



laetus in praesens

Alternative view of segmented documents via Kairos

22 April 2007 | Draft

Consciously Self-reflexive Global Initiatives

Renaissance zones, complex adaptive systems, and third order organizations

-- / --

Introduction

[Recursion and self-reflexivity](#)

[Dematerialization and virtualization](#)

[Progressive self-reflexive learning](#)

[Progressive integration of the shadow of non-self-reflexivity](#)

[Insightful "rebirth" and emergent thought structures](#)

[Imagination, constructivism, faith-based reality, revisionism and "spin"](#)

[Form, geometry, pattern and dimensionality](#)

[Cybernetics of cybernetics: complex adaptive systems?](#)

[Indicative examples of 2nd and 3rd order environments](#)

[Conclusion: emergence of "post-systemic" forms of organization of "higher order"?](#)

Introduction

The case is frequently made for "new thinking" better adapted to the complex of challenges foreseen for the 21st century -- and the decades immediately to come. In the light of learning regarding the relative inadequacy of the forms of organization and practice typically considered appropriate to the challenge, the question is how to explore the possibility of new forms of organization -- whether of knowing or as embodied in collective initiatives.

The following sections consider different ways in which the mode or form of "description" of an organizational system is itself progressively brought into question from increasingly recursive or self-referential perspectives. The cognitive assumptions associated with the "perspective" metaphor may also be called into question with greater self-reflexivity, notably in the light of the arguments of enactivism.

The sections on dematerialization and virtualization endeavour to highlight the extent to which centre of gravity of modes of cognition and practice has shifted away from the tangible and immediately concrete. Thereafter the sections indicate various understandings of the spectrum of "higher" degrees of subtlety, notably as encoded in form, geometry, pattern and dimensionality. The insights of the cybernetics of cybernetics are then distinguished to highlight the shift in current interest to complex adaptive systems. Resources on possible examples of such self-reflexive adaptive initiatives are then presented. The conclusion is used to present a table juxtaposing these various understandings of organization of an increasingly higher order.

The implicit question throughout is how to distinguish and comprehend the forms of genuinely self-reflexive global initiatives appropriate to the challenges of the times -- and how to give organized form to such understanding. This is an effort to challenge the dangerous assumption of simplicity made by many with aspirations for responsibility in global governance. It is too readily assumed that the complexity of policy control, and switching between programmes, is of the same order as that of using a TV remote controller -- when many would be challenged to programme a VCR, or to comprehend the manual provided.

Recursion and self-reflexivity

As an introduction to the sections that follow, Donald H. McNeil (*What's Going on with the Toplogy of Recursion? S.E.E.D. Journal: Semiotics, Evolution, Energy, and Development*, 4, 1, 2004) provides a helpful overview of the challenging confusions currently associated with various notions of [recursion](#) -- and its central importance in the search for invariance. He introduces his summary as follows:

The notion of 'recursion' -- by various definitions -- goes around and about in scholarly circles, but too often without the appreciation which it deserves. Meanwhile, the quest for invariants lies at the core of human pursuits generally.... Throughout, however, it will be assumed that recursion proper involves at least one cyclical process which produces some of its results by using or referring back to some of the previous results of that same process, thus to evince a kind of 'circular causality.' Along the way it will be remarked that recursions are to be found at the core of invariances and vice versa, the two together being

prerequisites for selfness as a whole. Moreover, it will become apparent that it is not primarily the morphology but rather the topology of processes that serves best to enlighten our appreciation of recursion and of the spin-offs therefrom.

He concludes:

The metaphor of the sphere which so dominates the Western Rational Tradition is important, of course, but counts for nothing without an appreciation of the torus. It is no accident that our reflective metaphors such as 'grasp' and 'comprehension' are inherently toroidal. Moreover, circular logic is unavoidable, and the topology of self-reference is, after all, that of recurrent processes. Even such progressions as re-revolution and e-revolution turn upon themselves. Without going around there could be nothing going on. It is through the web of dynamic, recyclical processes that our being emerges embodied as an eddy, persists as a relative invariant, reflects upon itself, construes meaning, and eventually disperses. That is what the topology of recursion is all about.

The associated notion of [self-reference](#) or self-reflexivity was given a particular focus through the work of [Douglas Hofstadter](#) (*Gödel, Escher, Bach: an Eternal Golden Braid: a metaphorical fugue on minds and machines in the spirit of Lewis Carroll*, Basic Books, 1979). Hilary Lawson (*Reflexivity: the post-modern predicament*, 1986) has clarified the dilemmas it implies for the future -- exemplified in its relevance for administration (Ann L. Cunliffe and Jong S. Jun, *The Need for Reflexivity in Public Administration, Administration and Society*, 2005, 37: 225-242). In relation to complexity, an example of self-reference situation is [autopoiesis](#), namely as the process of auto (self) creation that is presumably at the core of any adaptive reorganization in response to the challenges of the times (cf *Bibliography on Self-Reflexivity*; James Juniper, *A Critique of Social Applications of Autopoiesis, International Journal of Interdisciplinary Social Sciences*, 1, 3; Felix Geyer and Johannes van der Zouwen, eds., *Sociocybernetics: complexity, autopoiesis, and observation of social systems*, Greenwood Publishing, 2001)

Dematerialization and virtualization

As argued elsewhere (*Reframing Sustainable Sources of Energy for the Future: the vital role of psychosocial variants*, 2006), in the case of an economic perspective on the future, the focus is typically on how the economic system is to be sustained, notably through development. This is undergirded by a focus on the stability of the financial system, primarily in its monetarized form. In considering the monetary system, it is important to recognize that it is based fundamentally on confidence and trust -- namely trust that monetary tokens can be exchanged for goods and services later in time at an acceptable rate. Not only is "energy" itself, in any form, essentially intangible, but the forms through which it manifests may themselves be intangible. With the increasing importance of the "service industry", economics has had to come to terms with a process of "dematerialization" of the products with which it is concerned. In 1999, half of *Business Week's* one hundred biggest global corporations in 1999 were in information and financial services.

More broadly, dematerialization now refers to the absolute or relative reduction in the quantity of materials required to serve economic functions (cf Iddo K. Wernick et al. *Materialization and Dematerialization: measures and trends, Daedalus* 125, 1996, 3). This may be expressed as reducing the total material that goes toward providing benefits to customers -- accomplished through greater efficiency, the use of better or more appropriate materials, or by creating a service that produces the same benefit as a product (cf *Dematerialization and Immaterialization*)

It could be argued that the evolution of organizations into more sophisticated or subtler forms is characterized by a progressive dematerialization (or virtualization) of the distinct "vehicle" for the identity that it engenders and "incubates". As such the process of virtualization may be usefully be understood as a process of disidentification -- well-understood metaphorically in the psychological disidentification of a child from its parents. As a consequence, and as conventionally understood, there is no active interface between the stages of such transformation, other than that internalized within the individuals operating according to both logics.

Dematerialization has taken on a wider significance in relation to electronic information. It may then be understood as a process to convert assets and securities held in physical form into electronic form or to directly allot securities in electronic record form. Ecological sustainability may be assessed as the dematerialization of production and consumption (cf Peter Bartelemus, *Dematerialization and Capital Maintenance: two sides of the sustainability coin*, 2002). An important potential avenue for achieving sustainability objectives is to develop policies aimed at dematerialization of consumer preferences and consumption patterns (cf *Dematerialization, habit formation and social interactions in consumer behaviour*, 2005).

The widely-recognized emergence of a knowledge-based society, matched by an increasing concern with faith-based structures and disciplines, also points to the importance of dematerialization. This trend is better recognized under the term "virtualization" as discussed in exploring the case for "cognitive fusion" (*Dematerialization and Virtualization comparison of nuclear fusion and cognitive fusion*, Annex B of *Enactivating a Cognitive Fusion Reactor: Imaginal Transformation of Energy Resourcing*, 2006) under the following headings:

- **Information system virtualization:** This concept has been intimately associated with the development of computer and information technology over the past decades. In computing, [virtualization](#) is the process of presenting a logical grouping or subset of computing resources, whether hardware or software, so that they can be accessed in ways that give benefits over the original configuration. Virtualization can therefore be understood as an abstraction layer that allows multiple virtual machines, with heterogeneous operating systems to run in isolation, side-by-side on the same physical machine. It is widely promoted as the direction of development of computer-related processes, notably knowledge-related applications.
- **Artistic virtualization**
- **Economic virtualization:** The internet is now understood to be fundamentally reshaping businesses and the industries in which

they compete. A form of virtualization of the contemporary economy is now taking place even though the basic rules of the "old" economy have regained their currency, and the issues as business cycle, cost, quality, inventory, productivity or traditional measures of profitability and economic value are valid.

- **Social virtualization:** The challenge of progressive virtualization of society was explored under the editorship of Magid Igbouria (*Virtual Societies: Their Prospects and Dilemma, The Information Society*, 14(2), 1998). The concern goes beyond virtual classrooms, virtual universities, virtual organizations, and even virtual communities. There is relatively little awareness of how people can live and work in societies in which these and other virtual practices and social forms are widespread and mixed in with face-to-face relationships [[more](#)].
- **Virtualization of reality:** This phenomenon has been framed in a variety of ways. Concern has been expressed at the psychological fallout of the virtualization of reality through the death of affect. J.G. Ballard has called this "the greatest casualty of the twentieth century" -- a psychic numbness that cultural commentators from Camus to McLuhan have argued is a salient characteristic of our media-bombarded, hyperstimulated culture. It is distinguished by the disengagement from immediate experience, a cauterization of the soul. [[more](#)]
- **Virtualization of identity:** The implications of cyberspace for identity have long been explored. More intriguing is the sense in which identity may be as much a metaphor as anything more identifiable, as noted by Kenneth Boulding (*Ecodynamics; a new theory of social evolution*, 1978)
 - Our consciousness of the unity of self in the middle of a vast complexity of images or material structures is at least a suitable metaphor for the unity of group, organization, department, discipline or science. If personification is a metaphor, let us not despise metaphors -- we might be one ourselves.
- **Virtualization of organization:** This is an organization existing as a corporate, not-for-profit, educational, or otherwise productive entity that does not have a central geographical location and exists solely through telecommunication tools. Scott M. Preston (*Virtual Organization as Process: Integrating Cognitive and Social Structure Across Time and Space, Journal of Computer-Mediated Communication*) argues that:
 - Virtual organization requires a different way of perceiving the world by those who wish to participate in it. There are four key characteristics of virtual organization as process. First, virtual organization entails the development of relationships with a broad range of potential partners, each having a particular competency that complements the others. Second, virtual organizing capitalizes on the mobility and responsiveness of telecommunications to overcome problems of distance. Third, timing is a key aspect of relationships, with actors using responsiveness and availability to decide between alternatives. Last, there must be trust between actors separated in space for virtual organization to be effective. This paper describes the perceptual and social requirements of virtual organization and suggests a research plan for explicating the structure, process and content of any system based on its elements. The structures of individual actors' perceptions and expectations and the social processes that supply the content of their social experience must be addressed if virtual organization and its advantages are to be understood
- **Virtualization of community:** The "organizational" variant overlaps with a virtualization of community, possibly extending to "virtual nations" (cf Howard Rheingold, *The Virtual Community*, 1999).
- **Virtualization of psychosocial activity:** The increasing extent to which many now live significant portions of their day in virtual worlds has been a topic of repeated comment. This may take the form of:
 - e-shopping and e-consumption
 - e-gambling, including variants using virtual funds
 - e-gaming, notably to the point of engaging individuals for many hours per day
 - e-socializing, notably through chat rooms and including e-dating
- **Virtualization of social constructs:** As the above items indicate, within the emerging psychosocial environment of the 21st century many elements of "reality" may be as real, if not more real, in a virtual sense than in a more tangible sense. This applies to different degrees to each of the following:
 - money: it is only economic threat, and the increasing purchase of gold, that provides a striking reminder of the intangible nature of money and its primary existence as a virtual entity (cf Peter Koenig, *30 Lies About Money*, 2003)
 - institutions: as noted with respect to organizations, duly constituted institutions may be understood as existing as virtual entities to a higher degree than as tangible entities (irrespective of office buildings and factories)
 - plans, programmes, schedules: as patterns of intent, their "existence" as coherent entities is a matter of interpretation and an expression of shared confidence. The problematic nature of the existence of such entities is evident with respect to vanishing pension plans and strategic plans that are continually rolled over without producing what is promised.
 - contracts: the "existence" of many entities is seemingly ensured through legally binding contracts but such texts merely provide a pattern for actions which may or may not conform to them
 - meetings: face-to-face gatherings may be understood as somewhat chaotic assemblages of people for which varying degrees of order and coherency can be claimed. But, as with virtual meetings, the degree to which the various face-to-face interactions constitute an identifiable and coherent whole is debatable.
 - threats: in a society subject to skillful warnings regarding threat (such as "weapons of mass destruction") the reality of such threats is increasingly questionable
 - values

The extent to which a social construct is "real" or "virtual" might lend itself to a social application of Heisenberg's [Uncertainty Principle](#) in quantum mechanics (cf Shay David, *On the Uncertainty Principle and Social Constructivism: the case of Free and Open-Source Software*, 2003; Garrison Sposito, *Does a generalized Heisenberg Principle operate in the social sciences? Inquiry*, 1969). The challenge of self-referential [reflexivity](#) is understood as a methodological issue in the social sciences analogous to that principle. However the principle is frequently, but incorrectly, confused with the "[observer effect](#)" since it associates precision in measurements related to changes in velocity and position of certain particles relative to the perspective the observer takes on them.

- **Virtualization and image:** The extent to which "reality" is now treated as "plastic", to be moulded by through image management and public relations, is now widely recognized. Social entities, whether individuals, corporate bodies, programs, products or policies, all lend themselves to being repackaged independently of their facticity. The media have a central role in the process of image formation and sustainability. Psychosocial entities may usefully be understood as constructs -- memes -- travelling along the many currents of public opinion.

Progressive self-reflexive learning

UNESCO, notably through the International Commission of Education for the Twenty-first Century, gave prominence to the notion of a "learning society" and subsequently to the "connected learning society". This had followed a much earlier report to the Club of Rome (James W Botkin, Mahdi Elmandjra, Mircea Malitza. *No Limits to Learning: bridging the human gap*. Oxford, Pergamon, 1979; *Societal Learning and the Erosion of Collective Memory: a critique of the Club of Rome Report: No Limits to Learning*, 1980). Botkin subsequently raised the question whether the Club itself was a learning organization (Jim Botkin, *The Club of Rome: a learning organization?* 1996). In relation to the previous section, the 1979 report identified of the important characteristics of the knowledge society as being : the immaterialization of the material and the materialization of the immaterial.

Framed in this way, self-reflexiveness of an increasingly subtler nature results from a progression such as the following:

- learning facts
- learning information about facts
- learning from experience regarding facts and information
- learning the appropriateness of various philosophical perspectives
- learning to learn

This progression through learning stages can be explored in various ways, including the many highlighted elsewhere (*Varieties of Rebirth: distinguishing ways of being "born again"*, 2004) and discussed below, especially from a [cognitive perspective](#). In particular, this progression may be explored in the light of the development of [critical thinking](#).

Of particular interest in any such progression, as pointed out by Donald Michael (*On Learning to Plan and Planning to Learn*, 1973; *The Unprepared Society: Planning for a Precarious Future*, 1969), is the "requirement to embrace error":

More bluntly, future-responsive societal learning makes it necessary for individuals and organizations to embrace error. It is the only way to ensure a shared self-consciousness about limited theory on the nature of social dynamics, about limited data for testing theory, and hence about our limited ability to control our situation well enough to be successful more often than not

Also of interest is the process of learning under uncertainty (R L Flood. *Rethinking the fifth discipline: learning within the unknowable*. Routledge, London, 1999)

Progressive integration of the shadow of non-self-reflexivity

The successive phases in the evolution of insight are frequently depicted in Zen Buddhism by a traditional sequence of 10 ox-herding pictures, each with a brief commentary (cf D T Suzuki; Kubota Ji'un, *Ten Ox-herding Pictures with the Verses Composed by Kakuan Zenji*, 1996). As argued elsewhere (*Enlightening Endarkenment: selected web resources on the challenge to comprehension*, 2005), these are of special interest because of their indication of a person's progressive discovery and interplay with a shadowy element denoted by an ox. In a *Commentary on the Integration of perceived Problems* in the Human Development section of the *Encyclopedia of World Problems and Human Potential*, the following attempt was made to suggest how that classical sequence might be interpreted for clues to an unfolding relationship between humanity and its shadow (in the shape of the complex of world problems).

The phases in the sequence, here to be reinterpreted in terms of their self-reflexive implications, are:

- **(a) Undisciplined exploration of the problematique:** Humanity, having violated its own inmost nature, loses track of the problematique and its significance. It is then led astray by the delusions to which it succumbs, such as desire for gain and fear of loss, and is confused by a multiplicity of views of right and wrong, appropriateness and inappropriateness. Although distracted by this confusion, and exhausted by its efforts, humanity continues its search for a sustainable solution. *At this time, it would appear that humanity, as represented by the international community, continues to be embroiled in the pre-systemic, single-factor perspectives of this first phase (ozone, acid rain, "health-for-all", substance abuse, illiteracy, terrorism, AIDS).*
- **(b) Recognizing traces of the problematique as an integrated system:** Repeated (and basically unsuccessful) attempts to locate and contain the problematique through uncoordinated initiatives provide humanity with occasional insights into its nature, especially when more integrated approaches are used. Although recognizing that the problematique, by whatever means, is in some sense engendered by humanity as a whole, there remains a basic confusion between truth and falsehood, especially when it seems obvious to some that another particular group can be usefully blamed for specific problems. *Environmental and systems insights (tropical forests, global warming) are shifting the focus to this second phase.*

- **(c) Focusing on the problematique as a whole:** Having cultivated a more intuitive insight, enabling it to integrate its complementary modes of perception, humanity focuses directly on the problematique, recognizing its many manifestations as consequences of different forms of inappropriate human intervention. *There are episodic exercises in focusing on the problematique as a whole (Brandt Report, Brundtland Report), although what they fail to take into account quickly condemns them as sub-systemic and inappropriate and encourages further initiatives of a similar nature.*
- **(d) Encompassing the problematique:** Humanity grapples with the problematique directly for the first time. The momentum of the problematique, developed over the long periods during which it was uncontained, and the pressures and habitual opportunities of an undisciplined social environment, make it extremely difficult to control. Severe disciplinary measures are necessary. *The various development strategies, especially the current attempt at "sustainable development", correspond to this fourth phase, but only to the extent that efforts are made to implement them. On the national level, the structural adjustment required by the IMF is indicative of the political will required -- although typically such adjustment fails to take into account many facets of the problematique.*
- **(e) Orienting the problematique:** Every insight concerning the problematique leads humanity to further insights in an endless pattern. With discernment these will all be of value. But when humanity deceives itself, confusion will prevail and the problematique will reassert itself in an inappropriate manner. Constant vigilance is required to discipline the problematique and orient its manifestations within appropriate bounds. *The seeds of this fifth phase may be seen in the increasing recognition of the need for a disciplined and radical change of life style, especially on the part of the industrialized countries.*
- **(f) Using the problematique as a vehicle for sustainable development:** The struggle of humanity with the problematique is over. Humanity is no longer traumatized by gain or loss, which are assimilated as phases in a larger process that is now the focus of attention. Rhythms of action in harmony with nature are cultivated. The problematique is used as a vehicle moving in sympathy with those rhythms towards the re-enchantment of the Earth. The old modes of action are not considered viable and their advocates are no longer heeded. *Some indications of the nature of this phase are to be found in the writings of the "deep ecology" movement and in the preoccupations of some forms of sustainable agriculture -- although their obvious limitations lie in their inability to deal realistically with the conditions of industrialized, urban societies and the impoverishment of an overpopulated planet. The missing insight would seem to be how to achieve the transition to this stage by benefiting from the problematique itself.*
- **(g) Transcending the realm of the problematique:** Having used the problematique as a vehicle to reach a sustainable condition, it is no longer required. However, the necessary disciplines for humanity to handle it remain available. Humanity can now act with serenity guided by insight that is no longer obscured by the dynamics of the problematique. There are writings on paradigm shifts into a new consciousness (in which the problematique no longer figures) and these do offer clues as to the nature of this phase. However, their neglect of the problematique would seem to be more a question of avoidance rather than transcendence, indicating that such perspectives lack vital insights.
- **(h) Disappearance of both humanity and the problematique:** The dualistic mindset through which humanity is perceived, in opposition to the problematique and to other species, is itself transcended, as are the disciplines through which that relationship is articulated. Confusion disappears. But there is no question of being either entranced by more integrative insights or entrapped by lesser ones. The nature of this condition does not lend itself to definition. Typically, any desire for it renders it unattainable or unsustainable.
- **(i) Expression of essential humanity:** Grounded in its essential nature, humanity stands untouched by inappropriateness. Processes of integration and disintegration are witnessed from a perspective that enfolds them. Neither formulation nor reformulation are necessary to ensure sustainability. Change, as perceived, is necessarily appropriate however paradoxical it may appear.
- **(j) Human intervention in the world:** Human action is no longer associated with any particular mindset, nor does it follow any recognizable path. It cannot be assessed by any form of conventional wisdom, nor does it depend on any particular tools. No special effort is made to preserve forms of any kind -- including those of humanity itself. Insight into the emptiness underlying form enfolds any form of action in a more meaningful context, thus enabling greater appropriateness to emerge as required.

Insightful "rebirth" and emergent thought structures

Progressive evolution of recursive self-reflexiveness may also be framed in terms of some form of "rebirth". This has been explored elsewhere (*Varieties of Rebirth: distinguishing ways of being "born again"*, 2004; *Web Resources on Being "Born Again"*, 2004). The following clusters of ways were described.

G. Experiential rebirth (operacy, flow, emdiment of mind, speaking with God, born-again, possession, psychedelic experience, embodiment in song, spiritual rebirth)	F. Cognitive perspective (metacognition, critical thinking, philosophy, aesthetic sensibility, orders of thinking, systematics, orders of abstraction, disciplines of action)
E. Therapeutical rebirth (release from trauma, mentors, self-help, discipleship)	D. Developmental rebirth (education, perspective, initiation, cultural creativity, individuation)
C. Psycho-behavioural rebirth (sin-to-virtue, changing patterns of consumption, conversion)	B. Socio-religious rebirth (birthright, destiny, reincarnation, social status, ceremony, ritual, group affiliation, games, sports)
A. Cultural rebirth (renaissance, aesthetic birth, mytho-poesis)	

The nine levels of emergent thought structure distinguished in [Spiral Dynamics](#), described as vMemes, might be understood in terms of degrees of self-reflexiveness and recursion.

Imagination, constructivism, faith-based reality, revisionism and "spin"

There has recently been official recognition of the "failure of imagination" by the international community in relation both to "terrorism" (*Failure of imagination to deal with an alternative logic*, 2005) and to many other challenges calling for new thinking and a "paradigm shift" (cf *Documents relating to Paradigm Change, Social Transformation*). The question is whether there is a more fundamental failure of

imagination in relation to the emergence of insight -- and its expression through forms appropriate to the challenges of the 21st century.

As concluded elsewhere (*Enactivating a Cognitive Fusion Reactor: Imaginal Transformation of Energy Resourcing*, 2006), like it or not, governance in the 21st century will be significantly influenced by the imagination -- whether as manipulated by news management and media phenomena, by the faith-based articulations of different belief systems, or by the search for imaginative relief from the constraints of simplistic governance, insensitive planning and the incompatible preferences of others. "Urban myths", notably regarding "immigrants" and minority groups, may have increasing influence on social unrest and remedial policies. Imagination will be called upon, through self-reflexive processes, to reframe depression, anxiety and existential doubt. Relief will be increasingly sought in alternative realities, whether private (including drug-enabled), virtual or elective communities, in which primacy is given to imaginative connectivity to provide coherence.

Imagination is a vital quality sought and cultivated, notably by politicians, in envisaging viable future possibilities -- beyond the tired formulas of "business as usual" and "more of the same".

There is now recognition of a vital distinction made between "faith-based" and "reality-based" decision-making at the highest level, as noted in a much-cited article by Ron Suskind (*Without a Doubt*, *The New York Times*, In The Magazine, 17 October 2004) regarding an exchange with an aide in the decision-making circle of President Bush:

The aide said that guys like me were "in what we call the reality-based community," which he defined as people who "believe that solutions emerge from your judicious study of discernible reality." I nodded and murmured something about enlightenment principles and empiricism. He cut me off. "That's not the way the world really works anymore," he continued. "We're an empire now, and when we act, we create our own reality. And while you're studying that reality -- judiciously, as you will -- we'll act again, creating other new realities, which you can study too, and that's how things will sort out. We're history's actors . . . and you, all of you, will be left to just study what we do."

The challenge of imagination in relation to self-reflexivity might be framed in terms of how much "spin" makes for what degree of recursive self-reflexiveness -- provided there is awareness of the degree of spin, namely of the degree of disconnectivity from unspun reality.

As in the 1960s, it is once again a case of "*l'imagination au pouvoir*". Just as each of the above may be understood as an exercise in imposing and eliciting particular imaginative strategies, so individuals are now free to dissociate themselves from such "stories" and develop their own (cf *Imaginal Education: game playing, science fiction, language, art and world-making*, 2003).

Form, geometry, pattern and dimensionality

The pattern or form through which insight is organized and expressed implicitly constrains or reinforces certain modes of understanding. Various authors have explored the extent of this influence in different ways.

Form/Medium: As discussed elsewhere (*Psychosocial Work Cycle: beyond the plane of Möbius*, 2007), the focus of Michael Schiltz (*Form and Medium: a mathematical reconstruction, Image [&] Narrative*, 6, 2003) follows from that of the calculus of indications of [George Spencer-Brown](#) (*Laws of Form*, 1969/1994). Schiltz notes that form/medium is "the image for systemic connectivity and concatenation", as described by [Humberto Maturana](#) and [Francesco Varela](#). For Schiltz, the notion of "space" is the key to reflexivity appropriate to any discussion of form and medium, citing Spencer-Brown as follows:

In all mathematics it becomes apparent, at some stage, that we have for some time been following a rule without being aware of it. This might be described as the use of a *covert convention*. [...] Its use can be considered as the presence of an arrangement in the absence of an agreement. For example, in the statement and theorem.... it is arranged (although not agreed) that we shall write on a plane surface. If we write on the surface of a torus the theorem is not true [...] The fact that men have for centuries used a plane surface for writing means that, at this point in the text, both author and reader are ready to be conned into the assumption of a plane writing surface without question. But, like any other assumption, it is not unquestionable, and the fact that we can question it here means that we can question it elsewhere.

Schiltz then comments, regarding **covert conventions**:

It was our choice to write in a plane surface that has made that distinctions indeed do cut off an inside from an outside, that 'differences do make a difference' ([Gregory Bateson](#)). Covert conventions at a level deeper than the level of form, preceding the level of form, have determined what the form would do. There lies a chance for developing a medium theory here. In this concrete case: the medium of the plane surface makes the difference. And in general: the topology of the medium makes the difference between distinctions making a difference and distinctions not making a difference. 'It is now evident that if a different surface is used, what is written on it, although identical in marking may be not identical in meaning'... Spencer-Brown has shown us that the 'medium is the message' ([Marshall MacLuhan](#)).....

The inadequacy of conventional frameworks to subtler insight is usefully highlighted by [Ken Wilber](#) (*On the Nature of a Post-Metaphysical Spirituality: response to Habermas and Weis, Consumercide*) in relation his **AQAL framework**:

Trying to fit the transpersonal in an abstract and theoretical framework is a hopeless enterprise, all mystics have said the spiritual cannot adequately be formulated. Yes, and all of traditions of the mystics have nonetheless offered general maps of the journey to

Spirit (such as the ten Zen Ox-Herding pictures). It turns out that there are family resemblances to these maps, and these resemblances seem to reflect certain deep potentials in the human bodymind (deep potentials for self-transcendence given as the Great Nest). We don't try to fit anything into an abstract and theoretical framework. Instead, we attempt a reconstructive science that concludes, based on empirical and phenomenological research and evidence, that there are higher states and stages available to men and women (but again, not in a predetermined fashion, since their manifestation is molded by all four quadrants -- behavioral, intentional, social, and cultural). This is a much fuller approach than Weis offers, I believe.

Geometry: For some the focus is on geometry, as with:

- [John Allen](#). *Succeed: structuring managerial thought* (Tucson, Synergetic Press, 1988)
- [Arthur Young](#). *Geometry of Meaning* (Delacort Press/Seymour Lawrence, 1978)
- [R Buckminster Fuller](#). *Synergetics: explorations in the geometry of thinking* (Macmillan, 1975 (vol. I), 1979 (vol. II))

Fuller focused on the role of the set of polyhedra in modelling cognitive systems of different complexity. The cognitive and organization implications of his exploration of tensegrity are discussed elsewhere (*From Networking to Tensegrity Organization*, 1984; *Implementing Principles by Balancing Configurations of Functions: a tensegrity organization approach*, 1979; *Groupware Configurations of Challenge and Harmony: an alternative approach to alternative organization*, 1979; *Tensing Associative Networks to contain the Fragmentation and Erosion of Collective Memory*, 1980). A variety of tensegrity structures can be displayed in virtual reality over the web (cf Bob Burkhardt, *VRML Tensegrity Models*, 2006).

Fuller's work was subsequently a basis for the work of [Stafford Beer](#) (*Beyond Dispute: the invention of Team Syntegrity*, 1995) and the [syntegration](#) process -- using the icosahedron. As the premier management cybernetician, Beer is noteworthy for his (adapted) version of *Le Chatelier's Principle* -- relevant to any discussion of complex adaptive systems:

Reformers, critics of institutions, consultants in innovation, people in short who "want to get something done", often fail to see this point. They cannot understand why their strictures, advice or demands do not result in effective change. They expect either to achieve a measure of success in their own terms or to be flung off the premises. But an ultra-stable system (like a social institution)... has no need to react in either of these ways. It specializes in equilibrational readjustment, which is to the observer a secret form of change requiring no actual alteration in the macro-systemic characteristics that he is trying to do something about. (Stafford Beer on *Le Chatelier's Principle* as applied to social systems: *The Cybernetic Cytoblast - management itself*. Chairman's Address to the International Cybernetic Congress, September 1969)

More traditionally this approach is typically implicit in concerns with [sacred geometry](#) or the role of number (cf *Representation, Comprehension and Communication of Sets: the role of number*, 1978; *Distinguishing Levels of Declarations of Principles*, 1980). This is notably the case in the work on [systematics](#) of [J G Bennett](#), especially that on the [progression of categories](#) whereby a system is a set of independent but mutually relevant terms. He distinguishes [twelve systems](#) (cf *Systematics: a new technique in thinking*, 1966, with Anthony G. E. Blake; *Systematics and Systems Theories, Systematics 7, 4*, March 1970; *The Dramatic Universe*, 4 vols).

Pattern: Patterns of different complexity, notably including the above considerations, may also serve to distinguish different degrees of complexity and self-reflexivity, as discussed elsewhere (*Patterns of Conceptual Integration*, 1984) and especially with respect to dialogue (*Energy Patterns in Conferences: weaving patterns of information as a context for higher levels of integration*, 1988).

Dimensionality: Given the mathematical hypotheses of fundamental physics in offering explanations of reality, another approach is in terms of the number of dimensions required for an appropriate description -- currently rising to 26 in some variants of [string theory](#). The question of the number of dimensions relevant to comprehension has been explored in an insightful manner by Ron Atkin (*Multidimensional Man; can man live in 3-dimensional space?* 1981; see [review](#)).

Cybernetics of cybernetics: complex adaptive systems?

Earlier versions of this section appeared in *Interrelating Metaphors -- to enable a cycle of transformation between epistemological modes* (a portion of Part A of *Psychosocial Energy from Polarization within a Cyclic Pattern of Enantiodromia*)

First order cybernetics: It is the systems sciences, and notably cybernetics, that explore negative feedback loops between the elements of well-bounded systems leading to an objectivist positivist approach. Cybernetics was initially the study of the "objective" control of machines (artificial and natural). [Heinz von Foerster](#) (*Ethics and Second-Order Cybernetics*, 1991) has suggested a form of "zero-order cybernetics" when activity becomes structured; when 'behaviour' emerges, but without reflection upon the 'why' and the 'how' of this behaviour. Cybernetics is then implicit

Second order cybernetics: However, notably as a result of the work of Heinz von Foerster in the 1950s, the value became apparent of exploring the "cybernetics of cybernetics", the "cybernetics of observing systems", or "reflection on reflection on cybernetics" -- the observation of the observer observing his/her own observations. This was acknowledged in a phrase of von Foerster that is significant to any approach to knowledge organization: "*Objectivity is a subject's delusion that observing can be done without him*". In a keynote speech in 1972, [Margaret Mead](#) consecrated the field as 'Second Order Cybernetics'.

Second order cybernetics extended cybernetics to include the interface with the observer, the "subjective" feature of cognitive methodology -- a theory of the observer based on functional-constructivism. Partly inspired by the work of Gestalt psychology, the question that emerged was the extent to which an inner representation of the outer world was a valid portrait of the macrocosm "outside"? How should this internal microcosmic representation be used in order to avoid illusions and abusive action? That which is observed cannot be neatly abstracted and separated from the observer's own biological, nervous and cerebral structuration (cf Sara B. Jutoran. *From*

Observed Systems to Observing Systems, 1985/2005). Related explorations are associated with constructivist epistemology (Humberto Maturana, Paul Watzlawick and Ernst von Glasersfeld), the hypercycle (Manfred Eigen) and the self-referential calculus (Francisco Varela, *A Calculus for Self-reference, International Journal of General Systems*, 2, 1975, pp. 5-24). A journal (*Cybernetics and Human Knowing*) is now devoted to the issues of second order cybernetics, [autopoiesis](#) and cyber-semiotics.

However it had in fact been sociologist Magoroh Maruyama (*The Second Cybernetics: deviation-amplifying mutual causal process. American Scientist*, 1963) who had named "second cybernetics" to differentiate it from "first cybernetics" with its emphasis on the **negative** feedback process fundamental to self-correcting [homeostasis](#). This enabled him to highlight the peculiar effects of recursive **positive** (deviation amplifying) feedbacks implicated in shaping the dynamics of organizational forms in response to environmental turbulence. He distinguished two processes on which he considered that every living system depended:

- 'morphostasis': namely the maintenance of system constancy through **negative feedback mechanisms**. '*...constancy in the face of environmental vagaries*'
- 'morphogenesis': referring to deviation and system variability through **positive feedback mechanisms**. '*...at times a system must change its basic structure*'

According to Maruyama: '...it is possible to have both positive and negative mutual causal loops counterbalancing one another in any given situation'. This understanding of the function of both positive and negative feedback loops is clearly of relevance to the hundreds of thousands of such loops documented under the auspices of the Union of International Associations -- available, as hyperlinks, to exploration (and visualization) [online](#) (cf *Feedback Loop Analysis in the Encyclopedia Project*, 2000)

The very large networks of looping functional relationships documented and visualized there, bring the user literally "face-to-screen" with the cognitive limitations to significant knowledge management in relation to strategic challenges. Such representations, notably of value networks or of subtle human development concepts (and modes of awareness) from many disciplines, raise issues which highlight the relevance of second order cybernetics.

In this respect, Brian Holmes (*Network, Swarm, Microstructure, Multitudes*, May 2006) argues:

On the one hand, the use of social network analysis tools is giving us pictures of very complicated interlinkages between individuals and groups. These pictures are quite simply fascinating, because they aggregate lots of data and allow one to glimpse patterns, or at least, the possibility of patterns, of regularities. But the maps are not enough. One needs an understanding of the quality of the links themselves, of what encourages a group to cooperate even when its membership is atomized and dispersed in space.... This is where the questions asked by complexity theory become so interesting and timely. What gives form and pattern to emergent behavior?

To describe the specific contents out of which richer and vaster worlds of meaning are made, and to detail the effects of the specific tools and procedures that make it possible to continuously transform them and to coordinate actions within their horizons, are the tasks of a complexity theory which seeks to understand how groups organize their own behavior, when they are no longer decisively influenced by traditional institutions. Bateson pointed the way to this possibility of a cybernetic understanding, an understanding of feedback processes, with his "*Steps to an Ecology of Mind*."

Wolfram Lutterer (*Systemics: the social aspects of cybernetics, Kybernetes*, 34 Issue: 3/4, Mar 2005) proposes the term 'systemics' instead of 'second-order cybernetics'.

Third order cybernetics, in principle represents the current state of the art. Here the observer is understood to be part of a coevolving system -- the focus is on how observers and systems co-evolve across different social systems. The dominant discourse is understood to be reproduced and transformed through local interactions. As noted by Chris Lucas (*Complexity Theory: Actions for a Better World*, 2001):

This is a more intrinsic (embodied) methodology and shows the ongoing convergence of all the various systemic disciplines, as part of the general world paradigm shift noticed recently towards more integrated approaches to science and life. In 21st Century systematics, boundaries between systems are only partial and this implies that we must evolve with our systems and cannot remain static outsiders. Thus our mental beliefs echo our systemic behaviours, we co-create our realities and therefore internal and external realities become one. Understanding this mutual control, exhibited by us on our world and our world on us, takes us into the metaview outlined here, where we can see ourselves as being part of the system under examination.

Because of the intimate connection with reflection on [social constructivism](#) and [constructivist epistemology](#), the use of "second order cybernetics" has been interwoven with various proposals for a "third order cybernetics". David Pocock (*Loose Ends*), offers a critique of such usage in family therapy -- an obvious example of "mutable worlds". Another discussion speculated on the distinction: 1st order cybernetics is spectacular; 2nd order cybernetics is simulating potential fields with request/response; 3rd order cybernetics is potential fields, smell [[more](#)]. Note also the discussion by Kent D Palmer (*On the Social Construction of Emergent Worlds: the foundations of reflexive autopoietic systems theory*. 1996).

Concern has been expressed that any third order human system configured on the metaphor of autopoiesis would necessarily be oppressive, inhuman, and parasocial (William P. Hall, *Are Third Order (i.e. Social) Autopoietic Systems Necessarily Autocratic?* 2003). Discussion of "observers observing observers", namely certain forms of strategic management consultancy, is held to require such a third order cybernetics by Vincent Kenny and Philip Boxer (*The Economy of Discourses: a third order cybernetics? Human Systems Management*, 1990).

Fourth order cybernetics: Helpfully summarizing the contrasts between the above, M. Zangeneh and E. Haydon (*The Psycho-Structural Cybernetic Model, Feedback, and Problem Gambling: a new theoretical approach*, *International Journal of Mental Health and Addiction*, 1, 2, 2004) propose a fourth order cybernetics as follows:

Central to this effort is the application of a unique, critical theory inspired by the works of Anthony Giddens (1971, 1990; see discussion on modernity and reflexivity) and John Francois Lyotard (1979; see discussion on postmodernity) to the cybernetic theoretical framework. The epistemological orientation of the theory proposed here is that of multiple realities shaped by social, cultural, economic, ethnic, gender and disability values, which centralize on the asymmetric power relations in society

Fourth order cybernetics is thus understood as concerned with how multiple realities are shaped by, and impinge upon, power relationships within society.

Complex adaptive systems: Some of the confusion in relation to the above distinctions is helpfully clarified by Chris Lucas (personal communication, 2007):

I'm rather amazed that third-order cybernetics seems not to have 'taken-off' as it were, few people seem to mention it now.... It is interesting to note how much this unwillingness to recognise the 'outside influence' on self is based upon current scientific dogma, this is well illustrated by a foreword from Bruce Lipton [to Louise LeBrun, *Phoenix Rising! The Freeing of Human Potential*].

Yet the actual idea of co-evolution between system and its environment is very much to the fore today. I think perhaps the term 'cybernetics' has itself a poor, mechanical, feel to many people, so the term used in complexity theory for perhaps the same idea is 'Complex Adaptive Systems' (CAS). This is frequently now used in organizational contexts (e.g. see my review of the book *Open Boundaries: creating business innovation through complexity* by Howard Sherman and Ron Schultz)

When I write on these themes nowadays I tend to use other terms, for example my 2006 essay "*Complex Living Tensegrities*" (2006) used "Complex Interacting Systems" (of which CAS was 1 of 4). In "*Integral Intersubjectivity*" (2006) I contrasted the third person (objective) view (1st order), with the first person (subjective) view (2nd order), to generate a middle way (intersubjective) which is close to 3rd order. Finally in... "*Qualitative Living and Thinking*" (2006) I brought in three forms of knowing, 'knowing how' (1st order), 'knowing that' (2nd order) and 'knowing from' (3rd order).

Whilst the terms aren't common perhaps the understanding is getting more so, the environmental crisis highlights the coevolution of people and planet in a way perhaps never before part of the public mind... I tend to stress recently the need to take three levels into account, these aren't the three cybernetic levels as such, but as Stan Salthe notes, our focus on one level cannot ignore the level below (N-1) which gives rise to level N, nor the level above (N+1) which constrains its behaviour. In human cultural terms the biosphere sustaining planet is N+1, the organizational greed is N and the genetically fear driven human is N-1. A potent mix !

Human ecologies: Holmes points to the innovative work of Félix Guattari (*Cartographies Schizoanalytiques*, 1989) in trying to create even more dynamic models of human ecologies. He considers Bateson and Guattari as being:

...probably the most important references for the art of composing mutable worlds, where the goal of the participants is to carry out continuous transformation of the very parameters and coordinates on which their interactions are based (this is also understood as 3rd-order cybernetics, where the system produces not just new information, but new categories of information)

However Holmes considers the work of sociologist Karin Knorr Cetina (*Complex Global Microstructures: the new terrorist societies, Theory, Culture and Society*, 2005), which he reviews, to be more accessible and strategically relevant. It is questionable whether such insights could be effectively applied to the static networks documented by the Union of International Associations rather than to the challenge of the dynamically gated communities they imply (*Dynamically Gated Conceptual Communities*, 2004).

Such communities exemplify the challenge recognized by Magoroh Maruyama (*Peripheral Vision: polyocular vision or subunderstanding? Organization Studies*, 2004) of enhancing "polyocular vision" to avoid the dangers of "subunderstanding". A mathematical clarification of this challenge has been provided by Ron Atkin (*Multidimensional Man; can man live in 3-dimensional space?* 1981) and by D. Dubois, H. Prade and P. Smets (*Representing partial ignorance. IEEE Trans. on Systems, Man, and Cybernetics*, 26, 1996, pp. 361-378).

Maurice Yolles (*Knowledge Cybernetics: a new metaphor for social collectives* 2005) has developed an approach to complex systems drawing on work of Cohen and Stewart (*The Collapse of Chaos: discovering simplicity in a complex world*, 1994). It derives from epistemological antecedents, created by Stafford Beer (1959, 1985) in his *Viable System Model* (VSM), and explored through concepts of ontology by Eric Schwarz (*Towards a Holistic Cybernetics: from science through epistemology to being, Cybernetics and Human Knowing*, Vol. 4, 1997). It suggests a new form of knowledge management that is connected with the notions of S P Marshall (*Schemes in Problem Solving*, 1995) and her new radical classifications for knowledge. For Yolles:

These ideas can be closely associated with concepts of lifeworld and the ideas of communicative action by Habermas, and leads to a useful knowledge cybernetic framework.... Just as the system is normally seen as a metaphor, knowledge cybernetics is metaphorical in that it: (a) explores knowledge formation and its relationship to information; (b) provides a critical view of individual and social knowledge, and their processes of communication and associated meanings, (c) seeks to create an understanding of the relationship between people and their social communities for the improvement of social collective viability, and an appreciation of the role of knowledge in this.

Indicative examples of 2nd and 3rd order environments

Approaches to detecting the exemplification of higher order, self-reflexive contexts -- possibly "centres of embodiment" as opposed to "centres of excellence" -- might include:

- [Renaissance zones](#) (resources)
- [Integral University](#)
- [Chaordic Alliance](#)
- [Foundation for P2P Alternatives](#)
- [The Transitioner](#)
- [Geonet](#) (geodesic democracy)

Of course a case could be made for inclusion of various kinds of monastic environment, including ashrams and Zen communities centred on a temple (and its garden). For the individual interacting with a complex world, examples of 3rd order processes would include:

- cultivation of [flow](#) and being "in the zone" [[more](#)]
- cultivation of "[infinite games](#)" rather than "finite games", as outlined by [James P. Carse](#) (*Finite and Infinite Games: a vision of life as play and possibility*, Ballantine, 1987) [[more more more more](#)]

In the spirit of "infinite games", [Flemming Funch](#) (*New Civilization*) provides an extensive list of links to a collection of web resources on the "game of the new civilization" -- as being about "creating a new civilization that works better" (cf [World Transformation website](#)). It remains unclear whether there are groups that can indeed be distinguished as characterized by infinite game-playing (in Carse's sense!) within their own context, with groups of similar persuasion, or with bodies that do not share that persuasion.

Resources on the possibility of such initiatives and examples (obtained with the assistance of [Chris Lucas](#)), are notably to be found at

- **Research perspective:** [Complex Adaptive Systems Research](#) (maintained by Mark Voss), which illustrates the extent to which the focus is on modelling behaviours of intelligent agents. However most of the agent models would not be third order -- since clearly the agents in the models cannot be claimed to be self-aware. The [modelling of artificial societies](#) is represented by the collaborative initiative of the [Brookings Institution](#), the Santa Fe Institute, and the World Resources Institute (cf Joshua M. Epstein and Robert Axtell, *Growing Artificial Societies: Social Science From the Bottom Up*, 1995)
- **Consultancy perspective:** The consultancy literature contains information on situations in which efforts are made to 'convert' CEOs and/or their people to a more open viewpoint. The most likely third-order locus of application of CAS ideas is therefore probably in companies, either by consultants working with the CEO and bringing them up to speed in such coevolutionary thinking or by the company people doing so themselves (cf David Rooke and William R. Torbert, *Organizational Transformation as a Function of CEOs' Developmental Stage*, *Organization Development Journal* 16, 1, 11-28, 1998). Ironically however it is the monitoring by the consultants of their effort which effectively then introduces a third-order perspective in action (or not !). Another source are the resource list maintained by Chris Lucas (*Economics, Business and Management Papers*), notably the papers of Marilyn Herasymowych and Henry Senko (*Corporate Culture and Complexity*, 2001-3)
- **Learning organization perspective and organizational innovation** : understood as a recent alternative to "complex adaptive system", as represented by the resources at [Stanford Learning Organization Web \(SLOW\)](#) and those maintained by Peter Senge (*Resources on Senge's Learning Organization; The Fifth Discipline: the art and practice of the learning organization*, 1990). Metaphor has been extensively used in describing the emergence of new corporate management styles (Rosabeth Moss Kanter, *When Giants Learn to Dance*, 1989; Bobby Logue, *Even Dinosaurs Learn to Dance*, *Security Management Today*, June 2005; Dudley Lynch and Paul L. Kordis, *Strategy of the Dolphin: scoring a win in a chaotic world*, 1989; Dee Hock, *The Birth of the Chaordic Organization*, 1999)

A valuable summary in terms of organizational innovation is provided by Eleanor D. Glor (*A Gardener Innovator's Guide to Innovating in Organizations*, 2006). Glor considers innovation from the perspective of individuals (individual plants), challenges (particular diseases, nourishment) and the culture (garden, neighborhood, region) as a whole. She addresses the question of whether it is possible to change existing organizational patterns as long-lasting ways organizations and societies have of behaving. How patterns change is considered in terms of patterns within patterns developed earlier (*Innovation Patterns*, 2001).

A quite different approach is offered by Jean M. Bartunek and Michael K. Moch (*Third-order Organizational Change and the Western Mystical Tradition*, *Journal of Organizational Change Management*, 7, 1994, 1, pp 24 - 41)

- **Aesthetic perspective:** As a flourishing cultural phenomenon, the [Société Imaginaire](#) (founded in 1984, and sustained by the initiative of the Batuz Foundation) groups over 500 artists, writers and scholars from around the world (*The Imaginary Society*, *International Herald Tribune*, 4 January 1995). The challenge of "describing" and "defining" a third order initiative is well illustrated by the "non-descriptions" of it offered on its website:

People ask, "What is the Société Imaginaire? Does it exist? Or is it an Illusion?" The answer is: the Société Imaginaire exists, but it cannot be summarized without its subtlety being blunted or its fluency being compromised. It lives by refusal, by saying "no" to what other groups or societies depend on for survival. It has no manifesto, and will not be bound by any explicit formulation of its aims. It exists as a paradox; it is most alive when its life can be least assumed. Although it welcomes attempts to define what it is, it knows none will be right. If its members are evasive when asked to explain it, it is because they know that any answer, once uttered, comes too late. It is committed to "beyondness", to being always one step ahead of what can be said about it. Thus, it

keeps growing.

Only someone who is primarily universal and only then local can comprehend this new situation and live at one and the same time, i.e. simultaneously, in many cultures, like a neutron which can appear simultaneously in several places.

Man's own limitations, his methods of apperception, can contribute to his salvation in mastering this new challenge because his powers of perception are capable of modification. Paz has expressed this similar idea poetically and clearly: *The understanding of others is a contradictory ideal: it asks that we change without changing, that we be other without ceasing to be ourselves.* Surely everyone recognizes today that man must alter and adapt his means of perception in order to be able to meet the new challenge. When we say man does not live in one culture only but in many, he cannot do it with his old methods of apperception. As the abstract in art becomes comprehensible for us only when we surrender our figurative images, so we must renounce our provincial selves if we want to understand today's world, or worlds, and feel at home in them.

- **Interpersonal perspective:** clearly analogues to third order organizational initiatives are fruitfully explored in new approaches to interpersonal relationships following experience of the constraints of modes of organization based on the patterns of first and second order cybernetics.
- **Individuation perspective:** as noted above (*Varieties of Rebirth: distinguishing ways of being "born again"*, 2004; *Web Resources on Being "Born Again"*, 2004), any process of individuation may give rise to what might be considered a third order understanding and relationship to the environment. In the context of mytho-poiesis many births refer to the birth process with specific exemplars recognized as "twice-born" or "thrice-born" (as with Hermes Trismegistus). For Louise Cowan (*Epic as Cosmopoiesis*, 1992): "If we read epic poems with attentiveness, putting aside preconceived ideas about the dominance of the patriarchal virtues, we see in them something of a palimpsest, indicating that nations are not only 'twice-' but 'thrice-born'. Becoming a Freemason has for example been described as a third birth, or becoming "thrice-born".
- **Open organizations perspective:** inspired by the open software philosophy. From this perspective, the structures that organizations typically use for decision-making are closed: individuals are unaccountable, abuses of power are hard to prevent and knowledge is hoarded. The [open organizations](#) project explains how to set up and maintain transparent, accountable and truly participative communities. The desire for open organizations stems from a widespread dissatisfaction not only with the formal power structures found in governments and corporations, but also with the informal structures found in many voluntary and activist groups. [Examples](#) are given of groups that explicitly claim to use the framework (including [Indymedia](#), [ATTAC](#) and [European Social Forum](#)), with [links](#) to related work.
- **International relations perspective:** An account of the significance of complexity science for international relations theory is provided by R.M. Cutler (*Complexity Science and Knowledge-Creation in International Relations Theory*, In: *Encyclopedia of Institutional and Infrastructural Resources*, Oxford, Eolss Publishers for UNESCO, 2002). He explains its epistemological and ontological significance for the level of analysis, scope of analysis, and scale of analysis. This followed his earlier study (*Autopoiesis in Transgovernmental Networks: para-interparliamentary group action for sustainable development*, World Society Foundation, 1999). Cutler continued his focus in a more recent study (*The Paradox of Intentional Emergent Coherence: Organization and Decision in a Complex World*, *Journal of the Washington Academy of Sciences*, 2007)

In a study of operations of the United Nations, John G.I. Clarke (*Transcending organisational autism in the UN system response to HIV/AIDS in Africa*, *Kybernetes*, 35, 2006, 1/2, pp. 10-24) determined that there was a disconnect between what the system does and what the system espouses - a bias toward 'doing things right' rather than 'doing the right thing'. The study drew on the writings of Berry (eco-spirituality), Beer (VSM), Argyris and Schon (double loop learning), Hock (chaordic organisation) and Ackoff (corporate planning) to suggest that the sub-optimal organisational performance was best interpreted as an 'autistic' condition, whereby organisations become 'so locked up inside themselves that nothing and no one can get in'.

Subsequently, however, in the abstract of a presentation to the ECCO (Evolution, Complexity and COgnition) transdisciplinary research group (Free University of Brussels, directed by Francis Heylighen), Mehmet Teczan (*A complex systems critique to mainstream IR theory: a case study of foreign policy integration in Europe as a complex system*, 2007) notes the call:

... for 'another International Relations (IR)' that will finally recognize international relations as being an emergent realm of non-linear patterns of social interactions. Nevertheless, the (neo-)positivistic hegemony is today hampering the introduction of Complexity Theory (CT) to IR and the former's full-fledged employment.

Graeme Chesters (*Global Complexity and Global Civil Society*, 2004) suggests that the emergence of 'antagonistic' relationship between actors is best understood through the lens of complexity theory and offers some conceptual tools to begin the process of analyzing global civil society as an outcome and effect of global complexity.

- **Legal perspective:** K-H Ladeur (*The Theory of Autopoiesis as an Approach to a Better Understanding of Postmodern Law: from the hierarchy of norms to the heterarchy of changing patterns of legal inter-relationships*, EUI Working Paper, 1999, LAW 99/3). In a review by Jason A Beckett (*Conflicting Orders: how peace is waged*, *Leiden Journal of International Law*, 20, 2007), of a study by William Rasch (*Sovereignty and Its Discontents: on the primacy of conflict and the structure of the political*, London, Birkbeck University Press, 2004), Beckett argues that:

There is no reason not to understand the sub-systems of the international legal order as operationally closed, as autopoietic systems. If this is so, then our familiar clichés regarding hierarchy, or the 'logical connections' between the sub-systems and general international law, must be opened to challenge. Moreover, behind the familiar responses of hierarchy, coherence, dispute allocation, or co-ordination of the sub-systems - that is, behind the questions of how to (re-)establish order in PIL [public international law] - the real question comes into relief: why do we desire this order at all?

- **Activist perspective:**

- **Civil society networks:** These may regard themselves as coevolving, and may therefore offer examples from a third order perspective although there appears to be little literature on specific examples treated from that viewpoint.
 - An early proposal, which may effectively be operational was for a "potential association" (*Wanted - A New Social Entity: Role of the Potential Association* -- Annex I of: *Next Step in Inter-organizational Relationships*, 1971). Such an association would, as such, not have "members" in the sense of people subscribing in common to a particular set of views or being represented in any way via any election procedure. The relationship would be loose - almost to vanishing point - to avoid any threat to autonomy. The bodies brought into relationship via a potential association would be held, or, strictly speaking, would hold themselves, in this relationship simply by the fact that they received information, whether on a paying basis or as some form of subsidized service, from a central point of topics of interest to them.
 - In terms of the interpretation of the vMemos of Spiral Dynamics, Ken Wilber (*How to Stage a 2nd-Tier Protest, You Tube*) offers a unique articulation of the scope for activism beyond those envisaged by conventional organization.
- **"Adaptive networks":** Typically these are studied as a variant of civil society networks, notably of NGOs. Studies include:
 - Sibout Govert Nooteboom (*Adaptive Networks: the governance for sustainable development*, 2006)
 - Simon Reay Atkinson and James Moffat (*The Agile Organization: from informal networks to complex effects and agility, CCRP Command and Control Research Program, US Department of Defense, Information Age Transformation Series*, 2005) explores in helpful detail the nature and behaviours of different kinds of networked enterprises and their implications for security services -- especially in their response to dissident networks framed as disruptive of law and order.
- **"Uncivil" society networks:** To the extent that networks perceived to be disruptive of the social order are excluded from any definition of "civil society" (possibly by broad interpretation of anti-terrorist legislation), it is appropriate to recognize the innovative forms of unconventional organization they may employ (*Interacting Fruitfully with Un-Civil Society: the dilemma for non-civil society organizations*, 1996). Commentators have, for example frequently described al-Qaida as a movement of opinion and ideas, even a set of principles and a strategy. As noted by Jason Burke (*Al-Qaida is now an idea not an organisation, The Guardian*, 5 August 2005):

... we need to face up to the simple truth that Bin Laden, al-Zawahiri *et al* do not need to organise attacks directly. They merely need to wait for the message they have spread around the world to inspire others. Al-Qaida is now an idea, not an organisation.

The same might be said of many a secretive "cabal" with a questionable agenda.

In each of the above cases **the challenge is to distinguish claims for those environments to a "higher order" condition from the actuality thereof. It is also the case that any such claims might well be an indication of the aspiration to some understanding of such a condition when it has not indeed been successfully embodied in practice.**

Testing for "higher order" characteristics: One test would be the extent to which the "adaptive" nature of such complex initiatives is indeed a consequence of conscious self-reflexivity -- or is merely adaptive in some more conventional (reactive) sense. A more systematic test might be to review the nature and quality of the questions that the initiative asks of itself, exemplified in the case of a self-analysis, in response to "typical difficulties", by the **Scientific and Medical Network** (John Clarke, *Where Are We Going? -- the future of SMN, Network Review*, Spring 2005) which explicitly asks itself questions such as:

- whether we have a special and unique contribution to make to the spiritual and intellectual life of our times?
- what shape should that contribution take?
- how can we respond to the existential crisis of meaning and purpose that is characteristic of our times?
- should we continue to build on the intellectual approach and pattern of activities that have proved successful in the past?
- should we:
 - encourage a wide spectrum of perspectives -- and how wide should these spread?
 - increase scientific rigour, discouraging any perceived tendency to "New Age flakiness"?
 - cultivate the original commitment to spiritual goals, even if it undermines scientific respectability?
- should our conferences move beyond what has been framed as "sages on stages"?
- should we reappraise our basic philosophy and operational strategies?
- in considering our membership:
 - are we sufficiently attentive to their possibilities of involvement?
 - should we seek to attract a greater proportion of younger members?
- do we, indeed, have good reasons to continue to exist at all?
- should we:
 - take a strong position, directing our appeal to "right brain" or "left brain" needs?
 - emphasize greater commitment to more experiential and personal dimensions of learning?

- continue to emphasize what has been framed as a professional "elitist" identity?
- should we consider ourselves:
 - a kind of praetorian guard of a particular intellectual/spiritual ethos?
 - an openly populist organization?
- can we continue to call ourselves a "scientific" and "medical" network when:
 - we expend much of our effort in examining philosophical and theological issues?
 - many of our members are not directly associated with any of the sciences?
- should we:
 - have a distinctive worldview and seek to propagate a coherent set of values and beliefs?
 - continue to avoid the temptation to formulate dogmas or creeds?
- how do we:
 - rediscover the "spirit" of our organization -- beyond its immediate difficulties?
 - determine what we stand for?

Ironically, in the light of the pattern offered by the Zen ox-herding pictures -- and the fact that oxen (like steers) are often adult, castrated male cattle -- such questions put an interesting twist on new significance that might be attached to a third order "steering" committee. The term cybernetics is intimately associated through its Greek origin with understanding of steering and governance mechanisms. Ironically again, given the castrated state of oxen and steers, this suggests the unfortunate parallel of members of any steering body to the **castrati** singers required to express the higher notes in early operatic productions (by inhibiting normal maturation of the voice after puberty). Such a parallel might be contrasted with any cognitive or governance metaphor based on [overtone singing](#).

Given the socio-economic factors (including the livelihood of those involved) that typically constrain organizational innovation, of particular relevance for the immediate future is the facility with which such environments may be created virtually. Perhaps in a *Third Life* rather than in *Second Life* (Bryan Alexander, [Towards Third Life](#), 20 February 2007)?

Conclusion: emergence of "post-systemic" forms of organization of "higher order"?

Might it be the case that all the "problems" faced by humanity are (using Maruyama's term) subunderstood design elements of an inherently sustainable "engine" -- whose operational integrity is of a higher degree of virtualization than currently considered credible? Being subunderstood, the design elements are mismanaged and therefore malfunction. This is notably a view highlighted by Douglas Flemons (*Completing Distinctions*, 1991).

Beyond, "third-order" or "fourth order" cybernetics, the possibility of a progression in degrees of cognitive recursiveness and self-reflexivity is implicit in the work of a number of authors. These include:

- George Lakoff and Mark Johnson:
 - *Metaphors We Live By* (University of Chicago Press, 1980)
 - *Philosophy In The Flesh: the embodied mind and its challenge to western thought*. (Basic Books, 1999)
- Francisco Varela, Evan Thompson, and Eleanor Rosch. *The Embodied Mind*. (MIT Press, Cambridge, 1991)
- Francisco Varela. *Laying Down a Path in Walking*. In: W I Thompson (Ed). *Gaia: A Way of Knowing* (Massachusetts, Lindisfarne Press, 1987)

The work of Varela is most notably associated with the articulation of [enactive cognition](#) or [enactivism](#) -- a form of embodied knowing. Using the series of Zen [ox-herding pictures](#) as an indicator, this might be understood as corresponding to one of the later stages of self-reflexive recursiveness potentially expressible through some form of organization -- as yet to be widely understood. Such a series might include forms primarily characterized by what may be understood by: "potential" association, mirroring, shadowing, embodiment, intentionality and entelechy (cf [Entelechy: actuality vs future potential](#), 2001) -- even a sense of destiny (*fatum*).

The elaboration (above) of approaches to the world problematique offers an example in terms of that series. The Zen series is valuable because it embodies the challenge of comprehending successive stages, whereas many authors readily fall into a form of descriptive trap corresponding to the perspective of one of the earlier stages of self-reflexivity -- effectively obscuring the nature of that challenge.

Although a sequence of stages, even expressed in a table, is necessarily inappropriate to the qualities to be distinguished (in the light of the cautionary arguments of Schiltz), the following table is an effort to juxtapose (very tentatively) some of the distinct understandings which might emerge as significant for the future in the light of quite different analytical devices.

Indicative pointers to higher orders of self-reflexivity (tentatively ordered in terms of the classic series of 10 Zen ox-herding pictures, but without implying more than a possible correspondence across columns of the table, a "correspondence" on which the proponents of each would have strong reservations)													
Ox picts. (a)	Identity (b)	Feedback (c)	Evaluation: criticism/ appreciation (d)	Problem- atique (e)	Resolut- ique (f)	WH- Questions (g)	Cybernetic order (h)	Polyhedra (Fuller) (i)	Systematics (Bennett) (j)	Learn/ Action cycle (Young) (k)	Spiral Dynam. (Beck) (l)	Aikido (mgt) (m)	Philosophy / Principle (n)
Ox-1	Conventional legal entity	Negative	External	.	.	where/what/ when/how	First	.	wholeness	.	instinctive (beige)	.	Us vs. Them
Ox-2	Organizational system	Negative Positive	External	.	.	which/how	Second	.	polarity	.	animistic (purple).	.	Le Chatelier
Ox-3	Learning organization	Negative Positive	External Internal	.	.	why	Third (CAS)	.	relatedness	.	egocentric (red)	.	Embracing error
Ox-4?	?	?	?	.	.	?	Fourth	.	subsistence	.	absolutist blue.	.	.
Ox-5	.	.	.	.	.	?	?	.	potentiality	.	materialistic orange	.	.
Ox-6	.	.	.	.	.	?	.	.	repetition	.	humanistic (green)	.	.
Ox-7	.	.	.	.	.	.	.	.	structure	.	systemic (yellow)	.	.
Ox-8	.	.	.	.	.	.	.	.	individuality	.	holarchic (turquoise)	.	.
Ox-9	.	.	.	.	.	.	.	.	pattern	.	infinite (coral)	.	.
Ox-10	.	.	.	.	.	.	.	.	creativity	.	.	.	.

Notes to table:

- a. **Ox-pictures:** It is appropriate to note that there are many commentaries on the challenging distinctions implied by the Zen ox-herding pictures
- b. **Identity:** In the absence of common terms, higher order entities might include swarms, flash mobs, potential associations, and various known forms of virtual entity
- c. **Feedback:** There is the possibility of distinguishing new kinds of "feedback", perhaps at least reflecting the distinction between negative, positive, negative and positive, neither negative nor positive. Feedback might be extended to include notions of subject-object interactivity as proposed by Chris Lucas (*Integral Intersubjectivity*, 2006)
- d. **External/Internal:** In combining (c) with (d), correspondence with the AQAL system of Ken Wilber emerge (notably as discussed in *Interrelating Metaphors -- to enable a cycle of transformation between epistemological modes*, 2007)
- e. **Problematique:** The "world problematique" is a term promoted by the Club of Rome as referring to the cluster of intertwined socioeconomic problems. An articulation of the contents of this column is given [above](#)
- f. **Resolutique:** The "world resolutique" is a term promoted by the Club of Rome as referring to the cluster of intertwined strategic responses to socioeconomic problems [[more](#)]. Presumably a corresponding series to that for the problematique could be elaborated. As a result of the [Global Strategies and Solutions Project](#) of the *Encyclopedia of World Problems and Human Potential*, a specific [commentary](#) relating to this possibility is relevant.
- g. **WH-questions:** The possibility of a relationship between this classic set of questions and questions of "higher order" has been explored elsewhere (*Engaging with Questions of Higher Order: cognitive vigilance required for higher degrees of twistedness*, 2004; *Functional Complementarity of Higher Order Questions: psycho-social sustainability modelled by coordinated movement*, 2004) notably in relation to the dimensionality of catastrophe (*Conformality of 7 WH-questions to 7 Elementary Catastrophes: an exploration of potential psychosocial implications*, 2006)
- h. **Cybernetics:** The comments of Chris Lucas (above) with respect to some distinctions to be made here should be noted
- i. **Polyhedra:** Aside from the work of Fuller, which tends (despite the subtitle of *Synergetics*) to be allusive with regard to the cognitive distinctions, the many commentaries on sacred geometry by other authors point to another mode of understanding these distinctions (including those on projective geometry by anthroposophy)
- j. **Systematics** (Bennett): An explanation of the multi-term systems is given [elsewhere](#). Those for 11- and 12-term systems are not included in the table.
- k. **Learning-Action cycle** (Young): The focus of Arthur Young (*Geometry of Meaning*, 1978) is on a 12-phase learning-action cycle necessary for ordered experience -- potentially to be understood as extending beyond first and second-order cybernetics (arising in his case from a generalization of his experience in helicopter design and operation). Various possibilities for further generalizing these insights have been explored elsewhere (cf *Cycles of dissonance and resonance; Typology of 12 complementary strategies essential to sustainable development; Typology of 12 complementary dialogue modes essential to sustainable dialogue; Varieties of experience of past-present-future complexes*)
- l. **Spiral Dynamics** (Beck): A useful summary of spiral dynamics in relation to complexity theory is provided by Chris Lucas (*Spiral Complexity Dynamics*, 2006), notably the distinction between the "1st tier" (1-6) and "2nd tier" (7-9) vMemes in the table, from that perspective. A case could of course be made for treating the 1st tier as corresponding to different styles of first-order (or even second-order) cybernetics -- with those of 2nd tier as different styles of third-order cybernetics.
- m. **Aikido** (in management): In recent years, Aikido has become a model for leadership and management development at organizations, universities, and governments throughout the world. Practitioners apply established principles of balance, leverage, position, and movement to achieve harmony and collaboration rather than competition -- offering an effective strategy for managing change. The question is whether the levels of (self-) understanding of this martial art offer insights -- ranked by *dan* -- correspond in any way to other degrees of insight in the table. The *dan* system is also used in the strategy game of *go* -- now considered of some relevance to management.
- n. **Philosophy / Principle:** The first row helps to clarify a general point, namely that whilst it appears to constitute a polarity, this is only recognizable from a perspective corresponding to the second row. Similarly, whilst Stafford Beer's adaptation of

Le Chatelier's Principle (cited earlier) is a characteristic of the dynamics of the second row, it can only be recognized from a perspective of the third row. Similarly the play on "Us vs Them" offers cognitive modalities that can be distributed as characteristic of other rows: "Us and Them" ("same struggle"), "Neither Us nor Them" (larger issue). These might be considered precursors to more complex forms of mutual engagement (as with any Other).

Such a conceptual array necessarily calls for "tuning" -- with the usual challenge regarding choice of "musical tuning" system. Furthermore, in the light of the above-mentioned conclusions of Donald H. McNeil (*What's Going on with the Topology of Recursion?* *S.E.E.D. Journal: Semiotics, Evolution, Energy, and Development*, 4, 1, 2004), a more appropriate form to interrelate such distinctions might indeed be the torus, as explored elsewhere (*Comprehension of Requisite Variety for Sustainable Psychosocial Dynamics: transforming a matrix classification onto intertwined tori*, 2006).

Also of relevance in considering such possibilities (in the light of Fuller's work on tensegrity and that of Chris Lucas on *Complex Living Tensegrities*, 2006) is the use of a toroidal tensegrity of some kind (cf Bob Burkhardt, *Ten-stage Tensegrity Torus*, 2003) and the possibility of its **display** as a virtual reality structure. A 10-stage stage structure might be able to hold the complexity capable of reconciling some of the disparities associated with inappropriate juxtaposition of items in the above table -- as well as offering understandings of the relationships between stages..

In a world of increasing psychosocial complexity, the emergence of organizations of knowledge and people of increasing virtualization and self-reflexivity points to the possible emergence of modes of collective "surfing" of the cognitive catastrophes of that turbulent environment (cf *Interrelating Cognitive Catastrophes in a Grail-chalice Proto-model: implications of WH-questions for self-reflexivity and dialogue*, 2006).

One intriguing possibility, suggested by the example of the *Société Imaginaire* (above), is that the higher orders of self-reflexivity may be (necessarily) more intimately related in cognitive terms to aesthetics -- if only in the future (*Aesthetics of Governance in the Year 2490*, 1990). The possibilities with respect to music and song, consistent with the rationale of sacred chant, have been explored elsewhere (*A Singable Earth Charter, EU Constitution or Global Ethic?* 2006). Some wire-and-tube tensegrities, encoding significant content for the design of collective initiatives, might even serve as wind harps (*aeolian harps*) -- suggestive of yet other levels of significance, and possibly rendering them comprehensible!

Ken Wilber (*The Look of a Feeling: the importance of post-structuralism* #28) offers valuable qualifications to such possibilities:

Technically, a song is an artifact and as such cannot adequately be used as an example of an organism or compound individual; if we do so, we would have to say that the organism is a self-song: it is autopoietic. This is similar to saying that an organism is a system, which is acceptable but slightly misleading in that it is a system with a dominant monad, which is not what we usually mean by a system... . There are similar problems with the metaphor of a song, which does not adequately apply to an organism or sentient holon, nor to a stream or line in a sentient being, but rather to an artifact of a sentient holon. Likewise, the interaction of those artifacts is a song sung by a choir, not a big organism. Gaia, for example, is not a big compound individual, nor a song sung by an individual, but a song sung by a chorus or choir of all sentient beings. That choral song, alas, is being sung off key, it is out of harmony, due to one species singing off-key loudly... There is, however, one sense in which interior developmental lines are indeed artifacts, namely, artifacts of the transcendental Self... I will continue to refer to developmental lines or streams as songs, simply because the analogy is so useful, but only with all of those qualifications.

A splendid justification for eliciting the pattern of songlines of the noosphere (*Cultivating the Songlines of the Noosphere: from presentations by representatives to embodying presence in transformation*, 1996). Or, combining classical tales, is adocacy of such virtuality a case of yet newer "clothes for the Emperor" (Nero) and "fiddling while Rome burns"?



This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/).

For further updates on this site, [subscribe here](#)