how to cultivate it are all part of the mindset, skill set and heart set of the this new generation, this new breed of syntony seekers.

This act of listening into what Stuart Kauffman has called the adjacent possible<sup>8</sup>, of curating that which appears as though it were almost seeking to emerge, this is the act of intuiting, imagining, and co-creating a narrative of thriving. It is what was so deliciously captured by Arundhati Roy’s evocative assertion:

“Another world is not only possible, she is on her way. On a quiet day, I can hear her breathing.”<sup>9</sup> Cultivating this sense-ability – and the corresponding response-ability that it calls for – is part of the new set of competencies needed for a thrivable human presence on Earth.

I once sat next to a bee keeper on trip. As it turns out, this man knew he was going to be a bee keeper when he was three years old. I had many questions. At one point in our conversation, he told me that all the species of plants and animals know what role the bees play in their ecosystems, and they depend on the bees to fulfil their role. This prompted me to ask him what role the animals and plants know that humans play in their ecosystems and whether or not they depend upon us to play that role. We sat in silence for a long while...

I later asked this same question of my daughter Kahlia, who was thirteen at the time. She thought about it and told me that perhaps the role we play is that of being the connectors. Connecting life with life, connecting what is with what might be. I continue to listen to the echoes of this answer and all the questions it births. It seems to affirm the spirit of Janine Benyus’ observation that life creates conditions conducive to life<sup>10</sup>. This is a far cry from the species centrism and zoophobia that characterizes so much of what Darwinism became at the hands of Herbert Spencer and others over a hundred years ago... Rather, it is an appeal to the designerly way of being so well captured in George Bernard Shaw’s poetic reflection: “You see things as they are and ask, “Why?” I dream things as they never were and ask, “Why not?”<sup>11</sup> This is the spirit of syntony and those who curate its emergence.

#### THE LISTENING CONVERSATION OF DAOLOGUE

Taking on the mantel of evolutionary co-creators with life on Earth involves re-storying our narrative as Human Becomings and remembering our place in what Joanna Macy, John Seed, Arne Naess and Pat Fleming have called The Council of All Beings<sup>12</sup>. To this end, it is essential to engage in the ongoing and ever emerging improvisational conversation-jam that is the hallmark of creative evolutionary processes. David Price writes about the notion of engaging in a *daologue* with Earth<sup>13</sup>. Price asks, “how might we listen and act differently given this perception of the conversation of the Earth, this enveloping planetary layer, this connecting and collecting intelligence, this sum of all dialogues: *this Daologue?*” The dimensionality of

daologue evokes exploration of and engagement with the way in which conversation, play, dance, and all aspects of life as art connect us to *ourselves*, to *each other*, to *the more-than-human world*, and across time to *past and future generations* of all beings. These are the four intertwined dimensions of systemic thrivability. As syntony seekers, engaging in this daologue across all four dimensions is a matter of consciously connecting, intertwining, and curating the emergence of the World Narrative – the bigger story of our individual and collective being and becoming. The quality and character of this story, therefore, depends on the way in which we author our life along these four dimensions. While these dimensions have been articulated and explored in detail in other articles<sup>14</sup>, suffice it list them here:

- The intra-personal dimension of sustainability; thrivability within oneself;
- The inter-personal dimension of sustainability; thrivability with one’s communities and social systems;
- The trans-species dimension of sustainability; thrivability with the more than human world;
- The trans-generational dimension of sustainability; thrivability with past and future generations of all beings.

By consciously, purposefully and intentionally curating each of these dimensions *in dynamic relationship to the other three*, it is possible to for us – both personally and in the sense of our larger humanity – to take on the mantel of evolutionary co-creator of a World Narrative that is led with:

- 1 - Passion – meaning vibrant, intense, and compelling enthusiasm
- 2 - Integrity – dignity or elevation of character; worthiness, honour and respect
- 3 - Grace – simple elegance, considerateness and a composed way of being
- 4 - Control – personal mastery in (not of) all situations in which I find myself
- 5 - FLOW – tuning my actions and attitudes to harmonize with my surroundings

These are the “five movements of syntony,” as I call them. They constitute the ground upon which the sense-abilities of syntony can be cultivated and the response-abilities of the syntony seeker can be brought into practice.

#### DREAM THINGS THAT NEVER WERE – WHY NOT?

Imagine what it would be like to live in the world with both the sense-ability and the response-ability

of an evolutionary co-creator – fully functioning and fully engaged. Inspiration for what this might entail can be found not only in the wisdom practices of traditional cultures but also in the imaginings of creative minds that reach out to portray future possibilities through fictional thoughtscapes. Isaac Asimov was a master of envisioning the adjacent possible. In the fourth of the five books of his Foundation Trilogy, he writes of a planet called *Gaia*. The planet is not our Earth and the story he recounts is set far in the future. However, as he tells it we are let in on a vision of what things could be like for us were the evolution of consciousness to develop to its full potential on a planetary scale here, on Earth. Through the character of Dom, a being from Gaia, we are shown an artscience that approximates this way of being. In the excerpted passage, below, Dom explains his hobby to Trevize and Pelorat, the intrepid space explorer and the donnish old friend who has accompanied him to Gaia.

He led them way into another room where, on a small circular table, there was a group of smoky lenses connected in pairs.

“These,” said Dom, “are Participations I have designed. I am not one of the masters, but I specialize in inanimates, which few of the masters bother with” [...]

“How are they used, Dom?”

“You put them over your eyes. They’ll cling. They do not transmit light. Quite the contrary. They obscure light that might otherwise distract you – though the sensations do reach your brain by way of the optic nerve. Essentially your consciousness is sharpened and is allowed to participate in other facets of Gaia. In other words, if you look at that wall, you will experience that wall as it appears to itself” [...]

Pelorat placed one pair over his eyes and they clung there at once. He started at the touch and then remained motionless for a long time. [...]

Dom said, “What did you experience?”

Pelorat said, “It’s hard to describe. The wall seemed to twinkle and glisten and, at times, it seemed to turn fluid. It seemed to have ribs and changing symmetries” [...]

Dom sighed. “[...] these Participations are enjoyed primarily for their aesthetic value, [although] they have their practical uses, too. A happy wall is a long-lived wall, a practical wall, a useful wall.”

“A *happy* wall?” said Trevize, smiling slightly.

Dom said, “There is a dim sensation that a wall experiences that is analogous to what ‘happy’ means to us. A wall is happy when it is well designed, when it rests firmly on its foundation, when its symmetry balances its parts and produces no unpleasant stresses. Good design can be worked out on the mathematical principles of mechanics, but the use of a proper Participation can fine tune it down to virtually atomic dimensions. No sculptor can possibly produce a first-rate work of art here on Gaia without a well-crafted Participation and the ones I produce of this particular type are considered excellent – if I do say so myself.”<sup>15</sup>

The ability to listen into the harmonies of evolutionary emergence comes across clearly in this piece. In fact, Dom implies that art is necessary to “fine tune” applied science for the dynamics of physical existence to be not only harmonious but actually felicitous. Of course, his Participations are an advanced form of technology that can be used to heighten aesthetic sense ability. However, it may be possible to evolve our consciousness so that such crutches are not necessary. The challenge is to interpret the flow of events through which we consciously participate in the shaping of our futures and those of all things with which we interact, and then to learn to intentionally align our actions with evolutionary purpose. In this sense, evolutionary sense-ability and response-ability are the Participations of our consciousness, and it is up to us to craft, polish, continually refine – and above all – employ them.

“It *is* a craft, you know. It is inherent in the human mind, but it must be developed in a very subtle and difficult manner. It takes many generations to reach its full potential, but once well begun, it feeds on itself. We have been at it for over twenty thousand years and the sense-of-Gaia is that full potential has even now not been reached.”<sup>16</sup>

So it seems Gaia may have a bit of a head start on us, but it is not too late for us here on Earth! In fact, the timing couldn’t be better. Who knows where this process of conscious evolution could lead given twenty thousand years, and the important thing to realize is that we *are* given twenty thousand years – and more!! What will Earth be like in twenty thousand years – like Gaia, or like a barren radioactive wasteland, or just another planet – maybe with life and maybe even with intelligent life, but without human descendants? Which narrative we participate in creating will depend on the vision we have and the volition we evince as conscious participants in the play of evolutionary emergence.

In the long run we may look back and, like one of Asimov’s characters, think how “we do not understand a human being who cannot sense his place in the scheme of things, who does not feel like part of a greater whole” (:389). At this point in the adventure of our species on this planet of Earth, it is the combination of evolutionary sense-ability and evolutionary response-ability that stands the best chance of providing a future creating, life affirming and opportunity increasing pathway. The first step on this journey begins with the heartfelt realization that *what we do* – both as individuals and as a species – *counts*, for this is the essence of evolutionary response-ability. But even before we take this step, we must first let ourselves know that *what we feel counts*. This is the essence of evolutionary sense-ability, and

without it we may never develop the necessary Participations of consciousness.

#### THE WHOLE CREATURE: COLLECTIVE INTELLIGENCE AND UBUNTU

In a recent *Spanda* article on the *Qualitative Dimensions of Collective Intelligence: Subjectivity, Consciousness, and Soul*<sup>17</sup>, Charles Eisenstein makes the case for an expanded appreciation of collective intelligence. He argues that “we are social animals; we are not separate individuals having relationships – we are relationship. Beyond the separate self, the smallest unit of collective intelligences is a partnership, and most of us have experienced that in a partnership, who we are changes. We might consider that “who we are” in total is the integration of who we are in each of our social, economic, and ecological relationships.” This notion of collectivity, of an identity that is interdependent (neither independent nor co-dependent) with others echoes the notion of *Ubuntu* in the belief system of the Xhosa and Zulu peoples of Southern Africa. It stands in stark contrast to the Cartesian declaration that because I doubt, I must think, and because there is an “I” that is thinking, I must exist: *Dubito ergo cogito. Cogito ergo sum* (I doubt, therefore I think. I think, therefore I am). Instead, Ubuntu expresses the sentiment that “I am because we are.” In other words, my human condition is conditioned and ultimately defined by the collective interactions of all with whom I come in contact. The condition of the whole provides context and sense for my own existence. As Eisenstein suggests, “we cannot say that collective intelligence is secondary to individual intelligence, or a mere epiphenomenon arising out of relationships among individuals. Each level, individual and collective, co-creates the other. To identify the locus of subjectivity in the individual is a cultural conceit – one not shared by other cultures that valued the we above the I, and gave it ontological primacy.”

These aspects and considerations of the interminglement of individual and collective being suggest a shift toward a worldview of interconnection, interdependence, and essential interrelation – what Eisenstein refers to as the conditions of *interbeing*. He asks, “why is it assumed without much debate that no one can have direct access to the subjective experience of another person (or non-person)? This is obvious only if we conceive and experience ourselves as fundamentally separate from each other. There are other stories of self, however. We could see ourselves, as many spiritual traditions do, not as separate beings but as “interbeings,” not just interdependent but interexistent.” The

emerging narratives of systemic sustainability, of evolutionary syntony, of glocal thriving all draw upon this wellspring of understanding<sup>18</sup>. It is the basis of innovation that holds the promise of fostering a syntonious human presence on Earth.

#### LEADERSHIP AND SYSTEMIC INNOVATION

Contemporary approaches to the development and implementation of advances in the application of technology tend, at best, to emphasize the synergetic relationship between human-beings, technology, society, and the environment. New ways of living, of creating value, and of raising not only standard of living indicators but – what is far more important – quality of life indicators require an augmented and expanded treatment of innovation in the context of societal evolution.

According to standard usage, an *innovation* is the concretization of a practical idea that augments human capability for action with societal impact, existing as an intermediate phase between the conceptual *invention* of an idea and its marketable *diffusion* in society. As mentioned at the beginning of this article, advances in science and technology have created unprecedented opportunities for human development and well-being, and yet such advances have brought with them certain “side-effects”<sup>19</sup> that now threaten the stability of societies and ecosystems the world over. As illustrated in FIGURE 1, population growth, social inequities, hunger, armed conflicts, water shortages, pollution, climate change – these are but a few of the issues, each of which is related to every

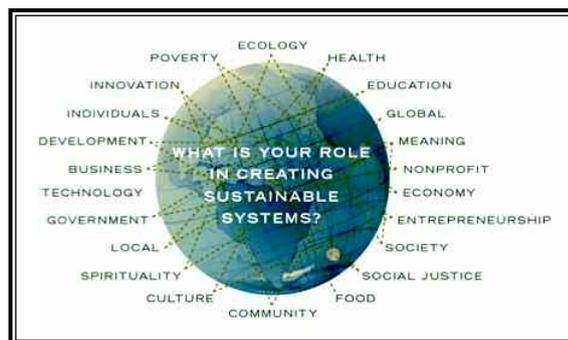


FIGURE 1 ~ Systemic Interdependencies.

other, and together form a complex challenge for societal development<sup>20</sup>. The finitude of resources on our planet calls for new forms of production, distribution, and consumption... and for new ways of researching, developing, and innovating social and technological change in order to answer the call.



FIGURE 2 - *Competencies of Evolutionary Leadership*

The emergence of new programs of research, development and innovation that seek to explore how the dynamics of healthy socio-cultural change are linked to the dynamics of innovation represents an emerging trend in higher education to answer this call. The Doctoral Program in Leadership and Systemic Innovation of the Buenos Aires Institute of Technology (ITBA) in Argentina is a case in point. Through a structured program of advanced study, the program focuses research on the set of interconnected and interdependent challenges that characterize global civilization in the first half of the 21st century<sup>21</sup>. Opportunities to study how these challenges directly impact, and are impacted by, the advancement of society at local and regional levels are pursued through practical fieldwork. With an awareness of how an extrapolation of the trends that characterize the current set of challenges for humanity point toward ecological catastrophe and social disintegration, researchers first develop a solid grounding in systems thinking and the sciences of complexity – allowing them to formulate explanations of why these trends are occurring – and then develop policies and strategies to innovate the means of emerging futures that are not only sustainable, but also desirable and even thrivable, as well. Clearly, there is an urgent societal need for research, development and innovation that is based on the systems sciences, and in particular, on the sciences of complexity and the study of socio-technical systems<sup>22,23,24</sup>.

An important characteristic of future-oriented innovation is its fusion of scientific and ethical knowledge, as suggested by the notions of evolutionary sense-ability and response-ability. Instead of just answering questions of “know how,” such innovative advancement in socio-technical systems must also

provide the means to begin to answering questions of “know why” and “care why” in regard to the way in which we live, work, and learn together.

Ever more powerful technologies of communication and information processing have given rise to Big Data that can be transformed into Smart Data through meta-tags and evolutionary algorithms, creating not only a reservoir of extra-somatic brain power for humans, but also emerging a semi-autonomous Internet of Things. The dynamics of these socio-technical systems

complexify and evolve ever more rapidly. Clearly, for innovation to be efficient, efficacious and effective, as well as ethical, aesthetic and humane, no single individual can be responsible for shaping it – some notion of *ubuntu* is essential. This is another core aspect of systemic innovation: it relies on collective intelligence. Systemic responses to the complexity of contemporary global and local challenges – personal, societal, planetary – require an expanded perspective: a way of recognizing interconnections, of perceiving wholes and parts, of acknowledging processes and structures, of blending apparent opposites. But most importantly, they require collaboration and an appreciation of reciprocity. Individual solutions and breakthrough ideas are necessary but not sufficient. Real opportunity to affect change arises from the systemic synergies that we create together. The emergence of programs of advanced research and study – such as the Doctoral Program in Leadership and Systemic Innovation – acknowledges the need to draw on contemporary insights from the sciences of complexity, computational and life sciences, and an embrace spirituality that re-instills a sense of integrity and ethical purpose in the leader and designer of systemic innovation.

#### LOOKING FORWARD

In his forthcoming book on *Thrivability Strategy*<sup>25</sup>, Dino Karabeg considers how the Club of Rome coined the term “global problematique” to describe the complex entanglement of the collective challenges humanity faces at any given point in time. He suggests the need now to create “solutionatiques” – systems of shared solutions that arise from the connected intelligence of leaders and designers of innovation. To do so, he emphasizes the importance of focusing on *systemic innovation* as an ecology of

new ways of researching, developing and innovating socio-technical solutionatiques that embody social values, technological creativity, economic opportunity, and environmental integrity. Such a prospective, systemic and evolutionary consideration of ourselves as co-creators of the narrative of evolution on Earth offers us the chance to avoid being cast as the villains of evolution who – consciously or not – take on the role of planetary home wrecker. Equally importantly, it allows us to avoid an alternative narrative that would cast us in the role of the martyrs of evolution by suggesting that we should safeguard Earth and all it holds by removing ourselves from the scene. Learning to be leaders of systemic innovation in syntony with life and the life support systems of Earth is the survival imperative of our species at this point in time.

Our common quest is that of curating conditions conducive the ongoing emergence of life on earth, of ways of being responsible agents of evolutionary development while at the same time learning how to deal with the challenge of playing a meaningful role in an eco-civilization that has the potential to emerge amidst the dynamics of a rapidly changing world. This seeking of ways to become curators of life in partnership with Earth, of taking on the mantel of connectors of life with life, this is the contemporary syntony quest. As with any significant learning adventure, the process of the quest is more important than any particular outcomes to which it may lead. Through the ways of learning how to read and understanding the consequences of change that both shape and are shaped by us as agents of thriving, we will find ways to voice our own response to the challenge of this syntony quest. Thrivable development is as much a function of our understanding of evolutionary processes as it is of our ability to engage with the dynamic change processes of which we are a part in a spirit that fosters the responsible co-creation of abundance. The systemic perspective that underlies and nurtures this understanding moves us beyond the important but limited visions and objectives of sustainable development. To curate the emergence of a glocal eco-civilization, it is no longer enough merely to seek to sustain our presence on earth. We must evolve our presence, and we must do so in the direction of collective thriving in the context of ecosystemic abundance.



<sup>1</sup> BBC News 2012, Can the Dutch do reality TV in space?  
<sup>2</sup> Roselle in Al Gore 1993, *Earth in the Balance*: 217.  
<sup>3</sup> Ellul 1964, *The technological society*.

<sup>4</sup> Tornatzky 1983, *The process of technological innovation*.

<sup>5</sup> Laszlo 2013, *Evolutionary Development*.

<sup>6</sup> A glocal eco-civilization is one that celebrates and invests in local expressions of thriving while contributing to the emergence of global interdependence.

<sup>7</sup> NPR 1999, *Talk of the Nation*.

<sup>8</sup> Kauffman 2003, *The Adjacent Possible*.

<sup>9</sup> Roy 2003, *War Talk*.

<sup>10</sup> Benyus 2002, *Innovations Inspired by Nature*.

<sup>11</sup> Shaw 2010, *Back to Methuselah: In the Beginning*.

<sup>12</sup> Seed et al. 2007, *Thinking Like a Mountain*.

<sup>13</sup> Price 2015, *Daologue*.

<sup>14</sup> Cf. Laszlo 2014, "Connecting the D.O.T.S."

<sup>15</sup> Asimov 1982, *Foundation's Edge*: 356.

<sup>16</sup> *Ibid*: 363.

<sup>17</sup> Eisenstein 2014, "Qualitative Dimensions of Collective Intelligence".

<sup>18</sup> Cf. Wheeler 2006, *The Whole Creature*.

<sup>19</sup> Meadows et al. 1972, *The Limits to Growth*.

<sup>20</sup> Merry 1995, *Coping With Uncertainty*: 78.

<sup>21</sup> Meadows et al. 2004, *Limits to Growth: The 30-Year Update*.

<sup>22</sup> Goerner 1994, *Chaos and the evolving ecological universe*.

<sup>23</sup> Capra in Loye (ed.) 1998, *The evolutionary outrider*.

<sup>24</sup> Pasmore et al. 1978, *Sociotechnical Systems*; and Pasmore 1988, *Designing Effective Organizations*.

<sup>25</sup> Karabeg 2015 *Thrivability Strategy*.



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ANGEL WITH BIRD

## THE STORY: UPLIFTING HUMANKIND TO CREATE HUMANITY VIA SOCIETAL METAMORPHOSIS



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*humankind could rapidly and significantly change to insure the multi-millennial survival/thrival of Humanity/Gaia.*

*Larry wintered over in the Antarctic and developed innovative math/science curricula for K-6. He taught students from kindergarten to graduate school, and was active in movements to improve education. He has been an active social change agent from the early 1960s to today, and a student of change.*

*Larry has a rare disability; he has no mental imagery in any sensory modality, which results in no sensory remembrances or sensory fields for creative work. In compensation he developed abilities to work with complex conceptual schemes.*

*Larry has been online since 1982, but not a geek. His interest in the history and philosophy of science results in a balanced approach to the claims of scientists. At 80, Larry seeks a team willing and able to exploit his insights and discoveries.*

### SAVE CIVILIZATION OR CREATE HUMANITY

**A**LTHOUGH HUMANS HAVE ACCOMPLISHED much and have demonstrated many quality attributes during the Era of Civilization, we might query whether, as a whole, civilization (a specific type of human societal organization) may not have been, in sum, negative for Gaia and for Humankind. A few have recommended we go *Beyond Civilization*<sup>1</sup>, while more recently Naomi Klein<sup>2</sup> has claimed that capitalism must be replaced if humankind is to survive. I up the ante and propose that humankind must not only abandon civilizations, but create a viable nu humanity, if humankind is permitted to have a secure multi-millennial future. I deliberately use “nu”, not “new”, a distinction to be discussed later in the article.

Yet, the vast majority of solutions proposed call for reforming our economic system; essentially committing

us to an attempted preservation of civilization, risking the very real (but denied) threat of Extinction (the E word!). A few cry out warnings; but can't provide any hopeful solutions. I hope to suggest, here, a path alternative to collapse/extinction. In addition, I and others concerned, must collectively face our own intuitive/emotional denial of our *Crisis-of-Crises* (as evidenced by our behaviour), even as our conceptual/rational minds work overtime.

In this chapter I hope to tease your curiosity that our future might be very, significantly different from all the other scenarios you may have considered. One where emerges an exciting *Opportunity-of-Opportunities*<sup>3</sup> ready for the taking.

The theme of this essay is an attempt to imagine changes in how humankind conceptualizes reality (as a distribution of different, personal worldviews) from the early 21st Century to different “times” (critical moments) on our path/expedition to a condition when the multi-millennial future of Humanity/Gaia is “secure” (as best it can be secure). That is, we have successfully ducked the bullet of catastrophic climate change and a personal-to-planetary, viable, sustainable, and thriving Humanity dances with a nu, emergent Gaia into the far future.

“Change”, used here, can apply to both: 1) the specification of how a future “state” is different from a prior “state”, and 2) processes that bring about the transition between “states”. Change-1 is static; change-2 is dynamic.

I am not calling for futurist speculation of consequences to existing and future technological innovations, although they are very significant. I am not calling for survivalist speculations after collapse; or a post Singularity humankind. Obviously, we can no more accurately imagine details of these changes than our tribal ancestors could imagine our high tech civilization. The best we can do is being assertively open to challenges to many of our most “sacred” assumptions about “reality”. The changes I explore are not guaranteed to occur and may not have high probability (futures probability estimates are impossible without major, highly questionable assumptions). The changes will depend on specific types of actions taken by humans. They will be the result of human intentional agency.

In this human adventure I propose, where each human person will be a participant, I cannot avoid including my personal story of how I came to host

an inner world named “nuet” (which I invite you to visit)<sup>4</sup>. At age 22, I discovered I lacked mental imagery in all sensory modalities – including visual and auditory. I have learned of only a few others who claim this total lack. Outdated research claims 3% lack visual imagery and 7% lack auditory imagery. This led me to study mental imagery (just at the time it was emerging from suppression by behaviorists). There is great variation within each imagery modality.

Over the years I learned more about my disabilities, such as having no sensory remembrances or sensory fields for creativity – and how this affected my interaction with others. Nuet serves as a context for what I experience. Each domain in nuet’s world has less detail than for most others. This disability has been compensated for by the emergence of a special process of conceptualizing, and nuet’s world can be more comprehensive than for any persons I have yet encountered. I have come to view myself as a “savant” with both extreme disabilities and compensatory abilities – except that neither are in traditional categories and I am seen as simply “eccentric”, sharing here a few of the insights relevant to a viable emergence of Societal Metamorphosis.

## TWO PATHS TO A BETTER FUTURE

Let us first explore our most significant and critical choice towards a better future. There are two main paths:

1 ~ Fixing and reforming civilization, humankind morphs/transforms by gradual, incremental, transformational changes from our current state in 2015 to a better future state.

2 ~ Through emergent, alternative views of “change” and “reality”, a nu humankind forms and learns/organizes into becoming a viable humanity preparing for a healthy multi-millennial future dance with Gaia. This involves the use of new technologies and accurate/advanced knowledge of both the “current-state/history of humankind/civilization” & “trending changes”, and emerging alternatives. Although a successful “shift” must occur this century (and possibly sooner), it will take centuries to millennia to “mature”. The “maturing” will be done by the next, much more competent generations. Our task is to manifest the “shift”.

On this second path, a radical transition is created. This transition has analogy with insect metamorphosis, with butterfly form emerging from caterpillar form, without transformation (morphing); a new process labelled Societal Metamorphosis.

The caterpillar doesn’t morph into a butterfly. It doesn’t absorb its many short, stout legs and grow a

few long spindly legs. It doesn’t grow wings on the heavy caterpillar body. Sequential pictures/states of the transFORMATION from caterpillar FORM to butterfly FORM don’t exist. Instead, early in the life of the caterpillar, some cells grow/develop into embryonic organs of the future butterfly, called Imaginal Buds. During the life of the caterpillar these imaginal buds are discs/clusters of small cells dormant (but nurtured) within the body of the caterpillar’s larger cells. Initiating active metamorphosis, the caterpillar encases itself in a cocoon and begins disintegration of functional caterpillar cells into a nutrient soup supporting the growth/development of imaginal buds into functional components, organs, and subsystems of the emergent butterfly. Most of the molecular components of the caterpillar become components of the emergent butterfly. This is a “popular” type of change in Gaia. I have read that in some instances each cell in the caterpillar/butterfly has two whole genomes, one for each form. For human societal metamorphosis we must create our societal analogue of the butterfly genome. Caterpillar/Civilization forms cannot be morphed or transformed into Butterfly/Humanity forms. At the molecular level there would be a continuous process, and in Societal Metamorphosis there would be continuity-of-life for many humans. But it would be more like migration between two realities than a transformation of realities. “Migrating to NU”, might be the title of our story; NU is the term I use to label the nu humanity, the emergent societal butterfly<sup>5</sup>.

## BIGGER THAN BIG - BEYOND BIG PICTURES

I use “NU” (in caps) to label the set of models for Humanity/Gaia<sup>6</sup> I hope will manifest within this century. NU is bigger than big; NU is more than a big picture. NU is more than a description of the “state” of Humanity/Gaia on Earth Day, 2100. NU includes the history from 2015, and before. NU can’t be visualized, or experienced.

HUMANITY is a creative, aesthetic, loving, intelligent process, emergent on a planetary scale. It is a new process tweaking the billion year story of biological evolution. At each stage in the process there are existential forms/systems (also called Humanity) of which humans living in that era are viable components.

NU – is an imagined social organism, the whole of humankind after societal metamorphosis or migration, a nu humanity. NU will grow, adapt, learn, develop, evolve, emerge for centuries and millennia. NU will be as radically different in form and behaviour from 21st century humankind, as a butterfly is from a caterpillar. We, change agents, although cells in societal imaginal buds, can’t fully or accurately imagine NU. Thus, it is

highly premature for us to propose the form for NU. Nu humans in NU will be far more competent than we are today. Although we are free to speculate, it would be a waste of valuable time and energy to debate alternative future forms of NU, when there is little we can, or should, do to secure our contemporary preferences.

NEW/NU DISTINCTION I use the characters Here&Now to label the “experience of presence”. Here&Now has temporal duration; it is more than an instantaneous moment or the “present”. All is experienced in the Here&Now, including our past and future. “new” and “nu” are two alternative perspectives within our Here&Now. “new” refers to novelty in the Here&Now that relates to the “past”. “nu” refers to the novelty in the Here&Now that relates to our alternative futures. Both new/nu are useful perspectives. “nu” explores potential.

Zeno’s paradox is resolved when each halving of the distance covered is matched by halving the time elapsed – the foundations of the calculus. NU is achievable when we match the full challenge of its creation with the exponential uplift in the distribution of humankind’s potentially actualizable competencies. Contemporary humankind can’t create NU; but humankind can uplift itself to requisite competency levels to create NU.

#### UPLIFT FOR TRANSFORMATION: A PRAGMATIC FUTURE

What actually happens is beyond forecasting. Whatever emerges, transformation will also occur; transformations always accompany/follow emergence. To me, the first step to operate a radical transition with the established order would require a well organized “revolutionary” population. The alternative movements in 2015 are grossly inadequate to confront the “powers that be” (whoever they are). Big money suppresses much needed innovation.

Information about protests and alternative projects is managed in the corporate mainstream media. Hi-tech police power can control any “disturbance” and intimidate resistance. Corporations “own” most of the democratic and judicial structures. Today, the top constrains everything else. Significant change coming from the “streets” is a naïve pipe dream. The “powers that be” will do anything they need to do to maintain their dominance.

Whether our future transition is transformation or emergence, success demands a nu, highly competent, learning/organizing population to challenge the existing order, either by reform or replacement. UPLIFT (developed later) is essential to both paths.

#### THE MAGNITUDE / SCOPE / COMPLEXITY OF OUR CHANGE IS BEYOND IMAGINATION

This is very difficult to convey. What humans are asked to give up is initially unacceptable until they fully comprehend and accept what they will gain. What is happening on Earth in this 21st Century is not the fall & rise of another civilization. This is the first time the change is global, with no unaffected regions to support recovery. We have not only destroyed our humankind organizational systems, but have destroyed our ecological, resource based, home.

No one or force is coming to save us. Fortunately we have unrecognized powers and resources beyond our awareness and imagination. Just as infants and young children can’t imagine their potential futures as adults; so humankind is blind to many of its future options. I don’t speak of new special abilities as given to our “Super Heroes” on TV, or enhanced telepathy or eternal life. I speak of how human systems would develop if each person had access to personally supporting learning environments tuned to their unique propensities and the real needs of their collectives. Neither a top-down program (too much direction limiting personal creative agency) nor a grassroots bottom-up program (too much individual freedom by persons unable to be personally aware of all the consequences of their actions) can suffice. It is our challenge to weave a process, Personal to Planetary, where “domination” is not permitted.

Our potential future can’t be represented in a blueprint, an explicit plan to guide us through changes. We must continually design our own plans, test them, and revise them, proceeding through cycles of design and attempted implementation. We must begin to properly apply “scientific methodology” to social/societal change.

Human innovative ingenuity has almost exclusively been directed towards “making” (material construction), and technologies for “making”. This includes tools to amplify our perceptions and actions; but again primarily directed towards our non human environment. Only the crudest attention has been given to human learning and organizing. When the “best is bad”, but we can’t imagine “better”, we honour the “best-we-have”. Organization, education, and economics all fit this characterization. The pseudo science of “economics” has attracted most talent and the science-tech institutions primarily to further human material productivity. Religions, governments, and corporations are simplistic and crude compared to other technological systems. Even the exciting adventures in community living have never gone beyond temporary experimentation. Some of the organizational experimentation in hi-tech corporations is encouraging – but they

are still all directed towards making things to market in our economic system. *Creativity, Inc.* by Ed Catmull<sup>8</sup> has recently caught my attention.

#### IGNORANCE: A POSITIVE FORM OF KNOWING

Ignorance is knowing of what one doesn't yet know or comprehend, and knowing of what one can't yet do or appreciate. One's "ignorance" is one's knowledge of their potentials. I have proposed that learning about and to use "ignorance" be an explicit feature of quality educational systems. I was primed for this insight that led me to select and read the book: *The Encyclopedia of Ignorance*<sup>9</sup> in 1977. This is now an accepted, minority usage as illustrated in a recent book, *Ignorance: How It Drives Science*<sup>10</sup> which debunks the popular idea that knowledge follows ignorance, demonstrating instead that it's the other way around. As illustrated in these two books, the act of describing one's specific ignorance leads to an efficient selection and explication of the most relevant knowledge we do have: framing our knowledge in our ignorance. The potential of the whole field of ignorance may have special relevance and utility, as distinct from our whole field of "accepted knowledge". Knowing of, the domain of questions and queries is a type of knowledge. While pure numbers of expanding publications are impressive, they don't adequately reflect the changes in our structures of knowledge and ignorance.

The knowledge perspective tends to narrow the discourse more and more, until we end up with many semi-isolated silos of specialists. These specialists' ignorance is often limited to only those issues related to their silo. On the other hand, dive into detailed debate on the fractal-like multitude of topics and discover the awesome extent of humankind's expanding knowledge of process, new methods of gaining new knowledge (and wisdom). This is happening with only a very small percent of humankind. UPLIFT will be designed to tap into this wealth.

#### THE NEED FOR UPLIFT

UPLIFT is a term gathering nu meanings. I use it implying a bootstrapping, self-organizing process, not an external force lifting something up. A definition may be: UPLIFT is a process whose goal is to rapidly increase/improve/innovate the distribution of conceptual/intuitive/performance competencies in the global population. In this chapter I also use the term interchangeably with a specific model of change leading to that goal. UPLIFT evolves as the core process in stages: from an R&D team, a movement/network of communities, an organization/society,

a nu humanity. Many quote Margaret Mead: "Never doubt that a small group of thoughtful committed citizens can change the world; indeed, it's the only thing that ever has."

UPLIFT is a core process in Societal Metamorphosis. It cannot be achieved by reform of any existing educational system, and is much more than an educational process. OLLO (Organizing-for-Learning=Learning-for-Organizing) is the primary conceptual scheme underlying UPLIFT.

OLLO is a novel, innovative approach for merging the old domains of "education" and "management" into a self-reinforcing process with a strong futures perspective. Instead of attempting to reform "schools", "businesses", "governments", and other diverse "organizations", OLLO offers a nu scaffolding for nu innovative models for change. OLLO needs to be part of the diverse, movements of contemporary change agents, such as P2P, The Commons, PLAST (A Pattern Language for Systemic Transformation), People Centered Economic Development, Collective Intelligence, TheNextEdge, and literally thousands of other startup movements.

The vast diversity of humans in cognitive/intuitive/behavioural competencies and habits must be our real world. Norms and standard deviations must be avoided, unless meaningful. Our real diversity is our future. We are much more than the sums of our norms. Once we begin to adequately attend to this relevant diversity, we will tap into its awesome power.

The essential "complementarity" in OLLO is critical. OL and LO are not in competition. They temporally-weave, in ways we are just learning about<sup>11</sup>.

There is considerable literature emphasizing humankind's poor record in developing and utilizing human resources, which acknowledges the vast untapped, actualisable potentials in the human population. I expect that most of them are weak in recommending what to do, and call for reforming our educational systems. There is also literature pointing out the hidden agenda of formal education: to indoctrinate workers to the industrial system and to blindly accept authority.

In my analysis, stopping Global Heating and other human created forces driving Earth Changes (including Climate Changes); creating sustainable/resilient humankind; and participating in multiple recovery ventures – demands UPLIFT – and the abandonment of the civilization model for societal organization. We must think/act beyond capitalism, econo-centrism, and electoral democracy.

The technological advancements over the century were accomplished by a very small percent of the population. Imagine what would happen if the whole

population had these, and better, competencies. Don't prejudge UPLIFT to be impossible – in the short time frame of a few decades – until you consider the full resources of our new knowledge. If UPLIFT is necessary for survival, humankind can mobilize to make it real.

#### VECTOR TERMS

To illustrate the higher level of complexity to be considered in UPLIFT, three new terms have been coined. These are called here *vector terms*, as they represent the multi-dimensional aspect of the concepts labelled by each term. Vector terms are needed when one term (from a set of terms), elevated as a category label for the set, creates a bias toward that term (concept), when the other terms (of the set) may be equally appropriate.

*galdee* = grow, adapt, learn, develop, evolve, emerge. Types of change.

*reeee* = relevant, effective, efficient, enjoyable, elegant. Ways of evaluating action.

*seaf* = support, enable, augment, facilitate. Modes for helping.

A mantra for the ontology-of-becoming for UPLIFT may be: *reeee seaf galdee*.

No one is expected to buy into UPLIFT “lock stock and barrel” on the basis of this chapter. I estimate minimal effort being equivalent to a difficult university graduate course. I also expect a quality educational (*seafing*) process will be needed for many persons – that reading alone, without dialog, would probably be insufficient. Compare the magnitudes of effort and challenge.

Once we acknowledge the need and viability of the goal to “rapidly uplift the global distribution of human intuitive/conceptual/performance competencies”, an exponentially growing population of active participants emerges.

It is important to emphasize that UPLIFT is neither a top-down nor bottom-up process. UPLIFT involves a dance of engineering design and creative flow; both planning-ahead and living in the Here&Now. In UPLIFT the human population both pulls and pushes. Scaffolding is designed and created from below, to pull others up. Those who embrace UPLIFT push the design and creation of new scaffolding, for themselves and others.

As you read this chapter UPLIFT is only an emergent idea, a tentative proposal. Very little of what one might expect in a proposal doesn't yet exist in sufficient detail to motivate action. Much of this is intentional, as the members of UPLIFT will design

their next stages, and as UPLIFT progresses, its competencies will increase.

We organize so we can learn more and we learn so we can better organize (OLLO). We don't attempt to apply our rapidly emergent systems of competencies to transforming our social environments, or even engage in large projects related to climate change – as important that is a longer term goal. Initially, we uplift ourselves, by our bootstraps, to a level of competencies and organization when we become a major positive force on Gaia. We *galdee* to become the new social/societal, local-to-global, personal-to-planetary, manifested version of humankind; an emergent new Humanity – a radical alternative to Civilization. Then we can be significant!

#### CHOOSING THE SOCIETAL METAMORPHOSIS TRACK IS DIFFICULT

In the decades leading up to 2015, the most informed and creative change agents subconsciously adhered to the morphing or transformation model of change. They speculated on very radical differences between the “old” and “new”, but – from their behaviour patterns, it is evident that they deeply assumed “the end game” as morphing or transforming. Societal Metamorphosis was locked-into being only a metaphor for rapid, significant shifting (morphing) from old to new.

Two “situations” affected movement towards adequately conceptualizing and implementing Societal Metamorphosis. We are blocked by our intuitive/emotional/fast minds in denial of our extinction threat; while our conceptual/rational/slow minds are trapped in confusing, paralyzing loops. Emotion dominates reason as we confront cognitive dissonance.

In *Denial*<sup>12</sup>, the authors hypothesize that for self consciousness to have Darwinian survival value it had to emotionally deny death, otherwise humans would be risk averse and not survive to breed. In our future, humans may need to be members of special teams to override this barrier.

Another barrier is our inability to adequately imagine Societal Metamorphosis as a viable systemic strategy or scenario, more than metaphor, because:

A ~ Most persons believe the established order is too powerful to permit an alternative to manifest. The more knowledge one has of the “power structures and elites” and their wealth and technological competencies, the more invincible to reform they seem. Knowledge of the “powers” is made much more difficult with their ability to fabricate complex “evidence” and create sophisticated “spin campaigns” to promote

and sustain deceptions. Key to this is an intentional demonization of “conspiracy thinking”.

Replacement (not reform) strategies, in that they don’t initially challenge establishments, have an opportunity to emerge without suppression. The actions required are OLLO and the building of an UPLIFT movement, which requires significant change for change agents – more about being part of changing themselves than changing others.

B ~ Most persons lack sufficient knowledge of how the synergy of many new discoveries makes the rapid emergence of a viable “societal butterfly” possible – in the short time frame before collapse. Most change agents, if they devote the time to read about it, categorize Societal Metamorphosis as a Utopian Fantasy or SciFi speculation.

However, the initiation of UPLIFT doesn’t require the participation of many people, certainly not most. Yet, the most frequent objection to this proposal is “people can’t change that fast” or “most people won’t understand” or “most people are addicted to the material world”. The UPLIFT model is specifically proposed/ designed to “motivate” the whole global population and help people “learn and organize” – in stages and over time – starting with full knowledge of the contemporary distribution of addictions, habits, beliefs, knowledge, competencies of a very diverse population.

C ~ The social/societal<sup>7</sup> systems of many change agents are dysfunctional relative to their abilities to explore alternatives. The positive value of intentions and the personally rewarding “communities of dialog and practice” contribute to the delusion of doing “all that is possible”, and to remain quite conservative related to basic practices.

The change agent movement is far more diverse than we usually take it to be. We often imagine it as the whole of those persons we are aware of and who are active. This is a very small subset. Most are doing good work in the context of their objectives, although all could improve and would benefit by greater collaboration. Each works in a context (largely, critically unexamined). Social pressures keep them focused. There is neither time, motivation, nor immediate benefit to challenge these contexts, even if continuing as usual results in some cognitive dissonance.

The cognitive dissonance between *practice* and *perspective* is usually resolved for individual persons in favour of maintaining practice (Kuhn’s early “paradigm”). It might be different for special teams, where social pressure is directed towards challenging contexts (which starts with challenging perspectives of practices), but is supported by changes in practices (involved in the challenging of contexts). This needs further exploration. The “dialectic”

between practice and perspective will be the same “Möbius spirals” as between OL and LO in OLLO.

D ~ Each specific structure both enables and inhibits systemic processes. In designing systems to facilitate certain processes we frequently ignore what processes that system’s structure inhibits or makes difficult. Frequently ignored by action oriented systems are the continued learning of members (often in unexpected domains), evaluating and improving the system, and adequately relating with other systems. “Goals” (the intended consequences of achieving objectives) are also seldom given the attention needed. Accomplishing goals usually depends on the activities of other systems.

As awesome as our intelligent technology is, the specific structures that emerged (e.g. email, social media online; learning venues such as courses and conferences, cell phones, etc.) makes it difficult to develop many needed processes. Humans are usually more conservative as to practices (paradigms) than to ideas (perspectives). Change agents are usually not aware that their new tools may actually limit what they can do. Sometimes a process made easy and enjoyable by the structure of the new technology is seductive and attracts attention away from other processes. Online dialog often distracts efforts for constructing collective structures, such as strategies and educational programs.

Persons can differ greatly in how they approach change and “the future”, and often aren’t aware of this diversity. Those not having developed adequate “futures” processes often belittle others for wasting their time. Persons who “futures” are frustrated by those who can’t recognize the need to assess options related to different consequences.

No humans have yet been successful *seafing* significant change in societal systems of the size and complexity of contemporary reality. We have sometimes been successful in creating viable communities (tribes with uniform cultures) or businesses. But, creating viable societies composed of diverse communities and cultures is a technological challenge seldom even recognized.

Ancient civilizations were as competent as we in managing people, maybe even better – and with much more primitive technologies. What we must do<sup>13</sup>, in a few decades, is innovate advances in human-social technology equivalent to what has developed the past few millennia in the technologies of non-human, “natural” processes. For example, astounding gains were made in: metallurgy, horticulture, agriculture, construction, road and bridge building, transportation, seafaring machines, tools, chemistry, animal husbandry, and unfortunately “war”. Health care and education had a much more checkered history. Humans demonstrate

great ingenuity, creativity, innovation - whether as indigenous tribes, Roman road builders, or pyramid and cathedral constructors - all without electricity or the internet to organize labor. There has been little advance in the technology of systems where human persons are the key components.

There is more than a hint of progress in the curation by Giorgio Bertini's *Learning Change* blog<sup>14</sup>. For over a year I have been reading Giorgio's brief summaries of literally hundreds of quality articles on many diverse topics related to human change and learning change. There is so much quality knowledge about humankind and change rapidly accumulating that it overwhelms me to contemplate how to use this knowledge. The assumptions we make about how humankind changes (or functions or organizes) and apply in our activity are light years behind what this new knowledge informs us. We have yet to discover/create how to work with it.

And this is only one of a great many domains where our new knowledge far exceeds our abilities to apply. In analogy: although the authors of a given research perceive both trees and groves; the larger and more complex "forest of diverse groves" remains out of focus. Most decision makers are unaware of or trivialize this vast resource that would greatly support OLLO (Organizing-for-Learning= $\Leftrightarrow$ Learning-for-Organizing), and the success of UPLIFT and Social Metamorphosis models.

The contexts and limiting vision of their challenge, along with inadequate technologies (relative to needs) inhibits change agents' capacity to be effective. A major reason is that a "technology of human change" has yet to be scientifically based. False or inaccurate beliefs and dogmas are at the foundations of attempts at intentional human change. Most human change just emerges without much intention about "big pictures". Our current knowledge of this process (which we could surf if we could forecast the waves) is also lacking.

#### WHAT MIGHT CHANGE AGENTS DO, THAT THEY AREN'T YET DOING?

I favour a horticultural analogy I call SSS (viable Seeds, fertile Soils, and nurturing Scaffolding) for change agent activity. We take action to create/produce viable seeds (proposals for projects) but make inadequate effort to effectively distribute them and nurture the engagement of the audiences with the sprouting seeds. We flood our Social Media with seeds commenting on seeds. We enjoy this dialog and believe "real change" will, eventually, emerge from it.

We virtually ignore what may be needed to prepare and assist many others in comprehending our

seeds. We systematically ignore the need to also create/produce fertile soils and nurturing scaffolding for our seeds.

The viability of seeds and the fertility of soils complement each other. Are the soils semi-isolated persons reading the same book, with occasional book clubs? Do we need different versions of seeds to match different soil types? Given a seed and a soil, what "fertilizers" may be needed to *seaf* comprehension? What projects are needed to determine cognitive profiles for relevant individual differences? Can a positive use be made of our Big Data technologies for personalized discourse? How do we handle privacy/transparency concerns?

Nurturing scaffoldings are important in countering the tendency of seed-soil matches to evolve into closed silos. We cannot expect dedicated communities of practice to devote adequate time and energy to seek and engage with other communities of practice. *Seafnets* will be needed to know about and match communities. Communities must dedicate a subsystem to be responsible for the larger network of communities and their *seafers*.

*Seafing* is a powerful second order system/process. *Seafnet* will be a well organized network of humans, trained and dedicated to Supporting, Enabling, Augmenting, and Facilitating other persons/teams/communities working on first order projects. *Seafing*, a

#### BUILDING SCAFFOLDING AND SEMS (SEMIOTIC STRUCTURES)<sup>16</sup>

Scaffolding are temporary engineered physical structures designed to *seaf* the *reeee galdee* of living systems (persons, teams, communities, societies). Physical structures here include semiotic structures: observable patterns in a physical substrate that results in meaning when perceived. The meaning results from an interaction of the pattern and the perceiver.

Scaffolding could include trained human persons performing to scripts. Exemplars of semiotic structures (sems) would be digitized text, graphics, and audio/video sequences. One type of actions by users of scaffolding would be the creation of new sems or the editing of sems in the scaffolding. Users of scaffolding usually communicate via the exchange of sems.

Scaffolding may also include any other physical structures used, such as tools, instruments, displays, machines or physical substrates that are manipulated, as in construction. However, the primary components in the design of a scaffolding are sems; although the nature of the media displaying sems strongly determines the *reeee* of perception and study of sems.

generalization of the proposal by Shoshanna Zuboff in *The Support Economy*<sup>15</sup>, will serve as an enzymatic accelerator to human social change.

This chapter is only a Seed. I point my finger at myself. Creating/producing Soils and Scaffolding involves making seeds about soils and scaffolding; but requires more: different types of activity. We have yet to reach an effective level of competent seed creation and discussion about soil and scaffolding creation/production. Recently I have suggested strategy construction as a complementary activity to dialog.

For me, this is a convoluted domain; in a way still at the boundary between order and chaos. It has dimensions beyond our emotional issues and immediate concerns; yet attending to this domain may have very significant impact on our personal lives. High abstractions weave with our immediate moments – which makes dialog difficult.

#### NU LANGUAGE

The issue of Social Metamorphosis is related to our awesome cognitive diversity where the concept of a norm for a human is as inappropriate as thinking of a norm for a mammal or tree. Our means of interacting and what we collectively produce are still on the steep upslope of innovation, with major paradigm shattering process ahead. We desperately need nu languages and different media for expression/interaction. The digital realm has primarily facilitated new versions of old processes and media – as is the usual pattern for the consequences of innovation. What is truly unique to the digital realm is only beginning to emerge and not yet adequately comprehended.

Our conceptual schemes have become so much more in magnitude, scope, and complexity that we can no longer hold them in our working minds. We must go beyond simple settings for processing information and linear exchanges. We need semiotic structures that evolve via human participation. Wikipedia is a poor analogue, and explorations into Global Brains are attempting too much too fast. Learning & organizing must be integrated into these evolving/emerging representations of conceptual reality. The human agents working at this level may need to be cybercrews, as it probably involves activity beyond the competencies of single persons. We need to experimentally create a nu perceptual language that is totally free from having to be spoken (although speech sequences could be components). We need media for both composing and processing that integrate the dual nature of our knowledge structures: nested (outlines) and networked (hypermedia). The new economy of digital production enables us to present each sentence on a

screen (with all kinds of enchantments for comprehension) and abandon this compressed text artefact from ancient times!

#### LEARNING EXPEDITIONS

Learning expeditions is one of a variety of new small-to-midsize group organizational forms that might be created as humankind emerges into the computer-mediated digital realm. As noted elsewhere, we are just beginning to see deep cultural/epistemic changes, consequences of recent innovations. Many of our crises are consequences of this massive shift between cultures/epistemologies underway.

The exploratory expeditions of the 19th century are my metaphor. Groups of persons formed tight semi-isolated living/working communities for an extended period of time. There also was an extended community which supported the core expedition, both before and after the active period of the expedition. Many things were accomplished by these expeditions; the primary achievement was learning – of both participants and of humankind. The positive attributes of exploratory, learning expeditions should be integrated into nu learning expeditions. The semi-isolation and deep community relationships are very important – in the sense of being “on retreat” for the duration.

I lived in an urban commune in New Haven when at Yale, and I wintered over in the Antarctic 1960-62 with 19 other men. We didn't have a common objective, but there was considerable mutual aide. Biosphere II in Arizona was another variation, not too successful. Many proposed “projects” could be conducted as learning expeditions. There should be special organizations that *seaf* the infrastructure for teams wanting to create learning expeditions. Many decades ago, George Pór borrowed the Learning Expedition concept (with acknowledgement). It remains a viable insight.

I would very much desire a learning expedition to brainpick Larry/nuet and his archive before he becomes senile and dies. I would submit to interrogation and manipulation. In addition to Nobel and MacArthur awards, humankind would gain much by identifying persons whose mental development far exceeded their published productivity. Not that their views be accepted, but that world-weaving “successes” should not be wasted. Had they existed, I would have been part of Learning Expeditions of Gregory Bateson, Erich Fromm, etc. I nominate the following to be explored by Learning Expeditions: Douglas Hofstadter, George Pór, Jerome C. Glenn, Tom Atlee, Glistening Deepwater, Oliver Sacks, Howard Rheingold, and many, many others. Might learning Expeditions be part of *Seafnet* activity?

## WHAT NEXT?

The text of this chapter is a crude distillation of many times more words/texts composed for this chapter – and this from a reservoir of four decades of thinking and writing. A viable nu humanity may seem “alien”, compared to envisioned minor transformations of our contemporary reality. That these are critical times is an understatement. If you sense that my proposals for UPLIFT and Societal Metamorphosis have merit, I heartedly invite you to dialog with me, and assist us going beyond dialog.



## REFERENCES & ENDNOTES

<sup>1</sup> Quinn, D. (1999). *Beyond Civilization: Humanity's Next Great Adventure* (New York: Three Rivers Press)

<sup>2</sup> Klein, N. (2014). *This Changes Everything* (New York: Simon & Schuster)

<sup>3</sup> This contrasting pair, *Crisis-of-Crises* and *Opportunity-of-Opportunities* signifies a meta-perspective involving deeper feedback loops and cybernetics. “*Crisis-of-Crises*” is much more than a “crisis”, as “*Opportunity-of-Opportunities*” is more than an “opportunity”. This significant distinction can't yet be experienced by the vast majority.

<sup>4</sup> nu-et, is a “nu” (variation of “new” with a futures orientation), “et” (extra-temporal – a la extra-terrestrial, or explorer-in-time). Access to all my online publications <<http://bit.ly/1FRAe6Y>> [Retrieved 15 May 2015]. Email Larry at [nuet1370@gmail.com](mailto:nuet1370@gmail.com) for a “tour”.

<sup>5</sup> Comprehending insect metamorphosis remains an evolving scientific project, with controversies as to its evolutionary origins. These details are not relevant for the use of insect metamorphosis as analogue for societal metamorphosis. See Wikipedia/The Imaginal Disc <<http://bit.ly/1FHywUp>> and “How Did Insect Metamorphosis Evolve?”, *Scientific American* <<http://bit.ly/1HWvgFi>> [Retrieved 15 May 2015].

<sup>6</sup> xxxxxx/yyyyyy I often use two terms, separated by a slash, to focus on the relationship between the two conceptual schemes labelled by the terms. Humanity/Gaia labels the dynamic. *galdee* processes that influence the *galdee* of both Humanity and Gaia.

<sup>7</sup> Social/societal. The distinction between these two conceptual schemes and their interaction is critical to our comprehension of change. “Social” involves the bio/psy interaction patterns of “real” humans. “Culture” is in the domain of social. Societal refers to structures that constrain the social, such as organizations, institutions, governments, and corporations. Societal rose to dominance over social with civilization. Today, many change agents try to change social first, as that is what they have access to. Yet, deep change in social requires radical change in societal.

<sup>8</sup> Catmull, E. (2014). *Creativity, Inc.* (New York: Random).

<sup>9</sup> Duncan, R., Weston-Smith, M. (eds). (1977). *The Encyclopedia of Ignorance: Everything You Ever Wanted to Know About the Unknown* (Pergamon Press).

<sup>10</sup> Firestein, S. (2012). *Ignorance: How It Drives Science* (New York: Oxford UP).

<sup>11</sup> I pay homage to Donald Michael's *On Learning to Plan and Planning to Learn* (Jossey-Bass Publishers, 1973), a seminal book in nuet's emergence.

<sup>12</sup> Varki, A. (2013). *Denial: Self-Deception, False Beliefs, and the Origins of the Human Mind* (New York: Twelve, Hachette).

<sup>13</sup> In a 1969 *Science* journal article, with this title “What We Must Do” by an old university mentor, John R. Platt, launched my many decade adventure, leading to my major insight cascade in 1974 <<http://xfin.tv/1HWvBrN>> [Retrieved 15 May 2015].

Platt focused on the potential of social technologies, but didn't seem aware of the distinctions I make here. It may be significant that it took me nearly five decades for this distinction to clarify, just now, although I had hints before.

<sup>14</sup> Bertini, G., *Leading Change Blog* <<https://gfbertini.wordpress.com/>> [Retrieved 15 May 2015].

<sup>15</sup> Zuboff, S. (2002). *The Support Economy* (New York: Viking Penguin).

<sup>16</sup> Victor, L. (2010). “Bootstrap UPLIFT Scaffolding - BUS”. *Proposal submitted to InnoCentive* <<http://bit.ly/1EDuyIq>> [Retrieved 15 May 2015].





FEMALE TUMBLER

# CONVERSATION IN THE CONSCIOUS EVOLUTION OF SOCIAL SYSTEMS



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**I** FIND IT EXTREMELY FRUITFUL TO VIEW EVOLUTION AS “THE interaction of diverse entities in nurturing and challenging contexts generating novelty and persistence – notably the emergent phenomena associated with new forms of elegantly simple complexity<sup>1</sup>.”

I also see generative conversation as “the means through which we expand and apply our consciousness together. It is the primary medium of human co-creative interaction from which needed evolutionary change can emerge, especially when we wish to minimize force, violence, and control. Our sustained collective conscious evolution will be possible to the exact extent we develop, use, and spread the art and culture of generative conversation<sup>2</sup>.”

## WHAT DO I MEAN BY CONVERSATION?

Most people think of conversation as “the informal exchange of ideas by spoken words”. But I see so many formal and written conversations (especially online) that I find this definition inadequate – especially for evolutionary purposes. “Conversation” derives from Latin and Indo-European roots meaning “to turn together”. In this paper I explore conversation as interaction that generates shifts in people, ideas, and feelings. Interactions where no shift takes place – like closed-minded arguments – are poor media for transformation.

Interactive dramas, dances, films, etc., can engage people in ways that generate shifting perspectives and feelings. These can qualify as conversations even when there’s little talking going on. The conversational dance may occur within observers or between the bodies of people involved.

I’ve experienced non-linguistic conversations in interactive exercises designed to teach systemic understandings. In one workshop fifteen of us stood in a circle. We were instructed to silently pick two people from whom we would subsequently try to remain equidistant. Then we milled around in quiet chaos for about five minutes... and then stopped in our tracks. We’d suddenly all become equidistant. Amazed and delighted at our emergent, abrupt, unexpected collective alignment, we laughed. The workshop leader then moved one person one step to the right, causing us to resume our chaotic collective milling until we again stopped suddenly after several minutes. This exercise taught us essential truths about the dynamics of interconnectedness, shifting all our worldviews simply by engaging us in bodily “turning together” with no words spoken.

I think exercises like this and various forms of improvisation and performance stretch the edges of what “conversation” can mean, but very creatively and usefully. That being said, most transformational conversations are readily recognized as dialogue, deliberation, brainstorming, mediation, choice-creating, negotiation, empathic reflection, collaborative document creation, and other written or spoken interactions. Transformational conversations also include scientific, academic, and cultural “discourse” operating at a broad societal level embracing thousands of sub-conversations and idea-interchanges of all kinds, contemporary and over time, through which knowledge and collective thinking evolve. At the micro level, we know shifting understandings occur through sympathetic and erotic physical interactivity. The point is that while I’m dealing here primarily with linguistic interactions, I want to highlight *co-evolutionary interaction* as such, regardless of mode.

So I will use the word “conversation” in that sense in this essay, with occasional forays into the traditional definition or other forms of communication where it seems useful.

## THE FUNCTION OF CONVERSATION

Conversations are arguably the primary nonviolent medium through which diverse people in a social system discover and align around common directions and then harmonize, course-correct, and fork into additional systemic complexity as they proceed.

I recognize that top-down communication often shapes collective behaviour, especially in hierarchical organizations and societies and in situations where charismatic leaders tap the ripe energies of their followers. Top-down command structures also apply in crises situations where rapid application of expert knowledge gained in previous crises is vital to coordinate the behavior of all involved, as with an experienced combat officer's orders. This approach works to the extent the situation is similar to past situations where the learning took place and where the authority of the leader and the command lines are understood, accepted, and practiced.

However, the more unprecedented, unfamiliar, or complex the challenge – and the less recognized the authority – the less top-down approaches, used alone, are likely to succeed. We live in such a global reality today.

As our modern Enlightenment-industrial era project begins to bog down in the side-effects of its command-and-control successes, it is becoming increasingly obvious that such approaches are fundamentally incapable of addressing unprecedented complex, rapid, emergent, nonlinear challenges. In fact, the tendency of the Enlightenment-industrial worldview to reduce challenges to manageable chunks is arguably the main cause of the emerging nonlinear mega-crises we face today.

Because the world *is* nonlinear and complex at its most fundamental level, our increasingly potent reductionist efforts cannot help but generate unexpected side effects of increasing magnitude. The scientifically controlled experiment – the gold standard of Western civilization's knowledge-creation – is fine for clarifying specific linear cause-effect relationships. But the world in which we then apply those understandings is not a controlled experiment. Interactions with untold variables in the real world inevitably generate unexpected outcomes which – like genetic mutations – are occasionally useful but more often problematic.

*Under the right conditions*, complex living systems are themselves quite suited to deal with their own evolving complexity. They have within their parts and interconnected dynamics most of the diverse, distributed information and energies needed to guide their evolution. Their internal and environmental interactivity is what generated their evolved complexity in the first place. This self-organizing potential of systems *can* be tapped to reshape those complexities. But the dynamics involved may be conscious or unconscious – and can lead to desirable or undesirable outcomes. However, if designed and carried out with intelligence and appropriate wisdom and humility, conversations among the people and perspectives

involved in a living system or situation can call forth insights and energies that consciously shift the system's dynamics in more desirable directions.

*“Under the right conditions”* – there's the rub! Conversations (in the mainstream sense of the word) can be and often are (sometimes by intentional design) meaningless and irrelevant to the needed reorientation of the systems within which they take place. Furthermore, even meaningful conversations can be manipulated or hostile in ways that impede the emergence of collective understandings and synergistic shifts towards higher-level systemic coherence. In fact many, if not most conversations (again, in the mainstream sense) fit one or more of these three categories – trivial, manipulated, or adversarial. Luckily decades – even centuries and millennia – of experience suggest that higher qualities of conversation can occur which *do* serve the capacity of social systems to self-evolve in challenging circumstances towards greater viability and vitality. Thus my focus on interactions that generate shift.

#### COHERENCE AND THE CREATIVE USE OF DIVERSITY

Shift is important for two reasons: 1) coherence (unity, order, and stability); and 2) evolution (learning, innovation, and change). Human systems generate and sustain coherence by enabling shifts towards harmony in the diverse people, perspectives and energies involved. On the other hand, systems generate evolution by causing existing ways of thinking and behaving to shift in response to emerging realities. In both cases we as transformational agents need creative ways to help diverse views and energies shift in directions that meet the needs of the system. As noted above, top-down approaches – such as commanding and suppressing – are ill suited to the task of addressing the diverse realities we confront in complex systems.

Diversity is ubiquitous. It is natural for people to have diverse perspectives that arise from their different experiences, cognitive styles, needs and interests. So in any situation we find diversity present and, when it is handled poorly, problematic. Diversity can get in the way of collective enterprise and adaptation because it interferes with the achievement, maintenance and evolution of collective coherence, i.e., appropriately shared understandings, shared goals, empathic relationships, coordinated actions, etc. At its worst, adversarial, competitive interactions can escalate dysfunctional diversity until the system no longer functions.

But if the diversity that's present can shift, new configurations are possible. If quality interactions support

shifting perspectives, feelings, and connections among diverse players and factors, coherence among them can form and evolve. Quality conversations among diverse people who occupy positions in and around a system – that is, conversations that use the existing diversity creatively – allow for a sharing of information and meaning that can then come together into larger and more nuanced shared pictures of what’s going on. To the extent existing diversity can be used creatively to generate common action – or diverse actions towards a common purpose – the system can act as a coherent functional unit. To the extent this interactive integration of diversity is ongoing, the system becomes intelligent, capable of responding collectively – with flexible adaptation and/or proactive initiative – thanks to its diverse distributed knowledge and capacities aligned in service to the system’s vitality and the success of the whole.

Feedback loops that magnify or sustain desirable dynamics in human systems are largely influenced, determined and/or driven by conversation, especially where those dynamics are being consciously created and carried forward. In healthy small human systems like families and tribes, this ongoing multidirectional flow of energy and information comes naturally, largely through empathic interactions among the members and awareness of their shared destiny. In larger or dysfunctional systems, the parts do not tend to be as in touch and aligned, and their interactions are more likely to be dissonant, especially in the presence of challenge or change. In these cases, the right kinds of conversations need to be instigated, supported, and established as common practice.

Given the current abundance of large and dysfunctional human systems – especially in the light of Western-style civilization’s profound planetary mixing and unsustainability – well-designed conversational interventions are increasingly important. To the extent they are woven into common practice, they provide the infrastructure for the ongoing conscious evolution of the social systems involved.

Think about it: how do we have conscious evolution of our social systems without the ability to bring unconscious dynamics – particularly dysfunctional dynamics – into shared awareness and to attend to weak signals of disturbance before they become problems, crises, or catastrophes? Early creative engagement with emerging dissonance can generate productive, life-serving shifts. That engagement looks like welcoming and listening to the marginalized and dissenting voices and taking their ideas and concerns – and often creative energies – into account as an integral part of learning to collectively respond to the rapids of change.

Most of the crises we face have arisen from the choices “we” have made and the systems “we” have

created – usually a “we” partial to self-interested parts of those systems, whose perspectives are naturally and often intentionally narrow, excluding key pieces of the larger picture that need to be addressed in order to avoid disaster. By transforming the systems and cultures that favour and empower such narrowly focused intelligences – that is, by consciously expanding the amount of diversity that systems creatively take into account – we enable them to consciously evolve. They are reborn in more collectively intelligent, responsive forms.

Transformational agents would therefore be wise to prioritize the design, catalyzing, and facilitation of quality strategic conversations as a pivotal mode of systemic intervention. Furthermore, to support *evolving* collective coherence and *ongoing* wise self-organization, human groups, organizations, communities, networks, and politics need to institutionalize powerful conversational practices and create “cultures of empathy and dialogue” and “systems of public and stakeholder deliberation”. Catalyzing the emergence of such institutions and cultures is a fundamental task of change agents and conscious evolutionaries who wish to empower the sovereign wisdom of the systems they choose to serve and transform. Such authentic systemic transformation reaches beyond issue-oriented rearrangement of the chairs on our global Titanic.

#### UNDERLYING DYNAMICS OF CONVERSATION

We can evoke shifts in conversation using a few basic principles like these:

##### 1 ~ TAP THE ALIVENESS THAT’S PRESENT

There is life energy in any situation or system. Sometimes these energies are suppressed, unrealized, frozen, or opposed to each other. A transformational agent recognizes them as resources, regardless.

A major aspect of such life energy is its motivating power: bottom-up participatory activities arise from – and are sustained by – the interests, needs, passions, and responsibility of those involved. Part of transformational leadership and artistry is clarifying and calling forth these motivating energies to engage creatively with the challenges at hand.

Another aspect of the aliveness involved here is the often hidden trove of precious and potentially synergistic knowledge, intelligence, creativity, wisdom, and capacity dispersed among the participants. Under the right conditions, this wellspring of collective potency can be invited into interactions that magnify it and through which it evolves into a transcendent source of guidance and power.

For maximum transformational potential, we want to encourage both authentic expression and full hearing, to follow the unfolding energy of the group, and to trust the emerging group wisdom in the systems we are engaging. This takes personal competence and capacity<sup>3</sup> and the wise application of conversational processes to provide an effective “container” for generative interaction.

## 2 ~ USE DIVERSITY CREATIVELY

Invite and welcome diversity – especially diversity that reflects that already present in the system, including disturbances, dissents, and disruptions emerging during the conversation.

Include an appropriate variety of information. Sometimes it’s present in the diverse people involved but sometimes requires well designed briefings, expert witnesses, web explorations, experiences, etc.

Make the space inviting, safe, nonjudgmental, empathic. Use reflective listening in ways that help people feel truly heard<sup>4</sup>. Attend to dynamics of power and privilege. This often means making the conversation accessible to disadvantaged people – ramps, child care, internet access, remuneration, etc. – and/or ensuring that officials, experts and assertive participants don’t limit or colonize the conversation or the thinking of other participants.

In most situations the term “stakeholders” directs our attention appropriately to parties we should engage in the conversation, including those involved in, affected by, and knowledgeable about the situation, and those who have resources or power without which any resolution will likely fail. In public affairs, however, it is also wise to view “the people” (citizens) as the legitimate final authority on public or community values – and therefore to treat stakeholders and experts as “on tap, not on top,” helping citizens understand how to successfully apply their values to the specific situation or issue at hand. Ideally, we engage both a full spectrum of stakeholders and a demographically representative body of diverse citizens.

Although demographic and stakeholder diversity are particularly important for addressing public affairs, many other forms of diversity – used well – can enhance transformational potential. These include people’s diverse cognitive styles, personalities, capacities, and the developmental stages<sup>5</sup>. Although the role of various forms of diversity has been researched for personal growth and group and organizational effectiveness, it has not yet been well investigated for its role in transformational conversation.

Once we welcome diversity, we need to use conversational modes capable of appreciating, channeling, synergizing, and otherwise engaging with it

that add value to the conversation and the situation. Our choice of process depends on the nature of the diversity (especially how much oppositional energy or ignorance it involves) and the purpose of the conversation. For example, in decision-making situations, we might not settle for majoritarian voting, instead seeking supermajorities or even using consensus processes that solicit and address everyone’s concerns, needs, and interests. Such approaches press participants to take diversity seriously as a resource for crafting more inclusive, wise understandings and solutions.

## 3 ~ EVOKE COLLECTIVE AWARENESS

Systemic transformation ideally engages the attention and consciousness of the whole system. Engaging a full spectrum of parties, perspectives and needs stimulates people’s interest in what happens and their willingness to invest time and attention and to “own” the results.

We can draw people in with powerful strategic questions like “What could health care also be?” or “What would have to happen for us to actually change the economy?” Such questions simultaneously focus and expand the attention of everyone involved, opening them up into meaningful ongoing inquiry rather than prematurely “finding the answer”<sup>6</sup>.

We also need to make the conversation and its outcomes visible to the whole system. Online venues, interactive electronic systems, community meetings, journalism, social media, art and performances, and many other approaches can serve this purpose even, in one case, to the point of vicariously engaging a whole country in a well-designed conversation among a dozen decidedly different people<sup>7</sup>.

## 4 ~ TAP THE COLLECTIVE INTELLIGENCE POTENTIAL OF ITERATION

Complexity theory - notably fractal mathematics - reveals the power of iteration: the output of one process becomes input for a subsequent or related process. Amazing fractal patterns emerge from plotting points generated by repeatedly feeding a formula’s answers back into the formula. Complexity theory describes how feedback dynamics in complex systems like weather generate radically unpredictable outcomes – producing, among other things, the proverbial “butterfly effect” where small perturbations generate large impacts after many feedback iterations.

Likewise, in conversational interactions, people take what others have said, process it internally, and feed the result back into the collective space. Given a good transformational conversation process, the energy and knowledge in the collective space (and inside each participant) evolves as participants dialogue. Processes particularly adept at evoking this result are often called “emergent processes” because

outcomes emerge that no one foresaw – an indicator of their transformational potential.

In light of this understanding, I am surprised at how many transformational conversations are convened as one-time one-or-two-day events. For maximum transformational impact, multi-day events are designed so each day's developments feed into the next day's conversations – after composting in participants' dreams and informal interactions. The most powerfully transformational events I have attended were five-day Open Space gatherings (see below) designed to capitalize on the potential of iteration.

In multi-process programs<sup>8</sup> the outcomes of different processes can feed into subsequent processes. Furthermore, when conversational processes are themselves institutionalized – as in annual organizational retreats, periodic scientific conferences, and Wisdom Councils in Vorarlberg, Austria<sup>9</sup> – there is opportunity to have *ongoing systemic reflection* which, if designed with emergent processes, has transformational potential.

Iteration of reflection in light of evolving experience is the essence of learning. Iterative conversation is thus a primary support for ongoing communal learning – the collective intelligence of an entire system. We can engage designers, conveners, facilitators, participants, and observers in reviewing what happened in each conversation in an effort to enhance the transformational potential of future interactions.

Other sources for principles to enhance transformational conversation and public engagement include:

- The GroupWorks Pattern Language Deck<sup>10</sup>;
- The National Coalition for Dialogue and Deliberation's "Core Principles for Public Engagement"<sup>11</sup> and "Engagement Streams Framework"<sup>12</sup>;
- The Co-Intelligence Institute's "Principles for Public Participation"<sup>13</sup>;
- The International Association for Public Participation's "Spectrum of Public Participation"<sup>14</sup>.

#### STRATEGIC USE OF TRANSFORMATIONAL CONVERSATION

Some strategy-minded transformational agents stretch beyond traditional consultation and facilitation practices in search of greater impact.

They may start by looking for systemic leverage. One approach involves working *with* already existing energies and situations, guided by questions like these:

- Where can suppressed passions be productively empowered?
- Where are key players embattled, overwhelmed, or uncoordinated, mired in situations which,

if addressed well, would free up their life energy to make vital contributions?

- What systemic issues are hot in the public mind, where attention could be shifted from complaining and problem-solving to systemic insight and transformation?

- Where is an issue or system reaching a crisis point or generating one or more trigger events such that the right questions and conversations could unleash a storm of high-energy creative thinking and action?

- What social systems – like political, economic, educational, and philanthropic systems – and system dynamics – like purposes, incentives, and feedbacks – if successfully shifted – could impact how *the whole society* behaved?

Effective transformational agents often see established authorities not as primary sources of change, but as parts of the system. They seek to engage the whole system – or a group whose diversity reflects the diverse types of people, factors, roles, interests, resources, etc., that make up the system – its functioning, its problems and its possibilities. They work to "get the whole system in the room" – a narrative that includes and transcends the usual focus on leadership. They know that relevant factors not welcomed into the conversation will likely generate problems later. Since we want the whole system to evolve *through* the conversation, we try to involve the whole system *in* the conversation.

As noted in the previous section, we also want to build *systemic* awareness and capacity. So we seek to inspire, train, and/or institutionalize ongoing quality conversation by most everyone in the system. For example, we may design transformational interventions that integrate media with widespread periodic public conversations. We want to leave behind us systems that can self-evolve. To the extent we succeed, groups and communities become leaderful with a shared sense of collective agency within which power is exercised more in mutual and collaborative ways than through control, competition, manipulation, domination, fear or violence. People know and trust each other across traditional or necessary boundaries, promoting interactivity and information exchange. They become familiar with and expect certain engaging forms of conversation as part of their normal group, community, organizational, and political life. They know the potency and pleasure of co-creatively addressing shared values, needs, and dreams. They actively seek out and creatively engage with diverse sources and types of information, and they treasure feedback of all kinds because they know that they and their fellows can and will use it well. Such long-term ideals of cultural capacity are

in the minds of conversation-oriented transformational agents as they design their initiatives.

Strategic transformational thinkers also naturally consider interconnections within and around the issue or situation at hand. If we need or want to focus on an issue, we might choose a “meta-issue” that impacts virtually all other issues – like climate change, social power relationships, or democratic process. Meta-issues – because they have such wide-ranging impacts – offer great opportunities for common ground and coalition building among activists. And because they are almost always rooted in systemic dysfunctions, they provide rich opportunities to raise awareness of systemic causes and the need for systemic transformation.

Also at the level of root causes, we may focus on expanding various dimensions of consciousness. People’s awareness significantly shapes how they view everything. Awareness of the wholeness and interconnectedness of life can be nurtured by everything from meditation to nature education, from systems thinking to empathy training. We also need expanded consciousness and skills to improve our capacity to tolerate uncertainty and ambiguity (to help us deal with the intrinsic complexity of our interconnected world) and our ability to confront the dark side of our psyches, our world, and our prospects without denial, despair, guilt or blame (to release the vast and neglected energy of our caring).

Tapping interconnectedness also includes tapping the reality and power of networks. Transformational agents use existing networks, engage influential well-networked people (or nodes in networks) in transformational conversation, and develop transformational networks of their own.

Strategic sensibilities guide some transformational agents to seek transcendent sources of power, such as nature, ancestors, future generations, and spirit or – following Gandhi and King – the higher-order transformational powers of Truth and Love. They may ask what nature would do or what Love demands of them, or open themselves to wisdom and guidance from higher, deeper transpersonal or collective forms of intelligence and wisdom.

Another empowerment approach transcends dull problem-solving by invoking the dynamism of human aspiration and co-creativity. We get people to explore and promote existing transformational activities and technologies as well as collectively imagining desirable possibilities and how to achieve them. We can transform hopelessness, cynicism, despair and inaction into energetic collaborations for a better world.

Another source of power involves integrating a variety of conversational forms, functions and outcomes

into a coherent force to be reckoned with. One particularly potent combination involves conversations:

- a - that orient and connect people;
- b - that evoke and unite people’s collective life energy;
- c - that facilitate emergence (usually through safe exploration of diversity and dissonance);
- d - that nurture wise self-organization; and
- e- that organize specific action commitments.

These five kinds of conversation have very different qualities and requirements, yet to the extent they are woven together, they can constitute more responsive, productive, and powerfully transformational initiatives than any of them could alone.

#### EXAMPLES OF POWERFUL CONVERSATIONAL METHODOLOGIES

1 - CIRCLES (aka Listening Circles, Talking Stick Circles, Sacred Circles)<sup>15</sup>.

Tribes held circle conversations for thousands of years around campfires. People could see each other and experience their peer fellowship while naturally looking toward the centre. These design elements support deep conversations that nurture transformational shifts. Circles usually involve taking turns, often supported by the tribal practice of “passing the talking stick”, giving each speaker the right to be deeply heard without interruption. Circles can also be used more informally to begin and/or end other processes (as in “check ins” and “check outs”) or to support other forms of dialogue<sup>16</sup>. But groups who use circles as an opportunity for deep reflection convened with appropriate presence, thoughtfulness and spirit are amply rewarded: to the extent they speak “from the Centre”, “the magic in the middle”<sup>17</sup> moves around the circle, acting like a collective psychic drill or vortex drawing everyone progressively deeper into reflection.

2 - OPEN SPACE TECHNOLOGY<sup>18</sup> (OST, or “unconferencing”)

With no pre-established speakers, workshops or agendas, an Open Space gathering invites anyone passionate about its topic to create sessions to talk or take action. Once everyone’s sessions are posted on a wall with spaces and times identified, each attendee creates their own agenda and the unconference begins. Participants are encouraged to leave any session where they aren’t learning, contributing or having fun; to feel free to hop from session to session or to hang out outside of all the sessions; and to start and end conversations according to the energy present rather than clock time. No one is in charge or tracks everything going on among the unleashed whole-system interactivity.

The remarkable self-organizing energy tends to ramp higher the longer the unconference continues, with emergent phenomena flourishing as each day's new sessions grapple with insights, possibilities, conflicts, and frustrations of the previous day, driving forward the evolution of everyone's thinking and feeling. Ongoing note-taking is encouraged (and sometimes compiled at the end) and experiences are shared in whole-group morning and evening circles. Periodic Open Space gatherings – especially 3-5 day unconferences – are a potent tool for any system or community to process emerging issues and possibilities during an ongoing effort at transformation and capacity building. The resulting parallel processing can complement or replace top-down dynamics. Importantly, Open Space is relatively simple to facilitate by anyone who is personally centered, unattached to outcome, and able to “hold space” for the group and its members to find their own paths.

### 3 - THE WORLD CAFE (TWC)<sup>19</sup>

Most everyone knows how to behave and talk in a cafe, so The World Cafe places groups of about four people at small tables. TWC's are convened around powerful questions<sup>20</sup> to evoke “conversations that matter”. Participants talk for fifteen minutes to an hour in each of several rounds of conversation. Between rounds they switch tables to engage with different sets of dialogue partners, first sharing highlights from their previous rounds. Discussion questions may evolve over the rounds, shifting to related topics or inviting the participants to seek deeper patterns. After the prescribed number of rounds, participants all come together to share individual highlights and perhaps co-create some collective meaning. Given adequate time, this iteration-intensive process calls forth fresh transformational ideas, energies, and possibilities. Simple to facilitate, The World Cafe can powerfully engage dozens or hundreds of people who – thanks to the design – get ample air time and intimate sharing while also tracking the larger collective intelligence which they are co-creating. Both World Cafe and Open Space can be carried out virtually on phones and/or online using MaestroConferencing<sup>21</sup>.

### 4 - DYNAMIC FACILITATION (DF)<sup>22</sup>

DF is the most potent process I know for transforming conflict and disturbance into breakthrough. Its centerpiece is a unique form of reflective listening<sup>23</sup>: the facilitator acts as a “designated listener” seeking to fully “get” how each speaker is making sense of what's going on, both cognitively and emotionally - reflecting it and recording it on chart pads. As speakers begin to feel fully heard, they relax, becoming more open, less pushy or withdrawn. The facilitator asks complainers

what they think should be done, generating a solution-oriented vector to the whole process. When one participant attacks another, the facilitator intervenes, saying, “Give it to me: What's your concern?”, reflecting and recording what they say and asking for solutions. Participants become progressively more open and less attached to their personal perspectives. Diverse dimensions of the conflicted situation accumulate in the collective space on chart pads, in people's statements, in the facilitator's reflections, and in occasional facilitator reviews of what's been said. A new collective attention emerges as participants together try to make sense of the now-visible big picture complexity. Out of that group meaning-making breakthroughs come. In the public sphere, this approach is used with randomly selected “Community Wisdom Councils” to invoke a coherently wise voice of “We the People”<sup>24</sup>.

### 5 - NONVIOLENT COMMUNICATION (NVC)<sup>25</sup>

Practitioners of Nonviolent Communication know that the events that upset people, the emotions they feel, and the solutions they push are not the essence of what's happening. What's really going on in an upset is that people's basic needs are not being met. So NVC facilitates a journey from the observable realities through the emotions they trigger, down into the basic needs that are crying to be met. It then explores strategies that could satisfy the needs of everyone involved. NVC practitioners practice empathic reflective listening, actively checking for possible unmet needs. They clearly support each upset person in getting what they truly need. (Despite apparent conflicts between what people say they want, there is tremendous room for satisfying everyone's basic needs.) Sometimes the level of empathy and the impact of being truly heard and cared for is so great, in and of itself, that the conflict evaporates in the open heart of the healed relationship. Basic NVC understandings have been translated into group and organizational processes, social visions, and guidance for transformational agents seeking to facilitate fundamental nonviolent change<sup>26</sup>.

### 6 - “MINI-PUBLICS” AND CITIZEN DELIBERATIVE COUNCILS (CDCs)

A mini-public is an inclusive microcosm of the citizenry convened to thoughtfully consider a public issue. It consists of a dozen to several hundred peer citizens – usually randomly selected – that together embody the diversity of their community or country. Its deliberations usually receive balanced briefings and facilitation to support their collective work. Many forms of mini-public exist, notably citizens juries, citizens assemblies, consensus conferences, citizen initiative

reviews, planning cells, and deliberative polls. I classify all except the last as citizen deliberative councils (CDCs)<sup>27</sup> because they seek to generate recommendations to guide officials or voters. In contrast to - and in potential synergy with - the creatively nonlinear Community Wisdom Councils noted in (4) above, CDCs' primary transformational gift (and potential limitation) is their groundedness in existing specialized knowledge about an issue. Given their purpose of providing a "public voice" or "public judgment" about an issue, transformational agents are challenged to expand a CDC's wisdom-generating process to the whole population. Canada's newsweekly *Maclean's* undertook one of the most remarkable such initiatives in 1991 in collaboration with Canadian TV: They involved twelve Canadians chosen for their differences with a facilitation team led by negotiation expert Roger Fisher. The result was 40 pages of coverage and an hour-long TV documentary that triggered months of intensive dialogue across Canada<sup>28</sup>.

I want to stress these are only a few of many dozens of methods useful for transformational purposes<sup>29</sup>. I also want to reiterate that diverse conversational modalities can be powerfully combined. The first Evolutionary Salon<sup>30</sup> launched with several hours of World Cafe exploring "What question, if well addressed here, would make all the difference in the world?" beautifully setting up the subsequent five days of Open Space. The Art of Hosting promotes flexible use of a palette of transformational approaches to conversation (including TWC and OST)<sup>31</sup>. I've explored multi-process programs in a series of essays<sup>32</sup> and a visionary story of co-intelligent politics<sup>33</sup>.

## CONCLUSION

The conscious evolution of social systems will not happen without conversations. How effectively and smoothly it happens will depend largely on how wisely we prioritize and apply conversational modes. Luckily we start with an abundance of conversational resources. But the runway is short. What could systemic transformation also be?



<sup>1</sup> Atlee and Holman 2008, "Evolutionary Dynamics and Social Systems".

<sup>2</sup> *Ibid.*

<sup>3</sup> The concept of Capacitance, in this sense, is (when capitalized) part of Creative Systems Theory and means, basically, how much truth we can handle without losing our balance. Significantly, it includes tolerance for - and the ability to be truly present in the face of - ambiguity, uncertainty, and disturbance,

and the ability to adapt appropriately to extreme complexity, challenge and change. Institute for Creative Development s.d., "Capacitance".

<sup>4</sup> Zubizarreta 2015, "Empathy in Collaborative Meaning-Making".

<sup>5</sup> Atlee s.d., "Human Diversity".

<sup>6</sup> Atlee s.d., "The Power of Questions".

<sup>7</sup> Atlee s.d., "The 1991 *Maclean's* Experiment".

<sup>8</sup> Atlee 2003, "Designing Multi-process Public Participation Programs".

<sup>9</sup> Center for Wise Democracy s.d., "What are examples?".

<sup>10</sup> Groupworks s.d., "Welcome to the Group Pattern Language Project".

<sup>11</sup> National Coalition for Dialogue and Deliberation 2010, "Core Principles for Public Engagement".

<sup>12</sup> National Coalition for Dialogue and Deliberation 2009, "NCDD's Engagement Streams Framework".

<sup>13</sup> Atlee 2008, "Principles for Public Participation".

<sup>14</sup> International Association for Public Participation 2007, "IAP2 Spectrum of Public Participation".

<sup>15</sup> Atlee s.d., "Listening Circles".

<sup>16</sup> Atlee 2003, "Dialogue".

<sup>17</sup> Voldtofte 2005, "Introduction to Magic in The Middle".

<sup>18</sup> Owen 1997, *Open Space Technology*.

<sup>19</sup> Brown, Isaacs, and the World Café Community 2005, *The World Café*.

<sup>20</sup> Atlee s.d., "The Power of Questions".

<sup>21</sup> MaestroConference s.d., "About MaestroConference".

<sup>22</sup> Atlee s.d., "Dynamic Facilitation/Choice-creating".

<sup>23</sup> Zubizarreta 2015, "Empathy in Collaborative Meaning-Making".

<sup>24</sup> Center for Wise Democracy s.d., "Center for Wise Democracy".

<sup>25</sup> Rosenberg 1999, *Nonviolent Communication*.

<sup>26</sup> Kashtan 2014, *Reweaving Our Human Fabric*.

<sup>27</sup> Atlee 2003, "Citizen Deliberative Councils".

<sup>28</sup> Atlee s.d., "The 1991 *Maclean's* Experiment".

<sup>29</sup> For sample compilations, see Holman, Devane and Cady 2007, *The Change Handbook* and National Coalition for Dialogue and Deliberation s.d., "NCDD Resource Center: D&D Methods".

<sup>30</sup> The Great Story 2005, "Evolutionary Directionality, Emergent Complexity, and the Future of Humanity".

<sup>31</sup> Art of Hosting s.d., "Methods".

<sup>32</sup> Atlee 2003, "Designing Multi-process Public Participation Programs".

<sup>33</sup> Atlee s.d., "The story of Pat and Pat, the view from the year 2020".



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DANCING COURTESAN

# PERMACULTURE PATTERNING, A DESIGN FRAMEWORK FOR SYSTEMIC TRANSFORMATION



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## FROM A MECHANISTIC TO A SYSTEMIC VIEW OF THE WORLD

**S**INCE THE TIMES OF DESCARTES, MECHANISTIC MENTAL models have shaped our world vision where every part of the universe is thought to work like a machine. Given enough time and resources we can crack/solve/tackle any problem. Or so was the vision.

The old model used to focus on identifiable parts, understand them by isolating them and breaking them down. These mechanistic mental models have been great tools and led to a lot of technological progress.

However the same models and techniques that produced progress are now threatening to destroy us. Blinded by the success of this reductionist approach we forget that the map is not the territory and that if approximations are helpful on a small scale, they can have disastrous effects on a large scale.

We are in a paradox where science has given us an incredible understanding of the world and powerful technological tools, yet the planet is on the verge of implosion with ecological, social, economical crisis looming. While the vast majority of people might agree on the problems and want change, we are stuck in a web of wicked problems, all interconnected and interrelated<sup>9</sup>. Individually clever, we remain collectively stupid.

For the last century we have seen the emergence of a new paradigm<sup>7</sup> that sees the world as a system, an interconnected set of elements that is

coherently organized in a way that achieves a purpose<sup>15</sup>. Although this new way of thinking has been there for decades, it is still relatively in its infancy. Buffers, stocks, flows, feedback loops reinforcing or buffering actions: exploring and defining new systems concepts, Donella Meadows and others have helped us understand better the way systems function and given us a map of leverage points to act upon them<sup>14</sup>. However, due to the inherent complexity of systems, it is still difficult to know where to start acting on a system to trigger effective change.

## SYSTEMIC CHANGE REQUIRES PRACTICAL METHODS TO CHANGE SYSTEMS

Systemic change is challenging as it requires change to occur at multiple levels and in multiple disciplines. Interestingly, in the late seventies, Australian ecological scientist Bill Mollison conceived permaculture, a design framework to change and optimize whole ecosystems. Central to Mollison's approach is the concept of patterning. Patterning can be seen as a branch of design that focuses on relationships between elements rather than on elements themselves. Mollison's notion of patterning seems to have been at least partially influenced by another systems thinker, Austrian born American architect Christopher Alexander.

Alexander developed a whole new way of thinking about architecture. Although it never became widespread in the field of architecture, it has revolutionized the way software developers think about software development and led to breakthroughs such as the wiki, a kind of software that makes a whole new way of working cooperatively possible, leading to the emergence of projects like Wikipedia.

These two design frameworks deal with whole systems transformation (ecological and architectural systems respectively) and have successfully applied systems thinking theories to material systems with visible and practical results. It is therefore particularly interesting to study the methods they have developed to change systems. By doing so, we could isolate common principles that could be applied to other systems including less visible ones such as social and cultural systems. In fact because systems are always linked to other systems, it is worth mentioning that permaculture and

pattern languages already work with social and cultural forces in their design strategies.

It would be illusory to imagine we can summarize the vast complexity and richness of these two disciplines in such a short article so I will try to give the reader an overview of both approaches and to highlight key points. We will start by examining Bill Mollison's Permaculture design framework, then explore Christopher Alexander's Pattern Language and then examine/identify the commonalities between these two approaches in order to see how they could be used in other contexts of systems design. The aim is not so much to be exhaustive but rather to promote the reader's interest in these disciplines and spur the development of research on the topic of systems design and systemic change methodologies.

## PERMACULTURE DESIGN FRAMEWORK

### ORIGIN OF PERMACULTURE

Permaculture was introduced formally by Australian Bill Mollison and David Holmgren after the publication of their book *Permaculture One*<sup>17</sup> in 1978.

To date, the main body of knowledge for permaculture design remains the *Permaculture Designer's Manual*<sup>18</sup> written by Bill Mollison in 1988. In this book Mollison defines Permaculture as: *"the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems [...] the harmonious integration of landscape and people providing their food, energy, shelter, and other material and non-material needs in a sustainable way."*<sup>18</sup>

If the meaning of permaculture was originally restricted to "permanent-agriculture" it has now expanded to "permanent-culture" to encompass other aspects of culture (architectural, social, economical, etc.) that impact the design of agricultural systems. "Permaculture design is a system of assembling conceptual, material, and strategic components in a pattern which functions to benefit life in all its form"<sup>18</sup>.

Although for most people permaculture is, at best, a clever way of gardening and various groups may have simplified it or at times added their own beliefs to it (stirring debate within the permaculture community<sup>13</sup>, at its core permaculture has a deep understanding of how ecosystem work and is firmly rooted in science.

### PERMACULTURE DESIGN PROCESS

Before using any design principles or techniques, the core idea of permaculture is to start with an ethical statement summarized as three principles that can be universally understood in any culture:

Care For The Earth, Care For The People, Fair-share also called Return Of Surplus.

Permaculture sees this statement not just as a "feel good" idea but as an essential necessity. Indeed, there cannot be any sustainability if we don't care about the natural environment that supports us, and we can't expect to thrive and be in peace if people around us are struggling. The third principle encourages us not to just simply extract as much as we can but to redistribute a part of what we harvest in order to support the first two principles. Permaculture therefore is an applied-science guided by ethics serving as a dynamic guideline for the permaculture designer throughout his choices.

The overall process of permaculture consist in getting an inner understanding of the characteristics and behaviours of the system before introducing gradual changes to create new links between elements in order to integrate these elements harmoniously so that they support each other. This starts by assessing the site and its surroundings, using direct observation, and collecting climatological, topological, geological, biological, legal, social and cultural data.

The next step is to map the various forces, buffer/stocks, flows, elements and their properties in detail to get a complete overview and understanding of the system. Based on this inner understanding of the system, design is conceived over space and time. Guided by a set of thoughtful principles the designer introduces connections, always taking into account the evolution of the system and the unpredictability of all associated events.

### PERMACULTURE PRINCIPLES

Mollison established the first core principles<sup>18</sup>. More recently, permaculture's co-founder David Holmgren adapted Mollison systemic/complex vocabulary in an everyday language easier to understand and tried to summarize permaculture design under twelve principles<sup>12</sup>.

However all principles still fall in the philosophy described by Mollison: *"The philosophy behind permaculture is one of working with, rather than against, nature; of protracted and thoughtful observation rather than protracted thoughtless action; of looking at systems in all their functions, rather than asking only one yield of them; and of allowing systems to demonstrate their own evolutions."*<sup>18</sup>.

To be resilient like a forest, permaculture systems are designed so that *each important function is backed up by several elements, and each element performs several functions*. This can be achieved by *relative location* principle where every element is placed in relationship to another so that they assist each other. Permaculture maximizes *harvest of energy* and *recycling* within the

system to create stocks and buffers while trying to *make the least change for greatest possible effect*. This is done by *efficient energy planning, use of biological resources* and building *small-scale intensive systems*.

Permaculture also has *Attitudinal Principles*. Firmly rooted in a positive attitude, permaculture thinks any problem is an opportunity and everything can be seen as a positive resource. How we use it to make it advantageous is up to us (*the problem is the solution*). For example if the wind blows cold, we can use both its strength and its coolness to our advantage (for example, funnelling wind to a wind generator, or directing cold winter wind to a cool cupboard in a heated house).

By weaving such productive relationships step by step, permaculture creates a dense network of harmonious connections. This “creative order” leads to a productive flow of energy cycling and a thriving system.

#### PATTERNING CONCEPT IN PERMACULTURE

The whole permaculture designer’s manual and the associated permaculture design course is very practical, dealing with topics such as climatology, soil science, plant and animal biology, architecture, legal structures.

It is noteworthy that one entire chapter deals with the notion of patterns, investigating the commonalities between various natural patterns and teaching the designer how he can use these to get insights about the inner working of systems and use them to his advantage. Mollison also discussed tribal use of patterns as a way to encode knowledge about systems.

Patterning is very important for Mollison who sees it as a kind of multidimensional design that goes beyond other design approaches:

“Patterning is the way we frame our designs, the template into which we fit the information, entities, and objects assembled from observation, map overlays, the analytic divination of connections, and the selection of specific material and technologies. It is this patterning that permits our elements to flow and function in beneficial relationships. The pattern is design, and design is the subject of permaculture.”

#### PATTERN LANGUAGES DESIGN FRAMEWORK

##### ORIGIN OF PATTERN LANGUAGES

At about the same time as Mollison and Holmgren were setting the foundations of a method for ecosystems design, Austrian born American architect Christopher Alexander released *A Pattern language*<sup>1</sup>, and *The Timeless Way of Building*<sup>2</sup>, two books exposing a new theory for architectural design.

In these twin books, Alexander presented a radically new approach to building complex architectural systems. Starting from the fact that traditional buildings throughout the world had a special quality that was lacking from most modern and post-modern architectures, he went to identify best practices for architectural design.

Alexander recognized that piling up good design ideas was not enough to build a good structure, and that the context was of uttermost importance. When dealing with a complex system with potentially thousands of variables influencing each other and where each choice impacts the next, how do we make sure we get it right? How did the traditional cultures – where most often people were not formally trained in architecture – manage to build structures that lasted for centuries and still amaze us?

Alexander hypothesized that throughout the world, builders used certain “languages” that, although implicit, were directly transmitted and helped them design and build good structures.

He argued that the 20th century lost this knowledge, and devised the pattern language method as a way to make this knowledge explicit and revive it. Christopher Alexander coined the term *Pattern Language* to refer to a collection of common problems pertaining to the design and construction of buildings and towns and how they should be solved.

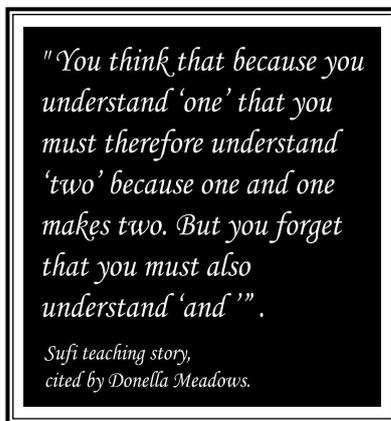
#### THE CONCEPT OF PATTERNS AND PATTERN LANGUAGES

In everyday use a pattern describes a plan, diagram, or model to be followed in making things, for example, *a dress pattern*<sup>4</sup>. In nature, patterns are visible regularities of form found in the natural world<sup>6</sup>. In systems thinking, the notion of pattern is very important<sup>7</sup>. Early systems thinker Ross Harrison defined the concept of *pattern as a configuration of ordered relationships* (cited by Capra<sup>7</sup>). Studying what made a good architectural design, Alexander used the concept of pattern and extended it<sup>25</sup>.

In Alexander’s view a pattern is “a careful description of a perennial solution to a recurring problem within a building context, describing one of the configurations that brings life to a building”. The core of Alexander’s approach is to identify and document the key ideas that make a good system different from a poor system so they can be used to assist in the design of future systems. In Alexander’s theory, “Each pattern describes a problem that occurs over and over again in our environment, and then describes the core solution to that problem, in such a way that you can use the solution a million times over, without ever doing it the same way twice.”

Patterns help us remember insights and knowledge about design and can be used in combination to create solutions. One might say that every pattern which was defined under that theory was, in effect, a rule for making or partly making some important type of centre (i.e., sub-system), necessary to the life of a living human environment. Typically, these solutions are documented as a *problem-context-solution* three-parts rule (this format was later called “design pattern” by his followers).

The solution expressed in a pattern should be *general enough* to be applied in very different systems, but still *specific enough* to give constructive guidance. An important part in each pattern is to *describe the context*, i.e. the range of situations in which the problems and solutions addressed in a pattern apply. The patterns, because of their explicitness, allow discussion, debate, and gradual improvement of the material.



In *A Pattern Language*, Alexander and colleagues listed 253 “patterns” varying in their level of scale and including suggestions ranging from how cities and towns should be structured to where windows should be placed in a room. Taken together this collection of patterns form a common language that help to make knowledge explicit and shareable within a field of expertise. A pattern language gives each person who uses it the power to create an infinite variety of new and unique structures, just as ordinary language gives him/her the power to create an infinite variety of sentences. A person with a pattern language can design any part of the environment and does not need to be an expert because the expertise lies in the language.

**PATTERNS: MORE THAN MEET THE EYES**

Although it hasn’t gained much traction in architecture, the pattern language approach has been

used to document expertise in diverse fields such as computer science, human computer interaction, education, and group facilitation<sup>11, 23, 27, 28</sup>. In computer science particularly, it sparked a revolution in thinking and led to a new way of writing computer code<sup>16</sup>.

However pattern languages are mostly seen as a formal way of documenting a solution to a common design problem and few seem to understand and use them in a systems thinking perspective.

Alexander warned that patterns are more than just clever design tools or formats. As we shall see the notion of pattern is both simple and elusive.

A pattern is at the same time:

- ~ a field – not something fixed, but a bundle of relationships, capable of being different each time it occurs, yet deep enough to bestow life wherever it occurs;
- ~ a three-part rule, which expresses a relation between a certain context, a problem, and a solution;
- ~ as an element in the world, it is a relationship between a certain context, a certain system of forces which occurs repeatedly in that context, and a certain spatial configuration which allows these forces to resolve themselves;
- ~ as an element of language, a pattern is an instruction, which shows how this spatial configuration can be used, over and over again, to resolve the given system of forces, wherever the context makes it relevant.

The pattern is, in short, at the same time a thing, which happens in the world, and the rule which tells us how to create that thing, and when we must create it. It is both a process and a thing; both a description of a thing which is alive, and a description of the process which will generate that thing<sup>3,4</sup>.

It is important to insist that, more than just being a way to describe a good practice, a pattern is a particular *configuration* – within a particular system – that integrates and resolves a set of conflicting forces in a harmonious/non-forceful manner. These forces can be structural, social, psychological, psychic, natural or a mix of several different ones<sup>2</sup>.

The power of good patterns comes from the fact that when the *qualitative relationship* between elements is right, it allows the various forces in presence to be used productively by the system to maintain itself and/or help maintain the sub-systems it contains and the wider systems it is part of.

This is in essence what Alexander calls “life” and possesses what he used to call “the quality without a name”. When a system contains lots of “living” (creative or generative) patterns, self-regulation increases,

entropy/disorder decreases and the system becomes more complex while remaining coherent as a whole. When a system has too little “living” patterns or too many dead (destructive) ones, self-regulation decreases, entropy/disorder increases and eventually leads to a system collapse.

#### FROM PATTERN LANGUAGES TO GENERATIVE SEQUENCES

In his latest work, Alexander refined the theoretical framework behind pattern languages and explained the underlying basis for pattern language efficiency.

In the Nature of Order<sup>1,2</sup> he proposes a deep and fascinating theory postulating that what he calls “centres” (the various “parts” or “elements” of a system described by patterns) emerge from the whole via a step-by-step unfolding process that preserves, differentiates and extends the existing structure by the application of fifteen possible transformations.

One of the points he makes is that his first pattern language lacked instructions on the order in which to use the patterns to get this unfolding process correct. He now focuses on what he calls generative sequences, ordered sequences promoting a generative process.

Embryonic development is an example of a natural generative process. In an embryonic cell, the DNA doesn't contain a full description of the organism to which it will give rise. Instead, The genome contains a program of instructions for making the organism.

Similarly we can use artificial generative processes to build complex structures. To describe in any detail the final form of an Origami and the complex relationships between its parts is very difficult and not of much help in explaining how to achieve it. Much more useful and easier to formulate are instructions on how to fold the paper. A generative sequence is a set of instructions that when used in the right order, allows a complex structure to emerge effortlessly and may be thought of as a second generation pattern language<sup>6</sup>.

#### COMMON IDEAS / PRINCIPLES BETWEEN THE PATTERN LANGUAGE AND PERMACUL- TURE FRAMEWORKS

##### START WITH AN ETHICAL FRAMEWORK

It is relevant to note that in Donella Meadows leverage points, the mindset or paradigm that the system arises from is ranked as one of the highest leverage points.

We currently operate from a paradigm where the natural world and people are seen just as commodities

that can be controlled and manipulated to extract profits.

If we are to change the system we need a new paradigm with different visions and values, based on strong ethics.

Ethics, embedded throughout Alexander's writing, are even more central in permaculture, where they come before any technique or method. Permaculture ethics are very practical, summarized as three principles that can be universally understood in any culture.

Starting with an ethical statement such as the one used by permaculture is a simple yet extremely important point for positive systemic change.

#### MAP WHAT IS ALREADY THERE AND WORK CREATIVELY WITH IT TO PRESERVE AND EXTEND IT

Permaculture starts early on by mapping all the various elements and forces and tries to build upon what already exists by making the smallest change with the most powerful effect. Alexander usually works by building pattern languages that preserve and extend the existing systems. In his approach structure-preserving transformation is seen as a fundamental principle of uttermost importance.

In each method, having a deep understanding of the context before taking any action is seen as essential. Valuing what exists and working creatively with it to make it more whole is seen as the right way to go, whereas arbitrarily wiping out the existing to build something new is seen as wrong and counterproductive at best and extremely damaging at worst. It should be only done on a limited scale and in particular cases.

#### SHIFT FOCUS FROM OBJECTS TO RELATIONSHIPS

Fritjof Capra clearly highlighted the differences between the mechanistic and systems world views<sup>7</sup>.

In the traditional mechanistic approach, the world is seen as a collection of objects or elements. These of course interact with one another and hence there are relationships between them, but relationships are seen as secondary. In the systems view, relationships are seen as primary. As Capra wrote: *“In the systems view, we realize that the objects are networks of relationships, embedded in larger networks. For the systems thinker the relationships are primary. The boundaries of the discernible (patterns) objects are secondary. Ultimately – as quantum physics showed us so dramatically – there are no parts at all. What we call a part is merely a pattern in an inseparable web of relationships”*. Alexander proposed the term of “centres” to describe these networks of relationships or elementary parts of a system.

Strongly anchored in systems thinking, permaculture and pattern language, at their core, are about building productive relationships between these centres so that they support each other.

#### CREATE NEW LINKS BETWEEN CENTRES SO THAT THEY SUPPORT EACH OTHER

Creating new links between elements to harmoniously integrate elements so that they support each other is at the core of permaculture design. Gradually weaving beneficial relationships, permaculture creates a dense network of harmonious connections leading to a productive and resilient system.

Pattern language, at its core, is also about building beneficial configurations of relationships at every scale of a system and its sub-systems. In his more recent work Alexander went further and described fifteen fundamental transformations that can be used to make links between centres more powerful. Patterns get their properties because they induce one or several of these fifteen transformations. So not only do we have to create links, the *qualitative* nature of the link is also essential.

#### SHIFT FROM A DESCRIPTIVE TO A GENERATIVE APPROACH

Traditional design focuses on describing what should be, which elements should be there and how they are linked. After this labour intensive phase, the design is then produced: parts are built and assembled to fit the description previously made. In contrast both permaculture and pattern language take a generative approach, i.e. following a sequence of instructions that will shape the evolution of the system. A descriptive program, like a blueprint or a plan, describes an object in some detail, whereas a generative program describes how to make an object. For the same object, these two programs are very different.

As we've seen before both origami and embryonic development contain a generative program for making a particular structure and it would be almost impossible to create these structures without a generative sequence.

#### WORK BY STEP-BY-STEP ADAPTATION USING FEEDBACK AT EACH STEP

Dealing with natural cycles, permaculture has to work by steps *de facto*. Interestingly permaculture tries to accelerate these natural cycles, effectively increasing time density.

Alexander stresses the importance of working gradually step-by-step, strongly insisting that each part of the environment, at every stage of its planning, conception, and construction, must be developed and evolve step-by-step, each step being an

adaptation through which things get fitted more and more closely to a harmonious whole.

To guide the adaptation, at each step in the process there must be a continuous and relatively immediate feedback about whether what has been done is a living structure in sufficient degree.

Developing such generative sequences as proposed by Alexander seems an essential tool to structure this step-by-step process.

#### DESIGN MAINFRAME FIRST, THEN GO INTO DETAILS

Systems are intrinsically highly complex structures and knowing where to start can be extremely hard to figure out.

Within the awareness of the whole, both approaches try to get started by focussing on major aspect first – the overall pattern – before refinement. Identifying these “Major aspects” is both an art and a science and both frameworks have their own methods, using deep logical analysis as well as deep intuitive feeling of the system.

In permaculture this is called working from patterns to details, whereas Alexander tries to identify major patterns/centres and then strengthen them in the process. One guideline to identify the major aspects to work on first could be this recommendation from Alexander: *“At each step, direct your attention to centers, the unit of energy within the whole, and ask: which one center could be created (or extended or intensified or even pruned) that will most increase the life of the whole”*.

#### ALWAYS BE AWARE OF THE WHOLE(S)

Systems properties are properties of the whole which none of the parts have. These properties arise from the ‘organizing relations’ of the parts, i.e. from a configuration of ordered relationships characteristic of that particular class of organisms. Systems and these systemic properties are destroyed when a system is dissected into isolated elements. Shifting our focus from parts to whole is therefore a core idea of systems thinking<sup>7</sup>.

While in a mechanical process, parts are formed independently of the whole, and then added together to form an aggregation, in a living structure, the parts come into being within the whole, emerging and getting differentiated from it<sup>1,2</sup>.

Having a holistic perspective and remaining aware of the whole at each step of the design process is therefore essential for systems design, and both pattern languages and permaculture strongly pay attention to this.

Moreover we need to keep in mind that, because systems are always nested within systems, each sub-system is a whole in itself yet constantly influencing the other

scales. Because of this fractal nature of systems we need to be able to shift focus between small and big scale to really grasp the whole.

CHANGE YOUR VIEW OF ORDER: ACCEPT UNPREDICTABILITY & EMERGENCE

From the systems thinking perspective, the “neat” or “tidy” machine-like order we are used to in the mechanistic view is actually an artificially maintained disorder which is energetically very costly and very inefficient compared to the “messy” but vastly more complex natural order of living systems.

Systems by virtue of their structure have inherent tendencies to evolve and behave a certain way. Instead of pushing a system into what permaculture calls “forced function” by trying to control it, it is far more efficient to let the system evolve towards its own direction and work creatively with it and not against it. This implies we

understanding of life. In the study of substance, we measure and weigh things. Patterns, however, cannot be measured or weighed; they must be mapped. To understand a pattern, we must map a configuration of relationships. In other words, substance involves quantities, while patterns involves qualities.

The study of patterns is crucial to the understanding of living systems because systemic properties, as we have seen, arise from a configuration of ordered relationships. Systemic properties are properties of a pattern. What is destroyed when a living organism is dissected is its pattern. The components are still there, but the configuration of relationships between them – the pattern – is destroyed, and thus the organism dies.

If we fail to understand the importance of the qualitative and focus only on what can be quantified we are doomed to fail at designing systems.



Extract from Ursus Wehrli: *The Art of Clean Up: Life Made Neat and Tidy*<sup>9</sup>.

understand the latent potential that is already present, and work not to “make” something but to help it emerge.

Accepting a part of unpredictability can be hard for mechanistic thinkers but an essential part of system design. This doesn't mean we cannot have an influence on where the system is going. Because we are also part of the system, we can have an influence. But we should accept wilfully that although we can set the direction, we cannot predict and control entirely the way to get there.

SHIFT YOUR FOCUS FROM QUANTITATIVE TO QUALITATIVE ASSESSMENT

As Capra argues, for most of the time the study of patterns was eclipsed by the study of substance until it re-emerged forcefully in our century, when it was recognized by systems thinkers as essential to the

As Einstein has been quoted to say: “*Not everything that can be counted counts, and not everything that counts can be counted*”. Both permaculture and pattern language approaches understand this and so should a system designer.

RELY ON YOUR INTUITION AND FEELING AS A TOOL TO COMPREHEND THE WHOLENESS OF SYSTEMS.

Implicit in Mollison's approach but explicit in Alexander's is that our rational mind is not sufficient to grasp the complexity of systems and we have to rely on our intuition and feeling as a tool to comprehend the wholeness of systems.

Alexander did experiments to prove there is an objective reality behind our feelings and that it is a better tool to embrace complexity than our logical rational mind overwhelmed by the number of variables in a complex system.

Alexander discussed this extensively in *The Nature of Order*, and it is the aspect of the intellectual paradigm he offers which is the most at odds – at least on the surface – with the Cartesian paradigm.

#### TOWARD A NEW DESIGN METHOD FOR SYSTEMS

As mentioned earlier, systemic change requires structured design methods, just like engineers or designers have structured methods to build objects. However, designing systems is extremely challenging because of their very complex nature.

The design discipline, as we think about it today, is still strongly anchored in a mechanistic/reductionist view of the world, focussing on elements and parts. Worse, sometimes design places appearance before function. If we want systemic change for the better there is a danger of trying to solve systemic problems using a reductionist approach<sup>8,20</sup>. The promise of quick technological fixes can be seductive, but as we discussed earlier this can have disastrous effect when dealing with large systems.

As Albert Einstein famously said: “We can’t solve problems by using the same kind of thinking we used when we created them.” Donella Meadows number one leverage point was the ability to transcend paradigm. Can we imagine a design discipline that grows with its roots in the systems thinking paradigm.

#### FROM DESIGNING TO PATTERNING

Indeed, in the last few years new schools of thought have emerged in the design field. Pioneered by developers seeking to improve their ability to deal with complex software building projects, agile methodologies embed in their process several principles common to pattern languages and permaculture approach: (iterative steps, structure-preserving unfolding, adaptive instead of predictive approach, use of feedback...). Interestingly Ward Cunningham, inventor of the wiki and one of the main actors of the extreme programming methodology and the Agile Manifesto was directly influenced by Alexander<sup>21</sup>.

Another school of thought, Design Thinking, also aims to tackle complex design problems with principles common to the ones we have seen (using the creative/intuitive mind to complement analytical thinking, focusing on process before form, etc.)

However if the use of these new methodologies has already showed great results, it seems the patterning methods developed by Alexander and Permaculture are more profound and could enhance the power of these design methods.

Beyond the surface, Permaculture design and Pattern Languages are more than just clever methods of

design. They are entirely new ways of approaching design, not in a mechanistic view of the world but firmly rooted in the systems thinking paradigm. Both anchored in reality (they deal with buildings and gardens and people, so they cannot afford to be only conceptual, they have to work practically) and strongly inspired by thousand-years old traditional cultures, these two approaches have developed a set of robust principles for systems design.

#### PERMACULTURE PATTERNING

As discussed throughout this article, central to both design frameworks studied is the concept of patterning. Although it is not clear how much Mollison was influenced by Alexander, both permaculture and pattern language use the notion of patterns with slightly different yet very complementary views. Mollison explored particularly well the use of natural patterns and the tribal use of patterns while Alexander studied patterns in nature and human designed structures to propose a revolutionary theory of the world. The notion of patterning is promising and it is important that further research is carried out.

As a start I would like to propose Permaculture Patterning as a new branch of design explicitly aimed to design thrivable systems. Permaculture patterning use Alexander generative pattern approach grounded in permaculture ethics and philosophy.

Here are some core principles of permaculture patterning I propose as a basis for future discussion:

- start with an Ethical framework;
- map what is already there and work with creatively with it to preserve and extend it;
- shift focus from objects to relationships;
- create new links between centres so that they support each other;
- shift from a descriptive to a generative approach;
- work by step-by-step adaptation using feedback at each step;
- design mainframe first, then go into details;
- always be aware of the Whole(s);
- change your view of order: accept unpredictability & emergence;
- shift your focus from quantitative to qualitative assessment;
- rely on your intuition and feeling as a tool to comprehend the wholeness of systems.

Some initiatives are already moving in this directions<sup>9</sup> and I hope this article encourages the development of more systems thinking research and education and the democratization of this ideas in the wider society. We urgently have to update our

obsolete Cartesian worldview if we are to achieve systemic change for the better.

Although systems thinking and the proposed Permaculture patterning framework are complex topics, we should aim to make this knowledge accessible to everyone, and build more practical tools and methods to empower people to act on their environment harmoniously. The Cartesian paradigm helped us develop great technological capabilities and research helped us build comprehensive systems theories. However we should be cautious not to repeat the same mistakes of thinking that “we know and they don’t”. Before we try to superimpose new systems thinking solutions blindly onto people and natural systems, we should stay humble, have the humility to accept that, as Mollison and Alexander taught us, traditional cultures often inherently had profound system thinking views of the world and developed many efficient tools to work harmoniously with systems. We don’t need to race to reinvent solutions that are already there, but just keep our eyes open and gives ourselves time to be able to see them. Then we might be able to slowly weave them together one pattern at a time.

Left on their own, systems seem to evolve naturally towards greater stability. Recognizing we are only a small part in a dynamic web of systems, we should move forward, not as teachers/makers but as learners/enablers. Letting human and natural systems be our guides, maybe we can facilitate what is already waiting to emerge and let systemic change happen on its own.



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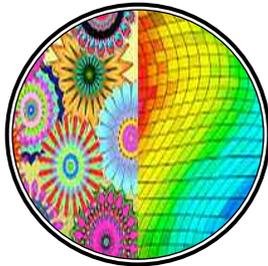
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YUSUF APPEARS BEFORE THE PHARAOH

# THE PLAST PROJECT: PATTERN LANGUAGES FOR SYSTEMIC TRANSFORMATION



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## FOREWORD

**T**HIS ARTICLE IS AN ABSTRACT OF THE PROPOSAL recently submitted to the EU HORIZON 2020/CAPS program. The CAPS program aims to support the piloting of Collective Awareness Platforms for Sustainability and Social Innovation. The authors, part of the project consortium members organizations and their close partners involved in the call, came together around the idea of connecting sustainability and social change praxis and related pattern languages within a commons pattern repository, via a systemic pattern language. Each brings a building block of what is needed to create a sustainable and scalable platform for collective awareness and exchange of tacit knowledge on sustainability challenges and solutions oriented towards systemic change. Helene Finidori, Sayfan Borghini, Kurt Laitner, and Takashi Iba are coordinating the concept from a theory to application perspective. Tom Henfrey, Nadia McLaren and Helmut Leitner are involved in the practical aspects of pattern language praxis, working with practitioners and those who drive change on the ground. Martin Pruvost-Beaurain and Vincent Puig are bringing to the mix exploration of possibilities and the semantic and hermeneutic inquiry that help to organize documented knowledge and discussions related to it. They ensure the liaison between the non-digital world of practice, the IT

that ‘tools’ it, and the philosophical-ethical approach that ensures a critical questioning of the categorization of knowledge. This approach is supported by the work of René Reiners on pattern evaluation and evolution, based on a long experience in the design and assessment of human-computer-interaction concepts, accompanied by the work on pattern repositories by Frank Leymann and Michael Falkenthal.

## INTRODUCTION

A central problem of our time is the separation of knowledge cultures into isolated islands. These knowledge islands typically have an excess of relevant information at their disposal from other islands, but do not leverage this knowledge effectively. This isolation has many causes: academic specializations, ideological polarizations and competing interests among grassroots movements, or simple separation in space, time, natural language or culture. Just as importantly, knowledge tends to be disconnected from praxis. The combined effect is to hinder the expansion of collective intelligence and fragment the systemic impact of sustainability and social change initiatives.

When attempting to intervene in a complex system, it is essential to assess the systemic implications of actions and to be aware of other actors in the system and their concurrent interventions. Isolated solutions can create new problems or be mysteriously ineffectual. Systemic change requires multiple interventions and an understanding of how they interact to produce desired outcomes, the discipline to monitor outcomes against intentions in a reflective way, and a willingness to change course where necessary, to mitigate the risk of unintended consequences.

The purpose of PLAST (Pattern Languages for Systemic Transformation) is to produce an open knowledge repository of sustainability and social innovation practices, leveraging pattern languages to make knowledge accessible, reusable across domains and actionable, turning knowledge into shared and accessible ‘know-how’. The key to success is making communities of practice aware of each other’s achievements in a language that is understandable, so that successes can be re-contextualized, applied, and evaluated for

effectiveness in other domains. The dynamic repository structure aims to promote the creation of meaningful relationships among different pattern languages using ‘Systemic Patterns’ as a novel form of meta-language.

The project balances this theoretical convergence by capturing the practical usage of patterns in new contexts, partnering and working with communities while prototyping and building the platform and allowing discussions and deliberations about patterns’ success and suitability to be included. Practice will thus inform theory which will guide practice in a virtuous cycle. In this way the PLAST will support collaborative creation, maturation, discussion, and refinement of knowledge and ‘know-how’ about sustainability practices and new ways of being and catalyse the social innovation required to find them.

The overarching objective of PLAST is to transcend boundaries among knowledge islands by creating a strong communication attractor for sustainability knowledge and thus to make sustainability-related knowledge more effective, connectable and ‘actionable’. This involves developing new digital tools and associated processes for the innovation of practice that builds upon, rather than rediscovers, established knowledge.

In particular PLAST is working to:

- ~ Provide a platform on which to share knowledge and know-how (in the form of Patterns and Pattern Languages) as ‘shared social objects’<sup>1</sup>, subject to discussion, deliberation and transformation.
- ~ Actively make communities aware of one another’s solutions through a coherent model of meaningful relationships and ‘systemic patterns’, providing the structure to allow inquiry and analysis through discovery and exploration.
- ~ Provide multiple entry points, (by problem, by solution, by systemic pattern, by context, by category etc.), and pathways, (guided tours, use before/after, etc.), through the collected solutions and practices.
- ~ Provide the means to re-contextualise solutions and practices into new domains and communities, and the ability to monitor, track, evaluate, deliberate and discuss the results.
- ~ Support the analysis of the process of transformation (categorizing discussion, deliberation, and transitions to understand tipping points, phase changes, and leverage points), creating the opportunity to design transitional strategies that are systemically assessed.
- ~ Allow participants to understand the full lifecycle of patterns in practice, from problem identification to pattern application, iterative reuse, maturity, adaptation, refinement and re-evaluation.

We expect this to:

- ~ Accelerate the circulation of domain-specific knowledge.
- ~ Improve the effectiveness of this knowledge and its applications.
- ~ Bridge ‘isolation’ gaps by connecting and making this knowledge ‘interoperable’.
- ~ Ultimately, keep knowledge dynamic as a living resource that embeds its on-going creation.

#### SUSTAINABILITY: THE QUALITY OF A (RE)GENERATIVE SYSTEM

We adopt in this project a broad definition of sustainability as a quality of a generative system able to regenerate and perpetuate itself in a way that allows flourishing of both the system as a whole and all its constituent parts. This systemic perspective can encompass multiple narrower definitions and forms of action: whether focused on the environment, lifestyles and behaviours, organizational forms, cultural norms and habits, power relationships, governance, equity and justice, technologies, or human relationships. This aligns itself with efforts to characterise trajectories towards making the world a better place in terms of essential qualities rather than precise definitions. There exist many definitions of the “vector” that makes the world a better place, and many who seek to uncover its essence and systemic characteristics.

Social activist Tom Atlee calls it Goodness<sup>2</sup>. Physicist David Bohm referred to it as Wholeness<sup>3</sup>; cultural theorist Jean Gebser as Diaphaneity<sup>4</sup>; Gregory Bateson as ‘The Pattern that Connects’<sup>5</sup>. Architect Christopher Alexander best conveys, and most fully articulates, this idea of something desirable, ineffable yet readily perceivable with high levels of intersubjective agreement. Alexander refers to it as the ‘quality without a name’: “*There is a central quality which is the root criterion of life and spirit in a man, a town, a building, or a wilderness. This quality is objective and precise, but it cannot be named.*”<sup>6</sup>

He goes on to elaborate on its context-dependence [...] “[I]t is never twice the same, because it always takes its shape from the particular place in which it occurs.”<sup>7</sup> and later on the conditions for its arising: “*This quality [...] cannot be made, but only generated, indirectly, by the ordinary actions of the people, just as a flower cannot be made, but only generated from the seed.*”<sup>8</sup>

Alexander’s holistic and pluralistic treatment prefigures the PLAST approach of providing tools for change agents, wherever they may be located and whatever their core areas of interest, to identify their own

goals and design their own preferred pathways towards them. PLAST thus aims to nurture, collectively, a range of diverse, complementary solutions that create opportunities for learning and collaboration and possibilities for mutually supportive action and synergistic outcomes.

We see current sustainability challenges as like the elephant in the ancient Hindu fable of the blind men. Although all are touching the same beast, each blind man only perceives a small part of it, and thinks he touches something different from the rest, none able to see the complete picture. Similarly, change agents involved in sustainability and social innovation may intervene in different domains, but all are ultimately addressing parts of the same challenge. PLAST's main ambition is to make the elephant – the bigger picture – clearly visible to change agents in all domains, allowing them to understand and take into account linkages among perceptions, interpretations and representations

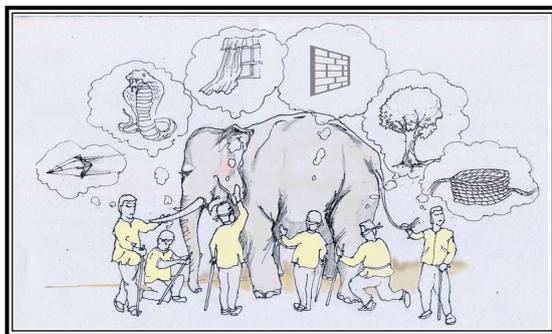


FIGURE 1 - *The Ancient Indian Fable of the Blind Men and the Elephant*<sup>9</sup>.

Edgar Morin describes this multiplicity of pathways in *La Voie (the Way)*: “*On each continent and in each nation one can find creative bubbling, a multitude of political initiatives in the direction of economic, social, political, cognitive, educational, ethical or existential regeneration. But everything that must be connected is yet dispersed, compartmented, separated. These initiatives are not aware of each other, no institution enumerates them, and no one is familiar with them. They are nonetheless the livestock for the future. It is now a matter of recognizing, aggregating, enlisting them in order to open up transformational paths. These multiple paths, jointly developing, will intermesh to form a new Path which will decompose into the paths each of us will follow and which will guide us toward the still invisible and inconceivable metamorphosis.*”<sup>10</sup>

In growing trends towards peer production, increasing numbers of people are seeking to create their own goods, tools, concepts and knowledge, often within local systems of production, use and

exchange<sup>11</sup>. The challenge this raises is how to equip communities with skills and technical capacities to capture their experiences of peer production and the tacit knowledges developed in doing so, and reproduce and build upon this learning so that future action is more effective. A related challenge is how to support learning across communities that can support more effective local co-creation, bridging islands of engagement, language and experience without diluting diversity into uniformity<sup>12</sup>.

We believe this can be achieved through systemic investigation via a hermeneutic approach of observation, hypothesis formation, selection of methods, and interpretation. This will provide the ontological and epistemological threads that can reveal and activate potential connections among different sustainability initiatives. By encouraging change agents to creatively focus their attention on the tacit knowledge they have developed through experience in their own domains, and on the underlying dynamics of the sustainability challenges they engage, PLAST will support them to enhance the effectiveness of their interactions with peers in their own domains and create and strengthen connections to other domains.

At the centre of PLAST is the concept of the *design pattern*, as a mechanism for connecting different kinds of people with different kinds of experiences. The design pattern is a unit of knowledge that can circulate - can be exchanged or transferred. Patterns, in use, are connected to other design patterns to form a web of action-oriented knowledge within a defined domain of operation, called a *pattern language*.

PLAST will provide a systemic thread through which diverse capacities and potentials become interrelated within an emergent ecosystem or network of possibilities. Within this ecosystem, collective awareness builds up as sustainability domains open up to each other and connect through webs of interrelated patterns, unleashing all sorts of possibilities for participation, collaboration, innovation and action.

In the following sections, we distil elements of concept and show how each will be approached and operationalized, and we conclude with the overall technical design approach of the project.

#### WICKED PROBLEMS: THE SYSTEMIC NATURE OF SUSTAINABILITY ISSUES

Most sustainability issues are systemic in nature. They are emergent on complex dynamic processes affected by the aggregated behaviours of multiple

agents (human and non-human): behaviours that are shaped by the rules, structures and automated systems we humans put in place, which arise from the paradigms we hold. Donella Meadows summarises this situation in her characterisation of Points of Intervention in a System (see figure below)<sup>13</sup>. Often these dynamics manifest at levels other than those at which they originate: a common property of complex adaptive systems. They may over time gather momentum and become self-reinforcing, and in turn become structural features that shape the available choices and hence behaviour of agents in the system. This creates situations of lock-in to highly undesirable states - such as the linked technological, institutional and political barriers to decarbonisation of industrialised economies<sup>14</sup> – and likelihoods that these propagate as path dependencies built in to new or rapidly changing systems<sup>15</sup>. Lacking simple resolution or even problem definition, most complex sustainability issues take the form of ‘wicked problems’, intractable to causal analysis and impervious to concrete remedies<sup>16</sup>.

theory have identified many common systemic patterns of this type, but often represent them in different ways. We will identify these recurring patterns across disciplines and research fields and their contexts of manifestation and forms of expression in different domains of sustainability and under diverse conditions. This will improve general understanding of system dynamics and their relation to sustainability, and help bridge languages across sustainability domains by providing a common ontological and epistemological thread. The objective is to produce a systemic pattern language that will be tested, refined and connected to the knowledge of communities of practice, and operationalised in the digital platform.

#### TAKING A HACKER'S APPROACH TO SUSTAINABILITY CHALLENGES

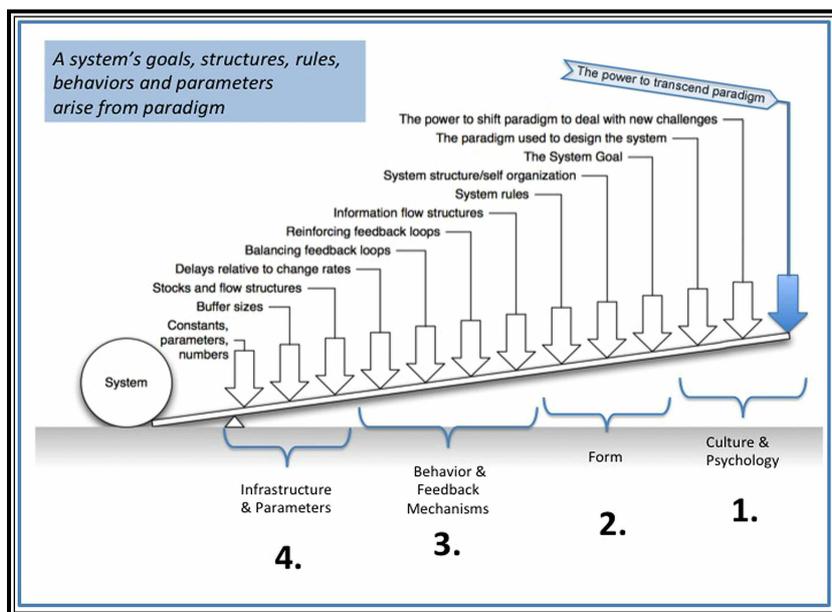


FIGURE 2 - Donella Meadows' leverage points for systemic change.

PLAST addresses this by bringing together scientists from many different fields of systems research to explore, discover and capture common patterns of systemic behaviour. A pattern in a system is here broadly referred to as ‘a common feature, system behaviour, structure or function [...] that can be observed across multiple contexts’<sup>17</sup> and can be used for revealing information on processes<sup>18</sup>. Research areas such as digital studies, cognitive technologies, social and cultural studies, game theory, complexity theory and resilience

A simple summary of our core approach is that it is about learning to take things apart in order to understand the relationships between components and build something new. This is the essence of a hacker's approach:

*“The large part of the complexity and opacity we are faced with is that it neutralises political action. There is [...] a large diffuse body of people who can't really articulate what they don't like about the [financial] system and how to change it [...] I used the hacker ethics analogy and framework [...] It involves exploring something to see it not as a*

*thing, but as a set of interacting components. Hacking is figuring out the internal impulse of things to figure them out. But the important question with the hacker approach is what are you aiming to achieve with this impulse.”*<sup>19</sup>

Here we take a similar approach, identifying systemic patterns that capture perceived relationships and behaviour and linking them to design patterns that communicate possible courses of concrete action in specific contexts. Design patterns, especially when located in networks of inter-relationships as pattern languages,

can efficiently capture interacting components of situations, practices or systems and their underlying dynamics. Use of pattern languages has become standard practice in object-oriented programming, where patterns are a format for exchange and reproduction of building blocks among experts<sup>20</sup>. They are now increasingly used by communities for collaborative creation, as a medium of narrative and conversation based on observation and experience that encourages creative thinking and creative action<sup>21</sup>.

The value of using patterns as units of knowledge and pattern languages to describe their contexts of application is manifold, as they:

- Reveal domain specific tacit knowledge, allowing it to be understood, unpacked, and recomposed to address specific challenges and needs.
- Build a language format upon which communities of practice can share experience.
- Facilitate the socialization and recombination of knowledge (ultimately resulting in hyper-productive, learning and knowledge-creating communities).
- Provide a conduit to externalise tacit knowledge enabling translation and transfers between domains of action and the circulation of knowledge across domains.
- Provide a web of 'readable' possibilities people can explore.
- Allow knowledge to be stored and retrieved, and for this reason extend collective intelligence.
- Articulate fundamental design principles to guide holistic/life-serving applications in a given domain (such as systemic transformation and sustainability), with each principle able to be manifested in diverse ways.
- Structure educational curricula (in this case for systemic transformation and sustainability).

Pattern languages are emancipatory tools, in other words, because they bring to light knowledge and understanding about the system that is normally hidden from view and which, when consciously articulated, allows people to propose and act upon ways to transform their situation<sup>22</sup>. We will support the communities involved in our use cases to 'hack' or decode sustainability issues and alternative practices in their domains of action, using the systemic patterns produced in the theoretical foundations research part of the project, and to encode these issues and practices into patterns (connectable, exchangeable formats) themselves. This will provide users with the capacity to explore, share and compare patterns and pattern languages (i.e. codified tacit knowledge) from a variety

of sustainability domains. These capacities will in turn be enounced in the platform objectives and built into the platform.

#### IDENTIFYING UNDERLYING SYSTEMS DYNAMICS IN SUSTAINABILITY DOMAINS

The community-based research part of the project will focus on various application domains and subdomains to record and analyse communities' creative and discovery processes, in order to answer the following questions:

- How do communities of practice apprehend and talk about systemic phenomena (the sustainability challenges they face or the underlying dynamics they identify) in their domain? How do they observe, interpret observations and make hypotheses?
- How do they explore and design solutions to address these problems in their respective domains and how do they document both problems and solutions?
- What are the systemic invariants and their manifestation/expression in the various domains?
- What socio-cognitive and contextual heuristic variables and operators can be drawn from the study of domain and subdomains exploration and design processes?
- What lies at the intersections among domains and among modes of exploration and perception?

We will derive from these data a semantic structure and a pattern language structure that will accommodate existing pattern languages and enable operationalization of exploration of possibilities, systemic inquiry and collective interpretation into a digital tool, which will be modelled into a semantic and system inquiry tool.

Pattern languages are already in use in many different areas of sustainability, including bioregional development<sup>23</sup>, community action on climate change<sup>24</sup>, the Transition movement of community-based sustainability initiatives<sup>25</sup>, permaculture's approach to designing sustainable human habitats<sup>26</sup>, as well as other human interaction and action domains such as learning, collaboration, co-creation, innovation, and conflict resolution<sup>27</sup>. The PLAST pattern data structure will bring together these different languages, mediate among them, and help create new ones. In this way, it will reveal how sustainability domains can act as intersecting clusters of closely related languages, forming an ecosystem of ideas and where agents complement each other in generating societal change. The domains and subdomains of application we will work with as use cases will act like vectors into the diverse semantic spaces of action for sustainability

and social change. This will allow connections to manifest, usage of the tool to spread, and ultimately support localised (spatially and/or conceptually) efforts to coalesce into emergent systemic effects at higher levels.

Use case collaborations will operate in four domains, and at their areas of intersection and overlap:

- 1 ~ TECHNO-SOCIAL
- 2 ~ SOCIO-ECONOMIC
- 3 ~ SOCIO-ENVIRONMENTAL
- 4 ~ STIGMERGETIC

#### TECHNO - SOCIAL

In the techno-social domain, circulation of knowledge is essential for individuation, empowering individuals, building capacity and promoting collective intelligence<sup>28</sup>. The network effect has the potential to accelerate the circulation of knowledge and the expression of collective intelligence for the benefit of society as a whole. Conversely, in certain configurations it leads to monopoly formation and the capture of collective intelligence by commercial interests. In such environments, conformist pressures are enhanced by algorithms that influence choice and may undermine behavioural diversity<sup>29</sup>. Algorithms play an increasingly significant role in shaping human behaviour and system dynamics, and their effects must be monitored<sup>30</sup>. PLAST can help communities identify those configurations and better prevent the threats they may entail.

In this domain, we will follow the work of Antoinette Rouvroy on algorithm intentionality and governance<sup>31,32</sup> and explore the structures and dynamics affecting choice and agency in the digital space. Key use case partners in this domain are Ars Industrialis, a community of citizens interested in industrial policy and technologies of the mind and matters related to the future of the web in conjunction with the “web we want” W3C initiative, and the Digital DIY H2020 project focusing on the transformations generated by the increasing social adoption of atoms-bits convergence, and its implications on ethics and the legal system. The goal is to work with the technology community to develop annotation capability, protocols for categorizing intentions, and learning material on technosocial implications of algorithmic computations and their dysfunctional effects in order to help generate positive dynamics.

#### SOCIO - ECONOMIC

In the socio-economic domain, business and governance structures and models have various impacts: on the circulation and accumulation of resources, money and intangible values; on forms of

work and realization of individual and collective potential; and on the capacity for people and communities to generate livelihoods. For example, combination of decentralised energy generation with distributed monitoring and control via ‘smart grid’ technology may be the technological basis for an ‘energy commons’ under the control of citizen producer-consumers, or it may entrench the power of large market players with vested interests in the status quo<sup>33</sup>. The two may look and sound similar in their natural language description, but have quite different impacts on empowerment, revenue retention, and other factors affecting the long term sustainability of the community. PLAST will help communities evaluate possible outcomes and the likelihood of a model to achieve its intents.

Key use case partners in this domain are the P2P Foundation, a global network of researchers and activists focusing on peer production and participatory modes of governance, and members of the ECOLISE network of community-based sustainability initiatives active at policy level. They will create patterns for policy and activity models oriented towards commoning, transitions to sustainability, commons based peer production, and sustainable living. The goal is to provide policy makers and social entrepreneurs with the building blocks, pathways to generative sustainable systems, and related inquiry approaches that will help them identify and share knowledge to design game changing policy and organizational models.

#### SOCIO - ENVIRONMENTAL

In the socio-environmental domain, the choices people make in terms of lifestyles, production and consumption (food, energy, other resources) affect environmental footprints, resilience and thriving, and ultimately human prosperity, relationships and well-being. PLAST will support community-scale inquiry into relationships among these choices and their effects, for example to identify how to balance efficiency and resilience and so access the ‘window of viability’ of a solution<sup>34</sup>. This can help communities address sustainability issues and make informed trade-offs without getting stuck in polarised positions and other unproductive social patterns.

In this domain, we will work with projects and initiatives of members of ECOLISE, the network of European Community-Led Initiatives for a Sustainable Europe; sustainability education initiatives involving Global Action Plan International (GAP) and other sustainability education organisations; and Initiative Homes, a social enterprise supporting community-led housing initiatives that emphasise sustainability and social justice goals. The goal is to support processes of collective learning at

community levels that can support meaningful action for social change, via education, awareness-raising, and reconfiguration of basic structures for production and consumption to satisfy human and environmental needs. Potential use cases within the ECOLISE include its policy-level activity (intersecting with the socio-economic domain), its internal operations as a network (such as communication mechanisms and decision-making processes), specific projects of member initiatives (such as the Italian national Transition Hub), and educational projects in which several member organisations are already using pattern languages (Global Ecovillage Network, Gaia University, and the German Permaculture Institute).

#### STIGMERGETIC DOMAINS

Commons based peer production projects involve a mechanism of indirect coordination between agents or actions, which is stigmergetic by nature. The principle of stigmergy is that the trace left in the environment by an action stimulates the performance of a next action, by the same or a different agent<sup>35</sup>. In that way, subsequent actions tend to reinforce and build on each other, leading to the spontaneous emergence of coherent activity. This is how open source production operates, with the common co-produced artefact openly accessible for peers to further build on<sup>36</sup>. Stigmergetic projects require both the whole (the commons being developed) and the ‘traces’ (new contributions, needs or opportunities) to be made accessible, visible, intelligible and actionable at the collective as well as the individual level so that people can engage in an optimal way<sup>37</sup>.

We will work with the Digital DIY project involved in studying the impacts of the digital do-it-yourself socio-technological phenomenon on open design and hardware communities, the P2P foundation, the Open Knowledge Foundation and more to build a pattern portfolio on peer production and digital commons that will help communities make their open and commons-based peer production projects more effective.

#### LEVERAGING THE EFFECTIVENESS OF PATTERN LANGUAGES AS NETWORKS OF IDENTIFIABLE AND TRANSFERABLE ELEMENTS OF DESIGN

At the conceptual level, PLAST draws significantly upon the pattern language approach pioneered by Christopher Alexander, which integrates concepts and approaches from a variety of fields including systems thinking, design thinking, and action research. It consists of a methodology to generate Alexander’s ‘quality without a name’, based on the

generation and use of patterns as generic, flexible encodings of possible desirable transformations in a system, and pattern languages as systematically organized collections of all patterns relevant to a particular domain. As dynamic entities that support on-going exploration of generative possibilities, patterns and pattern languages are not fixed but constantly reinvented through use in practical contexts, leaving space for interpretation and discovery of new patterns and relationships and emergence of co-created solutions<sup>38</sup>. They thus fit the need for a more dynamic, process-oriented ‘Transition Design’ approach consistent with the wicked nature of sustainability problems<sup>39</sup>.

Alexander, the first to formalize the concept of pattern language, sought to understand how design forms arise as solutions adapted to specific configurations of problems, which can then be generalized for other similar uses. He observed that complex systems could be partly decomposed into recognizable subsystems bound by strong forces (the systemic patterns) inter-related through weaker links, which could be treated as recombinable units (the design pattern) within design models, following grammar-like rules<sup>40</sup>. By making visible previously covert processes and the tacit knowledge that underlies them, a pattern language provides a common vocabulary for design, bringing communication on designing into existence and opening up new channels of communication and understanding<sup>41</sup>.

In practical terms, Alexander defines a pattern as a three part construct. First comes the ‘context’, the conditions under which the pattern holds. Next is a ‘system of forces’. In many ways it is natural to think of this as the ‘problem’ or ‘goal’. The third part is the ‘solution’; a configuration that balances the system of forces or solves the problems presented. This definition<sup>42</sup> reinforces the distinction between the ‘system as a whole’ – a holistic description of a concrete phenomenon in relation to its emergent properties - described by design patterns – and the ‘generative system’, or set of organic processes out of which any phenomenon emerges, described by systemic patterns<sup>43</sup>. PLAST will make explicit and examine the relationships among systemic patterns, the focus of its theoretical foundation research, and the design patterns revealed and generated in community-based research, which will be built into the platform design.

#### AN HERMENEUTIC APPROACH TO SYSTEMIC INQUIRY: PATTERNS AND PATTERN LANGUAGES AS REPRESENTATION AND INTERPRETATION MEDIA

PLAST seeks to tool the praxis and evolution of collective sense-making and action towards sustainable

design within a knowledge ecosystem that includes diverse logics of understanding and engagement, each with its own languages and cognitive preferences. It recognises that this diversity is not only inevitable, and desirable for its own sake<sup>44</sup>: it understands plurality of outlook and action as vital for addressing complex sustainability issues. However, it also recognises that not all outlooks and actions are equally true, valid, morally sound, or effective. By making use of patterns and pattern languages as media of interpretation, it will seek to reconcile difference with interconnection, inclusiveness with discernment, and so help activate collective awareness to its fullest potential, not reduce it to its lowest common denominator.

PLAST therefore adopts a hermeneutic approach to observation/representation, interpretation, design and action. A hermeneutic approach seeks to understand rather than explain. It acknowledges the situated nature of all interpretations and therefore accepts and values a plurality of perspectives on and points of entry into a topic. It recognizes that language and history both allow and limit understanding (see the pharmacological approach below), views interpretation as conversation, and is comfortable with ambiguity. Project partner IRI's approach to hermeneutic inquiry facilitates discussion and seeks to record points of divergence from and convergence towards categories and networks of categories in scientific disciplines. PLAST will extend this to analysis of conceptual models and the ways they are reflected in patterns and pattern languages. In this way, it will make it applicable to grassroots design and action, extending hermeneutics from the conceptual to the phenomenological and performative domains, furthering the work of the Digital Studies Network<sup>45</sup>.

The wicked and multifaceted nature of most sustainability challenges lends itself to a hermeneutic approach<sup>46</sup>. Their complexity often entertains ambiguity, preventing the adoption of clear-cut problem-solution approaches: trade-offs must be made, and any course of action monitored for unforeseen effects. A solution in one context can turn out to be a problem in a different context, or become a problem as conditions change<sup>47</sup>. Economic growth, for example, reliably contributes to improved standards of well-being in a context of poverty, but beyond a certain level of material affluence drives increasing depletion of environmental resources for no discernible benefit<sup>48</sup>. A network effect empowering participatory dynamics may become lock-in to proprietary platforms in the context of the web<sup>49</sup>. A solution or practice that is desirable and sustainable at moderate levels may become a problem at higher intensities. For example AirBnB – an apparent success in the sharing economy that contributes to

diversification of individual incomes – has also inflated local property prices and costs of staple goods, making life unaffordable for residents of popular city centre destinations<sup>50</sup>. Similar forms of context-dependence can also be seen in relation to points of view, interpretations of a situation, and approaches to action.

Hermeneutics enables multi-level inquiry through which this context-dependence can be understood and assessed. It allows the phenomenon under investigation (a situation, a practice, an alternative, a pattern...) to be evaluated in two main ways: in relation to its systemic features and their consequences, and in relation to its maturity. Such evaluation allows categorization of the phenomenon and its properties in terms of attributed status or quality (problem/solution, desirable/undesirable, functional/dysfunctional...).

Systemic evaluation focuses on the systemic characteristics of the pattern, changes in its configuration, and anticipated effects under designated conditions. These identify how sustainable or how functional/dysfunctional it may be or become – as illustrated in the examples described above. To accommodate this type of inquiry, the PLAST pattern language structure and ontology will support scenarios to allow evaluation of a pattern in terms of its sustainability under various conditions and in diverse contexts. PLAST will assist change agents in communities to decode (interpret and/or articulate) and encode (model and prototype) systemic phenomena and possibilities into patterns. This will operationalize Bernard Stiegler's concept of *Pharmakon* (the technique or solution being at the same time a cure and a poison, meaning that for problem solving to be effective it must take the form of an ongoing reflexive inquiry)<sup>51</sup>.

Evaluation of the 'maturity' of a pattern might address the completeness of its analysis, interpretation, description, understanding, design, or applicability (as Wikipedia does for its pages, for example). Does the content of the pattern reflect and empower a meaningful systemic inquiry and interpretation of a situation, practice, alternative? Does it accommodate sufficient perspectives or points of view for the design to 'stabilize' and evolve in an appropriate manner, and for people to expand the horizons of their exploration and understanding? Have points of convergence and divergence relevant to making trade-offs or understanding relational dynamics been identified?

PLAST will undertake such an hermeneutic enquiry in order to capture multiple perspectives and scenarios. Outcomes from this, along with new observations from further research or experience over the course of the project, will feed back into pattern design and eventually into the pattern structure and ontology.

These feedback loops will be maintained throughout the project and built into the on-going operation of the platform beyond the funded period, as an inbuilt mechanism for incremental evolution of patterns. PLAST will thus, as one of its major features, initiate an autopoietic approach, driving learning and expansion of collective awareness through an on-going design approach that perpetually regenerates the conditions for its own continuation<sup>52</sup>. Methodologies for collaboratively identifying and formulating patterns, the structure of patterns, and their inter-relationships within pattern languages (semantic organization) will derive from community-based research on the use case topics detailed above, and will be modelled for its operationalization in the platform.

A hermeneutic approach to support exploration and development of patterns and pattern languages will achieve the following:

- Provide users with the capacity to interpret, discuss and articulate sustainability challenges and sustainable practices in systemic and dynamic terms.
- Allow assessment of the 'systemic' sustainability of practices and perceived dynamics.
- Support documentation and reprocessing of discussions and field experience to keep the data alive and grow the commons of sustainability knowledge as the 'memory' of collective intelligence in action.

FOSTERING  
EXPLORATION  
AND DISCOVERY  
BY MODELLING  
CREATIVE  
DESIGN  
PROCESSES:  
PATTERNS AND  
PATTERN  
LANGUAGES AS  
DISCOVERY  
MEDIA

PLAST seeks to provide a tool for the exploration of the social change possibility space, taking advantage of the dual status of pattern languages as media for both communication and discovery. If communication is essential to the formation of understanding, discovery is essential to the formation of awareness. In this sense we can see the PLAST platform as an Internet of actionable knowledge for awareness, decision-making and action on sustainability, enabling navigation among patterns

and pattern languages across domains and so fostering discovery. A user should be able to enter the system at any point and from there explore it, discovering new possibilities and moving from familiar domains of practice to new territories of understanding and action. In order to ensure this, community-based research focuses on modelling creative design processes in order to build the findings into the design of the platform.

The creative process consists of a sequence of discoveries; it includes observation, interpretation, hypothesis formation, method selection, problem identification, problem solving, and ultimately innovation and action. Discoveries result from associations of ideas. Collaboration thus drives creativity by encouraging generation of a sequence of new associations and therefore discoveries beyond those accessible to the individual mind working in isolation. The creative processes underlying innovation and novel action are thus structurally coupled with processes of individual development of consciousness and awareness (psychology), and processes of communication within and among groups (sociology)<sup>53</sup>.

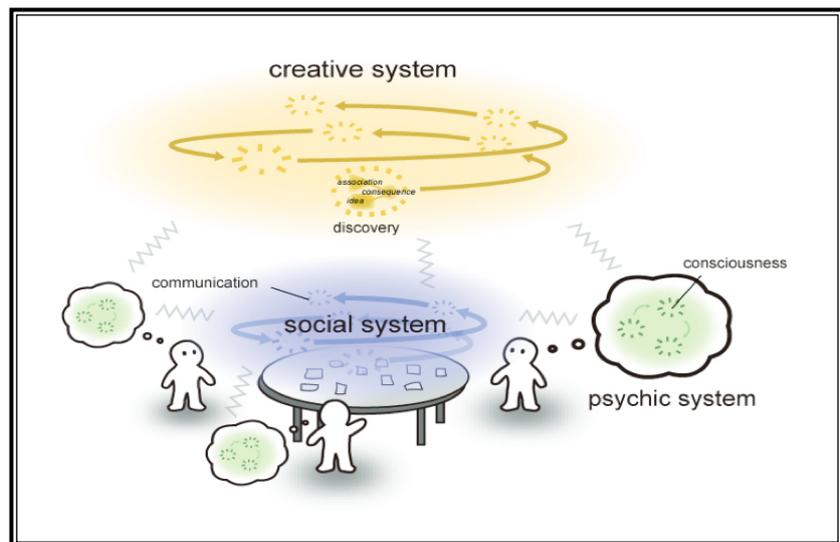


FIGURE 3 - Coupling of creative, psychic, and social systems<sup>54</sup>.

Connections beyond individual minds, such as those enabled by the Internet and the hyperlink, have exponentially increased the potential for discovery of ideas and knowledge. In a similar way, by facilitating creation and use of design patterns that encapsulate tacit knowledge in interoperable formats, supported by insights on systemic consequences, PLAST, focusing on the ergonomics of the technical tools that will accompany the practitioners and their practice, will

generate added potential for discovery of actionable knowledge and therefore for action.

When change agents analyse situations and co-create solutions in real world contexts, each stage of the co-modelling process involves questioning and draws on multiple modes of perception and exploration. During the research phase, we will document and model collaborative processes of pattern interpretation (decoding of perceived patterns) and design (encoding of pattern representation). We will analyse and evaluate several facilitation methodologies and human action pattern languages<sup>55</sup>. On this basis, we will create prototype workshop formats, to be piloted during the project and employed thereafter. Workshops will both facilitate the research process and allow documentation of the various processes through which groups explore possibilities and co-create new ideas. This will inform the design of a semantic structure and an orientation engine in the platform's user interface that will include query, visualization and navigation features that enable exploration and discovery.

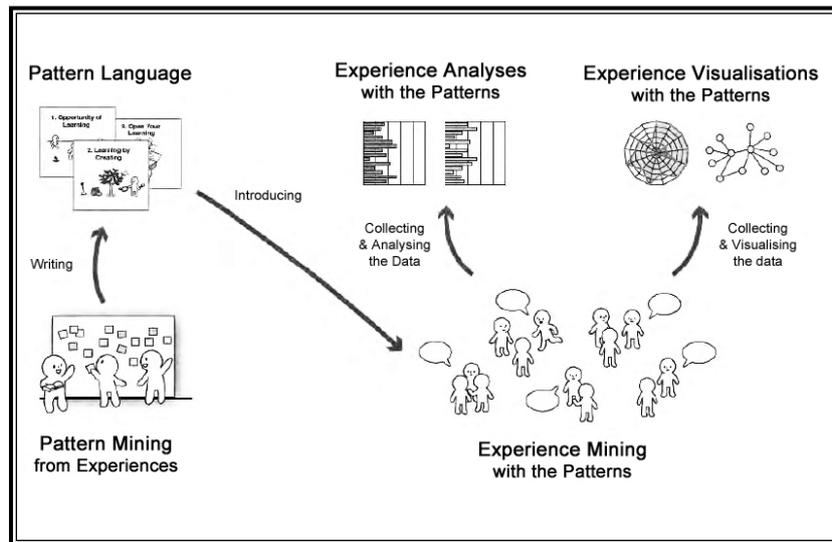


FIGURE 4 - The overview of experience mining, experience analyses, and experience visualisation with patterns<sup>56</sup>.

The goal is to enable users to navigate in the creative environment: query, explore, and play with elements forming structure, space and movement, and so explore perspectives, limits and boundaries through inquiry. The whole process enables the appreciation of multiple pathways and co-created solutions while ensuring systemic coherence and allowing systematic organization of knowledge in the pattern repository. PLAST will provide users with the capacity to make connections among patterns and navigate across domains within the sustainability space. The network formed through the common underlying

dynamics that connect patterns will enable users to explore possibilities and cross-pollination opportunities, bringing to life the ‘adjacent possible’ proposed by Stuart Kauffman: “*The strange and beautiful truth about the adjacent possible is that its boundaries grow as you explore them. Each new combination opens up the possibility of other new combinations. Think of it as a house that magically expands with each door you open. You begin in a room with four doors, each leading to a new room that you haven’t visited yet. Once you open one of those doors and stroll into that room, three new doors appear, each leading to a brand-new room that you couldn’t have reached from your original starting point. Keep opening new doors and eventually you’ll have built a palace.*”<sup>57</sup>

The Johari Window<sup>58</sup> (FIGURE 5) opens up on self-awareness and shared discovery of the unknown, to expand the boundaries of our perception. Discussions generated in the process of taking ‘the system’ apart to better understand interactions and their combined effects help gain a better view of the whole. An approach akin to cartography where one explorer sets the contours of a new continent for others to discover and more finely describe.

To sum up, at the conceptual level, PLAST bridges the systemic/experiential/action sphere (the dynamics at play; the structures, agents, relationships involved) and the semantic/conceptual/psycho-cognitive sphere (how we talk about these dynamics and co-create solutions across boundaries), with the technics (tools that will help people find the right information, co-create and exchange knowledge, better understand each other’s language and learn about systemic phenomena) in a reflexive manner. In this way, it will increase problem solving capability and the scope for dissemination of new concepts and practices. In other words, PLAST provides interpretation tools and interoperability across sustainability areas to allow groups with different outlooks, languages and goals to explore the possibility space and describe systemic phenomena in a mutually comprehensible way. Shared understanding allows reflection upon solutions and

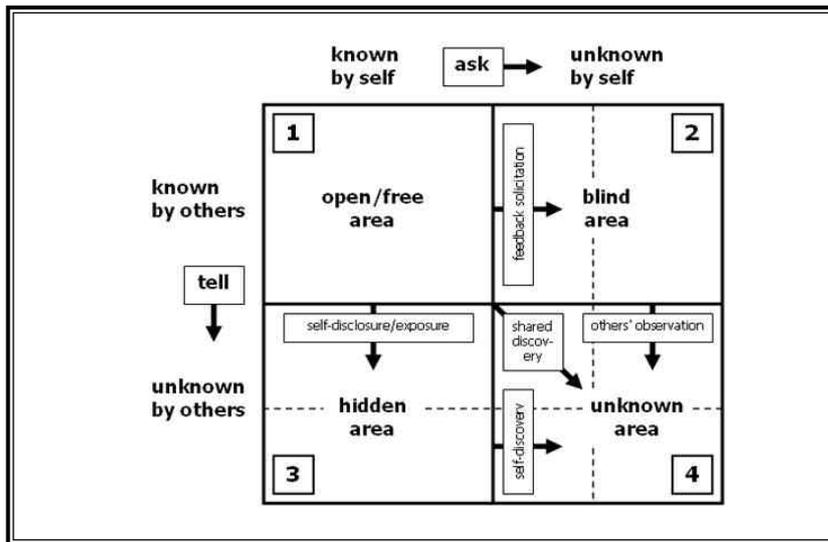


FIGURE 5 - *The Johari Window*<sup>59</sup>.

the prototyping, sharing, reproduction, maintenance and on-going development of effective practice across domains, supporting the design, learning and dissemination goals of change agents within communities of practice on the ground.

#### DESIGNING THE PLATFORM FOR SUSTAINABILITY

The platform will be designed to enable the formulation, management and development of patterns and pattern languages by the user communities who authored them. It will incorporate a contributory model, whereby different user communities will have their own local pattern repositories, integrated into a commons repository. Other communities will be able to work on copies of patterns transferred from the commons repository and later propose that their changes be re-incorporated into the commons repository. An evaluation and validation process will determine the criteria (based on pattern maturity) for inclusion of patterns in the commons repository and modalities for their merging and categorization. The evaluation tool and its user interface will be a key feature of PLAST. Governance of the processes for assessing pattern maturity and adding new patterns to the repository will be agreed with user communities.

The project will build on existing software to produce a pilot that can incrementally develop, scale and synthesize collective experiences of solutioning processes as catalysts of collective awareness.

The PatternPedia system<sup>60</sup> for authoring patterns and pattern languages of Stuttgart University's

Institute of Architecture of Application Systems is the basis for the development of the PLAST pattern repository. PatternPedia is built on the MediaWiki platform using semantic extensions, and is configured to provide an extensible set of semantic relationships between patterns. The platform will hold a scalable number of domains and support multiple perspectives, formalizations, logics, vocabularies and ontologies, to maximise contact and cross-pollination among disciplines.

The PLAST platform will also support the hermeneutic process of pattern formulation and evaluation, to assess the maturity of a pattern and lead to 'meta-stabilisation' of collective points of view forming one or more cohesive bodies of theoretical data, with tools and practices enabling 'traceability' of interpretations. The hermeneutic pattern formulation and evaluation tool will integrate adaptations of Fraunhofer's pattern evolution system, such as implemented in the BRIDGE FP7 project<sup>61</sup>, and IRI's 'categorisation' process, such as implemented in the Polemic Tweet tool to reveal controversies around events on Twitter<sup>62</sup>. The hermeneutic pattern formulation and evaluation tool should enable a change agent or community to design patterns and pattern languages from their own practice and to put them up for discussion, allowing comparison with similarly designed patterns, and with patterns and pattern languages in other domains of practice. The tool will allow tracking of the pattern inquiry and interpretation discussions in real time using supporting visualization of controversies and discussions that can be traced in a platform similar to Wikipedia's (versioning and history of exchanges)<sup>63</sup>.

It is essential to design the platform to reflect users' practices and fit their operational needs. To achieve this goal, we will co-design the tools with user communities in a LEAN/AGILE approach and integrate their feedback, stressing cognitive ergonomics and ease of use in order to empower the practitioners and not add technical constraints. The needs and findings uncovered in the course of the user-centred research, which can not be entirely foreseen, will drive the IT pilot's development in an agile manner. Requirements concerning federation of patterns from several repository instances have to reconcile governance of knowledge in the

common and integrated repository and the need for data autonomy in the federated repositories. So development is tightly coupled with user communities' needs, implemented iteratively and responsive to user feedback.

To ensure the sustainability of the PLAST platform beyond the project's duration its development and utilization have to take into account the following points<sup>64</sup>:

1 ~ The PLAST platform is generative of knowledge.

To ensure that the PLAST platform is used beyond the duration of the PLAST project it has to accrue significant visibility and volume of content during the project phase. It has to enable generation and derivation of new knowledge based on the hosted patterns, pattern languages and debates, and to ensure that user communities can maintain this knowledge.

2 ~ PLAST platform is generative of an open source ecosystem.

To ensure the sustainability of the PLAST platform from the technical and development perspective the project aims to attract a community of developers, in particular those who tool communities of social change, in order to create a whole ecosystem of features besides maintenance of the platform and contributions to the contents. Therefore, we will involve open source developers very early in the project, provide the platform as open source, and present it at computer science research conferences and hackathons to raise its profile among open source developers. By these means developers interested in the platform will be invited to contribute to its development or to create new features to extend its capabilities in order to support community specific functionality, with possibilities to spread the use of the platform to other communities. This follows the example of Wikipedia, where editors work in collaboration with open source Wikimedia developers to provide increasingly effective editing capability.

3 ~ The PLAST platform is generative of livelihood.

The PLAST platform has to maintain high levels of activity among users and producers of its content in order to ensure positive feedbacks between content generation and successful applications in practice, and eventual escalation to a point at which it can support new roles and practices that generate revenue. Thus, the PLAST platform seeks to establish a lively community to develop and refine its content further. The paragons for this aspect are open source movements such as Linux coupled with Git, which shows how federated work can be integrated into a powerful system generative of livelihood.

## CONCLUSION

PLAST advances systemic transformation in the following areas:

- ~ CONCEPTUAL: PLAST defines and operationalizes 'sustainability' using systemic patterns and hermeneutic supports that accommodate and integrate diverse perspectives from multiple sustainability domains and communities of practice, providing tools that allow these perspectives to operate coherently, synergistically and systemically.
- ~ INTELLECTUAL: PLAST supports collaboration among diverse scientific fields and areas of practical application to provide new interdisciplinary and transdisciplinary perspectives.
- ~ KNOWLEDGE PRODUCTION, COLLECTION AND CIRCULATION: PLAST leverages pattern languages as a format and protocol for the exchange of sustainability knowledge and practical know-how between and amongst theoreticians and practitioners by providing tools for documenting, compiling, evaluating, revising, integrating, synthesising, applying and sharing knowledge from different areas and across different fields of application. PLAST semantically structures patterns using concepts from systems theory to create opportunities for cross domain engagement, surpassing existing tools for activating and developing collective knowledge and capacity for action.
- ~ PROCESS AND CONTINUITY: PLAST's transdisciplinary action learning approach, using intentions and monitoring outcomes, allows more on-going/thorough/systematic testing of patterns and pattern languages than before. Embedding PLAST in communities of practice and providing operational data to theoreticians ensures its continuity beyond the lifetime of the funded project.
- ~ RESOURCES: PLAST leverages knowledge, resources and capacities across domains of action creating a novel ecosystem of navigable, evidence based, practical applications of theoretical knowledge which in turn becomes informed by and evolves with practice. Patterns, pattern languages, relationships and categories all become shared resources, subject to debate and evolution. The debates and discussion are also categorized, becoming a resource in their own right for the development of the pattern languages and theories of change
- ~ CONNECTING PRACTICE DOMAINS: PLAST brings together and activates wide communities of practice: local communities, social change activists, knowledge managers, sustainability educators, policy makers, and practitioners of pattern languages, systems thinking and organizational change, to create a knowledge commons upon which to build practice.

The platform will structurally support a systemic, pluralistic view of challenges, conditions and solutions, and support operationalisations that embed observation, orientation, monitoring and discussion in pathways to action. It draws upon the direct engagement of diverse communities of practice in assembling its elements via collaborative processes that will embed systemic cross-domain connections in its framework in a way that makes them accessible to users. This allows the transfer of practices across contexts and maintains active flows of knowledge, reinforcing and modulating relationships, directly affecting awareness, engagement and action. The result will be a genuine knowledge commons<sup>65</sup>: a dynamic set of openly accessible knowledge and associated practices that support the activities of user communities, who in the course of their use collaboratively maintain and develop both its content and its technical features, bringing about systemic change in practice.



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**ABSTRACTS**  
*DRAMATIS PERSONÆ*



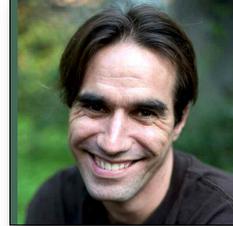
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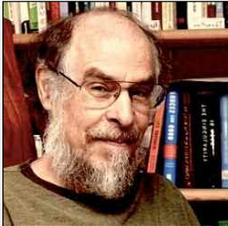
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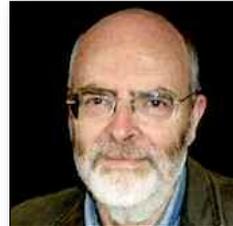
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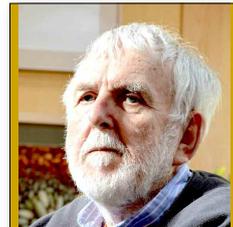
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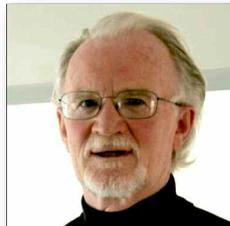
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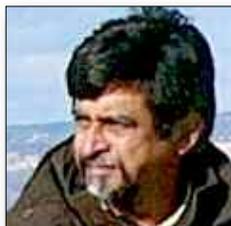
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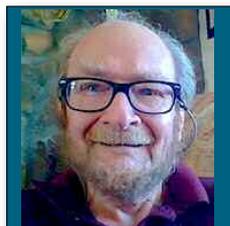
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DETAIL OF A 'UNIBROW' DEPICTED IN A QAJAR PAINTING

TOM ATLEE  
CONVERSATION IN THE CONSCIOUS  
EVOLUTION OF SOCIAL SYSTEMS

Conversations are arguably the primary functional medium through which diverse people in a social system discover and align around common directions and then harmonize, course-correct, and fork into additional systemic complexity as they proceed. Goals, feedback loops, and other dynamics in human systems are largely influenced, determined and/or driven by conversation, especially where those dynamics are being consciously created and carried forward. Conscious evolution of social systems requires the capacity to bring unconscious dynamics – particularly dysfunctions – into shared consciousness and to attend to weak signals of disturbance, because early creative engagement with emerging dissonance can generate productive, life-serving shifts. Change agents would therefore be wise to prioritize the design, catalyzing, and facilitation of quality strategic conversations as one of their fundamental modes of systemic intervention. Furthermore, to support evolving collective coherence and ongoing wise self-organization, human groups, organizations, communities, networks, and polities need to institutionalize powerful conversational modes and create “a culture of dialogue” among the individuals and collectives that make them up. So catalyzing the emergence such institutions and cultures becomes a fundamental task of change agents and conscious evolutionaries who wish to empower the sovereign wisdom of the systems they wish to serve. This paper includes discussion of some of the underlying dynamics and methodologies of powerful, systemically relevant conversations and factors to help guide strategic choices of conversational targets and forms for systemic intervention.

**KEYWORDS** ~ Conversation dynamics, systemic interventions, conscious evolution. | [185-193].

MICHEL BAUWENS  
P2P REVOLUTION AND COMMONS PHASE  
TRANSITION. NOTES ON THE NATURE OF THE  
REVOLUTION IN THE P2P COMMONS EPOCH

No fundamental change can take place if we do not also change the very ‘mode of production’ and ‘relations of production’, i.e. the way in which people produce and distribute value. The era of great struggles in industrial capitalism, between capitalism and socialism, did not bring new modes of production. Socialism’s ‘really existing’ experiments did not fundamentally alter categories such as capital and labour. It is in this context that the emergence of commons-based peer production is of paramount importance. In this essay, we will attempt to make the case of why peer production is so crucial, and why P2P-theoretical approaches, that see P2P as the key lever for change, are so important in the context of systemic change.

**KEYWORDS** ~ Peer production, levers of change, modes of production, relations of production. | [21-24].

JOE BREWER  
TOOLS FOR CULTURE DESIGN -  
TOWARD A SCIENCE OF SOCIAL CHANGE?

The world we live in today is filled with complex, systemic challenges – sometimes called “wicked problems” –

that can only be solved through collective action. Unfortunately, we still lack the capacity for intentionality at the societal scale. Even when the majority of people want to reduce inequality, address environmental concerns, or deal with some other social predicament, there is no ability to do so. In this article I make the case that this can be remedied through the synthesis of many existing bodies of knowledge into the integrated practice of *culture design*. Built on the pillars of complexity science, studies in human cognition, and cultural evolution this nascent field is ready to be born. Time is of the essence. Our grand challenge for the next century is planetary stabilization. The only way to transition our world toward a socially just, inclusive, and prosperous future – or so I argue – is through the application of culture design.

**KEYWORDS** ~ Embodiment, pattern formation, phase transition, evolutionary change. | [67-73].

SIMONE CICERO  
ON THE ROLE OF PLATFORM BASED PEER  
PRODUCTIONS AND THE COMMONS IN  
THE DYNAMICS OF INNOVATION

This article explores the hypothesis that cognitive capitalism and peer production can coexist in the perspective of an abundant economy. Too often we see the promoters of the commons and of commons-based peer production models putting neoliberal capitalism and private enterprise in direct confrontation with open, participative and cooperative ownership and governance models.

The main hypothesis behind this article is that cognitive (neoliberal) capitalism may be the most effective actor (or at least a powerful one) in producing new enabling infrastructures for peer production and scalable learning that may eventually lead to new empowering innovations and new categories of abundance.

Current digital market dynamics allow ambitious startups to grow and in effect, eventually become mega-platforms often with monopolistic traits. These players enable peers to collaborate and value to be created in communities and niche markets. At some point these players, likely the successful ones, become huge and almost totally control supply and demand, enabling entire ecosystems.

As they become powerful, they are increasingly confronted with powerful narratives, which demand trust, respect and fairness, and they are pushed to become – like a government would be – transparent and controlled regarding the way they manage data and information about peers.

On the other hand, innovation pushes these “enabling platforms” more and more towards the bottom of the value chain, in a quest for the development of new and better experiences.

This process leads to much more empowered individuals that increasingly collaborate with peers creating “movements” that will eventually lead to the design of new endeavours, enterprises and brands, enabled by this ever growing available infrastructure, designed to meet the challenge of being usable and convenient.

What are the frictions between enablement and control? To what extent can private capital become “trustable”? How can we ensure that this transformation copes with environmental and social issues? How will these ever-invisible

platforms evolve for long-term resilience and sustainability, become un-harming and effectively empower communities?

**KEYWORDS** ~ Commons based peer production, digital market dynamics, power, enabling platforms. | [83-90].

**JACK HARICH**  
SOLVING DIFFICULT LARGE-SCALE  
SOCIAL SYSTEM PROBLEMS WITH  
ROOT CAUSE ANALYSIS

Problems like environmental sustainability, recurring wars, and excessive concentration of wealth have defied solution for generations. Problem solvers are unable to solve problems of this class because of lack of root cause analysis. This omission has led to solutions that intuitively look like they should work but in practice do not, because they fail to resolve a problem's root causes.

This article presents a method for applying root cause analysis to problems of this class, followed by the results of applying the method to the sustainability problem. The method is the System Improvement Process. Process application led to construction of a relatively simple simulation model called The Dueling Loops of the Political Powerplace. The model explains why change resistance to solving problems of this class is insurmountably high and pinpoints the root cause. The analysis thus offers some insights into how problem solvers might better go about designing solutions that in practice could work, because they are focused on resolving specific root causes.

**KEYWORDS** ~ Root cause, root cause analysis, political power, process, sustainability. | [53-66].

**MICHELLE HOLLIDAY ~ MICHAEL JONES**  
LIVING SYSTEMS THEORY AND  
THE PRACTICE OF STEWARDING CHANGE

As we inquire into the nature of systemic change, this article will first comment on the importance of specifying that what we are really interested in is change within living systems. The systems whose change we are exploring – teams, organizations, economies, communities, cities – each demonstrate the core characteristics and tendencies common to all living systems. This observation helps direct our inquiry in useful ways. First, it provides important insights into how such systems function and how they change. It also offers helpful clarity about our role not as engineers or modelers, as mechanistic views and even systems views have suggested, but as stewards and hosts, creating fertile conditions for change to emerge in a self-organizing, self-determining fashion. Finally, a living systems understanding invites us to consider that the ultimate goal of systems change is to enable life to thrive at every level within the system. In other words, it is to support and enable the system's "thrivability."

To offer tangibility, the essay will then document the rationale and design process behind two projects:

1 - A transformational learning festival exploring what it means to craft a city as a "space for life."

2 - A living systems action-learning cohort made up of community leaders who, over the course of a year, will move through a regular rhythm of reflective meetings

and on-the-ground prototyping.

Each of these projects is an exploration of what new "social technologies" can most powerfully invite positive and lasting change at multiple levels within a system – and specifically, change that brings the system into greater alignment with the principles and patterns of life. In these ways, the article will touch on both theory and practice, 1) offering one possible perspective of systems change and 2) describing two experiments in designing for systems change according to that perspective.

**KEYWORDS** ~ Living systems, thriving, transformational learning, action learning, social technologies. | [155-163].

**ANTHONY JUDGE**  
REQUISITE META-REFLECTION ON  
ENGAGEMENT IN SYSTEMIC CHANGE?

The guidelines for this issue raise the question of the nature of fruitful meta-reflection on engagement in systemic change. This is explored here in terms of the questions asked, implied, or neglected. To what extent does consideration of change in academic and institutional settings need to be challenged in systems terms as effectively "on repeat"?

In a period of concern regarding increasing inequality, is this partly mirrored by an increasing gap between the preferred articulations by elites and the felt needs experienced on the ground? In a period of rapid technological innovation and information overload, to what extent is the organization of discourse and institutional structure subject to corresponding "upgrades" (with provision for backwards compatibility)?

What indeed is the nature of consensus on the possibility of the "world as a better place" – and how to engender it – given the challenge of knowledge overload and knowledge underuse?

**KEYWORDS** ~ Remedial capacity, consensus, higher order cybernetics, strategy, critical thinking, unasked questions, meta-reflection, meta-science, meta-discourse, meta-education, information overload. | [43-52].

**ALEXANDER LAZSLO**  
LIVING SYSTEMS, SEEING SYSTEMS, BEING  
SYSTEMS: LEARNING TO BE THE SYSTEMS  
WE WISH TO SEE IN THE WORLD

The Systems Movement celebrates a field of inquiry, action and appreciation that includes the theory, practice, perception, thinking, design and development of systems. The theme of this special issue of *Spanda* is Systemic Change and its power to make the world a better place. In order to apply systems thinking as a catalyst for future creating, life affirming and opportunity increasing change, it is necessary to understand both what systems thinking is and is not, as well as what types of social innovation and emerging technology it can foster to greatest effect and affect. This is critically important if we are to do more than merely create networks of social dysfunction and environmental degradation. As a species, we already know how to do that. If we wish to shepherd in a new era of global peace, prosperity and thriving, we must use systems thinking to

inform social innovation and emerging technologies so that they connect us with life. This article explores what systems thinking is and provides a few cautionary cues as to what it isn't. It then provides a framework for understanding technology from a systems perspective. Based on this understanding, it considers the role of technologies of social interaction – also known as *soft technologies* – in creating the conditions for the emergence of healthy and authentic communities, from local to regional to national to global. A case is made for the importance of generating Technologies of Organizational Communion (TOCs) in conjunction with the development of Technologies of Information and Communication (TICs – aka ICTs) given understanding of the interpenetration of hard and soft technologies and the essential interdependence of the two. Finally, the article suggests that a key role of systems thinkers who understand how to *live into* the systems they design is to foster social innovations and emerging technologies that give rise to a global eco-civilization.

**KEYWORDS** ~ Systems thinking, evolution, development, consciousness, creativity, thriving, curation, emergence, social innovation. | [165-173].

**RASIGAN MAHARAJH**  
**THE METABOLIC RIFT,**  
**ANACHRONISTIC INSTITUTION AND**  
**THE ANTHROPOCENE**

The 2.015 years of a common era of our species is a minor interlude within a complex geo-physical timeframe spanning approximately 4.5 billion years of the planet's history. Whilst the geo-physical processes of change shaped an environment capable of sustaining living organisms, our species' predatory practices have altered the life-trajectories of all life. Since the advent of industrial capitalism, massive changes have been induced in the natural cycles. The result is a build-up of waste and inevitable degradation of the eco-system. These elements constitute the metabolic rift between nature and institutions driving our praxis.

This paper discusses the systemic changes in the making of our contemporary conjuncture. The paper utilises an analysis of the global political economy and the international division of labour to argue that the world-systems are seized with a multiplicity of concurrent crisis that originate with the metabolic rift. Human society has transgressed some planetary boundaries and appears to be hurtling towards a catastrophic descent into barbarism. Structure and agency seems paralysed as the institutional framework appears incapable of reconciling developmental inequalities with a mode of production that is fixated with growth. Thus, as we venture further into the 21st Century, our institutional orientation remains locked into rule-sets elaborated mainly since 1900's.

The array of forces emergent from the contested dynamics holds the possibilities of enabling a 'great transition' to a planetary civilisation. Significant interests however remain bound within the logic of an expansion of capital. For these, accumulation and destruction is represented in an anti-self-interest, which maintains inequalities by threatening the collective survival of our species. This paper concludes with some research challenges for breaking the lock-ins and

redressing the metabolic rift with the objective of sustaining development, enhancing inclusivity and re-creating new institutional forms that would be more appropriate to the contemporary conjuncture.

**KEYWORDS** ~ Metabolic rift, great transition, structure and agency, lock-ins, new institutional forms. | [1-10].

**THE PLAST COLLECTIVE**  
**PATTERN LANGUAGES**  
**FOR SYSTEMIC TRANSFORMATION**

This article introduces the PLAST: Pattern Languages for Systemic Transformation. The major objective of the PLAST project is to create a multi-disciplinary community of practice around an open knowledge repository of sustainability and social innovation practices, leveraging pattern languages to make knowledge accessible and reusable across domains, turning knowledge and 'know-how' into repeatable results and coherent systemic sustainability outcomes. The key to social innovation is making communities of sustainability practice aware of each other's solutions and achievements in a language that they can understand, so that successes can be explained, remixed, applied, and evaluated for their effectiveness across domains.

The PLAST project will provide an ICT platform for multi-disciplinary participants to share sustainability knowledge and know-how (in the form of Patterns and Pattern Languages) as 'shared social objects', and will organize them in a coherent model of meaningful relationships, socially constructed categories, and system dynamics. It will provide multiple entry points and pathways through the collected solutions and practices, to encourage systemic inquiry and collective exploration of adjacent possibilities. It will encourage participants to apply these solutions and practices in new domains and communities, and to monitor the results, by providing the ability to document, discuss and deliberate the intentions and outcomes of systemic interventions. Most importantly, by capturing and analysing the social process of deliberating effective sustainable practices, the platform allows reflexive improvement in the process of transformation itself.

The PLAST project will engage communities of place and practice in facilitated action research, collecting existing pattern languages and creating new ones from practitioners' experiences. This will be the seed from which communities can create their own repositories, federated into a commons.

**KEYWORDS** ~ Pattern language, open knowledge, social innovation, commons, transformation, sustainability, multidisciplinary. | [105-118].

**DENIS POSTLE**  
**SYSTEMIC CHANGE:**  
**THE ROLE OF 'CREATIVE STYLE'**

Systemic relational infrastructure can be held in place in many ways, economics, tradition, fiefdoms, collusion, tribal solidarity and beliefs about what is 'natural' or 'normal'. Threaded through all of these is what Michael Kirton has called 'creative style' how we approach making or facing challenges. Creative style is an indicator of how we deploy

the creativity we bring with us, it isn't about levels of creativity. Kirton Adaption/Innovation (KAI) Theory – research from industrial psychology – demonstrates a spectrum of creative style that accounts for both necessary systemic stability and resistance to change. It shows how certain approaches to systemic change, while likely to be relevant, are also often likely to be unacceptable or unworkable.

KAI Theory illuminates both the group and interpersonal dynamics that are likely to be found in work groups.

**KEYWORDS** ~ Creative style, interpersonal dynamics, adaptation theory, psychology. | [137-145].

JENNY QUILLIEN  
PARSING SYSTEMIC CHANGES

*The Tao begot One, / One begot Two, / Two begot Three, /  
and Three begot the ten thousand things.*

TAO TE CHING

Over-sized, oiled, elusive Sumo hippopotamuses as opponent – that's what it feels like to enter the wrestling ring of analysis and confront systemic change. We're desperate for hooks, a way to grip the topic – even temporarily – with no illusion of permanent once-and-for-all mastery. Although a general methodology of investigation still escapes us, this essay holds out the promise of a handle. After briefing reviewing some classical approaches to organized complexity, I bring onboard a relatively unknown English author, J. G. Bennett, as inventor of a secret code. Triads – an interplay of three impulses – have long been recognized (British empiricism, semiotics, information theory, as well as Taoism) as the minimum unit for dynamic relationship but Bennett has a peculiar take on the general theme. Of particular significance is the emic not etic quality in how Bennett parses reality. The lion's share of this essay, devoted to explicating the shorthand calculus and permutation rules of 'three' devised by Bennett, explains homeostasis as well as evolution within systems. Wicked problems of scalability, problem framing, and boundary definition receive a nod but remain unresolved.

**KEYWORDS** ~ Dynamic relationships, triads, J.G. Bennett, systemic investigation. | [101-109].

LILLIAN RICAUD  
PERMACULTURE PATTERNING, A DESIGN  
FRAMEWORK FOR SYSTEMIC TRANSFORMATION

How do we change the system(s) we live in? By essence a system is an inherently complex web of relationships. Systems thinking researcher Donella Meadows has given us a map of leverage points to act on a system but there's no practical plan as to where to start effectively to trigger systemic change.

Interestingly around the late seventies, two systems thinkers/practitioners have developed practical design frameworks for systems transformation.

The first framework, Permaculture, is an integrated approach to design agro-ecological systems developed by ecological scientist Bill Mollison. Permaculture focused initially on developing a resilient "permanent-agriculture" but it was expanded to stand also for "permanent culture," as it was

seen that social aspects were integral to a truly sustainable system. Although it is still not widely recognized by either the scientific community or the general public, Permaculture has developed a very powerful set of analytical and design tools for whole systems transformation.

The second framework, Pattern Languages, was developed by architect Christopher Alexander to build human settlements and "living" architectural systems. If Alexander's Pattern Language focuses on built structures, it also encompasses a social dimension. Although Alexander's work hasn't taken off in the architectural field it has deeply inspired software programming and a growing number of disciplines.

Both frameworks share a common to approach to systems design called patterning.

If design builds structures by assembling elements, patterning can be seen as a branch of design that builds systems by weaving relationships.

In this paper we look at the commonalities and differences between the two approaches, discuss how they could be used by systems thinking practitioners and propose Permaculture Patterning as a new framework for systems design and transformation.

**KEYWORDS** ~ Leverage points, design frameworks, permaculture, pattern language, patterning, systems thinking. | [195-203].

CAROL SANFORD  
LANGUAGE AS CLUE: THE EFFECTS  
OF PARADIGMS IN CREATING SYSTEMIC  
CHANGE IN BUSINESS

Systemic change is a much misunderstood idea in the business world, especially if you have been exposed to the work MIT Sloan has promoted in this regard. It is drawn from Jay Forrester's work on artificial intelligence. That is, the studies of machines as a metaphor for the living work. The English language has a requirement for us to think metaphorically since the language is abstract. This is contrasted than Asian languages based on ideograms where each of those sketches speaks to a specific concrete situations and its dynamics

Thinking in English, if we are to be responsible, requires us to spend more time being mindful of our metaphors or we get the reality wrong. I offer in this article that working with the metaphor of an ecosystem is more likely to be isomorphic with living systems, those that are beyond computers and machines. That means we have to learn to image the working of systems, which is not taught in our schooling processes and systems in the English-speaking world. This leaves us with a very bad ability to design change in a systemic way or understanding it.

I will draw on business examples to demonstrate four major metaphors that we use to understand systems change or the working of systems, the source and use of each, and what we lose when we apply an inappropriate metaphor to our understanding. It is the source of our inability to manage climate change, ecosystem degradation, human societal health and even business success.

**KEYWORDS** ~ Language, metaphors, understanding, designing change. | [129-135].

DOUG SCHULER  
HOW WE MAY THINK - THE NEXT CHAPTER.  
CIVIC INTELLIGENCE AND METACOGNITION

Systemic transformation will depend to a large degree on the people who are helping to make it happen. And due to the severity of the challenges, the time criticality, and the asymmetry of social forces and resources, those people have a steep hill ahead of them! Above all, their responses will need to be intelligent. They will need to employ technology and communication in this pursuit but their insights, perspective, the receptiveness of their allies, and the ability to loosely and indirectly coordinate activities will be central. Civic Intelligence, the ability of groups to work together to address significant shared problems effectively and equitably is fundamental.

We know that individuals think, but societies and other groups also think. If we don't understand this phenomenon we have little chance of making any real impact. The phenomenon that describes how experts and novices vary in how they think about their field is meta-cognition, the ability to "think about their thinking." By employing meta-cognition experts continually improve their understanding of their subject area and create deeper models. Analogously the notion of societal meta-cognition helps to describe a critical intellectual perspective. Civic intelligence and societal meta-cognition are both relevant, but they're not the same thing. For one thing, civic intelligence is normative, it is something that we strive for, not just something to observe.

Even in the absence of a comprehensive theory, we know that certain aspects probably belong in a theory of civic intelligence. These include dominant systems and paradigms, sensor networks, communication patterns (mass media, social media, etc.), as well as collective memory, coordination, and collaborative action. Both societal meta-cognition and civic intelligence can provide useful intellectual perspectives as humankind struggles to address the vast challenges of the 21st century.

**KEYWORDS** ~ Civic intelligence, meta-cognition, social forces, agency. | [43-52].

BRETT SCOTT  
OPEN SOURCE FINANCE HACKING:  
THE POTENTIALS AND PROBLEMS

The global financial system is a notoriously opaque and alienating complex. The system is implicated in social injustice and ecological destruction around the world, and the key financial institutions, such as banks and funds, wield unhealthy levels of political power. It is very difficult, though, to try to imagine alternatives to our dominant financial, and broader economic, system. We can sometimes see promise in individual initiatives that we support – for example, an alternative currency, or a social lending platform, or a co-operative – but we struggle to see how they represent any broader programme of change. In 2013 I attempted to articulate a framework for financial sector change in my book, *The Heretic's Guide to Global Finance: Hacking the Future of Money*, drawing on hacker philosophy. The financial system, much like technological systems, has a way of repelling people through its

apparent complexity. The way that technology hackers approach a complex, interconnected technological system can be a useful model to use when thinking about how to approach a complex, interconnected financial system. Furthermore, the archetype of the 'hacker' has a subversive appeal that can capture the imagination of both activists and entrepreneurs. This is useful when trying to engage the entrepreneurial imagination of activists who need to build economic alternatives, and to simultaneously engage the activist imagination of entrepreneurs, who need to be more critical when building new things.

Standalone hacker culture, though, has a distinctly individualistic streak that does not necessarily advance systemic change. In this essay then, I will consider the open source movement as a model for harnessing individuals with a hacker outlook to work on collective projects with overt public and community goals, and what that looks like when applied to the financial system.

**KEYWORDS** ~ Hacker philosophy, open source model, entrepreneurial and activist imagination, political power. | [91-99].

ROBERT C. SMITH  
CRISIS, SOCIAL TRANSFORMATION AND THE  
FRANKFURT SCHOOL: TOWARD A CRITICAL  
SOCIAL SYSTEMS THEORY AND AN ALTERNATIVE  
PHILOSOPHY OF SYSTEMIC CHANGE

Building on a discussion as part of an extensive and ongoing research series, which includes several notable publications, this paper denounces the lack, in the current political landscape, of a 'coherent understanding of the process of systemic change', arguing toward a theory of change as a fluid (ongoing) multi-directional and many-sided human transformation process. Systemic change, if it is to be sustainable, should be seen as foundational and multidimensional: it is economic and political inasmuch as it is psychological, emotional, existential, relational, anthropological, epistemological, and so on. By considering an interdisciplinary analysis rooted in critical theory, questions spanning the historical reproduction of dominant social systems, the foundations of critical and emancipatory thought and action, the revolutionary horizon of radical democratic grassroots politics, and possible alternative economic practices (including a theory of 'actually egalitarian democracy') will be raised. In raising these questions, I will explore deeper issues regarding how systemic change might unfold: how agency and structure come into focus; what are the leverage points, the forces and dynamics at play; and lastly what are the conditions of empowerment and enablement? Only from the grounds of an alternative philosophy of systemic change – a more foundational and holistic vision – might we finally glimpse the revolutionary horizon of systemic change as being guided not by preconceived models, top-down and authoritarian politics, but simultaneously by grassroots and structural forces that are radically democratic and participatory.

**KEYWORDS** ~ Philosophy of change, interdisciplinary analysis, critical and emancipatory thought and action. | [25-33].

WILLIAM E. SMITH  
MAKING THE INVISIBLE VISIBLE. THE  
DYNAMIC INTERPLAY BETWEEN PURPOSE,  
POWER AND LEADERSHIP IN ORGANIZING  
COMPLEXITY

Ever since I started to work in organizations I encountered something almost magical that was hard to explain. In my very first job for British Overseas Airways, for example, without knowing how, in six months without managerial control and without spending extra resources, I helped make Rome the best performing airport on the airlines agency network. It has taken me a whole career to explore this magic and make sense of it.

The result is a very simple natural systems framework that asks organizers to consider three fields of power created by the purpose of their program or project:

- 1 - What the project can control;
- 2 - What it can influence but not control;
- 3 - Everything else that affects or is affected by the program but that it cannot control nor influence so needs to appreciate.

Put into practice on the most complex projects my colleagues and I could find I began to uncover the magic. We achieved success beyond our expectations on large scale problems of poverty, health and energy. From the start it was clear that it is the “appreciative” part that creates the magic of achieving what is thought impossible.

This article explores why, thirty years later, much of our world has learned to add influence to control to leverage its ability to achieve its purpose but has not yet learned to add the “magic” of appreciation. The result is that we hide information, distort it, and lie about it in the attempt to control through influence. The result is grid-lock in our political systems, endemic abuse of power and corruption in our institutions and corporations.

The article proposes a very powerful and simple way that we can all take part in adding the “magic” to greatly improve our capacity to address the greatest issues of our times.

**KEYWORDS** ~ Systems framework, appreciation, influence, control, power. | [119-125].

BERNARD STIEGLER  
SYSTEM AND TECHNICS

In a conversation with Helene Finidori in September 2014, Bernard Stiegler takes us through the role of technics in human evolution, starting with language and primitive art forms of the Upper Paleolithic. On the footsteps of Plato in opposition to the sophists, he warns against the potential dangers of externalizing knowledge by the extension of skills into the technics, that which he calls the *Pharmakon*. Digital technologies as automation techniques constitute a *Pharmakon*, a potentially curative ‘therapy’ for the system, but an extraordinary threat as well. In particular, he warns against the potential toxicity of the rogue-exploitation of big data and the automation of knowledge related tasks that produce both entropy-generating convergence, and the outpacing of our interpretation capacity. The risks respectively are a pauperization of the corpus of knowledge, and uncontrollable spins in the system as observed in the 2008 financial breakdown. Stiegler sees an issue in the increasing privatization of

knowledge and the legal vacuum that encourages it and suggests a way out through the re-appropriation by science of the public space, and the development of an economy of contribution and associated technologies aimed at generating collective interpretation and the healthy development of controversy and confrontation.

**KEYWORDS** ~ language, *Pharmakon*, big data, knowledge, economy of contribution. | [75-81].

MIMI STOKES-KATZENBACH  
ENSEMBLES OF DRAMATIC SYSTEMIC CHANGE:  
FROM PLANETARY TRAGEDY TO GLOBAL  
THRIVING IN THREE STAGES

Models of global activism to secure a thriving future for peoples and planet must be based on authentically pan-cultural foundations if they are to speak to, and for, all humanity. As a common cultural language, Art is a potential pan-cultural source for global activism, and the art form of Drama has obvious ‘rightness of fit’ for activism for our planetary tragedy. In this article, I take traditional “arts activism” beyond the arts, developing a drama based model of activism that any group can engage with, organized around two dramatic elements: 1) the theatrical group form of “Ensemble” as a new group model for engaging with systemic social change, and 2) a dramatic theory of systemic change based on three dramatic patterns of transformational action: the tragic pattern, the ecological comedic pattern, and the social comedic pattern. In Stage One, Ensembles develop their own action strategies to solve for the “wicked problem” of the tragic pattern playing out in multiple living, cultural systems. In Stage Two, Ensembles devise their own forms of engagement with the ecological comedic pattern of securing the mutual thriving of nature and humans. In Stage Three Ensembles develop action plans to activate the civic comedic pattern of social change. The result is a local-global, dramatic ‘unity in diversity’ of individual creative engagement by diverse Ensembles all over the world with the same three patterns of action to secure total thriving for people and planet. I conclude with a new civic leadership role for the arts and media in developing a dramatic and artistic approach to creating a Sustainable world, inspiring Ensembles to form, and sustaining them in their creative engagement systemic change.

**KEYWORDS** ~ Art, activism, pan-cultural, dramatic theory, action strategies. | [147-154].

ASHWANI VASISHTH  
RECONCEPTUALIZING SYSTEMIC CHANGE  
USING AN ECOSYSTEM APPROACH FROM  
PROCESS-FUNCTION ECOLOGY

We care about systemic change because truly complex socio-ecological systems are often intractable to impose, intentional change. This intractability derives in large part from certain intrinsic properties of complex systems, namely their nested and scale hierarchic structure and the fact that they are comprised, essentially, of processes and functions rather than objects and entities. As such, they are harder to “move,” given that they are not things to be pulled or pushed, shoved or even levered into places we think more appropriate and better suited. Instead, as

processes and functions, they need to be guided, and channelled, and deflected and cajoled.

In planning, and conventionally, change processes are occasionally characterized as either top-down or bottom-up – leadership-driven or grassroots-driven. But there is a third model of change processes, one that rests on the concept of distributed leadership. Then, and specifically under complexity, changes processes may need to be top-down, bottom-up and middle-out simultaneously.

These two memes – process-function ecology, and distributed leadership – may together give us some interesting ways to begin to talk about systemic change in ways that may lead to new insights. When systems are viewed as nested, scale-hierarchic structures, and when they are conceived as constituted by processes and functions, and when we view change processes themselves as being driven by a model of distributed leadership, then we come to a place where systemic change can be viewed as more closely approximating actual reality, rather than as mechanical metaphors from classical physics.

**KEYWORDS** ~ Intractability, leverage, change processes, distributed leadership, process function ecology. | [111-119].

LAURENCE J. VICTOR

THE STORY: UPLIFTING HUMANKIND TO CREATE HUMANITY VIA SOCIETAL METAMORPHOSIS

Multiple challenges call for creative thinking/acting well beyond the ordinary. Variations of this call are bandied about, authored over the decades by prominent persons (e.g., Einstein). Yet, no proposal has come anywhere near commensurate with our needs. We jump out of one limiting box to land in another limiting box – and believe we have progressed. Historically humankind experienced paradigm shifts to new and different realities. We need shifting to a system of multiple, new, interacting paradigms.

Visionaries call for specific significant changes, or claim such changes are already underway. They claim to “know” what these changes should be. Additionally, they don’t anticipate a need for themselves to undergo further paradigm shifts. They expect others to change.

Furthermore, there is a striking absence of comprehensive strategy sketches from now to when our Crisis-of-Crises is behind us. Those who propose new economic systems to replace existing economic systems are silent about how they envision the transitions to occur. Few propose that any other domain for change (other than a vague consciousness awakening) might have more viability (such as systems for greatly enhanced learning/organizing). Humankind’s imagination remains locked in the ideology of econo-centrism.

No one is to blame. This is obvious when we apply our best, new knowledge about humans and change. Our collective new knowledge and competencies reveal truly awesome potentials. Yet, it appears there are no viable movements to adequately actualize these potentials, and the need for advancing synergy for significant change lies in our collective blindspot.

This chapter will briefly introduce a set/system of paradigm shifting insights. The interactions between this set of insights (and many others) can lead to the creative emergence of a *nu* reality to serve as sufficient context for the multi-millennial survival/thrival of Humanity/Gaia.

**KEYWORDS** ~ Dynamic patterns, relationships, paradigm shift, nu reality. | [175-183].

CHRISTIAAN WEILER

THE RETURN OF REAL SPACE:  
CO-AUTHORING SPACE PLANNING FOR  
COMMUNITY RESILIENCE

Dennett’s ‘Kinds of Minds’ and Dawkins ‘memes’ can help to know what to build next in a context of accelerated demographics. Acknowledging how space functionality is co-authored into sustainability could be a first step.

In 1995, 20 years ago, in his article ‘The Generic City’, Rem Koolhaas signaled the process of urban development despite urban planning. Isn’t it rather strange that we suffer our society as if it were a natural phenomenon, rather than manage its processes so it can be what we need it to be?

With the globalization of the economy, traditional industrial components found themselves scattered over the globe, managed centrally thanks to new online real-time remote access. Various impacts on local urban systems came with accelerated demographics. Planned urbanism often fell behind. Detroit was gradually abandoned. Seseña was constructed for nothing. Short-term profit driven logics were rolled out over long periods, making evitable mistakes.

In the wake, network communities emerged, making use of the same online technology, sharing ‘real-time’ regardless of where they were. Once only a social network, the new community of the sharing economy now eagerly uses online platforms to showcase physical assets or skills among peers on a map. A car, a drill, a gardener.

People in coworking places are redeveloping an awareness of the community as asset, in other ways. They want to share a space for reliable and verifiable (trans)actions, agreements and co-production. Real-time needs Real-space once again for housing a community, and to build trust – the basis for collaboration, investment, and commitment. As opposed to partial and sectorial margin optimization in industry, coworking places hybridise everything : work, life, leisure, creativity, for optimizing transversal ‘life’ values.

It’s as if a cycle is completed. Taylorism lead to a de-territorialized global economy and a spatially scattered community. Now, a new condition brings scattered people back together in a common co-authored condition: Real space – a carrier for shared values, a source of real economy.

**KEYWORDS** ~ Local urban systems, space functionality, hybridisation of activity, sharing economy. | [11-20].





SET

IN EIGHT,

NINE AND TEN POINTS

MONOTYPE ADOBE GARAMOND PRO  
TWO POINTS LEADED, ACCORDING TO  
SPANDA CREATIVE UNIT'S LAYOUT  
AND PRINTED IN THE HAGUE,  
JUNE MMXV.



*Words are stones, thoughts are things.*

MOMO







SPANDA



DISCLOSING  
SHARED COGITATIONS



FROM INNOVATION TO FINANCE HACKING,  
FROM METABOLIC RIFT TO ANTHROPOCENE,  
FROM CULTURE DESIGN TO CREATIVE STYLE,  
FROM REAL SPACE TO COMMUNITY RESILIENCE,  
FROM PLANETARY TRAGEDY TO LIVING SYSTEMS,  
FROM P2P REVOLUTION TO CIVIC INTELLIGENCE,  
FROM METACOGNITION TO ROOT CAUSE ANALYSIS,  
FROM PROCESS-FUNCTION ECOLOGY TO OPEN SOURCE,  
FROM STEWARDING CHANGE TO SOCIETAL METAMORPHOSIS,  
FROM PERMACULTURE PATTERNING TO PATTERN LANGUAGE

ARE SOME OF THE VISIONS UNVEILED IN THIS

# SYSTEMIC CHANGE

E N D E A V O U R

BY



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\$ 45  
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