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Alternative view of segmented documents via Kairos

26 March 2010 / Draft

System Dynamics, Hypercycles and Psychosocial Self-organization exploration of Chinese correlative understanding

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Produced on the occasion of the [enhanced activation](#) of the circular [Large Hadron Collider](#)

Introduction

This document develops commentary in *Club of Rome Reports and Bifurcations: a 40-year overview* (2010). It is specifically concerned with how interrelated initiatives, such as those indicated there, might be understood as effectively mapping the territory of preoccupations with global governance -- especially given their problematic relation to each other and to alternative perspectives.

The question is raised there as to why self-reflexivity is resisted in relation to mapping psychosocial dynamics (*Consciously Self-reflexive Global Initiatives: Renaissance zones, complex adaptive systems, and third order organizations*, 2007). Factors for an "eightfold way" which might merit discussion could therefore include:

- uptake/consensus:
 - uptake: namely the consideration given to any mapping initiative from other perspectives, as suggested by the "bifurcations"
 - consensus: as with the challenge highlighted in relation to climate change science and appropriate strategy, notably as dramatically articulated in a widely syndicated editorial (*Fourteen days to seal history's judgment on this generation*, *The Guardian*, 7 December 2009).
- criticism/animosity:
 - criticism: namely the technical criticism advanced, as with reactions to any modelling initiative, specifically as documented by Graham Turner (*A Comparison of the Limits to Growth with Thirty Years of Reality*, CSIRO 2007)
 - animosity: as a significant factor in the interrelationship between mapping initiatives, as recognized with respect to business in *The Economist* (*Look Forward in Anger: personal animosity is a mighty force in business, for good as well as ill*, 20 March 2010).
- complexity/time required:
 - complexity: given that the more complex the map, the less likely it is to be widely comprehended and used, and the greater the potential for unremarked errors (Dion Nissenbaum, *Graphic Shows Complexity Of US Counterinsurgency In Afghanistan*, *The Huffington Post*, 22 December 2009; Dion Nissenbaum, *The great Afghan spaghetti monster*, *Checkpoint Kabul*, 20 December 2009).
 - time required: in a context of increasing information overload, any mapping tool requiring significant learning time is liable to be ignored as irrelevant
- attention span/forgettability:
 - attention span: in what has been recognized as an emergent "blip culture", the attention span available for absorption of information on a map may be inadequate in comparison with what is required to make effective use of it
 - forgettability: the 40-year span review of initiatives associated with the Club of Rome highlights much that has been readily forgotten in a context where the erosion of collective memory is a factor (*Societal Learning and the Erosion of Collective*

Memory: a critique of the Club of Rome Report: No Limits to Learning, 1980).

Essentially these points raise the question of whether designing a map of value for global governance should build in factors regarding the process of how it is designed, used and comprehended -- notably with respect to what may be ignored, as previously discussed (*Mapping the Global Underground*, 2010; *Recognizing the Psychosocial Boundaries of Remedial Action: constraints on ensuring a safe operating space for humanity*, 2009). Basically the question is how self-reflexive is the map?

Viable governance for the future would seem to need to incorporate such disparate dimensions rather than seeking to marginalize some of them -- for in seeking to do so it increasingly alienates itself from voters, rendering the possibility of strategic traction problematic. The challenge may be one of reframing all strategic initiatives through new metaphors that can be readily communicated (*In Quest of Mnemonic Catalysts -- for comprehension of complex psychosocial dynamics*, 2007).

The focus here is on traditional insights from Chinese culture and various efforts to highlight their relevance to the understanding of complex systems, especially in the manner in which they offer an explicit -- and much needed -- bridge between systematic formalization and its understanding through metaphor. The relevance of such exploration is enhanced by recognition that the increasing significance of Chinese foreign policy may be informed by insights that are outside conventional western patterns of understanding.

The following argument also serves as an introduction to further development of specific aspects in a separate document (*Adaptive Hypercycle of Sustainable Psychosocial Self-organization: designing a mapping of a Chinese metaphorical pattern language*, 2010).

Integrative exercise for the future

Potential of Chinese insights?: The dysfunctional fragmentation associated with the bifurcations from the original insight regarding the need to address the "predicament of mankind", recalls the much-quoted warning of [George Santayana](#): *Those who cannot remember the past are condemned to repeat it*. Following recent concern with an integrative approach to the future, it would seem appropriate to point to possibilities that remain to be explored (*Self-reflexive Challenges of Integrative Futures*, *Futures*, 40, 2, March 2008).

Given that the Club of Rome initiatives of the past, and the bifurcations, together reflect a primarily western bias, the emergent role of China on the global scene suggests the special merit of giving some consideration to frameworks emerging from that culture. This is consistent with the argument of Susantha Goonatilake (*Toward a Global Science: mining civilizational knowledge*, 1999) as separately discussed (*Enhancing the Quality of Knowing through Integration of East-West metaphors*, 2000).

The relevance of traditional cultural concepts has recently been recognized in relation to China's foreign policy (David Lai, *Learning from the Stones: a go approach to mastering China's concept, Shi*, Strategic Studies Institute, United States Army War College, 2004; Josh Kerbel, *Thinking Straight: cognitive bias in the US debate over China*, Studies in Intelligence, 2004). This follows from earlier strategic analysis of the Vietnam war (Scott Boorman, *A Protracted Game: a wei-ch'i interpretation of maoist revolutionary strategy*, 1971). It is appropriate to note that two metrics of fundamental importance to current decision-making -- with respect to financial risk-management and climate change -- were developed by sino-japanese mathematical economists (*Uncritical Strategic Dependence on Little-known Metrics: the Gaussian Copula, the Kaya Identity, and what else?* 2009).

Of particular relevance to this exercise is the emerging recognition of the relevance of Chinese insights in cybernetics (Maurice Yolles and Paul Iles, *The Knowledge Cybernetics of Culture: the case of China*, *International Journal of Knowledge and Systems Sciences*, 3, 4, December 2006; Maurice Yolles and Zude Ye, *From Knowledge Cybernetics to Feng Shui*, 2005). There is some irony to this given that Chinese culture was one of the early inspirations for the binary coding system fundamental to computer operation.

The *Encyclopedia of World Problems and Human Potential* (one of the "bifurcations") contained an experiment in the interpretation of the Chinese classic, the *I Ching* (or *Book of Changes*), for contemporary strategic issues, given the appreciation of its traditional role in Chinese governance (*Transformation Metaphors -- derived experimentally from the Chinese Book of Changes (I Ching) for sustainable dialogue, vision, conferencing, policy, network, community and lifestyle*, 1997).

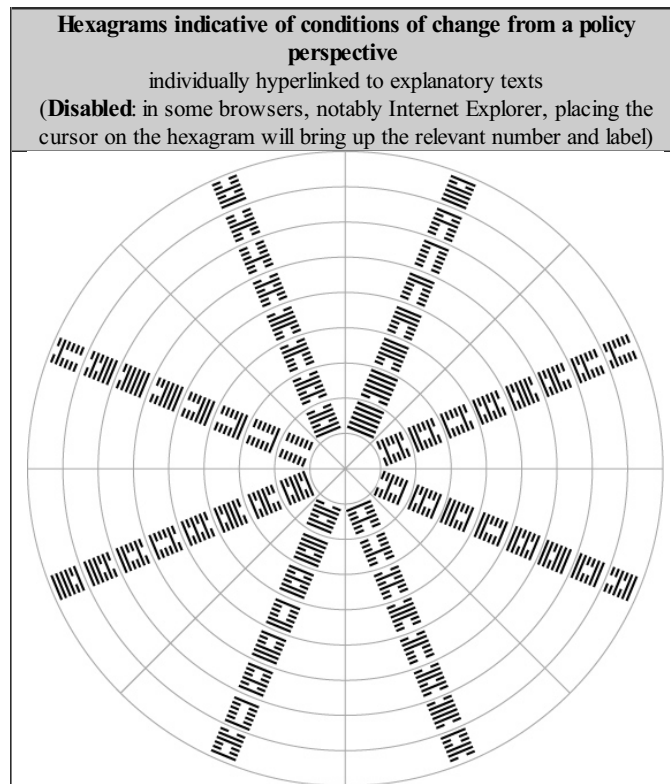
A much-debated, western synthesis is the **AQAL framework** of the Integral Movement, instigated by [Ken Wilber](#), which endeavours to integrate eastern perspectives (Steve McIntosh, *Integral Consciousness and the Future of Evolution: how the integral worldview is transforming politics, culture and spirituality*, 2007). It use was proposed as a means of providing an organizing framework for a conference of the State of the World Forum on climate change (Washington, 2009). The question is whether such inherently integrative perspectives would reframe the Club of Rome initiative and its bifurcations -- if new responses to the "predicament of mankind" are to be envisaged. It is of course also the case that any such initiative, however integrative its intentions, evokes bifurcations which presumably need to be understood as a feature of change itself, as tentatively discussed (*Coherent Patterns of Schism Formation, Bifurcation and Disagreement -- and the associated bonding, encounters and agreements they evoke*, 2001) -- as indeed implied by the interrelated conditions of the "*Book of Changes*".

Experiment: The question then is whether there is any degree of correspondence between the Club of Rome initiative and its bifurcations (as responses evoked by requisite variety for governance) and such schemes -- purportedly of relevance to governance from a different cultural framework. The following exercise should therefore be considered as an afterthought -- of potential value to the future -- evoked by frustration with the experience of a 40-year history and its inadequacy to the challenges of the times.

The procedure summarized by the diagram below has been to make use of the ordering of the 64 change conditions encoded as hexagrams in the *I Ching*. The 8 trigrams (of which the hexagrams are composed) are conventionally grouped in a circular configuration (*BaGua*), in one of two arrangements. The hexagrams are then typically grouped into a tabular arrangement of 8 corresponding "houses" (*Organization of I Ching hexagrams in terms of traditional "houses"* 1995). The approach taken below is to configure these "houses" in circular form, corresponding to the core *BaGua* (after which the houses are named) as a means of approaching the quadrant organization of the AQAL system. The question is whether the Club of Rome initiative and its bifurcations can be understood both as

corresponding to quadrants of that system and to four paired sets of "houses". **It should be stressed that this exercise is solely intended to evoke discussion and is not proposed as a definitive correspondence.**

Configuration: One advantage of the elements of the configuration below is that each hexagram in the diagram is explicitly hyperlinked to a document interpreting its relevance from a policy/strategic perspective -- in the light of traditional commentary. These 64 documents are integrated into 6 complementary sets of corresponding documents (on sustainable dialogue, vision, conferencing, network, community and lifestyle), making 7 interlinked sets in all. The focus of each set might be said to be relatively closely related to the preoccupations of the Club of Rome and its bifurcations. Although the diagram below provides access to the "policy" set initially, the primary mode of access to the array of documents and related tools is via the above-mentioned page ([Transformation Metaphors](#), 1997).



Correspondences?: A first question arising from such a diagram is the implication that the 8-fold *BaGua* set might bear some correspondence to the 4-fold AQAL system. This clearly calls for careful exploration. Surprisingly it would appear that this possibility has not been actively explored, although mentioned in earlier papers by this author ([Interrelating Metaphors to enable a cycle of transformation between epistemological modes](#), 2007). Of related interest within the AQAL framework is whether the Club of Rome initiative and its bifurcations correspond distinctly to the four AQAL quadrants -- if only as a demonstration of the requisite variety engendering the bifurcations..

If the various forms of "opposition" (noted in the [earlier paper](#)), both to the Club of Rome initiative and its bifurcations, are themselves to be taken as being a challenge to integration, one of the questions is whether the pairing of the "houses" -- possibly within quadrants -- offers a means of recognizing the functional role of such opposition in each case. Does one of any pair of "houses" correspond to an initiative and another to rejection of that initiative? The two together would then be complementary in a cybernetic sense as a cognitive sub-system.

Statics vs Dynamics: A diagram such as that above can of course be subject to useful criticism because its essentially static nature obscures both the dynamics of change (with which it is explicitly associated, as the commentaries clarify) and some fundamental issues about how such a document is to be "read" as a coding system -- especially to the extent that a degree of alternation is built into the significance of the hexagrams. Some of these issues have been addressed in separate experiments ([Embodying Values Dynamically through Alternation: integrating sets of polarized static values through indicative metaphor](#), 2008; [Sustainability through Magically Dancing Patterns](#), 2008; [Animation of Classical BaGua Arrangements: a dynamic representation of Neti Neti](#), 2008; [Dynamic Exploration of Value Configurations: interrelating traditional cultural symbols through animation](#), 2008). Other experiments of relevance are the use of [hypergraph techniques](#) to explore such relationships ([Mapping Songlines of the Noosphere: use of hypergraphs in presentation of the I Ching and the Tao te Ching](#), 2006).

Of particular interest is the effort of [Robert Daoust](#) ([Map for an Algonomic Pain Management](#), 2009; [Part 2](#), 2010), combining a mapping approach based on the *I Ching*, with a framing of the challenge in terms of complex systems dynamics -- especially in the light of the role of imagination in opposing initiatives in response to the "predicament of mankind" or favouring those variously held to be "unrealistic" ([Imagining the Real Challenge and Realizing the Imaginal Pathway of Sustainable Transformation](#), 2007). There is some irony to the 40-year history of the above initiatives in that the role of "imagination" was effectively deprecated and ignored, despite calls for "imaginative thinking", preoccupation with "image" and vast military expense on engaging "hearts and minds".

Assumptions: It is important to stress the degree to which it is appropriate to consider diagrams such as that above as experimental and speculative. This may apply as much to purportedly fundamental frameworks such as AQAL as to subsequent integrative efforts -- a

challenge for any future approach to the "predicament of mankind". Ken Wilber makes a case for AQAL being fundamental in response to the effort to develop it further as made by Lexi Neale ([Introducing The AQAL Cube Perspectives: transcending and including the AQAL square](#), *Guest Blog*, 12 June 2009):

The following is one possible extension of the basic AQAL framework. Lexi presents it as the fundamental framework, whereas in my opinion it is but one of several possible extensions of the simpler, more fundamental framework, anchored in the present moment. But it won't work as the fundamental framework because it puts too much stuff in to go all the way up, all the way down, and thus actually ends up leaving out important dimensions. (Ken Wilber, *Guest Blog*, 4 November 2009).

Given the Club of Rome initiative and its bifurcations, how is "fundamental" to be understood and by whom? What then of integral futures in the future?

System dynamics, hypercycles and psychosocial self-organization

The integrative exercise above is potentially significant in relation to the original consideration by [Erich Jantsch](#) of cyclic self-organization of social systems (*The Self-Organizing Universe: scientific and human implications of the emerging paradigm of evolution*, 1980). As discussed in a commentary on [Embracing Difference: system dynamics](#) for the [Global Strategies Project](#) in the above-mentioned *Encyclopedia*, Jantsch draws attention to the work of [Manfred Eigen](#) in molecular genetics. Eigen explores the question of how new information originates (Manfred Eigen and [Peter Schuster](#), *The Hypercycle: A principle of natural self-organization*, 1979). This is a general problem of evolution, which Jantsch relates to development and to learning.

With respect to the subsequent development of Eigen's thinking, William S. Dockens III (*The Asimov Scenario: predicting outcomes of the struggle for cyberspace*, 2000) notes:

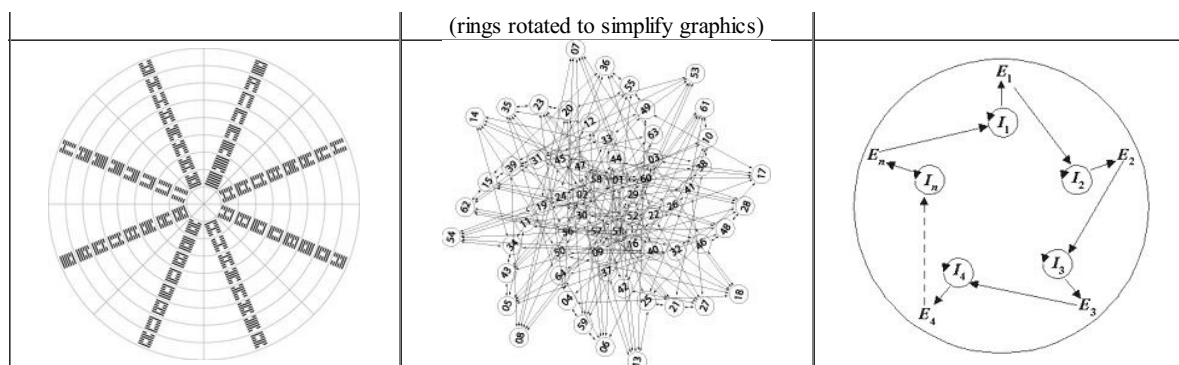
Psychohistory is mental science's approach to evolution. Instead of Darwin's theory, micro geneticists Eigen and Winkler's (1983) *Life/Death Game* is evolution's conceptual framework. All organisms, including *Homo sapiens*, take part in a game that resembles *wei-ch'i* (Japanese *go*). In the *Life/Death Game*, survival is a process rather than a goal, strategies are learned and inherited, both at the same time. Laws of "Chance" and (Necessity) operate simultaneously. The result is an existence that is not strictly determined, but determined more or less. Organisms adapt to the laws of the *Life/Death Game* by means of rules. According to Eigen and Winkler, it is the ability to adapt by means of rules that constitutes "understanding". In fact, only the rules can be understood.

In a subsequent study, Dockens (*Time's Feminine Arrow: a behavioral ecological assault on cultural and epistemological barriers*, *Behavioral Science*, 2007) argues

Like a powerful, hardly perceptible wall, the psychoanthropological barrier lies between the group formulations that characterize social psychology, sociology, and ethnology and the subjective reasoning that characterize individual modes of thought. More obviously, but equally as formidable, are the epistemological differences separating researchers within each of the scientific disciplines. As a consequence, humanities, behavioral sciences and biological sciences in general, and general systems in particular, lack the connectivity necessary for the broad unified approach that is prerequisite to applying multidisciplinary research to complex social, personal, ethnic, and gender problems. Eigen and Winkler's game theory optimization, together with recent developments in mathematics, microgenetics and ethnology, make it possible to integrate the social physics of Nicolas Rashevsky and the game theory formulations of Anatol Rapoport to produce Synchrony, a unified approach, which though not a seamless web, comes as close to a seamless web as is theoretically possible. But in accepting Synchrony, behavioral scientists must first learn to play *go*, then adopt the concepts of dual cognition, dual time scales, self-reference, chance and necessity. Philosophers and ethnologists must deal with ecological "optimizations" of ethics and cultures. And, finally, as far as groups are concerned, all will have to give up permanent hierarchies, adopt a "feminine" mode of reasoning as optimal, then accept behavioral science's role of "Guardian of Time's Feminine Arrow".

The question is how the new information emerges to provide the basis for any new patterns of ordering. Any given language, or "answer domain", effectively functions like a self-replicating ecosystem. [Ramon Margalef](#) (*Perspectives in Ecological Theory*, 1968) had described the evolution of such ecosystems as a process of information accumulation. Each such system seeks information from the environment, but only to use it to prevent the assimilation of more new information. Novelty is continuously transformed into confirmation. The question is how any new order can emerge under such circumstances. Eigen uses the term "hypercycle" to denote any such new order. A hypercycle is a closed circle of distinct transformatory or catalytic processes in which one or more participants act as autocatalysts.

<p>Preliminary indication of potential relevance of a hypercycle perspective as implied by the changes encoded by the set of hexagrams representing conditions of change (from the so-called <i>Book of Changes</i>) [Arguments relating to the spiral representation below are developed further in detail in Adaptive Hypercycle of Sustainable Psychosocial Self-organization: designing a mapping of a Chinese metaphorical pattern language]</p>		
<p>Hexagram organization by "houses" (reduced version of image above)</p>	<p>Indication of transformation pathways between conditions represented by hexagrams in image on left</p>	<p>Illustrative representation of hypercycle (from <i>Principia Cybernetica</i> entry)</p>



The above set of images is indicative of the possibility of considering the interrelated set of psychosocial conditions represented by the set of hexagrams as based on what amounts to a hypercycle. As noted in a consideration of fractals by Giuseppe Damiani (*Evolution and Regulation of Metabolic Networks*, in: Gabriele A. Losa, Danilo Merlini, Theo F. Nonnenmacher, Ewald R. Weibel, *Fractals in Biology and Medicine*, 2005):

The concepts of a metabolic hypercycle and of binary processes would greatly facilitate people's intuition about the dynamics of physical and biological systems. A surprising aspect of the proposed model is its similarity with ancient ideas of Hermetic, Hinduist and Taoist philosophers. The main concepts of Taoist medicine are described in detail in the *Nei Ching Su Wen* (The Yellow Emperor's Medicine Classic)... The Taoist concept of health can best be defined as a normal dynamic balance between Yin and Yang... At first the idea of Yin and Yang seems very simplistic; it is not, it describes the basic changing balance of nature: the metabolic hypercycle. (p. 267)

The last remark is developed from a different perspective by A. C. Graham (*Yin-Yang and the Nature of Correlative Thinking*, The Institute of East Asian Philosophies, 1986) and has been related to discussion of the credibility of "correspondences" (*Theories of Correspondences and potential equivalences between them in correlative thinking*, 2007).

For Jantsch: "Hypercycles...play an important role in many natural phenomena of self-organization, spanning a wide spectrum from chemical and biological evolution to ecological and economic systems and systems of population growth." (1980, p.15). Eigen, in reporting on his detailed analysis with Peter Schuster of the emergence of such new order (1979), states: "The self-replicative components significant for the integration of information reproduce themselves only in a coexistent form when they are connected to one another through cyclic coupling. The mutual stabilization of the components of hypercycles succeeds for more than four partners in the form of nonlinear oscillations..." (p.252).

Such a hypercycle can be seen as a linking process between the participating (sub)systems, themselves cyclically ordered. The formation and maintenance of such a cycle which runs irreversibly in one direction and reconstitutes its participants and thereby itself, is possible only far from equilibrium. Its rhythm is controlled by the cycle of the slowest acting participant, thereby liberating transformative energy steadily rather than explosively (p. 90).

Of further interest is the effort by Chinese scholars to integrate understandings of the hypercycle with traditional Chinese concepts -- including the above-mentioned *shih*, considered of relevance to western understanding of Chinese foreign policy:

- Te-I Yao (*The Dialectic Relations among Li (Noumenon), Chi (Energy) and Shih (Position) in Organizational Communication*, *China Media Research*, 2008) attempts a dialectic synthesis of eastern and western thinking specifically inspired by the hypercycle theoretic concepts of organization. The approach transcends the individual concepts and proposes a multi-level and multi-dimensional view of organizational communication.
- Chung-Ying Yang (*A Comparison Study of System Concept and Its Implication to Management and Organization - System Theories and I-Ging Perspectives*, 2008 (in Chinese) reviews the literature of general system theory, cybernetics, information science, dissipative structure theory, synergetics, hypercycle theory, and complexity theory. Based on rules of structural-functional relationship, information feedbacks, competitive collaborations, ordered fluctuations, advancing evolution, the study explores of *I-Ging* literature infers five rules: 'Rule of unified controversies, Rule of trigram's multifarious structure, Rule of procedure in growth and development, Rule of reinforcing/balancing causal connections, Rule of natural system's evolution.' It concludes with some general conceptions from system theories and *I-Ging*, and discusses organizational and managerial implications. With respect to organizational implications it discusses the relation among 'Xi-Han-Yi-Gua-Wu-Jue-Wei and Organization,' *Tai-Ji-Yin-Yang-Zhang-Luo* and Organizational Life Cycle, 'Jing-Fang-Ba-Gong-Liu-Shi-Si-Gua and Organizational Change,' and *Xian/Hou-Tian-Liu-Shi-Si-Gua* and Organizational evolution,' and so on. It also discusses managerial implications from from *Tai-Ji*, *Yin-Yang*, *Wu-Xing*, *Ba-Gua*, *Liu-Shi-Si-Gua*, and *Yi-Chuan*. In the light of the rules emerging from the study, three suggestions are made for future research: 1. to explore mathematical research and modeling; 2. to set up a conception in system science of *I-Ging*; 3. to extend the approach to organizational and managerial studies.

Within the framework of a discussion addressing complex micro-meso-macro systems couplings, Abir U. Igamberdiev (*The Meso-scale Level of Self-Maintained Reflective Systems*, 2005) argues;

The reflective system of living beings (hypercycle) consists of catalysts, substrates and an embedded subset of substrates serving as a matrix for catalysts' reproduction (Eigen and Schuster, 1979)... Code interacts with the whole reflective system as

its embedded digital description, which limits its development to simple recursive rules. It is a computable part of the non-computable system similar to the set of Godel numbers within the arithmetic system that are necessary for its description (Igamberdiev, 1998). The generalized structures similar to the genetic code (square matrices of grouping pairs of opposites corresponding to the temporal progression of the phenomenal world) are present in Chinese *I Ching* book and may represent a general rule of establishing invariants through the unfolding of reflection (Merrell, 1992). The pattern of the genetic code could be formed on the basis of search of the optimal variant of the reflective structure. (p. 104)

In a discussion of self-organization in the emergence of life and its processes, Omar Pandoli (*Supramolecular Hybrid Organic-Inorganic Multicomponent Architectures in Solution and on Surface*, 2008) notes that one scenario begins with catalytic cycles and "hypercycles" (cycles of multiple feedback loops) formed by enzymes, which are capable of self-replication and evolution. He however notes that creativity - in general sense, the creation of a new thing, a new thinking, a new functionality or a new structure - emerges from a "contamination process" of different disciplines such as biology, chemistry, physics, architecture, design, philosophy and science of complexity. Again he refers to Chinese philosophy, emphasizing movement and change, developing the notion of: *dynamic patterns which are continually formed and dissolved again in the cosmic flow of the Tao. In the I Ching, or Book of Changes, these patterns have been elaborated into a system of archetypal symbols, the so-called hexagrams.*

There is obvious merit in exploring the possibility that fundamental patterns of organization at the molecular level may be of relevance in psychosocial systems in the light of any degree of system isomorphism, if only in terms of the probability that they may be intuitively more comprehensible (*Beyond the Standard Model of Universal Awareness*, 2010; *Climbing Elven Stairways: DNA as a macroscopic metaphor of polarized psychodynamics*, 2007; *Archetypal otherness -- "DNA vs. I Ching"*, 2007; *Engaging with Questions of Higher Order: cognitive vigilance required for higher degrees of twistedness*, 2004). If it "works" at the molecular level, why would the cybernetic pathways not be of relevance at other levels?

The relation of the "health" of psychosocial systems at the collective level to disruptions of systems at the molecular level in disease in individuals clearly also merits exploration (*Cognitive Implications of Lifestyle Diseases of Rich and Poor: transforming personal entanglement with the natural environment*, 2010).

Requisite map for governance in the future?

The main paper (*Club of Rome Reports and Bifurcations: a 40-year overview*, 2010) raises the question as to where is the map to navigate a turbulent emerging future? How best to understand the form and shape of the space "populated" by global governance initiatives -- and variously hostile reaction to them? The occasional celebration by myth that any such map is hidden within whoever is in quest of it holds an ironic truth if the pattern in question is evident in the organization of molecular pathways at the cellular level -- of *metabolic pathways* (*Metabolic Visualizer*; Doutor Pedro Silva, *A general overview of the major metabolic pathways*, 2002).

Given the arguments for self-reflexivity, another approach, in the light of current reflections by a number of authors on cognitive engagement with the environment is, controversially, to consider the territory as the map -- a practice common in indigenous societies (*The Territory Construed as the Map: in search of radical design innovations in the representation of human activities and their relationships*, 1979).

It could be fruitfully assumed that each of the initiatives, and their components, could be understood as a consequence of a form of speciation within an ecosystem of modelling/mapping approaches. The emergence of new initiatives would then be an effort to establish a distinct competitive advantage, whether or not the older efforts continue to co-exist with the newer, at least to some degree. The maps could then each be seen as partial approaches to a more comprehensive understanding. Mapping the "location" of the initiatives in relation to one another would then constitute a significant exercise in self-reflexivity -- compensating for the tendency of each to imply claims for more comprehensive significance that is appropriate. Why is self-reflexivity resisted in relation to mapping psychosocial dynamics (*Consciously Self-reflexive Global Initiatives: Renaissance zones, complex adaptive systems, and third order organizations*, 2007)?

Configuring "sides" and "braiding" discourse

Part of the challenge of "global" democracy is to configure the many "sides" into as close an approximation to the sphere constituted by the "globe" in reality (*Spherical Configuration of Categories -- to reflect systemic patterns of environmental checks and balances*, 1994). This is a cognitive challenge as well as a socio-political challenge, discussed separately in terms of polyhedral governance (*Towards Polyhedral Global Governance: complexifying oversimplistic strategic metaphors*, 2008; *Metaphorical Geometry in Quest of Globality -- in response to global governance challenges*, 2009). Whilst it is accepted as a fact that there are people on the other "side" of the world who are awake (whilst those on this "side" are asleep), it remains difficult to integrate the reality of this awareness -- as jet lag so ably demonstrates.

To the extent that the initiatives (and those identified with them) effectively constitute or are associated with threads of discourse, the challenge of "mapping" may also be expressed as one of "weaving" together variously coloured threads (*Interweaving Thematic Threads and Learning Pathways: noonautics, magic carpets and widdomes*, 2010). The braiding together of threads in this way may indeed be implicit in the relations between "conversations" amongst the participants in the above initiatives over the years. The question is what explicit form this might take that would be as fruitful as the mythical *Ariadne's thread* -- for the guidance of global governance out of the labyrinth of challenges. Given the distinctive implicit "colouring" of the hexagrams, their pattern above might be considered indicative of cognitive "braiding" possibilities -- especially in the light of the knowledge cybernetics explored by Maurice Yolles (as mentioned above)..

Given the potential cognitive implication of self-reflexivity in relation to governance, "braiding" can then be appropriately considered in the

light of the argument of Douglas Hofstadter (*Gödel, Escher, Bach: an Eternal Golden Braid*, 1979). Such a braid offers a further possibility of considering a simplistic caricature of the potential implicit in what the future may recognize as the "functionally requisite" bifurcations above (ignoring the cross-overs between them):

- **Gödel (incompleteness theorems)**: with which the mathematics of the modelling initiatives are potentially most closely associated (implying useful questions regarding the scope of global models and the factors they ignore in the face of uncertainty). This "thread" has not yet been able to correct the tendency either to base strategic initiatives on singular metrics or to omit such factors as population from climate change concerns (*Uncritical Strategic Dependence on Little-known Metrics: the Gaussian Copula, the Kaya Identity, and what else?* 2009).
- **Escher** (visualization of paradox): with which the visualization experiments with the thousands of loops of connectivity in the databases of the *Encyclopedia* initiative might be most closely associated (especially in the light of the carefully profiled contradictions). Despite the explosion in "networking" and "visualization", this "thread" has not yet been able to enable relevant configurations of higher order of integration and comprehensibility of "dissonant" complementary perspectives (*Polyhedral Empowerment of Networks through Symmetry: psycho-social implications for organization and global governance*, 2008).
- **Bach**: with which the cultural preoccupations of the Club of Budapest are most closely associated (especially in its related consideration of the cybernetics of human knowing and second order cybernetics). This "thread" has as yet been unable to integrate the diversity of psychosocial preferences -- "ways of knowing" -- best exemplified by the use as an anthem by the European Union of Beethoven's *Ode to Joy* in contrast with European popular acclaim for the demonically-masked heavy metal/rock band *Lordi*, winners of the 2006 Eurovision Song Contest (*Strategic Challenge of Polysensorial Knowledge: bringing the "elephant" into "focus"*, 2008).

Given the shared original governance preoccupation with the "predicament of mankind", the potential implicit in these approaches can be reframed in terms of the refinement recently brought to his original argument by Hofstadter in *I Am a Strange Loop* (2007). There he sought to clarify the central message of *Gödel, Escher, Bach* by demonstrating how the properties of self-referential systems can be used to describe the unique properties of human minds -- and consequently of the human identity at the core of the "predicament" and any strategically relevant effort to comprehend it.

Of course if the myth of Ariadne (and the navigation by governance out of the labyrinth of that predicament) is to be taken further, consideration can be given to handling the *Minotaur* dwelling in that labyrinth (*Viable Global Governance through Bullfighting: challenge of transcendence*, 2009). Paradoxically, an essential feature of the predicament for many individuals in navigating their lives is the sense in which the *Minotaur* is an extremely appropriate caricature of their own experience of global governance -- exemplified by 9/11 and its consequences (*Promoting a Singular Global Threat -- Terrorism: strategy of choice for world governance*, 2002). The "Minotaur" has become the strategic "elephant in the living room" serving to mirror denial and to enhance the credibility of the above-mentioned conspiracy theories.

In terms of the implications of the hypercycle, it is appropriate to consider to what degree it is indeed -- in Hofstadter's terms -- an "eternal braid". As such the challenge is rendered it comprehensible. There is a certain irony to the fact that the dynamics skills of braiding may be of assistance in this respect. Given Hofstadter's other metaphor -- the "strange loop" -- there is a case for exploring how human psychosocial identity may be understood through the dynamics of the hypercycle (*Emergence of Cyclical Psycho-social Identity: sustainability as "psychically" defined*, 2007).

Relevant application of Le Chatelier's Principle

Of relevance to the threatening labyrinthine dynamics of the *Minotaur* is the insight of management management cybernetician *Stafford Beer* (on *Le Chatelier's Principle* as applied to social 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." (*The cybernetic cytoblast - management itself*, Chairman's Address to the International Cybernetic Congress, September 1969)

Immediately predating Hasan Ozbekhan's original proposal to the Club of Rome, it would seem that these dynamics could usefully be built into any future consideration of global strategic management.

Psychoactive engagement

More intriguing is the assumption that the desirable global map is something to be "looked at" rather than being a new kind of psychoactive medium through which people can engage and by which they can be engaged. Steps in this direction are evident in the technology of *situation rooms* and in the experimental, scientific immersion environment of *Allosphere* (*Topology of Valuing: psychodynamics of collective engagement with polyhedral value configurations*, 2008). A case can be made for the dramatically increasing role of interactive video games as a collective transformation towards an engaging, interactive map of relevance to governance (*Playfully Changing the Prevailing Climate of Opinion: climate change as focal metaphor of effective global governance*, 2005).

It is not recognized how much is built into assumptions about the appropriateness of the flat surface on which the text of the above reports are all written. By contrast, a torus holds an interesting position in the discussion of the relationship between form and medium as

fundamental to advanced theories of communication. This notably featured in the work of Niklas Luhmann (*Die Gesellschaft der Gesellschaft*, 1997) as discussed by Michael Schiltz (*Form and Medium: a mathematical reconstruction, Image [&] Narrative*, 6, 2003) in relation to 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. He further notes, that the notion of "space" is the key to reflexivity appropriate to any discussion of form and medium, citing Spencer-Brown (see discussion in *Comprehension of Requisite Variety for Sustainable Psychosocial Dynamics*, 2006).

Such considerations highlight the merit of embodying psychological processes in understandings of the governance challenges sustainability (*Psychology of Sustainability: embodying cyclic environmental processes*, 2002). There is indeed a literature associating consideration of hypercycles with sustainability, various referring to information/knowledge management, and notably by authors of Chinese origin:

- Na Wang, Wenyi Zhang Xiaofang Wang and Lu Liu. *A Research on Dissipative Structure of the Information Resource Organization of E-Government* (IFIP International Federation for Information Processing, 2008): This article starts with the basic assumption of the government information hyper-cycle system consisting of e-government and its object system, depicts the dissipative structure of government information resource organization through introducing superior-rank operator and lower-rank operator in algebra system, and explores actively the self-organized, extensible and universal government information resource organization pattern based on hyper-cycle (PBHC) systematic plan.
- Wolf Dieter Grossmann. *Realising sustainable development with the information society: the holistic Double Gain-Link approach (Landscape and Urban Planning, 2000)*
- Lothar Mayer. *Designing an Economy with Built-in Sustainability (Feasta Review, 1)*. This discusses how the capital/resources feedback loop turns into a hypercycle through being linked to human needs: *The (human!) agents of the system who, from their own experience, know intimately the psychological profile of its customers have the capacity to invent a never-ending stream of new needs and wants. Moreover in a mature capitalist society there is a positive feedback loop connecting, on the one side, the gratification of essential human needs (for love, support and identity) with material satisfiers (impressive homes, cars, TV, clothes) and, on the other side, the deficits and needs that are created and sustained in the process. The cycle thus established displays classic features of addiction, maintaining and feeding on itself. The coldness of economic relationships creates an overwhelming craving for warmth - to which industry responds by offering an abundance of products promising to fulfil this need.*
- Xu Xusong and Zeng Xuegong. *Disorder-Order Theory of Complexity Science Management* (Wireless Communications, Networking and Mobile Computing, 2008) offering a general model for organization innovation and organization evolution is depicted based on the theory of disorder-order.
- Mario Giampietro and Gianni Pastore. *Biophysical roots of 'enjoyment of life'* (In: Nicholas Georgescu-Roegen, et al. *Bioeconomics and sustainability*, 1999) discuss the structure of exosomatic energy flows in society in terms of an autocatalytic look indicating the possibility of using energy inputs converted outside the human body in a way that dramatically amplifies the amount of energy used by society. The associated hypercycle generates a surplus that can be considered a "disposable energy income" for society.
- Zhang Zeqiang and Cheng Wenming. *Reverse Logistics and the Forming of Circular Economy Hypercycle Structure* (Science Innovation Academic Frontier, 2010) introduce their study with the acknowledgement that in recent years, a broad and worldwide consensus has been reached on the great importance of striving for sustainable development. *The traditional industry, characteristic with high investment, high consumption and high pollution, cannot satisfy the demands of sustainable development. Due to the rapid economic development and the relatively limited resources, China has identified the establishment of circular economy as one of key strategies for implementing sustainable development. Reverse logistics plays the key role in the realization of the circular economy. Reverse logistics is the driven force of the forming of circular economy hypercycle structure.* They The authors propose, from the view of hypercycle theory, the forming of circular economy hypercycle structure and the effect of reverse logistics in several different level cycle. They conclude that reverse logistics is the driving force in forming of the structure.

Missing from this literature, however, would seem to be the psychological dimension so intimately encoded by the hexagrams of the *I Ching* as a feature of change, decision-making and credibility. Given hypercycle arguments with respect to molecular biology, is the hypercycle to be understood in some way as the essence of life and living? The elusive quality of this comprehension, so directly and fundamentally accessible, is indicative of the challenge of sustainability.

To what extent is achievement of sustainability dependent on cognitive engagement with a hypercycle intrinsic to comprehension of a sense of identity of higher order? A potentially valuable metaphor is to be found in the art of [sustainable breathing in the playing of the didgeridoo](#) and other such instruments.

In quest of a compass imbued in myth?

There is a certain irony to the fact that the *I Ching* itself has been used as a kind of map as with the geomantic compass (*Feng Shui* compass or *luopan*). Whilst these, and their western equivalents, are now deprecated as technologies of any value (except in construction work in Asia), they are indicative of a dimension missing from the kinds of mapping representation upheld as desirable for decision-making and governance. Put succinctly, blockbuster movies and videos -- like *Avatar* (2009) -- have immensely greater capacity to engage the populations of the world (*Relevance of Mythopoeic Insights to Global Challenges: cognitive integration implied by the Lord of the Rings*, 2009).

Whether "map", "myth" or "compass", perhaps there is a need to shift to a preoccupation with these (and other possibilities) as richer metaphors offering enhanced coherence in governance (*Guiding Metaphors and Configuring Choices*, 1991; *In Quest of Mnemonic*

Catalysts -- for comprehension of complex psychosocial dynamics, 2007).

The question is what can be learnt about framing the future from what in reality engages people? Ironically video games may provide important clues as noted by Steven Poole (*Fun Inc: Why Games Are the 21st Century's Most Serious Business* by Tom Chatfield, *The Guardian*, 13 March 2010) -- and as previously argued (*Playfully Changing the Prevailing Climate of Opinion: climate change as focal metaphor of effective global governance*, 2005). Does the "gap" between interactive games and global modelling highlight a vital gap in the cultivation of human ingenuity on which it has been argued that future survival is so dependent (Thomas Homer-Dixon (*The Ingenuity Gap*, 2000)?

Further development of specific aspects of the above argument in *Adaptive Hypercycle of Sustainable Psychosocial Self-organization: designing a mapping of a Chinese metaphorical pattern language* (2010).

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