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Variety of System Failures Engendered by Negligent Distinctions

Mnemonic clues to 72 modes of viable system failure from a demonic pattern language

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Introduction

Global civilization is currently witness to a variety of systemic failures -- and the recognized potential for more. There is an evident degree of incapacity to encompass their nature, whether or not efforts are made to frame them in terms of a global [problematique](#), or the possibility of a global resolutique (as originally proposed by the Club of Rome) -- or by more recent recognition of the nature of so-called [wicked problems](#).

With respect to the dangers of the current destabilization in the Middle East, one aspect of the challenge lies in the consequences of the arbitrary nature of territorial boundaries, as fruitfully outlined by [Baron Meghnad Desai](#) (*After Paris: Long Cycles in Politics and History*, *The Globalist*, 16 November 2015). His analysis focuses on the secret [Asia Minor Agreement](#) of 1916 (otherwise known as the Sykes-Picot Agreement), arguing that the world still awaits a resolution to the end of the Ottoman Empire, Caliphate or not. The systemically negligent definition in that case is more generally evident as a form of "conceptual gerrymandering". The major problems of today may indeed derive from the unexamined consequences of negligent distinctions in the past, embodied in authoritative assumptions of the present, as separately explored (*Vigorous Application of Derivative Thinking to Derivative Problems*, 2013).

Another aspect is the challenge to comprehension of global systemic complexity. It is increasingly difficult to render the complexities of governance comprehensible, whether in the formulation of policy, to decision makers, to the media, or to those from whom a mandate for new initiatives is expected. The probable ungovernability of global civilization is a matter meriting attention, despite assumptions to the contrary (*Ungovernability of Sustainable Global Democracy?* 2011).

Yet another aspect is to be recognized in the disassociation of many from conventional approaches to governance, whether this takes the form of voter apathy, violent protest, absorption in a variety of distractants (computer-mediated communication, games, the use of narcotic substances, and the like). These variously cultivate imaginative reframing of conventional reality, notably renewing the engagement with fantasy and myth -- and the irrational -- most notably through science fiction and video-gaming.

Especially intriguing in the latter case is fascination with the demonic. This is strangely matched by authoritative condemnation of alternatives to conventional initiatives as implying a demonic inspiration. Such demonisation, of one kind or another, is a common response to any disagreement with preferred modalities -- most notably reinforced by religion. Curiously however it is the attention to mythical demonology, cultivated in some widespread forms of video-gaming (as with *Dungeons and Dragons*), which suggests a potentially fruitful means of encompassing systemic failures in their totality and of engaging with them otherwise.

This possibility arises from a fourth aspect of the challenge, namely the **characteristically unmemorable articulation of systemic issues**. The global comprehension challenged by systemic complexity calls for radically new approaches to handling dynamic patterns of information. These are typically beyond the capacity of fragmented individual disciplines and other specialized modalities. The unprecedented **investment in global information systems and information retrieval does remarkably little to enable integrated**

global comprehension, despite assumptions and claims to the contrary.

The following exploration combines issues arising from the definition of arbitrary system boundaries -- whether across physical, virtual or cognitive territory -- with the mnemonic facilities associated with patterns of demons. The primary focus is therefore on comprehension of system dynamics which typically elude conventional linear approaches to reality -- to the point of necessitating some engagement with **hyperreality**, however that may be understood, as previously discussed (*Reality and Existence of Complex Abstractions*, 2014). Recognized in chaotic system terms, **the problems of governance then suggest their more widespread and comprehensible representation as "demons"**.

These are effectively creatures of a multidimensional hyperreality, namely the "faces of chaos" -- insofar as it can be recognized. However the experiential nature of such entities is also to be recognized in the common use of "our demons" or "my demons" with respect to engaging with life's challenges, and especially its dangerous temptations and the vicious cycles with which they may be associated. Such phrases feature widely in popular lyrics through which their existence is acknowledged. The terms are consistent with reference in the policy sciences to so-called wicked problems, but unfortunately without any comprehensive effort to encompass them in memorable song.

Such demonic personalization usefully frames a sense of individual and collective "disease", more formally framed as sociopathology (*Cognitive Implications of Lifestyle Diseases of Rich and Poor Transforming personal entanglement with the natural environment*, 2010). It also frames the existential vulnerability to potential mortality (*Metaphors To Die By: correspondences between a collapsing civilization, culture or group, and a dying person*, 2013).

Conventionally framed as a focus of concern, **the unmemorable problematique, is thus reframed here as what might be termed a "demonique"** -- extending the jargon promoted by the Club of Rome, as previously suggested (*Evil Loops and Sigils as a Pattern Language*, 2015). An earlier articulation of such an elaboration was framed in terms of the requisite fourfold complementarity between problematique, **resolutique**, **imaginatique** and **irresolutique**, understood as a pattern of perpetual game-playing (*In Quest of Mnemonic Catalysts for Comprehension of Complex Psychosocial Dynamics*, 2007). It is noteworthy that little attention has been accorded to the Club's original advocacy of "resolutique" as articulated by **Alexander King** and Bertrand Schneider (*The First Global Revolution*, 1992).

The focus here on widespread comprehension, and on the **memorability of potential system failure**, contrasts with the distinctive abstractions offered in a variety of specialized models -- for which comprehensibility and widespread uptake are not significant factors. It anchors preoccupation with problematic complexity in the comprehensible dynamics cultivated in traditional folklore and myth -- from which it has been unfortunately disassociated. The uncritical deprecation of such traditional insights is an instance of a wider concern (*Societal Learning and the Erosion of Collective Memory*, 1980).

The widespread current enthusiasm for demonisation, and the credibility it engenders -- even at the highest levels of politics and governance -- was noted previously (*Encyclopedia of Evil Claims, Claimants, Counter-claims, and Sigils*, 2016). There is therefore a case for the following exploration of the advantages to be gained from the **systemic "demonisation of problems"**, as suggested by the traditional set of 72 demons indicated there.

There is however the strange irony that traditionally the discipline of demonology encompasses contrasting entities of equally elusive higher dimensionality, otherwise termed "angels". These also engender widespread popular belief, potentially to be associated with a resolutique. How demonisation might then be matched by an **"evangelisation of solutions"** is of course a feature of the controversial dynamics of **end times scenarios** -- fundamental to some framings of the immediate future of global civilization. Appropriate to this exploration is the matching set of 72 angels and the virtues with which they are associated.

Given the surreal nature of the dynamics of current global governance, the transcendent engagement with **hyperreality** -- through the "demonique" and the "angelique" -- is developed in an annex (*Engaging with Hyperreality through Demonique and Angelique? Mnemonic clues to global governance from mathematical theology and hyperbolic tessellation*, 2016).

Viable systems and their vulnerability to failure

The **viable systems approach** (VSA) is a system theory in which the observed entities and their environment are interpreted through a systemic viewpoint, starting with the analysis of fundamental elements and finally considering more complex related systems. The **Viable System Model** was first proposed by **Stafford Beer**. In general terms, a viable system is finalized toward its vitality throughout viable behavior based upon consonant and resonant relationships. As summarized by Wikipedias:

The viable system model (VSM) is a model of the organisational structure of any **autonomous system** capable of producing itself. A viable system is any system organised in such a way as to meet the demands of surviving in the changing environment. One of the prime features of systems that survive is that they are adaptable. The VSM expresses a model for a viable system, which is an abstracted **cybernetic** (regulation theory) description that is applicable to any organisation that is a viable system and capable of autonomy.

A viable organization is therefore one that is capable of existence independently of other entities in its environment . Organizations can exist in non-viable states, but they are at risk of failure, or at least not meeting their potential). Thus, organizations are benefitted by striving for viability. Viability is achieved by components of an organization filling roles defined by VSM. A viable system is composed of five interacting subsystems which may be mapped onto aspects of organizational structure.

- Subsystem 1 consists of operational elements in an organization. This subsystem consists of the workers generating products or services for the environment. It is broken into components based on their contribution to the environment. Each component has

its own management unit.

- Subsystem 2 coordinates the operations of Subsystem 1. It maintains stability and smooth operations.
- Subsystem 3 provides resources to Subsystem 1, intervening with management of Subsystem 1 components when necessary. Subsystem 3 sporadically audits the outputs of Subsystem 1 to inform Subsystem 3.
- Subsystem 4 observes the environment to help the organization react and plans for the future.
- Subsystem 5 is in charge of organizational policy. It represents the organization in the outside world. It also supports Subsystems 3 and 4.

A breakdown in any of the subsystems will lead to non-viability of the organization. VSM is focused on control to facilitate effective collaboration, which depends heavily on communication throughout the organization.

In broad terms Systems 1-3 are concerned with the "here and now" of the organization's operations, System 4 is concerned with the "there and then" -- strategic responses to the effects of external, environmental and future demands on the organization. System 5 is concerned with balancing the "here and now" and the "there and then" to give policy directives which maintain the organization as a viable entity.

Although there is an extensive literature relating to the viable systems approach, it is intriguing to note how seemingly limited its relevance is held to be to psychosocial systems -- in contrast to technical domains in which the cybernetic perspective is especially valued. This limits widespread appreciation of the approach and the insights it offers. To whom is such an articulation comprehensible and credible?

For example:

- to what extent does widespread preoccupation with the health of the body benefit from its appreciation as a viable system -- despite being notably vulnerable to organ failure and death? Can health be explored in terms of systemic viability? Can a living human body be understood as a metaphor of a viable system?
- to what extent can a belief system be explored and strengthened in terms of insights into its viability in systemic terms?
- more generally, how might it be appropriate to consider the viability of systems of comprehension, especially in the light of insights from critical thinking? What indeed makes for the viability of comprehension? How does understanding of the embodied mind merit consideration in terms of system viability?

Such questions have been variously considered by Maurice Yolles and Gerhard Fink (*Organisations as Complex Systems: an introduction to knowledge cybernetics*, 2006).

As an understanding of "wholeness" and "wholes", the issues can also be considered within the elusive framework of "wholth" (*Wholth as Sustaining Dynamic of Health and Wealth: cognitive dynamics sustaining the meta-pattern that connects*, 2013).

Authoritative imposition of arbitrary boundaries and distinctions

Middle East: In the light of insights into viable systems, to what extent is it appropriate to explore the current crises in the Middle East in terms of systemic viability?

Mention was made above of the consequences of asystemic delineation of territorial boundaries in the secret [Asia Minor Agreement](#) of 1916, as fruitfully outlined by [Meghnad Desai](#) (*After Paris: Long Cycles in Politics and History*, *The Globalist*, 16 November 2015). That argument emphasizes the manner in which current conflicts are playing out unresolved issues dating from the fall of the Ottoman Empire. The Agreement is considered to have shaped the region, defining the borders of Iraq and Syria and leading to the current conflict between Israel and the Palestinians.

Conceptual gerrymandering: The systemically negligent definition in that case is more generally evident as a form of "conceptual gerrymandering". The major problems of today may indeed derive from the unexamined consequences of negligent distinctions in the past, embodied in authoritative assumptions of the present, as separately explored (*Vigorous Application of Derivative Thinking to Derivative Problems*, 2013). More specific examples also merit exploration:

- with respect to an understanding of life as a metaphor of psychocultural viability (*Transcending an Asystemic View of Life: review of The Systems View of Life: a unifying vision*, 2014), notably in sections on *Inadequacy of conventional systems thinking*, *Asystemic organization of unifying vision?* and *Uncritical asystemic selectivity?*
- manipulative dynamics of boundary shifting (*Conceptual gerrymandering and definitional game-playing*, 2002; *Scientific Gerrymandering of Boundaries of Overpopulation Debate: review of The Royal Society report -- People and the Planet*, 2012)
- with respect to an understanding of current crises (*Systemic Crises as Keys to Systemic Remedies: a metaphorical Rosetta Stone for future strategy?* 2008)

Terrorism: Of considerable relevance to the current preoccupation with [terror](#), the authoritative identification of [terrorism](#), and the framing of the [Global War on Terror](#) (GWOT), is the manner in which "terror" is arbitrarily defined to include or exclude particular systemic phenomena which could well be understood as engendering "terror". Examples raising questions regarding the conceptual frameworks enabling such exclusion include:

- crime experienced as engendering fear, as with any associated intimidation, street violence (mugging, etc), kidnapping and its variants (carjacking, etc)
- bullying experienced as engendering fear and undertaken for that purpose, whether in educational institutions, hospices, workplaces, military bases, or prisons
- relational violence experienced as engendering fear and possibly undertaken for that purpose, as with rape, domestic violence, date rape, gang rape

- bondage and its associated violence, most notably in the case of slavery
- forced resettlement with the existential terror most notably associated with life in refugee camps

Especially interesting is the manner in which exclusion is deliberately determined by:

- space or distance, namely the preoccupation is with proximate fear -- and to a far lesser degree (if at all) with that in any distant locations (notably those exposed to forms of collateral damage)
- time, namely the focus on fear engendered recently -- to the exclusion of the implications of that engendered in the past, or that which might become evident in the future (both of which may be transformed insensitively into infotainment). That associated with the Nazi contraction camps has been described as a "detail of history". That associated with the Colosseum of Rome is presented as titillating infotainment to tourists
- legitimacy, namely the exclusion of fear engendered by state military action with its associated collateral damage -- excused in terms of the principles of [just war theory](#)
- security preoccupations, namely the fear engendered by enhanced interrogation and the legal subtleties whereby this is distinguished from torture, whether or not this is deprecated (or legitimated by some form of "just torture theory")
- collective irresponsibility of authorities engendering fear as a consequence of loss of livelihood, as evident in the case of financial risk taking (*Extreme Financial Risk-taking as Extremism: subject to anti-terrorism legislation?* 2009)
- existential insecurity, namely that engendered by [structural violence](#) ensuring that individuals and groups are fearful of what the future holds
- identification with subjection of others to fear in virtual contexts -- namely in a daily diet of media violence and in online video-gaming

Particular cases of relevance are:

- how so-called "shootings", most notably "[school shootings](#)" and "military shootings" (by personnel on military), are most carefully distinguished from "terrorism" -- unless a link (however tenuous) can be established to some party pre-defined as "terrorist". This pattern is most evident in the USA (*Wikipedia List of school shootings in the United States*)
- how terrorism experienced **in the present** is carefully distinguished from that perpetrated within the same culture **in the past** during the course of a revolution through which the current regime displaced a previous regime. This pattern is most evident in France and the USA. The term "terrorism" in fact acquired the significance it has through the [Reign of Terror](#) in France during which some 20,000 people were guillotined. Any recent comparison with beheadings by ISIS has been formally condemned as indicative terrorist sympathies by the current French Prime Minister (Sonya Faure, Cécile Daumas et Anastasia Vécrin, "[Culture de l'excuse](#)"?: *les sociologues répondent à Valls*, *Libération*, 12 janvier 2016).
- modes of capital punishment, in which that employed by ISIS is condemned as "pure evil", despite having been last used by France in 1977, and being currently employed by strong allies of France, notably Saudi Arabia.

Failure mode analysis and systemic dysfunctionality

Failure analysis: Contrasting approaches to the recognition and analysis of failure in particular domains are indicated by the following:

- failure of organs, especially of the human body (World Health Organization, *Conceptual Framework for the International Classification for Patient Safety*. 2009)
- cognitive system failure, as variously identified (American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 2013; Robert L. Schalock, et al. *Intellectual Disability: definition, classification, and systems of supports*, 2009)
- failure of information systems (D. N. T. Gunawardhana and Chandana Perera, *Classification of Failure Factors in Information Systems. International Journal for Innovation Education and Research*, 3, 2015)
- failure of enterprises (Zhaosheng Zhu, et al, *Using Failure Information Analysis to Detect Enterprise Zombies*; Sabine Buckl, et al, *A meta-language for Enterprise Architecture analysis*, 2010)
- mega-project failures (Elliot J. Feldman, *Patterns of Failure in Government Megaprojects: economics, politics, and participation in industrial democracies, Global Dilemmas*, 1985, p. 138-158)
- work-place dysfunctionality (Len Sperry, *Classification System Proposed for Workplace Behavior, Academy of Organisational and Occupational Psychiatry*, 4, 1995, 1)

It is especially interesting to note the apparent lack of references to systemic failure analysis in the case of sports, the military, and intelligence. Given the pattern of military failures in various arenas over the past decades, how is such analysis conducted (or covered up) to enable learning for the future, as variously queried (*What Have We Learned: lessons from Afghanistan and Iraq; Pick Your Battles: ending America's era of permanent war?*, *Foreign Affairs*, November/December 2014; *Transforming the Unsustainable Cost of General Education: strategic insights from Afghanistan*, 2009).

With respect to introduction of new technologies, as noted by Albert V. Bruno, Edward F. Mcquarrie and Carol G. Torgrimso (*The evolution of new technology ventures over 20 years: Patterns of failure, merger, and survival, Journal of Business Venturing*, 7, 1992, 4, pp. 291-302):

Relatively few studies of entrepreneurs have examined the evolution of business ventures over a long period of time. This paper summarizes the fate of 250 technology-based companies founded in Northern California during the 1960s. The three outcomes studied are failure, merger, and continued operation. In addition, interviews with a dozen founders of firms that survived the entire 20-year period shed light on the founders' own interpretations of why they succeeded. By 1988, 50% of the firms in the sample had failed, 32% had merged or been acquired, and 18% had survived as independent businesses. There was a steady and occasionally sharp erosion in the number of survivors throughout the period.... Among the factors predicting failure were

product/market problems such as product timing difficulties, problems of product design, or inappropriate distribution channels; financial difficulties such as initial undercapitalization or problems with the venture capital relationship; and managerial/key employee problems such as imbalance in the management team or succumbing to the trappings of success.

One study of large-scale systems notes, for example:

Large-scale distributed systems are prone to frequent failures, which could be caused by a variety of factors related to network, hardware, and software problems. Any downtime due to failures, whatever the cause, can lead to large disruptions and huge losses. Identifying the location and cause of a failure is critical for the reliability and availability of such systems. However, identifying the actual cause of failures in such systems is a challenging task due to their large scale and variety of failure causes. In this work, we try to understand failures in a large-scale system through a two-step methodology: (i) classifying failures based on their statistical properties, and (ii) using additional monitoring data to explain these failures. We illustrate our methodology through a systematic study of failures in PlanetLab over a 3-month period (Sourabh Jain, et al, *Failure Classification and Inference in Large-Scale Systems: a systematic study of failures in PlanetLab*)

More general approaches to failure analysis are indicated by:

- Oscar Björklund. *Modelling of Failure*. Linköpings University, 2008
- Kenneth Crow: *Failure Modes and Effects Analysis (FMEA)* 2002
- George Forrest: *Quick Guide to Failure Mode and Effects Analysis*. iSixSigma
- V. Bignell and J. Fortune: *Understanding System Failures*. Manchester University Press, 1984.
- John P. van Gigch: *Modeling, Metamodeling, and Taxonomy of System Failures*. *IEEE Transactions on Reliability*, 35, 1986, 2, pp. 131-136; *System Design Modeling and Metamodeling*, 1991
- Ben Meadowcroft: *Why Systems Fail*.

Of particular interest is the systems engineering compendium by John Gall, successively titled as *Systemantics: how systems really work and how they fail* (1986) and *The Systems Bible: the beginner's guide to systems large and small* (2002) -- separately reviewed as *Why Systems Fail and Problems Sprout Anew* (1980).

Cognitive fallacies: With respect to cognitive disability, especially interesting is the systematic identification of fallacies as presented in the extensive ordered *List of fallacies* by Wikipedia. This distinguishes:

<ul style="list-style-type: none"> • Formal fallacies <ul style="list-style-type: none"> ◦ Propositional fallacies ◦ Quantification fallacies ◦ Formal syllogistic fallacies 	<ul style="list-style-type: none"> • Informal fallacies <ul style="list-style-type: none"> ◦ Faulty generalizations ◦ Red herring fallacies • Conditional or questionable fallacies
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Classification of failure and social pathology

Pattern language of failure? Although the previous sections indicate that forms of failure can be variously identified, as with an understanding of systemic failure, curiously elusive is any generic classification of failure as might be reflected in some form of pattern language of failure. As succinctly stated by Kevin Doyle Jones: *Few want to investigate the pattern language of failure; so people reinvent the square wheel*.

Chris Kimble and William Selby (*An Interdisciplinary Study of Information Systems: Christopher Alexander and IS failure*, 2000, pp 256-265), argue that an analogy between the five categories of architectural failings of Christopher Alexander and the four failure types of information systems identified by K. Lytinen and R. Hirschheim (*IS Failures: a survey and classification of the empirical literature*, 1987). The analogy is summarized as follows:

Lytinen and Hirschheim	Alexander from <i>Notes on the Synthesis of Form</i>
Expectation failure	<ul style="list-style-type: none"> • Aesthetic and Functional Failure in adapting to local, physical and social environments • Development of materials and standardised components that are ill-suited for use in any specific application • Inability to balance individual, group, societal and ecological needs
Correspondence failure	<ul style="list-style-type: none"> • Lack of purpose, order and human-scale • Aesthetic and functional failure in adapting to local, physical and social environments
Process failure	<ul style="list-style-type: none"> • Inability to balance individual, group, societal and ecological needs.
Interaction failure	<ul style="list-style-type: none"> • Development of materials and standardised components that are ill suited for use in any specific application. • Creation of artefacts that people do not like.

This articulation does not however offer the richness of Alexander's identification of 253 patterns (*A Pattern Language: towns, buildings, construction*, 1977). An exercise in reframing these into a fivefold set of complementary patterns is one indication of a possible future method of interpretation with respect to failure (*5-fold Pattern Language: proposed for inclusion in Encyclopedia of World Problems and Human Potential*, 1984).

Employing the diseases of the human body as a metaphor, two notable efforts have been made to explore the psychosocial diseases of civilization in pathological terms.

Social problem diagnosis: In a section on *Systems Science and Cybernetics* of the UNESCO *Encyclopedia of Life Support Systems* (EOLSS), a *Social Problem Diagnosis: a sociopathology identification model* (2002) is provided by Paris Arnopoulos. He notably argues:

As it happens, what there is of social pathology is vague and moot, thus open to various and varying interpretations. Nevertheless, social scientists can recognize certain symptoms close enough to diagnose a particular condition. The disagreement is mostly semantic in its labeling, that is why we are here arguing for the necessity of a common nomenclature. Whether consciously aware or consistently applied, nominal norms are indispensable to evaluation. All our method does is raise an implicit or instinctive diagnostic process to a higher explicit and expositive level.

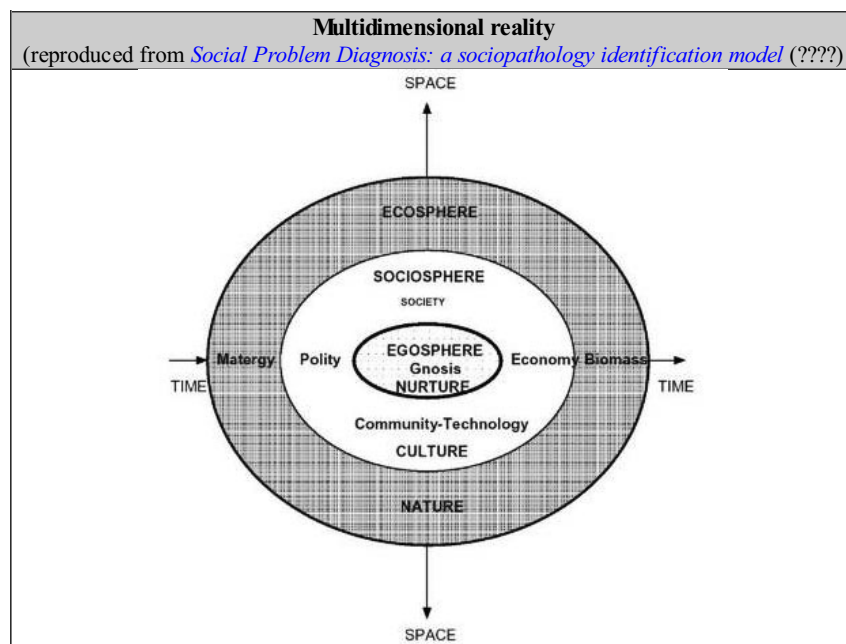
Like individuals writ large, societies suffer from a variety of maladies that accumulate and spread from their individual members. Thus, apathy, anomy and alieny, inevitably spill over from private to public diseases. Social pathologies then have a direct correlation to natural pathologies, as the following examples indicate:

- Hypertrophy, obesity, addiction, boulemia, consumerism, giantism, megalomania.
- Hyperactivity, manic-depression, hyperventilation, hypertension, aggression, hubris.
- Hyperbromy, toxicity, diarrhea, pollution, infection, contamination, epidemy, contagion

This set of typical symptoms could spell out what may be termed as the general disease of maldevelopment, manifested in two opposite states: under and over-development. Obviously, the former hypoanaptix indicates the atrophy or poverty of most countries of the world which have been stalled in a preindustrial state, whereas the latter is reflected in the few hyperanaptic postindustrial systems.

In the final stage of his elaboration, Arnopoulos compares perceived symptoms with conceived diseases and thereby draws conclusions based on the the discrepancy between facts and values in any given case. This leads to the identification of nine critical contemporary world problems:

- Scarcity: Overpopulation, leading to natural resource and fresh water depletion;
- Inequality: Rich-Poor standard of living Gap, increasing frictions and conflicts;
- Immunity: Mutant pathogens overpowering drug efficiency, spreading epidemics;
- Inability: Decision-making inefficacy in complex systems, increasing uncertainty;
- Insecurity: Proliferating global terrorism and sophisticating organized crime;
- Ecology: Adverse interaction between economic growth and natural conservation;
- Ideology: Increasing intolerance of religious, ethnic, racist groups, creating conflicts;
- Technology: Accelerating and disorienting, change creating unemployment;
- Economy: excessive accumulation and rising expectations of capitalism.



Social pathology in the light of knowledge cybernetics: A number of studies have been produced by Maurice Yolles, whether alone or in collaboration with Gerhard Fink, from a formally defined perspective of knowledge cybernetics (*Organisations as Complex Systems: an introduction to knowledge cybernetics*, 2006). With respect to social pathology, these include:

- *A Social Psychological Basis of Corruption and Sociopathology*. *Journal of Change Management*, 22, 2009, 6. pp. 692-73
- *Understanding Corruption and Sociopathology*, *Journal of Organizational Change*, 2009
- *The Social Psychology of Collectives, and their Pathologies*, XIV Congress of International Association for Fuzzy-Set Management and Economy, 2007

- *Modelling Pathologies in Social Collectives*. *European Journal of International Management*, 1, 2007, 1/2, pp. 81-103.

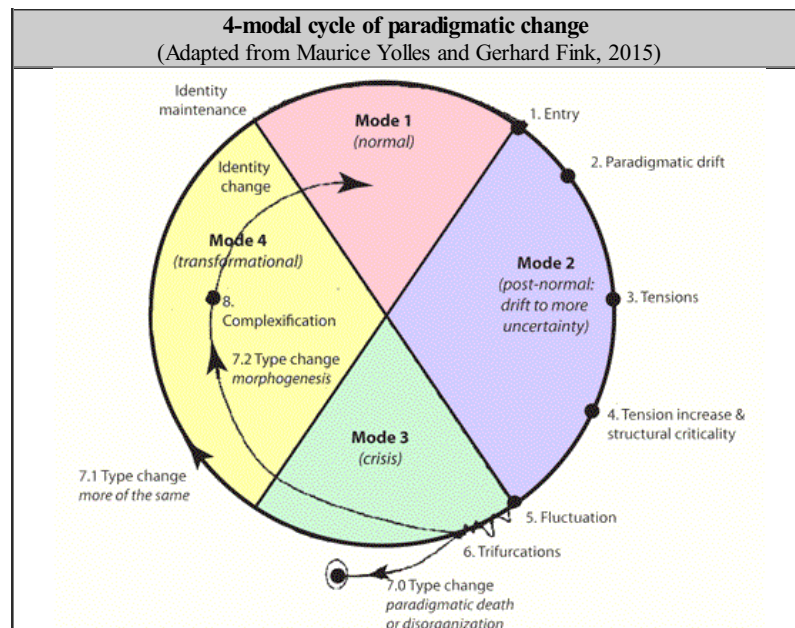
Knowledge cybernetics is used to show how pathologies can develop from the interconnection between such noumenal attributes as ideology and ethics. It is argued that social entities have similar psychological pathologies to individual ones. Piaget's notions of how the mind operates can be applied to corporate personality, and their inability to create and coordinate different perspectives can be seen as an organisational pathology. Knowledge cybernetics adopts a graphical approach to exploring the pathologies of social collectives through a set of modelling techniques. One of these takes an epistemological approach; another is ontological in nature. The two approaches can be distinguished further by saying that the epistemological approach typically adopts lateral processes of analysis, where a particular mode of analysis is exhaustively explored.

System viability is then to be understood as a condition of a system that enables it to respond to its environment. It is able to survive despite the fact it is likely to have pathologies

(conditions of ill-health) that impact on its operative effectiveness. Such systems have dissipative structures and hence maintain a condition of bounded instability, and the only way that they can survive is to provide energy to create order by formulating reactive/affective impulses that maintain requisite variety, and that can respond to the variety of affective/reactive impulses that originate from their complex environment.

In a further study (*Organisation Theory and the Normative Personality*, 2010), the authors make the following points in creating theoretical platform capable of assembling diagnostic tools that can explore corporate pathologies, and hence their potential for dysfunction:

- Organisations are often complex, and understanding their processes, and their successes and pathologies/dysfunction is therefore not an easy task.
- The idea of normative personality has been around as a metaphor for quite a while. This is the first formal appearance of a model of normative personality. It is also the first time that socio-cognitive and trait theory have been linked for the organisation, and the first time that a typology for organisational pathologies has been developed that can be connected with dysfunction.
- While pathologies may arise, they lead to dysfunction under special conditions. The nature of dysfunction is well examined by Sperry (1995), who identifies a number of dimensions that include: strategy/structure mismatch, structural problems, environmental problems, human resource problems, strategy/structure/culture problems, and a host of other problems that might be better expressed as problems that occur under the umbrella of corporate personality disorder (Kets de Vries 1991), like corporate neurosis. The development of such dysfunctional *illnesses* can be analyzed in depth using an appropriate methodology, like that of Beer (1979), or a recursive exploration using knowledge cybernetics.



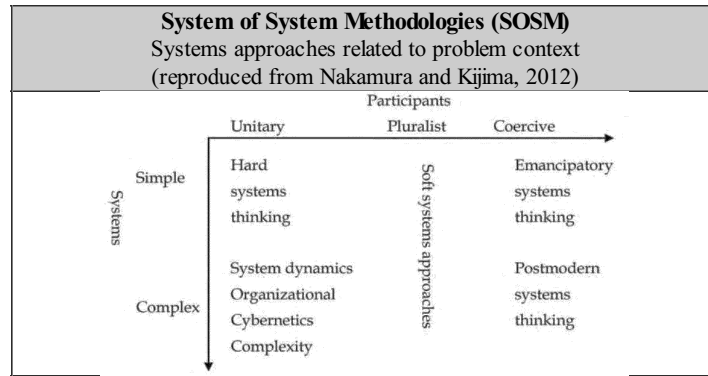
Taxonomy of failure: System of System Failures (SOSF): The studies noted with respect to particular domains suggests the emergence of existence of a general classification or taxonomy of failure, but this is generic, if not implicit, rather than articulated. Whilst general categories are identified the detailed implication suggested by "classification" or "taxonomy" is trantalisngly elusive. It is therefore interesting to consider the considerable body of work of Takafumi Nakamura and Kyoich Kijima who have variously presented a taxonomic system of system failures (SOSF), notably applied to information systems:

- *Failure of Foresight: learning from system failures through dynamic model*. (Proceedings of the 52nd Annual Meeting of the IssS, 2008)
- *A Methodology to Prolong System Lifespan and its Application to IT Systems* (Proceedings of the 53rd Annual Meeting of the IssS, 2009)
- *Total System Intervention for System Failures and Its Application to Information and Communication Technology Systems* (*Systems Research and Behavioral Science*, 28, 2011, 5, pp. 553-566)
- *Total System Intervention for System Failure: methodology and its application to ICT systems* (*International Journal of Knowledge and Systems Science*, 2, 2011, 3, pp. 42-62)

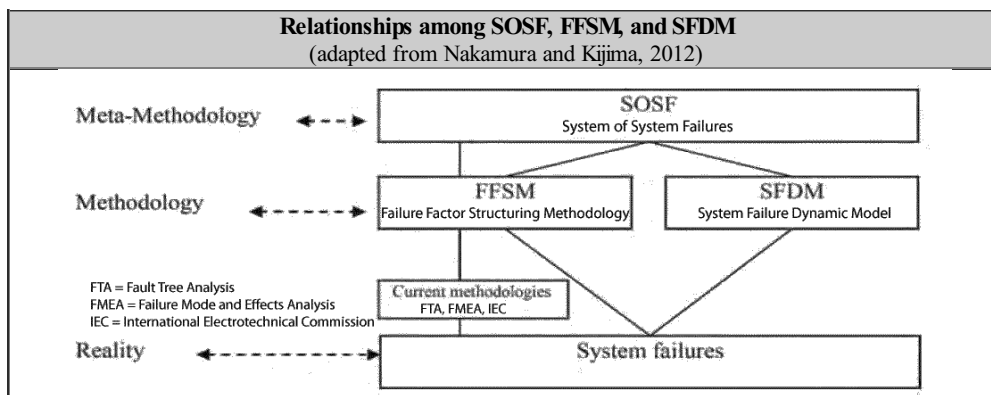
- *System of System Failure: meta methodology to prevent system failures*. (In: Adrian V. Gheorghe (Ed.), *System of Systems*, InTech, 2012)

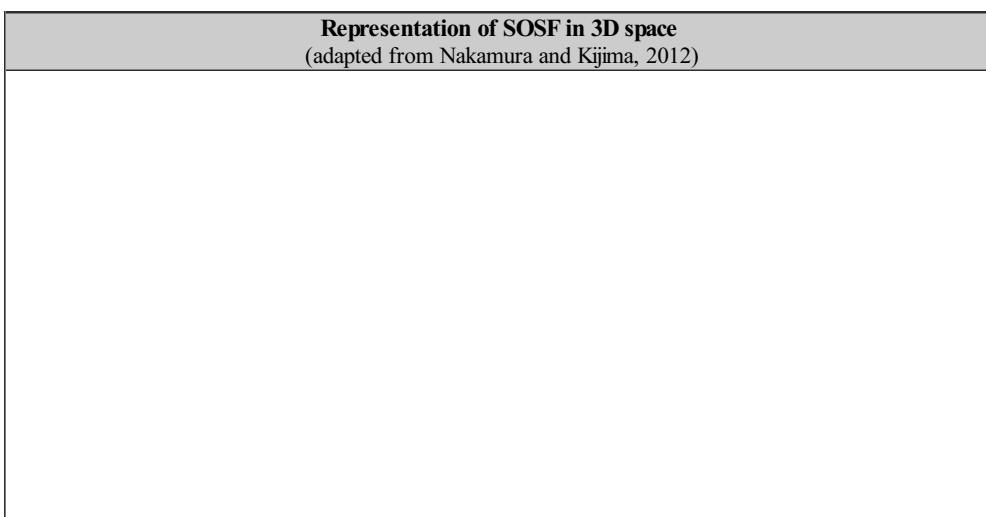
In the most recent articulation (2012) the authors propose a meta methodology called *System of System Failures* (SOSF), along with a system diagnostic failure flow, in order to overcome the shortcomings of current methodologies, whose limitations they review. The need for double loop learning is stressed, namely the ability to ask a question with respect to a current operating norm (i.e., a mental model), thereby enabling people to question basic assumptions, leading to modification of the mental models in place.

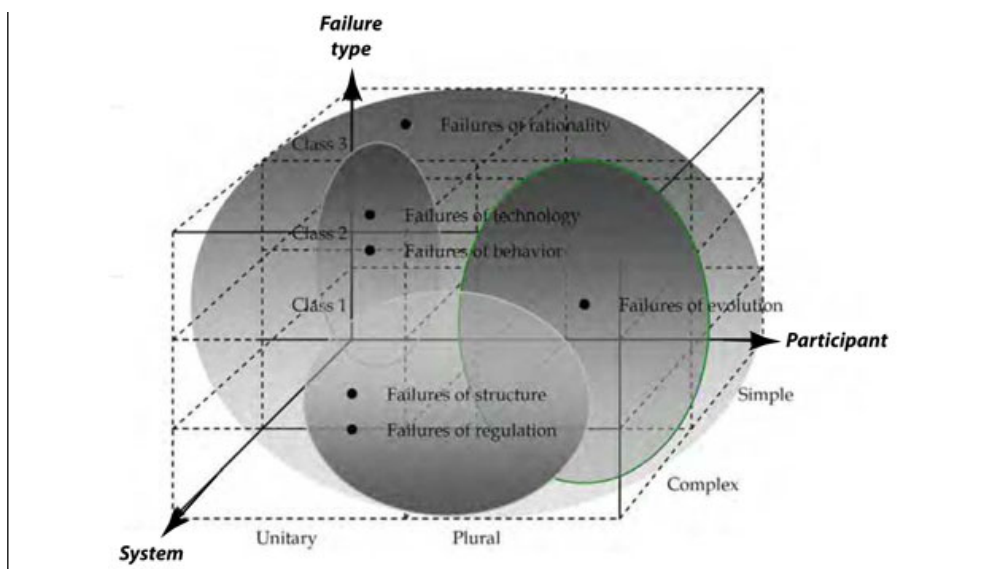
The authors first define three failure classes to treat dynamic aspects of system failures: Class 1 (Failure of deviance), Class 2 (Failure of interface) and Class 3 (Failure of foresight). A dynamic model is then proposed to understand system failure dynamically through turning hindsight to foresight to prevent further occurrence. SOSF is designed by allocating each type of failure from a taxonomy of system failures (van Gigch, 1986) into the space previously framed by the System of System Methodologies (SOSM) as developed by M. C. Jackson (*System Thinking: creative holism for managers*, 2003).



To satisfy the requirement for differentiating the three failure classes, a third dimension -- the failure class -- is introduced. This expands the 2-dimensional SOSF into 3-dimensional SOSF space, with the addition of the system failure dimension.. The current troubleshooting techniques, FTA ([Fault Tree Analysis](#)), FMEA ([Failure Mode and Effects Analysis](#)), IEC ([International Electrotechnical Commission, 60812, 61025](#)) belong to the unitary-simple domain in SOSM as presented above. The relation between the meta methodology and other methodologies is usefully summarized by the following.







Patterns of cracking and fracture: Patterns of fracture are a preoccupation of the material sciences. Within the discipline of [fractography](#) these are classified into four modes of fracture: microvoid coalescence or dimple rupture, transgranular cleavage, fatigue, and decohesive rupture (Ron Halahan, *Modes of Fracture*, 1997; B. M. Strauss and W. H. Cullen, *Fractography in Failure Analysis*, 1978; American Society for Metals, *Metals Handbook: Fractography and Atlas of Fractographs*).

The variety of studies on patterns of cracking in materials is indicative of their potential value as a source of metaphor with respect to psychosocial systems especially given the visual familiarity with such patterns in nature:

- J. Cordero, et al: *Patterns of cracking in soils due to drying and wetting cycles* (*Unsaturated Soils: Research and Applications*, 2014, pp. 381-387)
- William Alan Van der Sluys, et al: *Effects of the Environment on the Initiation of Crack Growth* (ASTM International, 1997)
- Jayantha Kodikara, et al: *Structure Development in Surficial Heavy Clay Soils: a synthesis of mechanisms* (*Australian Geomechanics*, June 2002)
- K. DeCarlo, et al: *Cracking dynamics and morphology of desiccating clay overlying a granular substrate* (*American Geophysical Union*, 2012)
- Jordi Cat: *Modeling Cracks and Cracking Models: structures, mechanisms, boundary conditions, constraints, inconsistencies and the proper domains of natural laws*, *Synthese*, 146, 2005, 3, pp 447-487

Curiously, as a metaphor, the process of cracking is widely recognized with respect to the dynamics of the progressive failure of many integrated systems, whether models of reality, buildings, proposals, or collective initiatives (Parneet Jaggi, *The "Cracking" Metaphor in Bapsi Sidhwa's Cracking India*, *International Journal of English and Literature* (IJEL), 5, 2015, 1, pp. 51-56).

"Cracking up": The emergence of "cracks" (or "flaws") attracts attention and concern in a competitive context, possibly as indicating an opportunity for the replacement of any such system. As "cracking up", the metaphor is frequently used with respect to personal relationships, and especially to an individual "cracking up" under stress. Examples include:

- Robert Reich: *The Republican Party Has Cracked and Split into 6 Warring Tribes* (*Alternet*, 16 February 2016)
- Joe Klein: Rush: *Trump. Cruz. Fox News: can the Republican Party avoid a crack-up?* (*Time*, 28 January 2016)
- Paul Craig Roberts: *Cracks In Washington's Empire* (17 March 2015)
- *The EU Might Crack Up the Way the Soviet Union Did* (*Russia Insider*, 7 November 2014)
- Gideon Rachman: *The Ice is Cracking under Putin* (*Financial Times*, 6 February 2012)
- Alex Rogers: *Metaphor Alert: the U.S. Capitol Dome is cracked 1,300 Times, Needs Repair* (*Time*, 19 December 2013)
- Borbala Toth: *A Media Empire Cracking: from biased partisanship to independence* (*South East European Media Observatory*, 19 November 2015)
- F. Scott Fitzgerald: *The Crack-Up* (*Esquire*, 1936)
- Sophie Borland: *Generation of have-it-all women is cracking up under stress* (*Daily Mail*, 10 November 2015)
- Joseph Chilton Pearce: *The Crack in the Cosmic Egg: challenging constructs of mind and reality* (1988).

Of relevance to this argument is what is detected as a developing "crack" and whether particularly distinctive modes of "cracking up" are to be recognized. Is there a pattern language appropriate to distinguishing modes of cracking up? The question is of course relevant to any articulation of the modes of civilizational collapse (Jared Diamond, *Collapse: How Societies Choose to Fail or Succeed*, 2005; *Mind Map of Global Civilizational Collapse*, 2011). Potentially intriguing is any sense of patterns through which individuals "crack up" under stress or during the later phases of the aging process -- with progressive loss of integrity and/or sense of identity.

Predictive value of cracks: Of particular interest from a historical perspective, with respect to current efforts to predict the future, an interesting relation has been explored between patterns of cracking and traditional predictive techniques based on bone-cracking. This has been done by Robert Temple in a study variously titled in distinct editions (*Netherworld: discovering the oracle of the dead and ancient techniques of foretelling the future*, 2002; *Oracles of the Dead: ancient techniques for predicting the future*, 2002). Although the title is technically appropriate it unfortunately disguises both the range of issues covered (with very extensive references) and the unconventional insights that Temple brings to the matter. The arguments are reviewed separately (*Engaging with the Future with Insights*

of the Past: consulting the dead, sacrifice, bone-cracking and divination, 2010).

As specifically noted with respect to his arguments regarding cracking (*Dynamic structure of events within event-space*, 2010), under the heading *The Oracular Hexagonal Lattice* (pp. 377-400), Temple relates modern representations of **decision trees** to patterns of cracking, as recently studied in a wide variety of substances. It is of course these patterns that have been the focus of the interpretation of oracle bones. The relationship is provided through the hexagonal lattices on which cracking is now recognized frequently to occur.

Temple notes that: *We regard cracks as aberrations, insignificant and weak. Or we consider them simply beneath our notice* (p. 379). However in the light of research on pavement cracking and animal skin patterns, he notes the recognition by Japanese authors (Torahiko Terada and Teru Watanabe, 1935) that:

A crack or crease is one of the most characteristic phenomena in the domain of physics by means of which a macroscopic discontinuity is produced in the field which is apparently uniform and homogenous but subjected to microscopic fluctuations....

Temple points out that the universe is now recognized by modern relativity theory to be subject to microscopic fluctuations suggesting that the "crack" may therefore be of hitherto unrecognized significance. He cites the conclusion of the Japanese authors as having "metaphysical" implications:

In the domain of physics, cracks and creases are phenomena by means of which a discontinuity or a localization of energy may spontaneously be produced in an apparently uniform field, with homogenous distribution of matter and energy, in other words, something is produced out of nothing.

That earlier discussion of Temple's arguments is consistent with those developed below with respect to hyperreality and its representation, notably in hyperbolic tessellations.

There is of course some irony to the widespread preoccupation with wrinkles as a form of cracking -- and to the predictive value widely associated (through palmistry) with those on the hand.

Transcending the barrier to global comprehension from attention deficiency and memory erosion

Human memory constraints: The following discussion is framed by the considerations of the "most cited" paper in psychology (George Miller, *The Magical Number Seven, Plus or Minus Two: some limits on our capacity for processing information*, *Psychological Review*, 63, 1956, 2, pp. 81-97). This has necessarily been followed by refinements to that argument.

As noted by Daniel Goleman (*Focus: the hidden driver of excellence*, 2013), more recently some cognitive scientists have argued that four chunks is the upper limit (Steven J. Luck and Edward K. Vogel, *The Capacity for Visual Working Memory for Features and Conjunctions*, *Nature*, 390, 1997, pp. 279-281; Clara Moskowitz, *Mind's Limit Found: 4 things at once*, *LiveScience*, 27 April 2008).

In this regard, Goleman cites cognitive scientist Justin Halberda:

Working memory hasn't shrunk... It's not the case that TV has made our working memory smaller... that in the 1950s we all had an upper limit of of seven plus or minus two bits of information, and now we have only four. The mind tries to make the most of its limited resources... So we use memory strategies that help... say combining different elements, like 4, 1, and 5, into a single chunk, such as an area code 415. When we perform a memory task, the result might be seven plus or minus two bits. But that breaks down into a fixed limit of four, plus three or four more that memory strategies add. So both four and seven are right, depending on how you measure it. (p. 19)

The relevance of any such chunking bias has been separately explored (*Representation, Comprehension and Communication of Sets: the Role of Number*, *International Classification*, 1978; *Patterns of Conceptual Integration*, 1984). Ironically, but appropriately, even memory dysfunctionality has been organized in terms of a 7-fold constraint (Daniel L. Schacter, *The Seven Sins of Memory: how the mind forgets and remembers*, 2002).

Satisfactorily comprehensible explanations: These memorability considerations are especially significant to interpretation of the explanations variously offered with regard to patterns of failure and their classification. **Is a typical explanation held to be satisfactory if it can be presented in terms of a very limited number of factors -- a number constrained by the constraints on human memory management?** Typically conceptual models are structured in terms of 7 plus/minus 2 factors, as explored separately (*Patterns of N-foldness: comparison of integrated multi-set concept schemes as forms of presentation*, 1980).

The models of failure and social pathology would appear to be consistent with this assessment. Clearly any explanation based on more than 20 factors (say), unchunked in any way, would be considered relatively meaningless, with that meaninglessness experienced as increasing as the number increased. Irrespective of **Occam's Razor** (and the law of parsimony), this suggests the mysteriously undiscussed assumption that **the validity of explanations is held to be related in some manner to clusters of factors of limited size** -- as is so evident in the systemic studies of failure noted above.

Learning and subunderstanding: A number of the studies cited make specific reference to the systemic role of learning in relation to failure. Can some systems only be appropriately managed by "geniuses"?

Missing from such consideration would seem to be the degree of learning required, especially as it may relate to vulnerability of a system

to failure. Whilst the need for learning may be framed as necessary, even as a continuing process, there is little if any reference to the adequacy at any stage of comprehension of the system vulnerable to failure. This consideration applies as much to double loop learning as to that associated even more self-reflexively with the higher orders of cybernetics (as mentioned above).

The issue is complicated when the parties involved have different comprehension needs and are acquiring these through distinct processes, notably in the light of the [theory of multiple intelligences](#). With respect to the necessary [collective intelligence](#) required, their distinct degrees of comprehension may provide necessary coherence, through their complementarity, as separately discussed (*Implication of the 12 Knights in any Strategic Round Table*, 2014)

The matter is especially important in that some forms of viable system failure are due to inadequate comprehension and inattentiveness -- typically framed as "human error". The system may indeed be too complex to be managed by ordinary means. With respect to the capacity to handle multiple factors, the issue can be usefully framed by the consequence of "subunderstanding" as articulated by [Magoroh Maruyama](#) (*Peripheral Vision: polyocular vision or subunderstanding?*, *Organization Studies*, 25, 2004, 3, pp. 467-480).

Incomprehension and ignorance: Considerable attention has been devoted to patterns of learning and to learning pathways. Missing would appear to be the insights into patterns of incomprehension (or patterns of ignorance) which may characterize those required to manage a system. This may be of particular concern with respect to the proportion of aging decision-makers in aging populations -- perhaps then to be understood in terms of any "cracking up" of global comprehension.

This absence is even more problematic given the implications of the [Peter Principle](#) as they may relate to ensuring viable system control and requisite oversight. Assumptions are readily made regarding the adequacy of the capacities of those selected for such functions -- especially when their eminence calls for unquestioning respect. Such a consideration has been notably framed by the classic adage of [George Santayana](#): *Those who cannot remember the past are condemned to repeat it*. It has proven especially relevant to military strategy in the education of generals (*Transforming the Unsustainable Cost of General Education: strategic insights from Afghanistan*, 2009).

Curiously the active debate on [democratic oversight](#) seemingly fails to engender the need to simulate the implication of degrees of incomprehension amongst those responsible or those mandating their function -- as could be considered appropriate to vigilance regarding vulnerability to failure of viable systems. Studies of comprehensibility therefore merit particular attention -- especially when these ignore the processes of [dumbing down](#) and the [cover-up](#) of inadequacies:

- [Living with Incomprehension and Uncertainty: re-cognizing the varieties of non-comprehension and misunderstanding](#) (2012)
- [Threshold of Comprehensibility: a fourfold minimal system?](#) (1983)
- [Comprehension of Appropriateness](#) (1986)
- [Engaging with the Inexplicable, the Incomprehensible and the Unexpected](#) (2010)

Similarly the systemic implications of ignorance with respect to the failure of viable systems call for greater attention, most notably in the light [pluralistic ignorance](#). culturally induced ignorance ([agnology](#)), and studies such as the following:

- Nicholas Rescher: [Ignorance: On the Wider Implications of Deficient Knowledge](#) (2009)
- Matthias Gross and Linsey McGoey (Eds.): [Routledge International Handbook of Ignorance Studies](#) (2015)

Noteworthy is the attention variously accorded a study by Steven Shepherd and Aaron C. Kay ([On the Perpetuation of Ignorance: system dependence, system justification, and the motivated avoidance of sociopolitical information](#), *Journal of Personality and Social Psychology*, 102, 2012, 2, pp. 264-280), publicized by the American Psychological Association as [Ignorance Is Bliss When it Comes to Challenging Social Issues: by remaining unaware, people can justify trusting government, study finds](#) (21 November 2011) :

- Jessica Satherley: [Ignorance IS bliss! We don't want to know about complex issues preferring to leave them to governments](#) (*Mail Online*, 22 November 2011)
- Dave Cohen: [Ignorance is Bliss](#) (*Decline of the Empire*, 6 February 2013)
- Isaac Lukas: ['Ignorance Is Bliss' Study: some tend to avoid challenging issues](#) (*Medical Daily*, 22 November 2011)

System blindness and collective blindspots: The study by Daniel Goleman (*Focus*, 2013) includes a whole chapter on "system blindness" explained as follows:

Through human history, systems awareness -- detecting and mapping the patterns and order that lie hidden within the chaos of the natural world -- has been propelled by... urgent survival imperatives for native peoples to understand their local ecosystem... Here's the catch. We are prepared by our biology to eat and sleep, mature and nurture, fight-or-flee, and exhibit all the other built-in survival responses in the human repertoire. But... there are no neural systems dedicated to understanding the larger systems within which this occurs.

Systems are, at first glance invisible to our brain -- we have no direct perception of the multitude of systems that dictate the realities of our lives. We understand them indirectly through mental models... and take action based on those models... We seem curiously unable to perceive in a way that leads us to prevent the adverse consequences of human systems, such as those for industry or commerce....

One of the worst results of system blindness occurs when leaders implement a strategy to solve a problem -- but ignore the pertinent system dynamics... The problem gets compounded by what's called the "illusion of explanatory depth", where we feel confidence in our understanding of a complex system, but in reality have just a superficial knowledge. (p. 137)

Making the invisible palpable: With regard to that illusion, Goleman cites Adam L Alter, et al ([Missing the Trees for the Forest: a](#)

construal level account of the illusion of explanatory depth, *Journal of Personality and Social Psychology*, 99, 2010, 2, pp. 436-451). He concludes that discussion with a section on "making the invisible palpable", arguing: ***So to meet the challenge of impending system collapse we need what amounts to a prosthesis for the mind.***

Enthusiasts for artificial intelligence and the global brain may well frame a "prosthesis" in such terms. Missing is any recognition of the vulnerability to failure of such remedial support. As noted by John Gall: *When a fail-safe system fails, it fails to fail safe.*

Of relevance is then the question of how strategies may tend to be conceived by ignoring a blindspot, as discussed separately (*Lipoproblems: Developing a Strategy Omitting a Key Problem -- the systemic challenge of climate change and resource issues*, 2009). Especially relevant are the insights into the only too evident conflicts between conceptual models (and their adherents), as highlighted by [Nicholas Rescher](#) (*The Strife of Systems: an essay on the grounds and implications of philosophical diversity*, 1985)

Given the remarks above regarding the systemic negligence of the Sykes-Picot Agreement, it is appropriate to ask whether its consequences offers insights with respect to the current secretively negotiated "carve-ups": [Transatlantic Trade and Investment Partnership \(TTIP\)](#), [Trans-Pacific Partnership \(TPP\)](#), and [Trade in Services Agreement \(TiSA\)](#). Those involved necessarily know what they know but -- also necessarily -- deny any knowledge of what they do not know, leading potentially to their undoing, as can be variously discussed (*Unknown Undoing: challenge of incomprehensibility of systemic neglect*, 2008).

To circumvent such negligent conceptual gerrymandering, the issue is the nature of the requisite "prosthesis of the mind", as advocated by Goleman. Hence the focus in what follows on a "demonique" and an "angelique".

Challenging memorability of insights of any higher order: Beyond the requirements for double loop learning, as advocated by Takafumi Nakamura and Kyoich Kijima, the arguments of Yolles and Fink point to the potential role of system comprehension in terms of third-, fourth- and fifth-order cybernetics (*Generic Agency Theory, Cybernetic Orders and New Paradigms*, 2014). Clearly there is however a collective challenge of comprehensibility and incomprehension in a learning-constrained society.

The constraints can be framed in terms of the extent to which global civilization is essential unconscious, as argued by [John Ralston Saul](#) (*The Unconscious Civilization*, Free Press, 1999). As a viable system in its own right, global comprehension can be explored as variously vulnerable to failure:

- *Comprehension: social organization determined by incommunicability of insights* (1995)
- *Engaging with Insight of a Higher Order: reconciling complexity and simplicity through memorable metaphor* (2014)
- *Societal Learning and the Erosion of Collective Memory* (1980).

The last of these took the form of a critique of an overly optimistic report to the Club of Rome (J. W. Botkin and M. Elmandjra, *No Limits to Learning: bridging the human gap*, 1979). The critique notably highlighted the *Fragmentation and erosion of collective memory* in terms of various limits ([Quantitative limit](#), [Limit to connectedness](#), [Limit to collective comprehension span](#), [Limit to depth of collective comprehension](#), [Pro-logical limitations](#), [Collective attention span limit](#), [Collective memory limit](#)). This included an annex framing the possibility of global amnesia (*Pointers to the Pathology of Collective Memory*, 1980).

In exploring any parallel between individual memory attrition and that of the global brain, it is appropriate to note the study by K. Nandy (*The Aging Brain and Senile Dementia*, 2012) who distinguishes four kinds of memory attrition: due to loss of synapses on surviving cells; consequent on cell atrophy; due to random loss of cells; and due to patchy, localized degeneration of the cerebral cortex (such as occurs in Alzheimer's syndrome and, prematurely, in Down's syndrome). Attrition is distinguished from language loss as a result of ageing.

Tabling a motion according to rules of order in debate

It is curious to note that an agenda classification of topics, as a checklist for any global debate, is itself subject to constraints of memorability and comprehensibility -- even though the list may well be nested to frame subtopics. The meeting as a whole may indeed be organized into parallel tracks for related reasons. How the themes may merit a higher order of connectivity is typically neglected, as separately argued (*Interweaving Thematic Threads and Learning Pathways*, 2010).

More intriguing, within the context of rules of debating procedure, inspired by *Robert's Rules of Order*, are the implications of the process of "tabling a motion" (*Rules of Procedure of the General Assembly*; *Rules of Procedure of the European Parliament*; American Model United Nations International, *Some Differences Between the United Nations and Model United Nations Conferences*; *Rules of Procedure of EU Scientific Committees*).

As noted by *Wikipedia*, the use of "table", as a verb, has two different and contradictory meanings:

- In the USA, to "table" usually means to postpone or suspend consideration of a pending motion (possibly indefinitely).
- In the rest of the [English-speaking world](#), to "table" means to begin consideration (or reconsideration) of a proposal.

Such considerations may be called into question when the order of debate is subject to secrecy, [non-disclosure agreements](#), [Chatham House Rules](#), etc.

Motions as implying a dynamic: [Motions](#) which use the word "table" have specific meanings and functions, depending on the [parliamentary authority](#). The meaning of "table" also depends on the context in which it is used. Further subtleties are offered by the sense in which a topic may be explored "on the table" or "off the table" (if at all).

With respect to the above argument, of interest from a metaphorical perspective, is the curious combination between the implied flatness of the table, its tabular organization into columns and rows (as notably understood in spreadsheets and otherwise), and the restriction of any dynamic under consideration (as implied by "motion") to a cell of any such table. Tabling a motion then offers strong associations to

[pigeonholing](#) (whether within the interpretation of the USA or elsewhere). This is a process that attempts to classify disparate entities into a small number of categories.

Confinement of a motion to the cell of a table enables attention to be switched away from any individual cell to the organizing principles offered by the limited number of rows and columns whose significance (and names) may be more readily recalled. It is then readily assumed that the distinctive variations represented by the cells are adequately and effectively comprehended in a manner enabling governance and navigation of reality as a variegated system. Explanation and (re)resolution are then notably "clearer" when framed in terms of 7 (plus-or-minus 2) factors.

Board games: The cognitive challenge of navigation is curiously exemplified by board games -- typically following a pattern of order 8x8, or somewhat greater (as in [chess](#), [checkers](#), [snakes and ladders](#)). Such games have a long tradition of association to comprehension of the challenges of governance. Especially intriguing is the manner in which each cell offers the potential for movement across the tabular array, in relation to an opponent -- whether real or imagined.

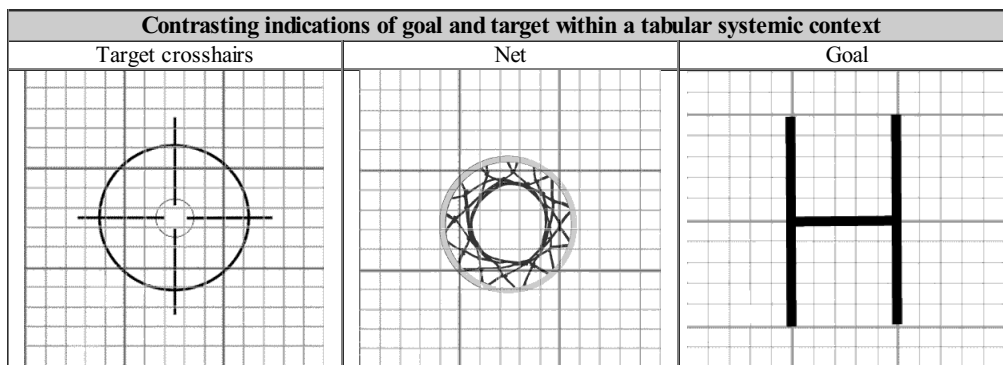
Symbolic arrays: The cognitive implications may be emphasized otherwise through arrays of symbols of significance to particular cultures in which comprehension is again facilitated through their tabular array. One particular example is the magic square, much valued by Freemasonry and other traditions.

- Kabbalah, etc
- I Ching, etc

The cognitive challenge of engaging with variety tends to get confused with superficial reaction to the aesthetics of any proposed pattern language, such as to alienate others thereby excluded from other interpretations of it. This is exacerbated by the mystification and special expertise of those who lay particular claim to it (possibly as intellectual property), or who identify with it (even through ritual processes).

Target acquisition and goal achievement: Conventional tabular organization offers a means of framing both [target acquisition](#) in its military sense and the goal achievement of any collective initiative (as with the UN's [Sustainable Development Goals](#), superseding the [Millennium Development Goals](#), and [Agenda 21](#)). Technically target acquisition may simply denote the process by which a weapon system (including any operator) decides which object to lock on to. As a metaphor, target is borrowed by collective initiatives from its physical use, just as goal is borrowed from its physical use in sport.

It is striking to frame visually both target and goal with respect to any representation of the cellular organization of a table. In the case of target, this is typically represented by the crosshairs of some form of [reticle](#) readily matched with the focus on a particular cell of the table. In the case of goal, this too may be visually matched in relation to a particular set of cells in the table. A net, as in basketball, can be similarly positioned, but with the additional sense in which the net can be recognized as a network configuration of cells -- potentially linking to the rectilinear structure of the table.



It is however appropriate to note that **system comprehension is misleadingly implied by either target acquisition or goal achievement**. In effect both are so framed as to exclude contextual systemic considerations as essentially irrelevant. In the case of target, these may incidentally be recognized after the fact, and to a degree only, as some form of [collateral damage](#) (if only in metaphorical terms).

Given the manner in which goal notably acquires its significance from football, the point is remarkably made by the sense in which enthusiasm for goal-scoring achievement worldwide has long been embedded in a global organization of football seemingly characterized by a widespread [pattern of corruption](#) -- previously denied. Any achievement of global targets or goals could be questioned from such a systemic perspective. The point can be made otherwise in the light of common use by men of "scoring" to frame intercourse in a manner deprecated by women as insensitive.

However regrettable, collateral damage can be seen to be the result of negligent distinctions (as framed more generally by this argument), and exacerbated by the choice of the target metaphor, as separately discussed (*Enhancing Sustainable Development Strategies through Avoidance of Military Metaphors*, 1998). The wider systemic negligence of goal achievement is usefully framed by the adage: *the operation was a success, but the patient died*. With respect to the dynamic, conceptually confined (at least visually) to a particular cell -- and to the exclusion of other dynamics in the table -- it can be argued that the tabular presentation reinforces a static framing of a dynamic, as separately argued (*Dynamic Transformation of Static Reporting of Global Processes*, 2013).

The game and target metaphor offers another means of further clarifying the argument above regarding "global comprehension capacity" -- through questions such as:

- what size "ball" can be successfully caught with a single "cognitive hand", whether 5-fingered or otherwise?
- what size "ball" can be successfully caught with 2 "cognitive hands"?
- what kind of "ball" requires 12 "cognitive hands" in order to be successfully caught, whether 12-pairs or otherwise?
- what kind of "ball" requires 72 "cognitive hands" in order to be successfully caught -- as implied by a set of 72 demons indicative of modes of failing to do so?

However the metaphor also highlights the sense in which a single "cognitive finger" is assumed to be all that is required to achieve a goal by pulling a trigger, following target acquisition.

Of related interest with respect to the table metaphor, is the preoccupation with obtaining a "seat at the table", r preventing others from doing so. With respect to multi-stakeholder debate on global issues, questions such as the following may be asked:

- what can be effectively debated "around a table" with more than 12, 20, 28, 30, 77, 193 seats -- as respectively exemplified by any Round Table, the [G20](#), the member states of the EU, the [Group of 30](#), the [Group of 77](#), or the membership of the United Nations?
- for a meeting of a very limited number of hours, how much time is each "seat" able to engage in any debate?
- what is implied in metaphorical and symbolic terms by the need to employ a table with seats configured around an empty central space?

If, for example, there are 72 "angelic" forces vital to the viability of sustainable global governance (as explored here), what is the danger that many will "fall" through the "cognitive safety net"? Those "falling" in this way could then be fruitfully recognized as thereby cognitively transformed into "demonic" forces -- in accordance with theological traditions regarding "[fallen angels](#)", namely the wicked or rebellious angels that have been cast out of heaven. Significantly, as noted by *Wikipedia*, [fallen angel](#) is extensively used in film, literature, music and song.

"Demonique": a mnemonic aid to comprehension of potential system failure?

The points made above frame the potential significance of a "demonique" -- notably in the light of the argument of Goleman (*Focus*, 2013) regarding the challenge of "making the invisible palpable". Rather than the sterile abstractions of any conventional systemic articulation -- felt to be alienating and meaningless by many, to the extent that attention is accorded to them -- the question is whether their representation in terms of "demons" would offer a greater degree of "palpability". Just as the problematique is understood as a complex of problems, a demonique is then to be understood as a complex of demons enabling system failure.

Arguably it is the case that, as with expressions such as "my demons", **there is an intuitive, experiential sense of the complex dynamics with which "demonic" is associated, namely with the palpability of demons**. This is consistent with use of "wicked problems" by the policy sciences, as noted above. The possibility can be variously explored and framed.

Demonology: As a well-defined branch of theology, [demonology](#) is the systematic study of [demons](#) or beliefs about demons. It is understood as the branch of theology relating to "supernatural" beings who are not gods. However, to the extent that "natural" is conventionally restricted to what can be readily understood and explained, points made above suggest that "supernatural" may include those aspects of experienced which are in some way beyond conventional explanation and comprehension, potentially indicated in terms of the hyperreal and hyperreality. The conventional deprecation of "super" may thus be usefully challenged by the efforts to articulate, depict and comprehend the hyperreal.

Of relevance to this argument is the sense in which demonology deals both with benevolent beings that have no circle of worshippers or so limited a circle as to be below the rank of gods, and with malevolent beings of all kinds. As noted by the *Catholic Encyclopedia* with respect to [Demonology](#):

Perhaps the first fact that strikes one who approaches the study of this subject is the astonishing universality and antiquity of demonology, of some belief in the existence of demons or evil spirits, and of a consequent recourse to incantations or other magical practices.

It is however noteworthy that the original western sense of "demon", as understood from classical Greece onward, was a benevolent being. The term in English of course now holds and emphasizes connotations of malevolence. Some effort may be made to use "[Daemon](#)" or "Daimon" to distinguish either that benevolent character or the ambiguity of which it is one extreme.

From an unexpected source, a useful clarification of the emergence of current understanding of the malevolent aspect is offered by Stanley Stepanic (*Demonology: a study of what is not*, *Skeptical Inquirer*, 38, 2014, 1):

So these ideas were quite real to many people at one time. This is because, in its earlier roots, demonology meant simply a system of demons, a hierarchy, delineating the various evil spirits of the world and how they interacted with human beings through the powers of the Devil. Christianity had a fairly developed system of demonology at one time, in fact. This system slowly degraded into a vague conception of "demon" or "the Devil" with no separation into different types, though believers may sometimes use the term figuratively and not ascribe literal interpretation.... But this is much different than in the past, when demons could be used to define nearly anything at odds with popular belief.

Proof of earlier systems of Christian demons can be found in such works as [Collin de Plancy's Dictionnaire Infernal](#) [1818], which provides various descriptions [including a [list of demons](#)] and whimsical depictions of demons based on popular knowledge and anecdotes, most fulfilling a variety of roles in describing the origins of "sinful" thoughts and behavior. Either way,

earlier Christian belief held strong the idea in the existence of minions of the Devil who had the ability to corrupt human existence through various means. The point is that regardless of what they were, in Christianity all demons answer to the Devil -- to some greater "evil" source... This is not unique to the religion; every culture in the world from the most advanced to the most primitive has some conception of "demon", usually functioning within the framework of a general evil force. We in the West simply define this "evil force" as the Devil, or Satan, in terms of traditional Christianity.

Again the point could be emphasized that, whether in terms of the "infernal" or the "devil", the term is indicative of what is conventionally framed as chaotic and unpredictable, extending into what is unfair and unjust. Again the adoption by the policy sciences of "wicked problems" is consistent with human inability to come to terms with uncontrollable systemic forces. To the extent that use is made of the term, "problemology" could be understood as an effort by the natural sciences to engage with what was previously explored through "demonology" (Charles François, *Problemology: a methodology for the discovery and management of complex problems*; Paris Arnopoulos, *Prolegomena to Problemology: definition of social problematics*, 1995).

Classification of demons: Of particular relevance to this argument are the many attempts to classify demons, as indicated by *Wikipedia* (*Classification of demons*). *Wikipedia* also presents a *List of theological demons* that appear in religion, theology, demonology, mythology, and folklore. The various demonologies may indeed be understood as classifications of demons, as in the case [Christian demonology](#), classical [occultism](#) and [Renaissance magic](#).

Such classification systems are based on the nature of the demon, the [sin](#) with which they tempt people, and the angels or [saints](#) that were their adversaries, or other characteristics. This language merits "translation" into secular terms reflective of the capacity to comprehend complex, chaotic systems -- most notably as experienced personally or collectively in terms of patterns of behaviour challenging rational response. Use of "my demons", and reference to vicious behavioural cycles, gives credence to this (*Vicious cycles and loops*, 1994; *Feedback Loop Analysis in the Encyclopedia Project*, 2000; *Dysfunctional Cycles and Spirals: web resources on "breaking the cycle"*, 2002).

Also of relevance to this argument is the degree to which fictional demons -- populating the imaginal world of individuals and collectives -- have been variously identified. The *List of fictional demons* identified by *Wikipedia* includes those from literary fiction with theological aspirations, such as Dante's *Inferno*. Their unconventional nature may well overlap with numerous [lists of legendary creatures](#) from mythology, folklore, and folk fairy tales.

Whatever the nature of the classification, it is the efforts to make systematic distinctions between the essentially problematic behaviour which is of significance in that they refer to phenomena beyond the bounds of conventional patterns of thinking.

Recognizing the demons of modern civilization

Demons as framed from a psychoanalytical perspective: As argued by Carl Jung:

Contemporary man is blind to the fact that, with all his rationality and efficiency, he is possessed by "powers" that are beyond his control. His gods and demons have not disappeared at all; they have merely got new names. They keep him on the run with restlessness, vague apprehensions, psychological complications, an insatiable need for pills, alcohol, tobacco, food -- and, above all, a large array of neuroses

For [Paul Levy](#) (*Are We Possessed, Awaken in the Dream*, 2010), referring to Jung as one of the most inspired psychologists of the twentieth century, who had incredible insight into what is currently playing out, both individually and collectively, in our modern-day world:

If, for a moment, we look at mankind as one individual, we see that it is like a man carried away by unconscious powers. We are a species carried away -- "possessed" by -- and acting out, the unconscious. Jung elaborates, Possession, though old-fashioned, has by no means become obsolete; only the name has changed. Formerly they spoke of 'evil spirits,' now we call them 'neurosis' or 'unconscious complexes.' To condescendingly think that we, as modern-day, rational people, are too sophisticated to believe in something as primitive as demons is to have fallen under the spell of the very evil spirits we are imagining are nonexistent. What the ancients call demons are a psychic phenomena which compel us to act out behaviors contrary to our best intentions. To quote Jung: *...the psychic conditions which breed demons are as actively at work as ever. The demons have not really disappeared but have merely taken on another form: they have become unconscious psychic forces.*

The personal engagement of Carl Jung with demons, as variously articulated, has been the focus of considerable commentary. More recently this was highlighted in *The Wall Street Journal* by Arnie Cooper ([Jung Confronts His Demons](#), 12 May 2010):

Modern men in the throes of a midlife crisis have been known to overhaul their careers, their relationships -- even their bodies. Few, though, intentionally induce hallucinations in order to commune with demons and deities and end up creating a text transforming -- at least indirectly -- the entire field of psychology. Carl Gustav Jung was 37 when by most accounts he lost his soul. As psychological historian [Sonu Shamdasani](#) explained, *Jung had reached a point in 1912 when he'd achieved all of his youthful ambitions but felt that he'd lost meaning in his life, an existential crisis in which he simply neglected the areas of ultimate spiritual concern that were his main motivations in his youth. In fact, the dilemma was so profound it eventually caused the father of analytical psychology to undergo a series of waking fantasies.*

Mental disorder -- individual and collective: One commentary on this assessment queries whether Jung's visionary phase was due to mental illness or an existential crisis, as indicated by Christopher Lane (*Carl Jung's Frightening Demons, Psychology Today*, 13 May 2010):

Jung's manuscript and paintings about communing with deities and demons (his own and those of others) were kept "in a locked cupboard in [his] Kusunacht house in the Zurich suburbs after his death in 1961." In 1984, Cooper continues, the manuscript "was transferred to a bank." Norton published it in translation [as *The Red Book*, 2009]... almost exactly a half-century after its author had died.... Although Jungians have been quick to downplay any suggestion that the book records more than its author's spiritual crisis or a foretaste of his evolving intellectual path, the book, which Jung christened *Liber Novus*...., documents such matters as his conversations with the winged "Philemon" during his daytime walks. By that point, the Swiss psychiatrist had been treating schizophrenia for several years. And though Shamdasani insists that Jung was engaging in a controlled experiment -- "There wasn't anything like a psychosis" -- the wrinkle in that story is that Jung's unusual hallucinations appear to have been involuntary. Were they therefore signs of madness? Indeed, it's worth asking whether Jung today would be at risk of receiving the diagnosis "psychosis risk syndrome." The *DSM-5* task force is currently formulating the term to include hallucinations and delusions.

As a conventional process, the methodological elaboration of distinctions through the DSM (*Diagnostic and Statistical Manual of Mental Disorders*) could be questioned as an instance of the conceptual gerrymandering whose inadvertent (if not "unconscious") consequences were noted above in a different domain.

The unquestioning acceptance of such distinctions could well be a reflection of the case made by James Hillman and Michael Ventura (*We've Had a Hundred Years of Psychotherapy -- And the World's Getting Worse*, 1993). This could be understood as reinforcing any argument for recognition of the degree of collective mental disorder at this time -- even, if not especially, at the highest levels of global governance.

Jung's understanding has been considered otherwise by Louis Charles (*Carl Jung on Demons, Angels and Ghosts*): *But what Jung determined to be the demonic definitely blows holes in superstitious and most religious beliefs about the same.* He cites Jung to the effect that:

Unfortunately, it is my fate that other people, especially those who are themselves possessed by demons, think me mad because I believe in these powers. But that is their affair; I know they exist. There are demons all right, as sure as there is a Buchenwald [WWII German concentration camp].

Charles continued:

Jung theorized that our own psyche, or at least a part of it, can produce negativity. When this happens, we are often not aware that this part, call it the demonic, is us. And when we resist it, when we react to it, we create more fear inside of ourselves and it strengthens. It's like having another person inside, an entity, that we do not know is us.

...we discover that the 'other' in us is indeed 'another,' a real man, who actually thinks, does, feels, and desires all the things that are despicable and odious.. A whole man, however, knows that his bitterest foe, or indeed a host of enemies, does not equal that one worst adversary, the 'other self' who dwells in his bosom. (Jung)

...the psychic conditions which breed demons are as actively at work as ever. The demons have not really disappeared but have merely taken on another form: they have become unconscious psychic forces. (Jung)

When negativity, the demonic, takes control of a person, that person may come to realize that they are not the master of their house. We may come to perceive a good and a bad, opposites inside of us at war. Jung wrote quite a bit about what he called 'the shadow.' He knew that mankind had two people within with 'the shadow' being the inward hostile, a dark side, if you will, an inner demon. The question is whether or not we can recognize the demon within:

The shadow is a moral problem that challenges the whole ego-personality, for no one can become conscious of the shadow without considerable moral effort. To become conscious of it involves recognizing the dark aspects of the personality as present and real. This is the essential condition for any kind of self-knowledge. (Jung)

Some caution is appropriate in any conventional deprecation of Jung's explorations, especially in the light of his improbable collaboration with physicist Wolfgang Pauli, as discussed separately ("*Globality*" in relation to a "*Cosmic*" number?, 2010). Together they co-authored *The Interpretation of Nature and the Psyche* (1955). This included *Synchronicity: an acausal connecting principle* by Carl Jung, and *The influence of archetypal ideas on the scientific ideas of Kepler* by Wolfgang Pauli. This preoccupation is consonant with the later arguments of biologist Gregory Bateson (*Mind and Nature: a necessary unity*, 1979).

In an account of that collaboration, physicist Arthur I. Miller (*137: Jung, Pauli, and the Pursuit of a Scientific Obsession*, 2009, and *Deciphering the Cosmic Number: the strange friendship of Wolfgang Pauli and Carl Jung*, 2009) notes Pauli's extraordinary conclusion, as one of the most eminent physicists of the century, that:

- "*even the most modern physics lends itself to the symbolic representation of psychic processes*"
- that there are "*deeper spiritual layers that cannot be adequately defined by the conceptual concept of time*" (Miller, p. 162)

Miller introduces his study with a quote from Jung:

The no-man's land between Physics and the Psychology of the Unconscious [is] the most fascinating yet the darkest hunting ground of our times

Miller's account presents the context for the extraordinary continuing exploration by physicists (and especially Pauli) of the fundamental significance of the dimensionless **fine-structure constant** (1/137) -- typically called "137" -- namely the coupling constant characterizing the strength of electromagnetic interaction (and usually denoted by α). Might there be a "coupling constant" characterizing the strength of psychodynamic interaction with an "other"?

As the "cosmic number", the fine-structure constant "137" is recognized as fundamental to the organization of the physical universe -- to the extent that its integrity is comprehensible to the human mind. It is appropriate to ask whether there is an analogous "dimensionless constant" which is fundamental to the organization of any psychosocial form characterized by "globality" -- to the extent that its integrity is comprehensible to the human mind.

It has been argued that stable matter, and therefore life and intelligent beings, could not exist if the constant were much different. For instance, were α to change by 4%, stellar fusion would not produce carbon, so that carbon-based life would be impossible. What "constant" would disenable any analogous psychodynamic coherence?

Problems as essentially evil? It could be readily assumed that there is a complex intimate relationship between evil and the problematic. For Stephen A. Diamond (*The Psychology of Evil: devils, demons and the daimonic, Angelfire*)

Evil is an actuality, whether or not we choose to deny it. In their 1971 anthology, *Sanctions for Evil*, social psychologists Nevitt Sanford and Craig Comstock cogently justify resurrecting the religiously tainted term "evil": *In using the word evil, we mean not that an act or pattern of life is necessarily a sin or a crime according to some law, but rather that it leads to damage or pain suffered by people, to social destructiveness of a degree so serious as to call for use of an ancient, heavily freighted term.* When employed in this sense, *evil is synonymous with "senseless violence."* But, on a still subtler level, evil can be considered *that tendency which -- whether in oneself or others -- would inhibit personal growth and expansion, destroy or limit innate potentialities, curtail freedom, fragment or disintegrate the personality, and diminish the quality of interpersonal relationships.*

The fact that evil, as defined above, exists more or less throughout our world seems incontrovertible. We see evil every day in its infernally multifarious forms. First, there are the cosmic, supernatural, transpersonal, or natural evils like floods, famine, fire, drought, disease, earthquakes, tornadoes, hurricanes, and harmful, unforeseeable accidents that wreak untimely death havoc, and unmentionable suffering on humanity. This is the metaphysical or "existential evil" with which the biblical *Book of Job* concerns itself, and which religions worldwide try mightily to explain. Existential evil is an ineluctable part of our human destiny, and one with which we must reckon as best we can, without closing ourselves off to its tragic, intrinsic reality. But there is, of course, another kind of evil at large: human evil, "man's inhumanity to man" in the most panoramic sense. By "human evil," I mean *those attitudes and behaviors that promote excessive interpersonal aggression, cruelty, hostility, disregard for the integrity of others, self-destructiveness, psychopathology and human misery in general.* Human evil can be perpetrated by a single individual (personal evil) or by a group, a country, or an entire culture (collective evil). The Nazi atrocities directly or indirectly engaged in by the German people dramatically exemplify the latter....

Evil has an archetypal -- or universal -- quality. There is no religion in the world, writes philosopher **Paul Carus**, *but has its demons or evil monsters who represent pain, misery, and destruction* From time immemorial, spirits, devils, or demons have been believed to be the source, and sometimes the personification, of evil,... Sigmund Freud suggested that our forebears -- who apparently had no short supply of their own anger, rage, and resentments -- projected their hostility onto imaginary demons Such superstitions as the belief in the existence of demons, said Freud, *derive from suppressed hostile and cruel impulses. The greater part of superstition signifies fear of impending evil, and he who has frequently wished evil to others, but because of a good bringing-up, has repressed the same into the unconscious, will be particularly apt to expect punishment for such unconscious evil in the form of a misfortune threatening him from without.....* Perhaps our primitive predecessors came to terms with their own projected anger by accepting and befriending the furious "demons" of their dead: by so doing, they, in effect, psychologically transformed their own wrathful feelings from menacing foes to friendly emotional forces and spiritual allies.

Association of demons with problems: It follows that there is a case -- if only from a cognitive anthropological perspective -- for exploring any match between traditional classifications of demons and current classifications of problems. This would improve understanding of how problematic phenomena, beyond conventional explanation, are clustered -- given the constraints of human memory, especially in engaging with complex dynamics.

Could classifications of "wicked problems" be matched to demonologies -- perhaps to the point of highlighting the existence of problems which have not yet been recognized as "wicked"? Demons, and their interaction, might then offer an imaginative means of distinguishing patterns of nonviability in systemic terms -- effectively of "unwholeness" or "unholiness". In geopolitical terms, an **unholy alliance** refers to an alliance perceived as unnatural, unusual, or simply undesirable, sometimes between seemingly antagonistic parties.

A pattern of particular initial value to such an exploration is the much-cited traditional list of sigils in *The Lesser Key of Solomon*. This is an array of the sigils of the 72 "princes of the hierarchy of hell" with which the *Ars Goetia* indicates a mode of engagement. Within that worldview, such sigils have been considered to be the equivalent of the "true name of a spirit" -- thereby granting the strategic magician a measure of control over them. *Wikipedia* offers a detailed *List of demons in the Ars Goetia* and a summary list of *Goetic demons in popular culture* (notably in role-playing games). The essence of a wicked problem, as a challenge to governance, could indeed be described metaphorically in such terms.

"Angelique": evangelisation of the resolutique in the light of angelology?

If present day classifications of problems could indeed be matched to classifications of demons, could this approach be extended to include the match between classifications of angels potentially to be understood as intervening serendipitously (and equally incomprehensibly) in complex remedial response to the "demonique". Just as the resolutique is understood as a complex of strategic solutions to global problems, an angelique is then to be understood as a complex of serendipitous forces ensuring system viability.

"Positive spin"? Whereas the process of "demonisation" is widely recognized, most notably in connection with negative campaigning, the possibility of a counterpart through some form of "evangelisation" has not been a focus of attention. Clearly such an analogous process is evident in efforts to "talk up" initiatives and portray them in an especially positive light (most notably through the skills of news management and "spin"), although these do not necessarily imply a dimension corresponding to the demonic.

There is however the sense in which particular political and strategic initiatives are held to be "angelic" in some measure, as framed by a charismatic leader -- a force for good, if not one upheld as "engaged in God's work". Initiatives of the Catholic Church might well be so framed by believers, for example, especially when enabled by those subsequently beatified for having been proven to have worked a miracle.

Angelique: If a "demonique" is to be recognized as a framework for the appreciation of the demonisation of problems (as argued above), there could well be a case for recognizing an "angelique" (in Club of Rome terms) as an appreciation of the "evangelisation of solutions" - - namely of the resolutique.

If a demonique accords with wicked problems in some manner, an angelique could then be understood to accord with serendipitous qualities of creative resolution of problematic situations -- readily characterized as "magical" or "miraculous". A current pattern of dependency, strangely echoing understanding of the angelic, is found in use of "angel investor" (or angel funder) with respect to unusual forms of support -- as in funding theatre and other forms of creativity. Increasingly angel investors may invest online through crowdfunding or organize themselves into angel groups or angel networks to share research and pool their investment capital. (The number of such investors was estimated to be in excess of 200,00 in the USA in 2007).

Potentially to be understood as characterizing the "angelique", the possibility of serendipitous cycles interrelating global strategies was envisaged in the analysis of the network of global strategies detected in work on the *Encyclopedia of World Problems and Human Potential*.

Evangelisation: The issue of interest is the subtlety imbued in any pattern of relationships by its "evangelisation" -- in contrast to the questionable subtlety by which a pattern of problems might be tainted by its "demonisation". The possibility of evangelisation -- if only as a metaphor -- would of course appeal to those segments of society with a degree of belief in angelic forces, typically articulated as in the case of demonisation. This is evident from the value variously attached to angels (*Wikipedia: Angels in Judaism, Christian angelic hierarchy, Islamic view of angels, Zoroastrian angelology*, etc).

Of even greater relevance is the sense in which the angelique is indicative of a degree of intuitive recognition of the nature of higher orders of beneficial complexity within which human civilization may well be understood to be embedded. This complements the argument made for the demonique as a problematic higher order. Such cognitively elusive subtlety is discussed below in terms of hyperreality.

Angelology: Angels, as traditionally understood, are indeed credible to many and the focus of *angelology* as a discipline -- as with demonology. Noteworthy is a measured comment on the phenomenon, highlighting the widespread reference to angels in the media (*Angelology: The Doctrine of Angels, Bible.org*).

The question of interest here is whether this credibility can be fruitfully adapted to some form of evangelisation of solutions to crises -- as controversially anticipated by many with respect to the dynamics of *end times scenarios*, fundamental to some framings of the immediate future of global civilization. The merit of the question can be more precisely focused in that it could be readily asked whether **there is a higher probability to the credibility of angels than to that of the solutions to crises articulated conventionally in secular and academic terms.**

If, as with demons, the particular characteristic of angels is their multidimensional nature -- as entities of hyperreality from a human perspective -- what forms of discourse are appropriate with regard to the angelique? Of relevance is clearly the exploration of *Rupert Sheldrake* and *Matthew Fox* (*The Physics of Angels: exploring the realm where science and spirit meet*, 2014).

"Axiologique": symbolisation of conventional values by angels and deities? It is somewhat extraordinary to note the manner in which classical deities are widely appropriated as the exemplification of values. This is evident in the case of specialized agencies and programmes of the United Nations, military hardware, and marketing of products by the fashion industry. There are few Greek and Roman deities that have not been so appropriated, as separately noted (*Religious "Plastic Turkeys" -- Hermes vs. the Hijab*, 2003).

Given the pattern of exploitation of the Club of Rome jargon (above), the articulation of values by *axiology* might then be extended to include any effort to order the "angelique" -- as an "axiologique". This approach would be especially relevant to the subtly impalpable

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