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9th February 2010 | Draft

Cognitive Implications of Lifestyle Diseases of Rich and Poor

Transforming personal entanglement with the natural environment

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Introduction

Lifestyle diseases (also called *diseases of longevity*, *diseases of civilization*, *degenerative diseases*, or *noncommunicable diseases*) variously identified and clustered are held to be a result of an inappropriate relationship of people with their environment. (*Top 10 Lifestyle Diseases*). As diseases of civilization, such diseases are found mostly in countries which are technologically developed and where the lifespan of the population increases. They may be understood as a direct consequence of development -- or of inappropriate development associated with an inappropriate relationship to the environment.

Lifestyle diseases typically take years to develop, and once encountered do not lend themselves easily to cure. The WHO *World Health Statistics* (2008) summarizes data collected from 193 member states and extrapolates future health trends. Mortality from non-communicable diseases -- lifestyle diseases -- is expected to rise while deaths from communicable diseases are expected to decline significantly over the next 20 years: *Non-communicable conditions will cause over three quarters of all deaths in 2030*" (Peter Gluckman and Mark Hanson, *Mismatch: the lifestyle diseases timebomb*, 2008)

As recent research on "happiness" is suggesting, it is appropriate to reframe the significance of "rich/privileged" and "poor/underprivileged" in relation to lifestyle diseases (*Happiness and Unhappiness through Naysign and Nescience: comprehending the essence of sustainability?* 2008). However 'lifestyle' is understood, any psychosocial "poverty" of the "rich" may be as significant to engendering such diseases as is the more obvious "poverty" of the "underprivileged" -- who may well be less vulnerable to "lifestyle diseases" as conventionally defined. It is a form of cynical misappropriation to imply that the disadvantaged do not have a 'lifestyle', even when they may not have chosen it. What is to be said of those who make a religious **vow of poverty** or a commitment to **voluntary simplicity**? What indeed is the incidence of such diseases amongst those who lead 'alternative lifestyles' -- including the monastic lifestyle?

It is misrepresentation to imply that such diseases are 'noncommunicable' when every effort is made to ensure communication of the cognitive and behavioural patterns (and peer group pressures) which engender them. As currently framed and undertaken, it might even be argued that *development is the communication of lifestyle disease* -- if only through communication of growth-obsessed 'unease' regarding prevailing conditions, however demonstrable their sustainability (cf *Veloping: the Art of Sustaining Significance*, 1997). A recent study by the New Economics Foundation indicated that advertising, for example, creates dissatisfaction and misery, and encourage over-consumption.

The exploration in what follows focuses on the reframing of lifestyle disease through metaphor and the correspondence between such sets of metaphors and those used in reframing global strategies with respect to the ills of the planet. With respect to the individual, Penny

Tompkins and James Lawley (*The Mind, Metaphor and Health, Positive Health*, 78, July 2002) argue that:

The British Journal of General Practice study shows how often patients spontaneously use metaphor to describe their symptoms (965 different metaphors were identified). Sometimes, however, they need to be invited to use such language. While giving a Healthy Language course for a group of nurses who specialised in Multiple Sclerosis, we were told that their patients often had difficulty describing the bizarre nature of their symptoms. We suggested they ask them, 'And when it's difficult to describe your symptoms, those symptoms are like what?'. This question acknowledges the patient's difficulty, and then invites them to use metaphor to describe the qualities and characteristics of their subjective experience of their illness.

When the nurses asked this question, they got responses such as "It's like ants running all over my body" and "It's like cheese wire wrapped round my legs." Further questions, such as 'And is there anything else about that [patient's metaphor]?' or 'And what kind of [patient's metaphor] is that?;', encouraged the patients to describe their strange sensations in greater detail. The nurses were surprised at just how relieved the patients felt when they could explain their symptoms in this way. Some patients said it was the first time they felt that someone had really understood what it was like to experience their illness.

The authors are specifically interested in the potential of cognitive reframing through metaphor (James Lawley and Penny Tompkins, *Metaphors in Mind: transformation through symbolic modelling*, 2000). Of relevance to this exploration is the extent to which military metaphors are both used in the engagement with lifestyles diseases and with the crises of the planet (Rebekah Richards, *Military Metaphors in Cancer Discourse Cancer: "Battles," "Fights," and "Struggles"*, *Suite101.com*, 14 November 2009). Cancer is often portrayed through a military metaphor: as a battle, a fight, or a struggle.

Human body systems

Various "systems" are recognized in the human body. The classification of such systems varies widely -- namely what is included or excluded, or how they are grouped. This is typical of any taxonomical challenge. The number of such systems recognized corresponds approximately to 7 (plus or minus 2, or more). But *Wikipedia*, for example, identifies 13 human [body systems](#). The approach taken here is to assume that how many of the "systems" are distinguished or clustered is a matter of preference and convenience rather than unquestionable objectivity. In support of the argument here, the choice has been made to distinguish 9 such physical systems essential to understanding the integrity (and health) of a human being and to cluster them as follows:

1. **Nervous system (and brain)** (brain, spinal cord, nerves) collecting, transferring and processing information. It may be considered as including the [sensory system](#).
 - **Alzheimer**: a form of brain disease.
 - **Multiple Sclerosis**: Multiple Sclerosis (MS) is said to be a degenerative disease of the nervous system. IT affects the brain and spinal cord, destroys the myelin sheath, the material that surrounds and protects the nerve cells. This damages, slows down and blocks messages between the brain and the body leading to the symptoms of MS>These include visual disturbances, muscle weakness, trouble with co-ordination and balance, sensations such as numbness and severe memory problems. While no one knows what causes MS, It is said to be an auto immune disease, which happens when the body attacks itself. It affects more women than men and starts between the ages of 20 and 24. It is rising because of the change in habits, lifestyle and bad food habits in people.
 - **Autoimmune**: Prominent examples include: AIDS, [Coeliac disease](#), [diabetes mellitus type 1 \(IDDM\)](#), [systemic lupus erythematosus \(SLE\)](#), [Sjögren's syndrome](#), [Churg-Strauss Syndrome](#), [Hashimoto's thyroiditis](#), [Graves' disease](#), [idiopathic thrombocytopenic purpura](#), and [rheumatoid arthritis](#) (*List of autoimmune diseases*)
2. **Musculoskeletal system**: The [skeletal system](#) (cartilage, tendons, ligaments, bones, joints), providing the framework and basic shape of the body, while protecting the delicate internal tissues and organs. The [muscular system](#) (muscles, tendons) moves the body. There are three types of muscle tissue: skeletal (voluntary muscles enabling the body to move), cardiac (involuntary muscles ensuring the action of the heart) and visceral (involuntary muscles ensuring movement through digestive tracts, blood vessels and urethra). Bone diseases and locomotor disorders
 - **Osteoporosis**: **Osteoporosis** is a disease of [bone](#) in which the amount of bone is decreased and the strength of [trabecular bone](#) is reduced, [cortical bone](#) becomes thin and bones are susceptible to fracture.
3. **Respiratory system** (nose, mouth, pharynx, larynx, trachea, bronchi, lungs) ensuring that blood is oxygenated through the lungs
 - **Chronic Obstructive Pulmonary Disease (COPD)**: a disease characterized by slowly progressing, irreversible airway obstruction.
 - [sleep apnea](#),
4. **Cardio-vascular (circulatory) system** (heart, blood, blood vessels; blood cells and platelets, plasma, bone marrow, spleen, thymus) carrying oxygenated blood to all parts of the body through veins and carrying deoxygenated back to the heart through the veins. .
 - **Arteriosclerosis** : A generic term for several **diseases** in which the arterial wall becomes thicken and loses elasticity. Arteriosclerosis is the most common and serious vascular disease.
 - **Heart Disease**: any of several abnormalities that affect the heart muscle or the blood vessels of the heart.
 - **Stroke**: a condition due to the lack of oxygen to the brain that may lead to reversible or irreversible paralysis.
 - **Hypertension**: High blood pressure
 - coronary artery disease
 - High Cholesterol
5. **Digestive, excretory (and urinary) systems** (mouth, oesophagus, stomach, small intestine, large intestine, rectum, anus, liver, gallbladder, pancreas, appendix, kidneys, ureter, bladder, urethra). Ensures the digestion and processing food, filtering out of

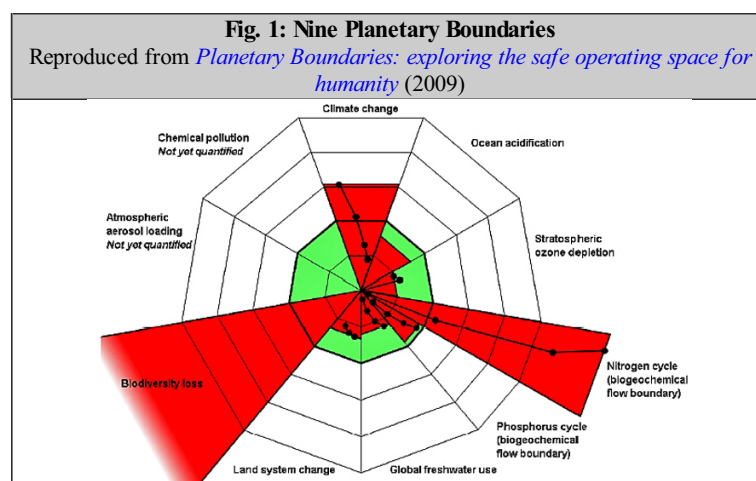
toxins and waste products removed from the cells (in addition to that ensured by the respiratory system).

- **Chronic Liver Disease/Cirrhosis:** any of a group of liver disorders. hyperlipidaemia
 - **Nephritis or chronic renal failure (CRF):** any disease of the kidney marked by swelling and abnormal function. Nephritis is **inflammation** of the **kidney**. The word comes from "nephro" meaning "of the kidney" and "itis" meaning "inflammation". The two most common causes of nephritis are infection or an auto-immune process. Characteristics of kidney disease are bloody urine, persistent protein in urine, pus in urine, edema, difficult urination, and pain in the back.
 - Obesity-linked diabetes: a disease affecting sugars used by the body. diabetes mellitus,
6. **Integumentary (skin) system:** comprised of the skin, hair, nails as well as the sweat and oil glands, ensuring a protective covering for underlying tissues against drying and invasion by toxins or pathogenic organisms. The skin is also responsible for regulating body temperature. Skin (both the surface that is generally thought of as skin and the underlying structures of connective tissue, including fat, glands, and blood vessels) diseases, acne
 7. **Connective tissue (system):** commonly used to exclude other forms of connective tissue (blood, cartilage, and bone) in order to include tissues that are loosely connective, dense connective, elastic, reticular, or adipose
 - **Systemic lupus erythematosus (lupus)**
 8. **Reproductive system** (penis, prostate gland, seminal vesicles, vasa deferentia, testes; vagina, cervix, uterus, fallopian tubes, ovaries), namely the external and internal organs as well as related inner structures that are required for reproduction.
 9. **Glandular / Control systems** (typically considered separately or ignored in classifications of human body systems):
 - **Endocrine system** (thyroid gland, parathyroid gland, adrenal glands, pituitary gland, pancreas, stomach, pineal gland, ovaries, testes) namely glands producing hormones that regulate growth, use of food within the cells and reproduction.
 - **Metabolic system:** notably as recognized in terms of **metabolic syndrome** (a combination of medical disorders that increase the risk of developing cardiovascular disease and diabetes)
 - **Immune system:** the system that fights off disease (including **leukocytes**, **tonsils**, **adenoids**, **thymus**, and **spleen**)
 - **Lymphatic system:** structures (including the thymus gland and bone marrow) involved in the transfer of lymph between tissues and the blood stream
 - **Endocannabinoid system:** neuromodulatory **lipids** and receptors involved in a variety of physiological processes including **appetite**, **pain-sensation**, **mood**, **motor learning**, **synaptic plasticity**, and **memory**.
 - **Vestibular system** : contributes to our balance and our sense of spatial orientation.

There is an amusing irony to the fact that in order to determine the 'health' of robots, specifically designed to box with each other, a 'health-o-meter' was developed to assess the condition of 9 systems within each robot (Grand Ideas Studio, *Boxing Robots*, 2010; J. Grand, *Fighting Robots, Sensor/Health Control Board*).

Representation of planetary system boundaries

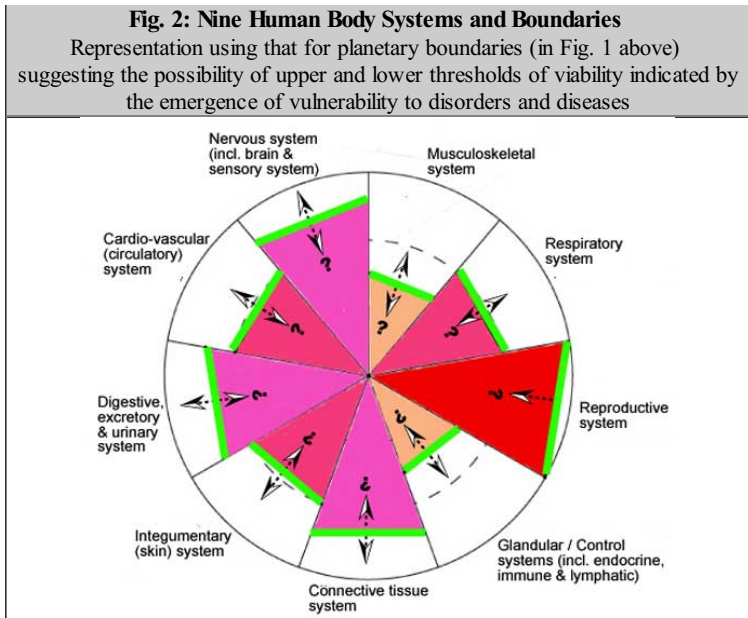
A team of 26 scientists, led by [Johan Rockstrom](#) and Will Steffen, and centered on the [Stockholm Resilience Centre](#) and the [Stockholm Environment Institute](#), have produced a report entitled *Planetary Boundaries: exploring the safe operating space for humanity* (2009), also available under the same title in *Ecology and Society*. It has been separately summarized as *The Nine Planetary Boundaries*. These boundaries are necessarily environmental constraints and boundary conditions, and the focus was on the degree to which they are already exceeded or in process of being exceeded. A summary of the study has been provided by Fred Pearce (*From Ocean to Ozone: Earth's nine life-support systems*, *New Scientist*).



Representation of human system boundaries

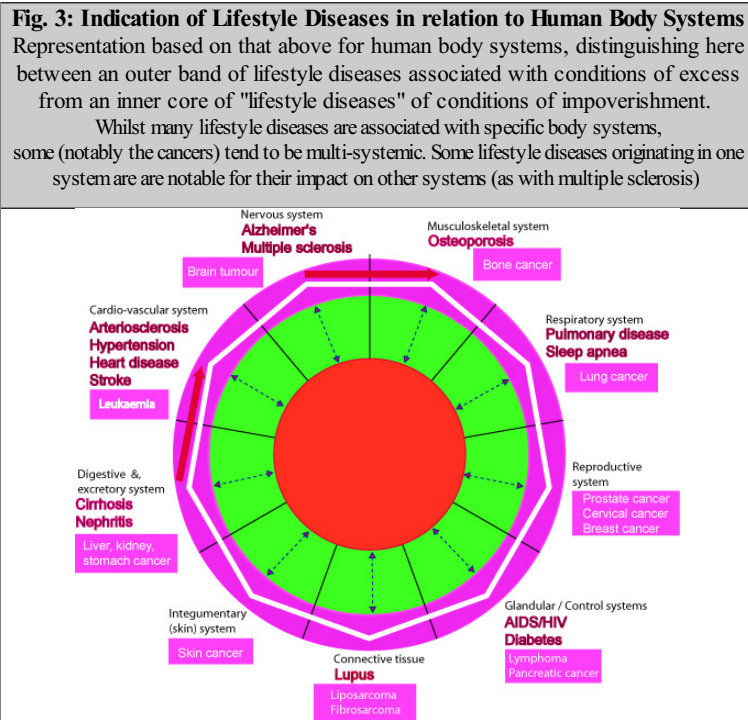
With respect to this discussion of lifestyle diseases, the question here is whether the helpful mode of representation of the set of environmental systems (above) can be used to:

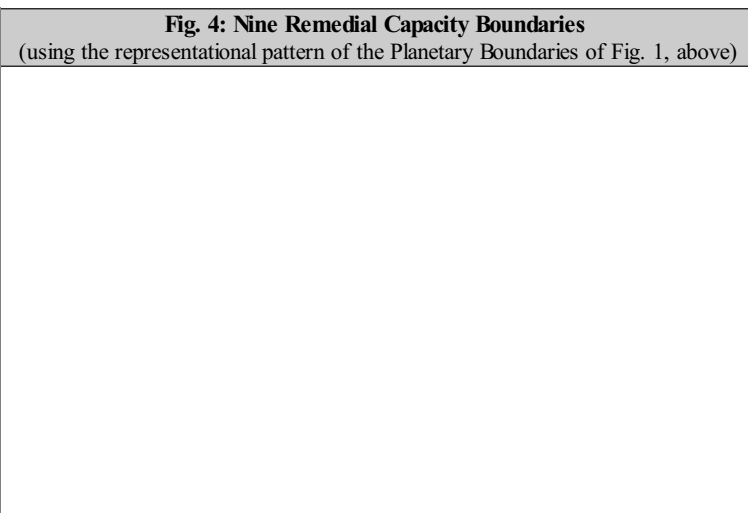
- represent the set of systems of the human body, with the implication that these too are constrained by "boundaries" or thresholds defining a "safe operating space" for a human being corresponding to the "safe operating space" for humanity collectively, as defined (above) by the nine planetary boundaries
- offer a useful way of representing the range of lifestyle diseases (as subsequently discussed)

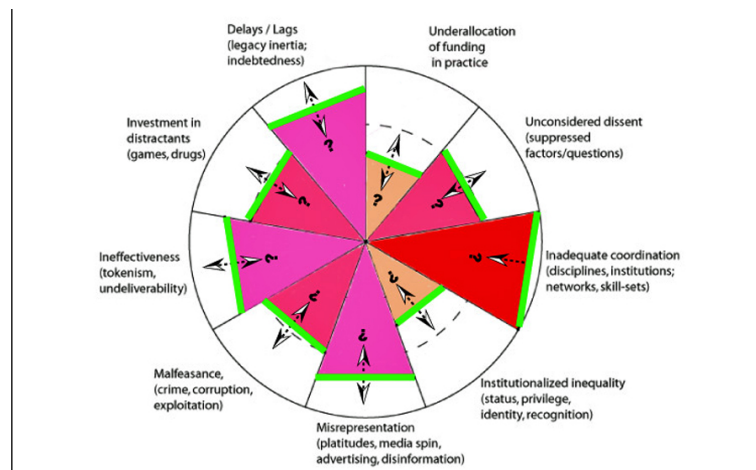


Representation of the set of human lifestyle diseases

With respect to the range of human body systems, this might then take the form indicated below, given the articulation above:







Towards a method for identifying remedial correspondences

This exploration was triggered by the recognition of 9 "planetary boundaries" by [Johan Rockstrom et al.](#) (*Planetary Boundaries: exploring the safe operating space for humanity*, 2009). As previously discussed, this suggested the possible existence of 9 "remedial capacity boundaries" (*Recognizing the Psychosocial Boundaries of Remedial Action: constraints on ensuring a safe operating space for humanity*, 2009). The pattern has been used above to suggest the possible corresponding pattern of 9 categories of "lifestyle disease" corresponding to 9 systems in the human body.

The point to be emphasized however is that such correspondences, if they have any validity, do not "exist" in any final definitive manner. The method that seems to be necessary for the "new thinking", for which calls are so widely made, needs to recognize the trap of static definitions of "what is" with its associated dangers of unfruitful closure, whether premature or otherwise. What would seem to be required is a lighter touch avoiding the dead hand of many favoured methods, which do not seem to be able to engender the remedies for the range of intractable planetary challenges (the "crisis of crises") of which the lifestyle diseases are an indication in the human body.

The argument here is that the favoured cognitive methods of the times are themselves characterized by "diseases" which need to be recognized as reinforcing the incapacity to address either those of the planet or of the human body. The possibility of an orderly identification of systemic parallels to diseases of the body has been explored in relation to the emergence of a knowledge-based information society (*Memetic and Information Diseases in a Knowledge Society: speculations towards the development of cures and preventive measures*, 2008). Given the sense of a "crisis of crises" the dangers of rapid convergence on a "singularity", potentially associated with catastrophic societal collapse, also merit consideration (*Emerging Memetic Singularity in the Global Knowledge Society*, 2009).

Of particular relevance is the sense in which any "cognitive diseases" undermining current methodologies may be as evident in individual thinking as in collective thinking, notably with respect to any emergent "collective intelligence" at the planetary level of global society (possibly explored in terms of "planetary consciousness" or a "global brain").

The argument here is partially inspired by that of [Susantha Goonatilake](#) in favour of seeking out fruitful metaphors from a range of cultures (*Toward a Global Science: mining civilizational knowledge*, 1999). One example of its application is with respect to the global financial crisis (*Remedies to Global Crisis: "Allopathic" or "Homeopathic"? Metaphorical complementarity of "conventional" and "alternative" models*, 2009). This comparison specifically draws attention to occasional use of individual "health" as a metaphor for the framing of economic "health". A similar comparison is occasionally made between individual "health" and the "health" of the planet. Another example is that of [E. J. S. Hearnshaw, et al.](#) (*Ecosystem health demystified: an ecological concept determined by economic means*)

Any such argument raises the question as to the legitimacy of the "correspondences" that might be sought or made. To what extent are metaphorical correspondences fruitful in eliciting "healing" of the individual or of an endangered planetary society? Correspondences are considered meaningful both in modern sciences and in the world of symbolism explored by the arts, religion and various therapies. These contrasting exploitations of correspondences call for further investigation as previously highlighted (*Theories of Correspondences -- and potential equivalences between them in correlative thinking*, 2007). As discussed below, metaphor is widely explored in reframing lifestyle diseases. Metaphor is of increasing use in framing strategic initiatives (*Metaphor as a language for global governance*, 1995). A primary function of metaphor in both cases is to facilitate communication and understanding where other modes have proven to be less than adequate.

In seeking a "lighter touch", to bypass the "dead hand" of conventional methodology, a valuable criterion would be the extent to which the method is self-reflexive -- taking account of more recent insights into the cognitive limitations of conventional approaches, notably as articulated by [Douglas R. Hofstadter](#) (*Gödel, Escher, Bach: an Eternal Golden Braid*, 1979; *I Am a Strange Loop*, 2007) and by [Hilary Lawson](#) (*Reflexivity: the post-modern predicament*, 1985). It can be argued that such reflexivity is of relevance with respect to the complexities of global systems (*Consciously Self-reflexive Global Initiatives: Renaissance zones, complex adaptive systems, and third order organizations*, 2007; *Engaging with Globality through Knowing Thyself: embodying engagement with otherness*, 2009).

Patterns essential to individual and global health?

The following themes are separately explored in [Annex A](#):

- Remedial 'healing' from patterns of N-foldness
- Example: Approaches to 9-fold integration
- Value of a dynamic method based on tentativeness and reflexivity
- Alternation exemplified in 4-fold pattern
- Alternating between patterns of numbers and patterns of metaphor
- Possibility of an organic "metaphoric chemistry"
- Playful quest for patterns of symmetry
- Pointers to possibilities: Ekistics, Dymaxion World and Eco-Cube
- Health and sustainability through the dynamics of patterning
- Cognitive patterns of environmental significance
- Dynamics of polyocular and multifaceted cognitive framing: navigating the adaptive cycle

Lifestyle diseases as metaphors

As noted above in the introduction, there is a well-recognized tendency to reframe diseases as metaphors. This is notably the case with lifestyles diseases. One author who has drawn significant attention to this is [Susan Sontag](#) (*Illness as Metaphor*, 1978; *AIDS and Its Metaphors*, 2001). Questions which follow from this framing include:

1. The extent to which there is a well-recognized set of distinct metaphors corresponding to the well-recognized lifestyle diseases. Of interest is the manner in which such metaphors are recognized as being of therapeutic value to those affected by such diseases -- following from the study reported in the *The British Journal of General Practice*. *The extent to which 'metaphors that work' in that respect are effectively addressing what might be termed 'memetic diseases' as discussed elsewhere* (*Memetic and Information Diseases in a Knowledge Society: speculations towards the development of cures and preventive measures*, 2008). Following from the above argument, is it then fruitful to distinguish (nine) chronically debilitating memetic diseases, in the light of the charcuteries of a 'debilitating disease'.

A remarkable effort towards identifying metaphors associated with diseases (including lifestyle diseases), and their symptoms, is that of Janie Ticehurst (*Healing Keys: Metaphor A to Z*, 2009)

2. Given the degree of relation of lifestyle diseases to environmental conditions, a question might then be the degree of correspondence between 'metaphors that work' for individual lifestyle diseases and those which are used in framing global and planetary challenges.
3. Of significant interest is the extent to which a lifestyle disease might itself be recognized as a metaphor which is of relevance to understanding and communicating social and planetary ills. Examples of use of such diseases as metaphors include:
 - cancer as a metaphor: white anting

Global and planetary problems as metaphors

Consideration of the use of metaphor in reflection on global problems was a theme of the [Metaphor Project](#) within the *Encyclopedia of World Problems and Human Potential* (*Problem metaphors*, 1995).

A specific concern was the possibility of considering problems as metaphors (*Reframing problems as metaphors*, 1995; *Generative metaphor and policy-making*, 1995; *Innovative Global Management through Metaphor*, 1989). In one exercise (*Problems as metaphors*, 1990), the examples considered were:

- Substance abuse
- Unemployment (including underemployment and absenteeism)
- Ignorance (including functional illiteracy)
- Homelessness
- Illness
- Hunger
- Wastage (including environmental degradation)
- Corruption (including crime)

Consideration was also given to metaphor in relation to overpopulation (*Reframing the problem of 'overpopulation'*, 1995). The possibility was subsequently explored in relation to a variety of global challenges, as separately summarized (*Degrees of Cognitive Engagement with Interrelated Global Categories*, 2009) -- most notably with respect to the Rio+10 Earth Summit (*My Reflecting Mirror World: making my World Summit on Sustainable Development (Johannesburg, 2002) worthwhile*, 2002). The latter exploration considered the following:

Poverty	Hunger (including malnutrition)	Disease (and pain)	Substance abuse (including drugs and alcohol)
Unemployment (including underemployment and absenteeism)	Ignorance (including functional illiteracy)	Homelessness	Wastage (including environmental degradation)
Crime (including corruption)	Inequality and injustice	Immorality	Degradation of the environment (including ecosystems and species)
Unproductivity	Insecurity (and violence)	Nuclear proliferation	Over-exploitation of energy resources

Given the long tradition of comparing the economic system and its ills (through metaphor) to those of the human body, the nature of a remedial response to the challenge of 'healing' the global financial crisis has been separately explored in terms of the contrasting systems of therapy typically critical of each other (*Remedies to Global Crisis: 'Allopathic' or 'Homeopathic'? Metaphorical complementarity of 'conventional' and 'alternative' models*, 2009).

Cognitive entanglement

The innovative conceptualization of quantum physics has given itself the legitimacy to give credence to the totally counterintuitive phenomenon of [quantum entanglement](#). Also called the quantum non-local connection, this is a property of a quantum mechanical state of a system of two or more objects in which the quantum states of the constituting objects are linked together so that one object can no longer be adequately described without full mention of its counterpart -- even if the individual objects are spatially separated in a spacelike manner.

If it is admissible to allow of such linkage, and to give credence to experiments that claim to prove it, it is appropriate to ask whether a fundamental property of this paradoxical kind might characterize the relationship between the individual and the encompassing environment, whether local, planet or universe. The argument with respect to the former case is that the property is an artifact of the human cognition which gives it credibility. However it may hold true, it could be argued that analogous forms of entanglement might hold in some way between systems defined by other categories. In the quantum case the phenomenon holds between objects 'linked together so that one object can no longer be adequately described without full mention of its counterpart'. Some interpersonal relationships might well be described in terms of such 'entanglement' -- by those who experience their relationship in this way.

The argument here is that a degree of entanglement of some paradoxical kind may hold between the understanding an individual has of personal identity and the understanding that person has of the encompassing environment. This would suggest that the same pattern of thinking -- subjective or objective -- applied to the individual would be 'cognitively entangled' with that applied by that person to their environment, and vice versa. Lifestyle disease may then in some way be understood as a dysfunctional form of cognitive entanglement.

Fig. 5: 'As above, so below' as 'Cognitive Magic' ?

As noted within the *Wikipedia* entry on [Hermeticism](#), these words circulate throughout occult and magical circles, deriving from Hermetic texts. The concept was first laid out in *The Emerald Tablet* of Hermes Trismegistus, in the words *That which is Below corresponds to that which is Above, and that which is Above, corresponds to that which is Below, to accomplish the miracles of the One Thing.*

In accordance with the various levels of reality: physical, mental, and spiritual, this relates that what happens on any level happens on every other. This relationship has often been represented by the accompanying image included in the *Wikipedia* entry.

Such a relationship has been highlighted within the context of [general systems theory](#) and [cybernetics](#) in terms of [isomorphism](#) between systems at different levels (Zwick, 2007), notably the theory of the [Good Regulator](#): "*Every Good Regulator of a System must be a Model of that System*" (Conant and Ashby, 1970)



Three "laws" of prediction as formulated by [Arthur C. Clarke](#):

1. When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong.
2. The only way of discovering the limits of the possible is to venture a little way past them into the impossible.
3. **Any sufficiently advanced technology is indistinguishable from magic.**

'We are all agreed that your theory is crazy.

The question that divides us is whether it is crazy enough to have a chance of being correct'. (Niels Bohr to Wolfgang Pauli following presentation of Heisenberg's and Pauli's nonlinear field theory of elementary particles at Columbia University, 1958)

The totally counter-intuitive discovery of 'anti-matter' provides another striking example from physics. The hypothesis formulated by [Paul Dirac](#), based on mathematical elegance, was the focus of widespread disbelief and criticism -- prior to its confirmation (Graham Farmelo, *The Strangest Man: the hidden life of Paul Dirac, mystic of the atom*, 2009).

As summarized by [Freeman Dyson](#):

'When a great innovation appears, it will almost certainly be in a muddled, incomplete and confusing

form. To the discoverer, himself, it will be only half understood; to everyone else, it will be a mystery. For any speculation which does not at first glance look crazy, there is no hope!' (*Innovation in Physics*, Scientific American, 199, No. 3, September 1958)

How might such an understanding apply to lifestyle diseases and planetary ills?

Drama of cognitive entanglement: Curiously cognitive entanglement is perhaps most evident in drama and narrative, namely the development and culmination of a plot. Typically significance is then associated with a form of 'cognitive twist' (as discussed in [Annex A](#) in relation to the [adaptive cycle](#)). The twist then holds a relationship between initial incomprehension (ignorance of what is unknown) and the surprise of subsequent discovery -- of the unexpected at which clues may variously and tantalizingly hint. For some, based on such hints, twists may well be foreshadowed allowing probabilities to be attached to predictions. For others the outcome may be a complete shock.

Progressive recognition of the twist therefore effectively tracks the emergence of knowledge over time. Arguably such a twist may relate imagined possibilities to subsequent scientific discovery -- effectively a relationship between 'fiction' and 'science', as celebrated in science fiction and the discoveries it has prefigured. It also offers a way of holding the relationship over time between the challenged predictions and prophecies of doom-mongers (and hope-mongers) and the subsequently emergent reality. This is echoed in relationship to prediction and knowledge of strategic challenges -- hence the relevance of the twist to the adaptive cycle, its representation by the [Möbius strip](#) (discussed below), and the possibility of catastrophic collapse through failure to navigate the twist.

The theory of drama has long recognized phenomena associated with such a 'twist':

- **Peripeteia** (peripety) as the reversal of circumstances, or a turning point. The term is primarily used with reference to works of literature. This is a sudden reversal dependent on intellect and logic, notably associated with an adventure.
- **Plot twist:** This is the change in direction or expected outcome of any dramatic work, typically used to sustain the interest of the audience. Without the embodiment of such a twist, the plot is of far less interest and there is little to be learnt from following its development. It does not constitute an attractor. Revealing the existence of a plot twist often spoils a movie, since the majority of the movie generally builds up to the plot twist. A device used to undermine the expectations of the audience is the false protagonist. It involves presenting a character at the start of the film as the main character, but then disposing of this character, usually killing them. It is a red herring.
- **Twist ending:** This is the unexpected conclusion of the plot through a twist at its [climax](#) -- changing understanding of preceding events and those involved. The *Wikipedia* entry comments (with examples) on a variety of devices through which this is achieved, including:
 - [Anagnorisis](#) (discovery)
 - [Analepsis](#) (flashback)
 - [Unreliable narrator](#)
 - [Peripeteia](#) (as noted above), namely the sudden reversal of the protagonist's fortune, whether for good or ill
 - [Deus ex machina](#) ("god out of a machine"), namely the introduction of an unexpected, artificial or improbable character, device or event to resolve a situation or untangle a plot
 - [Poetic justice](#) through which the plot unexpectedly, but appropriately, rewards virtue (or punishes vice) such as to offer a higher connectivity to the events of the drama.
 - [Chekhov's gun](#), namely a situation in which the significance of a plot element introduced early in the narrative, suddenly acquires pivotal significance to the outcome (effectively as a 'plant').
 - [Misdirection](#) (a [red herring](#)), namely introduction of a false clue intended to distract protagonists (and audience), pointing them prematurely toward an incorrect solution.
 - [Cliffhanger](#), namely use of an ending that deliberately fails to resolve the issues raised by the plot, thereby frustrating the audience, ensuring that the plot is memorable through raising the question as to what happens next -- activating the mnemonic advantages of the [Zeigarnik effect](#).

As suggested above, the 'realities' of current events derive part of their interest as 'fictional' dramas and through dramatic interpretation (*Gorbachev: Dramaturge?! Participative Democracy vs. Participative Drama*, 1991). This is most evident in the case of celebrity scandals, conspiracy theories, false flag operations, and '-gates' ([Watergate](#), [Climategate](#), etc).

Entanglement as time binding: The entanglement across time between imagination and reality, between dramatic potential and science, ensures the transmission of knowledge and abstractions accreted in cultures -- as articulated by [Alfred Korzybski](#) under the term [time binding](#). This phenomenon is especially relevant to the current civilizational challenge of navigating the adaptive cycle and avoiding catastrophic collapse as envisaged by several authors ([Jared Diamond](#), *Collapse: How Societies Choose to Fail or Succeed*, 2005) [Thomas Homer-Dixon](#), *The Upside of Down: catastrophe, creativity, and the renewal of civilization*, 2006). The challenge may also be explored as a thought experiment (*Minding the Future: thought experiment on presenting new information*, 1980; *Presenting the Future: an alternative to dependence on human sacrifice through global pyramid selling schemes*, 2001; *Engaging Macrohistory through the Present Moment*, 2004).

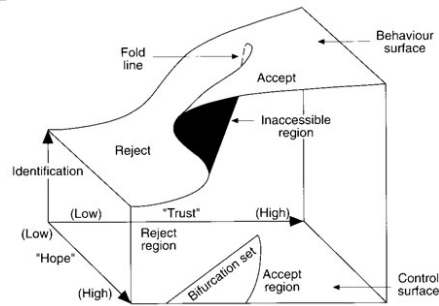
As noted in *Wikipedia*, [dramatic catastrophe](#) is the final resolution in a poem or narrative plot, which unravels the intrigue and brings the piece to a close -- particularly in the tragedies of classical antiquity. Catastrophe has long been recognized. Given the sophisticated insights of [catastrophe theory](#) into the patterns of catastrophe and how they may be navigated, it is valuable to relate such patterns to the more accessible understandings of cognitive twists and the associated learning process offered by plots and their dynamics.

The question has been raised as to the possibility of viewing the panarchy adaptive cycle as a special case of the cusp catastrophe. In the study of E. J. S. Hearnshaw, et al. (*Ecosystem health demystified*) consideration is given to catastrophe theory in relation to that cycle:

The actual change to another basin of attraction, that is, a new state of an ecosystem, is most often modelled by either catastrophe theory or bifurcation theory. Catastrophe theory was originally developed by the mathematician Thom (1975) and explains state transitions in a way that a system trajectory along a smooth surface will at certain points have combinations of impossibility, which correspond to 'folds' in the surface mapping.

The civilizational challenge of the adaptive cycle of achieving sustainability might then be reframed as one of navigating 'cognitive catastrophes' (*Interrelating Cognitive Catastrophes in a Grail-chalice: proto-model implications of WH-questions for self-reflexivity and dialogue*, 2006). The relevant catastrophic dialogue processes are mapped in the latter exploration on the form of a chalice -- appropriately present on the table in the above image (itself part of the traditional time binding narrative offered by the *Tarot*). To the extent that the challenge is memetic, of relevance is the study by Patricia Karathanos, et al (*Sudden Lost Meaning: a catastrophe? Management Decision*, 1994), especially their diagram as follows -- also of relevance to understanding remedial possibilities:

Fig. 6: Navigating memetic catastrophe
(the catastrophe of 'lost meaning' as represented by Patricia Karathanos, et al.)

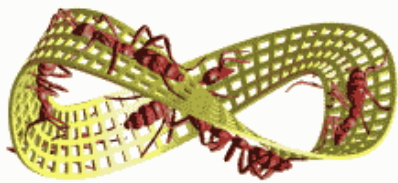


A figure of this kind is potentially of use to indicate the conditions of emergence of abuse of faith in governance (*Abuse of Faith in Governance*, 2009).

Orientation entanglement: In mathematics and physics, the notion of [orientation entanglement](#) is used to develop intuition relating to the geometry of spinors namely the properties of rotations in space. The orientation of an object may then become entangled with the orientation of the surrounding walls. This leads to the question as to whether such an understanding applies in some way to the relation between an individual and any surrounding context, whether local, global or relational.

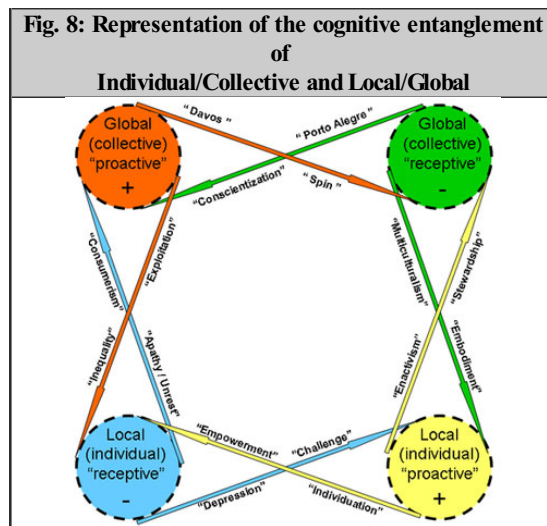
Cognitive entanglement in deep ecology: Individual engagement with nature, as understood in deep ecology and ecosophy, might be appropriately described as a form of entanglement. The importance of this for indigenous peoples and traditional knowledge systems has been extensively documented for the United Nations Environment Programme by Darrell A. Posey (*Cultural and Spiritual Values of Biodiversity: a complementary contribution to Global Biodiversity Assessment*, 1999). A more recent and specific example is offered by Catherine Laudine (*Aboriginal Environmental Knowledge: rational reverence*, 2009). A valuable exploration of this entanglement has also been provided by Jeremy Narby (*The Cosmic Serpent: DNA and the origins of knowledge*, 1999) as discussed separately (*Myth and indigenous knowledge*, 2006).

Fig. 7: Dynamics of cognitive entanglement within an adaptive cycle
as illustrated by a Möbius strip
(animated version of a classical image of M. C. Escher, as developed by Gershon Elber (*Escher for Real*, 2002)
[view much [enlarged version](#) as movie]



The animation could carry greater significance if the ants were to change colour as they traversed different parts of the loop, thereby becoming distinct from each other from their respective positions -- indicative of the challenge of dialogue between distinct worldviews

Local (individual) / Global (collective) entanglement: These forms of entanglement involve the kinds of paradoxes associated with the [Möbius strip](#) (above) and with the 'cognitive twist' (discussed in [Annex A](#) in relation to the [adaptive cycle](#)). It is only too appropriate that such a topological form should be included in the above image (which predates its mathematical description). The questionable delineation of two 'eyes' by the Möbius strip, provides a reminder of the paradoxical nature of what is brought into focus by the 'stereoscopic' capacity of 'polyocular vision' (cf [John A. T. Robinson](#), *Truth Is Two-Eyed*, 1979). Appropriately the form is the conventional [symbol of infinity](#) (the lemniscate) and, by implication, of the continuity desired in a sustainable adaptive cycle. The form is discussed elsewhere (*Psychosocial Work Cycle: beyond the plane of Möbius*, 2007) with respect to [Psychosocial Energy from](#)



The adaptive cycle might best be understood as taking the form of a (one-sided) Möbius strip -- with all that is implied by any preoccupation with 'one side' of it at any particular phase of that cycle, namely ignoring the 'other side'. As emphasized in the movie *Avatar*, environmental 'deities', like *Gaia*, 'do not take sides'.

The Möbius strip (like the *Klein bottle*) embodies the *quadrilemma* (discussed in *Annex A*). Within any alchemical metaphor, the Klein bottle (as an *alembic*) would be an appropriate cognitive 'container' for transformation (cf *Intercourse with Globality through Enacting a Klein bottle: cognitive implication in a polysensorial 'lens'*, 2009):

- having-an-inside
- not-having-an-inside
- having both an-inside and not-having-an-inside
- having neither an-inside nor not-having-an-inside

Such possibilities are no more 'ridiculous' than that of the quantum case -- famously challenged as needing to be 'crazy enough' to explain the phenomena of fundamental physics. If counterintuitive modes of understanding are appropriate to disciplines that have yet to prove their relevance to the challenges of a crisis of global crises, it is at least appropriate to explore their possible relevance to comprehension of those crises -- for which, seemingly, few cognitive disciplines have as yet any viable insights to offer.

There is also a charming irony in relation to therapeutic remedies in that they have been controversially sought by the pharmaceutical industry through exploiting the local knowledge of indigenous peoples -- otherwise universally deprecated. As argued by Susantha Goonatilake (*Toward a Global Science: mining civilizational knowledge*, 1999), there may be forms of traditional knowledge which address the cognitive ills that may underlie the lifestyle diseases indicated above. Conventional science may be in extreme danger of 'throwing the baby out with the bath water' in the inability of its methodology to discern insights relevant to the memetic ills faced by a society widely recognized to be in danger of collapse.

Interrelating planetary and human systems through disease metaphors

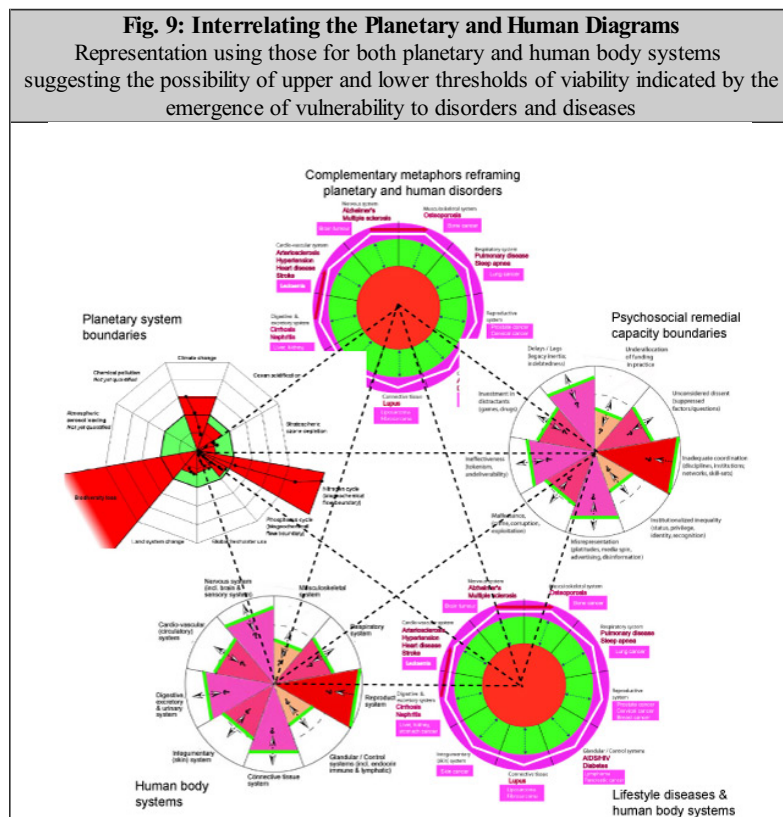
The fact that human systems are embedded within planetary systems with which they interact in various ways is a trivial observation. More intriguing is the manner in which such systems are framed through cognitive processes, specifically how cognition is implicated in the definition of categories conventionally understood to be distinct and indicative of separation. In this sense cognition relating to diseases of the individual body can readily be dissociated from those of the planet. Each may well be the focus of disciplines that have little interest in communication with each other. This of course reflects the challenge of lifestyle diseases, dissociated from the ills of the planet, just as the latter are typically dissociated from those of the body. There is then no sense that lifestyle diseases may in effect be functioning like the traditional *canary in coal mines*. -- as an indicator of environmental ills. In that sense lifestyle diseases function like *indicator species*.

Any such exploration, although justified by the manner in which metaphors are used to enable understanding and communication, is of course fraught with the potential for error -- especially when any effort is made to benefit from traditional insights relevant to such comparisons. Hence the relevance of the argument of *Donald N. Michael* with respect to both planning and learning "*On the requirement to embrace error*" (as discussed in *Annex A*).

Tentative correspondence between lifestyle and environmental metaphors of dysfunctionality			
Systemic lifestyle disease	Socio-environmental metaphors	Disease metaphors	Global crises
Nervous system and brain (incl. Alzheimer and MS)	Destabilization of environmental cycles and loops (communication pathways, water, migration)	?	Nervous system disorders, notably as a consequence of (civilizational) aging
			Global misleadership, lack of coordination, malgovernance, miscommunication,

	routes, etc)			information pollution
Musculoskeletal system (incl. osteoporosis)	'White-anting' of social structures	?	Disorders of bones and joints vital to integrity of body	Dysfunctional global institutional structures
Respiratory system (incl. COPD, sleep apnea)		?	Respiratory disorders	Air pollution (information pollution)
Cardio-vascular system (incl. Arteriosclerosis and Hypertension)		?	Cardio-vascular disorders (blood as funds)	Financial crises
Digestive/excretory/urinary systems (incl. cirrhosis, CRF, diabetes)		?	Digestive disorders, malnutrition, obesity	Malnutrition, overconsumption, waste disposal (accumulation of nondegrading waste products)
Integumentary (skin) system (incl. ***)		?		
Connective tissue (incl. lupus)		?		Democratic deficit
Reproductive system		?		Overpopulation
Glandular / Control systems		?		
Multi-systemic (incl. cancer).		?	Metastating cancers	Erosion of value systems. Degradation of psychosocial systems

This tentative exercise points to the possibility of representing the earlier diagrams together in the following image



Preoccupations of individual and global 'self-healing'

The above argument stresses the merit of exploring the way in which metaphor is used to frame systemic ills, especially those of a potentially catastrophic nature. However the essence of lifestyle diseases, as it has been argued, is the dissociation of identity from context -- of the individual from the environment and of society from the global context. In that sense., rather than appropriate entanglement with the 'lifeworld', there is disentanglement from that lifeworld -- typically framed as humanity's independence from nature, or humanity's conquest of nature (using a military metaphor). For some nature is therefore already 'dead'.

The question for further exploration is the extent to which any framing of remedies reinforces that dysfunctional disassociation. As stressed, lifestyle diseases and planetary diseases might usefully be understood as sustained by similar dysfunctional cognitive patterns.

Potentially of even greater interest is the extent to which the system, whether individual or collective, then engages in activities which reflect an intuitive understanding of an appropriate remedial response -- holding a memory of remedial possibilities but in a deactivated ('denatured') form. This might then even correspond to the strategic adage: 'having lost sight of our objectives, we redoubled our efforts' -- a preoccupation with the trace of the systemic insight which one most needs to learn.

In this sense there may then be valuable learnings implicit in the form of any compensatory activity or preoccupation -- then to be understood as a preoccupation with the only traces of what one most needs to learn. This would be consistent with the insight of

Gregory Bateson in concluding a conference on the effects of conscious purpose on human adaptation, is that: "We are our own metaphor." (Mary Catherine Bateson, *Our Own Metaphor*, 1972., p.304). Unfortunately we have over-identified with the metaphor and have been unable to see ourselves in perspective.

The question is then how 'displacement activity' may be reactivated as a 'cognitive healing catalyst' -- circumventing the forms of denial it otherwise reinforces (and the compensatory focus it offers). A number of authors (cited above) have in various ways articulated ways of thinking about this possibility (David Abram, *The Spell of the Sensuous: perception and language in a more-than-human world*, 1997; Henryk Skolimowski, *The Participatory Mind: a new theory of knowledge and of the universe*, 1995). The process of 'reactivation' may for example be understood in terms of 're-enchantment' as used by some (Thomas Moore, *The Re-enchantment of Everyday Life*, 1997; [Morris Berman](#), *Reenchantment of the World*, 1981).

Of interest is then to explore specific compensatory preoccupations in relation to the experience of specific diseases to determine whether they do indeed hold implicit systemic insights. For example, in the case of multiple sclerosis (given the systemic connectivity that is progressively undermined by the breakdown of patches of nerve sheath), for which [Metaphor A to Z: Multiple Sclerosis MS](#), (*Healing Keys*) offers:

1. We feel as if we are losing our natural protection and, as a result of multiple sclerosis, we are losing our nerve about moving forward and about life in general.
2. We are feeling emotionally helpless and vulnerable. This disease is an apology for our existence.

What then is to be learnt from a (professional) preoccupation by the sufferer with hydrology, hydrography and water systems? Is there any correlation between lifestyle diseases and such (planetary) systemic preoccupations? The example of MS is especially interesting in the light of the extensive comments by Thomas Moore on the psychological significance of water systems -- to a large extent lost in modern global society -- notably the spiritual dissociation from water and its flows. For Wade Davis (*The Wayfinders: why ancient wisdom matters in the modern world*, 2009):

For the Indians of the [Vaupès](#), rivers are not just routes of communication, they are the veins of the earth, the link between the living and the dead, the paths along which the ancestors travelled at the beginning of time. (p. 95)

More generally this tendency to dysfunctional externalization may be understood as effectively breaking the vital 'pattern that connects', again as articulated by Gregory Bateson (*Mind and Nature: a necessary unity*, 1979) in making the point that:

The pattern which connects is a meta-pattern. It is a pattern of patterns. It is that meta-pattern which defines the vast generalization that, indeed, it is patterns which connect.

In the light of the arguments for [enactivism](#), the challenge with respect to engagement with the lifeworld may then be expressed as one of 'enactivation' as previously argued ([Walking Elven Pathways: enactivating the pattern that connects](#), 2006).

As seen at the global level, many examples of treating externalities as irrelevant have proven to be problematic -- most notably in the case of the global economic system. In each case these effectively consist of 'exporting' issues outside the boundaries of the system with which it is possible to deal conventionally using a degree of subunderstanding of complexity. The question is how to embody externalities, as argued elsewhere ([Existential Embodiment of Externalities: radical cognitive engagement with environmental categories and disciplines](#), 2009).

Towards a University of Earth?

The following themes are separately explored in [Annex B](#):

- [Crisis of crises](#)
- [Eliciting appropriate thinking](#)
- ['Standard Operating Procedures'](#)
- [Identity as a strange loop](#)
- [Imaginal training](#)
- [Converging preoccupations with time](#)
- [Enabling the cognitive vehicle](#)
- [Cognitive and process challenges](#)

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