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Reintegration of a Remaindered World

Cognitive recycling of objects of systemic neglect

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Prepared as an aid to reflection on a world of "remaindered people"
currently of concern to the "[Indignant](#)" and to the [Occupy movement](#)

Introduction

Remainder: Understanding of "remainder" is variously significant in mathematics, commerce, law, cognition, and philosophy. It is given particular meaning in the form of "leftover", whether in relation to waste management or to religion (as with the "left behind" who are not "raised up" to heaven according to eschatological prophecies). Reference to "remains" suggests further significance to "leftover" in the case of a human being.

Remaindering: In a time of severe austerity measures, in which many are faced with the personal consequences of being laid off and of long-term unemployment, there is also merit in reflecting on commercial policies of "[remaindering](#)" (as with unsold copies in the book trade) -- as these could be applied metaphorically both to the people so treated, and more widely. More generally, in the light of the arguments of such as [James Lovelock](#) (*The Vanishing Face of Gaia: A Final Warning: enjoy it while you can*, 2009), "remainder" merits consideration in the light of the time remaining for humanity, if not in the specific and personal sense of the significance of the remainder of one's life and the possibility of its being wasted.

Anomaly: Conventional preoccupation with integrative approaches may well be framed as interdisciplinary, transdisciplinary, and unitary -- possibly involving coordination, normalization, harmonization, or the like (see [Integrative Knowledge and Transdisciplinarity Project](#)). These typically leave open the question as to what is left unintegrated into such a framework, as a "remainder", even a "scientific remainder". In this sense exploring "remainder" offers insight into the nature, quality and challenge of any such approach, and of what may remain an anomaly. This notably applies to any purportedly integrated strategy, with the implication that some issues and people may well have been left out of consideration -- and may even be "wasted" (in both senses of the word), or condemned as dangerous extremists (*Norms in the Global Struggle against Extremism*, 2005).

Indignation: By employing the term "remaindered", a useful means is offered of exploring the concerns of the [Occupy movement](#) and of the "indignant", as articulated by [Stéphane Hessel](#) (*Time for Outrage!*, 2011). These include the increasing proportions of the unemployed

and the incarcerated in every country, the reallocation of elderly people to hospices, and the "resettlement" of problematic indigenous groups (as with colonial use of "reservations"). These are all indicative of groups which somehow "do not fit" into a preferred model. They may be variously recognized as forms of "social remainder", "political remainder", or "cultural remainder" (discussed further in Annex 1: *Social Remainers from Psychosocial Remaindering: review of current usage and implications*)

Cognitive remainder: Whilst these forms of "remainder" may be understood as relating to externalities, particular attention has been given by many authors to cognitive forms of "remainder". These are notably evident in preoccupation with a "transcendental remainder" or a "theological remainder", as a consequence of the postmodernist philosophy of **Jacques Derrida** (currently celebrated by **Rodolphe Gasché** through *An Immemorial Remainder: the legacy of Derrida*) and the work of **Slavoj Žižek** (*The Indivisible Remainder*, 2007).

Cognitive recycling: The question here is whether these various connotations are together suggestive of unexplored cognitive possibilities of engaging with what is increasingly a "remaindered world" -- a cognitive **midden** or scrap heap -- which some have already expressed the possibility of abandoning in various ways. Is there a form of "cognitive recycling" to be discovered through which "objects" in the human environment, marginalized and wasted by the systemic inadequacies of conventional understanding into "leftovers", can be "reintegrated" into a more comprehensive pattern? This possibility was tentatively explored in a previous exercise (*Defining the objective ∞ Refining the subjective ?! Explaining reality ∞ Embodying realization*, 2011).

Template: As a means of responding to the question, the commercial practice of remaindering is used here as a template through which to explore the "external" usage of remainder in various contexts (presented separately as Annex 1). This then allows the use of "remainder" in conventional mathematics to be reviewed with respect to potential cognitive implications -- leading to consideration of how these "external" and "internal" uses might be more fruitfully related.

Remaindering in economic and business practice

The remaindering of manufactured products considered here offers a template through which that mindset could be said to have been applied to wider and subtler psychosocial contexts as considered thereafter.

Remaindering of media products: In the case of **book remaindering**, this is the practice whereby a publisher sells off, at greatly reduced prices, those books which are no longer selling profitably. For the publisher, although making a loss on the sales of those books, money can be made from the sale and it enables warehouse space to be made available. In the recording industry, a deeply-discounted or remaindered copy of a tape or disc is termed a **cut-out**. Through identification with their works, author's are notably sensitive to "being remaindered" -- a theme of various forums (*Getting remaindered is not the end of the line*, *The Guardian*, 30 September 2008; *Remainders*, 15 June 2006).

"Remaindering" of other products: Although the term is not used, many products are effectively "remaindered" when their sale is no longer profitable and especially when newer and/or better variants become available. Commercially the process may be difficult to distinguish from several other processes:

- **"dumping"** in economics is any kind of predatory pricing through which a manufacturer markets a product (notably to another country) at a price either below the price charged by competitors, or in quantities that cannot be explained through normal market competition. Internationally this may substitute for selling off products more cheaply in the home market, namely a means of "getting rid of" a product which is no longer marketable in the home market, especially if it is effectively obsolete.
- **"planned obsolescence"** is a policy of deliberately planning or designing a product with a limited useful life, so it will become obsolete or nonfunctional after a certain period of time. This might be termed "technological remaindering" or "remaindering of technology". Planned obsolescence has potential benefits for a producer because to obtain continuing use of the product the consumer is under pressure to purchase again (a replacement part or a newer model), whether from the same manufacturer or from a competitor potentially also relying on planned obsolescence
- **"subprime loans"**, **"financial derivatives"** and so-called **"junk bonds"**, as speculative financial instruments, potentially lend themselves to interpretation as problematic forms of remaindering, notably in the light of the challenge of repayment of the remainder of any loan as became evident in the **subprime mortgage crisis** and in the extent of **toxic assets** in the financial system. The aftermath of the crisis, and the manner in which those most implicated continue to benefit from ever-increasing salaries and bonuses, also suggests that such activities constitute a form of remaindering -- a "sell off", if not a "sell out". Deliberate currency undervaluation might be fruitfully considered as a form of remaindering, as with various approaches to cancelling ("writing off") debt, as advocated for **developing country indebtedness**.
- "selling off" houses, notably as a consequence of the subprime mortgage crisis (*Home Price Deflation Accelerates*, *Housing Predictor*, November 2011; Paul Boden, *Something for Nothing: the selling off of public housing*, *Huffington Post*, 20 November 2011)
- "selling off" land nominally owned by the government, notably in the case of wilderness and green belt areas (and possibly in the form of "concessions"), may be interpreted as a form of remaindering. Curiously a founding legend of North America, namely the **sale of Manhattan in 1626** -- for 60 guilders (24 dollars) worth of trinkets and beads -- could be considered as a pattern of remaindering established by the indigenous Native Americans. Given the reputation of the so-called "Masters of the Universe" as being prepared to "sell their own grandmother", it might be provocatively speculated that the "1%" -- headquartered in Manhattan - - would now be prepared to "sell off" the planet as a whole to "extraterrestrials" according to that same pattern.

The process by which employees may be "laid off" -- currently of deep concern in a period of austerity -- also merits consideration as a form of remaindering. This is especially evident in the manner in which capable people in gainful employment are obliged to "retire" to respect arbitrary social security regulations.

Waste production as a form of remaindering: The manner whereby a "product" is derived from source materials may well generate

"waste" to be discarded. This waste may in fact contain materials of value which it is not currently economic to process, for reasons of efficiency or time. This is also evident in the case of [food waste](#) and "leftovers", currently highlighted as a matter of major concern given the increasing shortage of foodstuffs.

The accumulation in the environment of unprocessed waste -- effectively "remaindered" to the "buyer of last resort" -- is recognized as especially problematic in the case of [marine debris](#) and [radioactive waste](#). Analogous processes are evident in the case of the accumulation of [space debris](#). There is an increasing challenge in disposing of the "remains" of the dead, to say nothing of its more gruesome variants (Craig Whitlock and Mary Pat Flaherty, *Air Force dumped ashes of more troops' remains in Va. landfill than acknowledged*, *The Washington Post*, 8 December 2011).

"Remaindering" of natural resources: A form of remaindering may be seen in the highly controversial manner in which natural resources are "sold off" at prices which do not correspond to their potential value in the longer term -- to the extent that effort is made to recognize this. This is most evident in the exploitation of natural forest. The issue is recognized in the ongoing debate regarding the undervaluation of natural resources, as notably articulated by the [World Wildlife Fund for Nature](#) (*Bolstering the value of natural ecosystems*). It is less readily evident in the destructive exploitation of wilderness areas and in the various forms of pollution resulting from ill-considered use of the environment as a waste dump.

According to a recent survey of conservationists, 60 percent agreed that criteria should be established for deciding which species to abandon in order to focus on saving others (Murray A. Rudd, *Scientists' Opinions on the Global Status and Management of Biological Diversity*, *Conservation Biology*, 2011). As indicated by the [International Union for the Conservation of Nature](#), there will indeed be disagreement about priorities. The challenge allegedly relates to 17,000 [endangered species](#) (*Is it time to let some species go extinct?* *New Scientist*, 12 November 2011). Any choice may depend on how unique a species is genetically, how useful it is economically, or whether many species can be saved at once. As a perverse interpretation of "sustainable", the strategy can be understood as a tacit form of remaindering.

It is appropriate to consider the relevance of that mindset (and the criteria cited) to the long-term debate regarding [human eugenics](#) and to the current debate regarding the viability of social safety nets under conditions of austerity. More generally it suggests the merit of reflecting on the need for an "International Union for the Conservation of Social Resources". This could clarify any need to "abandon" psychosocial resources and cultures to achieve "sustainability" -- as already implemented through the withholding of effective assistance to those in danger.

"Trashing the planet": Together these last two points offer a justification for relating recognition of "trashing the planet" to "remaindering". This reinforces the sense in which "remaindering" could be a useful lens for the psychosocial "trashing" of society and global civilization -- as explored below.

Omnipresence of remaindering and the remaindered in global society

The economic practice of remaindering commodities, as noted above, offers a frame through which to consider the extent of analogous social practices and processes in a society characterized by progressive [commodification](#).

A form of "remaindering" is evident in various forms of institutionalized "discounting" or marginalization, especially those of a progressive nature. It could be said to be most evident in slavery, as institutionalized in the past, and as currently practiced in the case of sale into bonded labour or the sex trade. The degree of loss of humanity of those so remaindered invites the provocative interpretation that they are then effectively human "remains" -- having been essentially "culled" or "killed off" by social processes.

It could be argued that the aspirations and expectations of many are effectively remaindered by social processes and the systematic breaking of political promises (*Credibility Crunch engendered by Hope-mongering*, 2008). As loss of hope, these processes suggest subtler forms of remaindering (*Implication of Personal Despair in Planetary Despair*, 2010).

In exploring the more general psychosocial implications of the economic template of "remainder" and "remaindering", it is interesting to note that although use of "remainder" is indeed more widely evident, the practice -- expressed through a verb -- is not (in marked contrast with the economic case). Thus although the existence of "social remainders" is recognized, the process of "social remaindering" -- which might be said to engender them -- is not (at least in that form). This is also the case with respect to widespread use of "remainder" in relation to subtler cognitive issues and the dynamic through which any such remainder is engendered.

The themes are reviewed separately in Annex 1 (*Social Remainders from Psychosocial Remaindering: review of current usage and implications*, 2011) within the following sections:

- [Social remaindering and the socially remaindered](#)
- [Culturally "remaindered" and cultural "remaindering"](#)
- [Historically "remaindered" and historical "remaindering"](#)
- [Politically remaindered and political remaindering](#)
- [Strategic remaindering and remaindered strategies](#)
- [Moral and ethical remainder](#)
- [Philosophy and epistemology of remainder and incompleteness](#)
- [Theological remainder: "lost presence of the absent origin"](#)
- [Challenge of the "remaindered" and "remaindering" for religions](#)

The often dramatic implications of the current economic crisis for human livelihoods have been usefully given a focus through presentation of the inequalities between the "1%" and the "99%". This focus has however obscured the extent to which the economic reality has been sustained by influential conceptual articulations within the academic and policy communities. Is it possible that a "1%" of

those articulations has effectively discounted a "99%" -- a form of "remaindering" in its own right?

Curiously the operation of internet search engines (Google, etc) necessarily ranks results using special algorithms in order to facilitate selection of the highest ranked items -- increasing the probability that low-ranked items will be neglected and effectively "remaindered". This is indicative of the larger challenge resulting from information overload and the consequent tendency to treat an ever increasing proportion of social concerns as "irrelevant". This was a specific concern with respect to [problem importance](#) in the [World Problems Project](#), given the sense in which the deliberate or unconscious neglect of issues important to some constituencies are similarly "remaindered".

Potentially more profound in its implications is the sense in which most people effectively live cognitively in a world of conceptual "cast-offs" -- frameworks and models engendered and abandoned by the [cultural creatives](#) of the past (including their own past selves). Given that little attempt is made to interrelate these cast-offs in any meaningful way, people are then obliged to live on a conceptual "scrap heap" through which they sift in quest for anything useful to the fabrication of their existential shelter and nourishment.

Towards reframing the implications of the mathematics of remainder

Remainder: The nature of a [remainder](#) is an early feature of the teaching of mathematics to children. It is the amount "left over" when dividing two [integers](#), namely whole numbers (whether positive or negative). Thus in dividing 12 by 8, the amount left over is 4. The result of the division can also be expressed as 1.5 -- using the decimal point as an indicator of what proportion of 8 "does not fit" into its division into 12.

When approximating a value by a mathematical series, the remainder is the error (the amount "left over") of an approximation, such that **true value = series approximation + remainder term**. It is assumed that the divisor is non-zero (although that case could be interpreted as being of larger significance, as discussed below). Also of relevance is that the value of so many irrational numbers (in principle all such numbers) can be approximated in rational terms through a dynamic iterative process which always implies a remainder. This gets progressively smaller as the number is better approximated.

Understanding of "remainder" becomes of wider relevance in the light of the manner in which conceptual models and strategies are typically articulated into elements (notably as "bullet points" in slide presentations). These may be numbered by integers -- implying distinct "wholes" into which the totality is broken down. Put otherwise, the consequence is that when a systemic "model" is applied to "reality", there is every probability that a range of (unnumbered) factors may be omitted or neglected as irrelevant -- whether deliberately or unconsciously. These then constitute the "remainder" -- as notably illustrated by the recent treatment by the [Intergovernmental Panel on Climate Change](#) of the population factor in the [Kaya Identity](#).

Unknown remainders: The issue is especially significant when the implication is that the framework is in some way "comprehensive" or "global", such that "everything" is somehow subsumed by it (as a "summation", if not a "consummation"). It is potentially even more significant in the case of any assumption that a framework is "universal". What might be held to be omitted from any [Theory of Everything](#)? Clearly it is unlikely that the neglected factors would be explicitly quantified -- rather than being understood as "numberless". In this sense such a "remainder" is essentially qualitative, although the (im)possibility of numbering may be partially recognized in the notorious strategic recognition by [Donald Rumsfeld](#) of the [known unknowns](#) -- potentially conflated with his "unknown unknowns":

*There are known knowns; there are things we know we know.
We also know there are known unknowns;
that is to say we know there are some things we do not know.
But there are also unknown unknowns -
the ones we don't know we don't know.*

(discussed in [Unknown Undoing](#), 2008)

It could then be said that it is the combination of "known unknowns" and "unknown unknowns" which constitutes the "remainder". However, being unquantified, they are strangely to be understood (through their conflation) as potentially both "less" than the "known" (incorporated into the model) and "larger" in implication than the knowledge offered by the model (if essentially partial). The situation calls for a more complex form of mathematics.

Modulus: The mathematical concept of [modulus](#) suggests further implications. Mathematically A is said to be congruent to B modulus C, if A divided by C and B divided by C have the same remainder. C is called the modulus of congruence. Stated otherwise, for a positive integer C, two integers A and B are said to be congruent modulo C, if their difference $A - B$ is an integer multiple of C. The number C is thus called the modulus of the congruence. Modular arithmetic enables different integers (such as A and B) to be handled mathematically by introducing such a [congruence relation](#).

This suggests the possibility of exploring some form of fruitful "modular relationship" between different integrative conceptual frameworks (as "integers"), each with distinct claims to be "comprehensive" -- with each necessarily "failing" in that presumption and thereby engendering a "remainder". Is there then the possibility of a "modular arithmetic" between models of reality, identifying a form of "congruence relation" between them? This would offer a powerful means of interrelating frameworks otherwise considered as incompatible and incommensurable.

Qualitative vs Quantitative perspective: [Peter Collins](#) ([Mathematical Dimensions and Psychological Development \(1\)](#), *Spectrum of Mathematics*, 5 October 2011; [Mathematical Dimensions and Psychological Development \(2\)](#), *Spectrum of Mathematics*, 12 October 2011) argues that, properly understood, every number expression represents a dynamic interaction as between a base quantity and a dimensional number (that is relatively of a qualitative nature):

■

So what we might refer to in conventional (Type 1) terms as the number quantity 2, more accurately is expressed as 2^1 (where 2 is quantitative and 1 -- relatively -- of a qualitative holistic nature). However because the very nature of linear (1-dimensional) understanding is to reduce qualitative to quantitative type meaning, from a Type 1 perspective, interpretation of numbers is invariably reduced in a mere quantitative manner. However when correctly appreciated in holistic Type 2 terms, number expressions have an intimate bearing on the interpretation of all the main stages on the spectrum of psychological development.

Amplifying on this argument (in a private communication), Collins argues (with respect to the above example of dividing 12 by 8, that the remainder is 4, that the result could also be expressed as a fraction as 1):

The very nature of the conventional quantitative approach to mathematics is that it is defined in linear (1-dimensional) terms where qualitative meaning is thereby reduced to quantitative. Now the movement from the whole notion of 2 as an integer to the inverse part notion of can be expressed as 2^{-1} .

So $2^{-1} = 1/(2^1) = .$

The fascinating feature then from a qualitative perspective is that this very process of obtaining the reciprocal part, entails the dynamic negation of rational linear understanding. And the negation of what is rational (and conscious) thereby entails the corresponding movement to what is intuitive (and unconscious). Therefore in the very dynamics of moving from whole to part notions in experience (and in reverse from part to whole), intuitive understanding is implicitly required to enable a successful transition to take place.

However because in formal terms the nature of conventional mathematics is defined merely in a linear rational manner, this entails that the qualitative intuitive dimension is ignored with subsequent interpretation taking place in a reduced quantitative manner. And such reductionism then leads to continual fragmentation of experience (in quantitative terms).

So when we view reality in a detached impersonal manner, the (part) remainder which does not readily fit in with one's rational perspective can be thereby excluded -- literally -- as wholly irrelevant. [emphasis added]

Linear vs Circular perspective: Collins then argues:

I have been long fascinated by the fact that when we raise 1 to a simple fraction (such as 1/3) that we get a switch from a linear to a circular notion (with the result lying on the circle of unit radius in the complex plane). The deeper explanation of why this is the case actually resides in the fact that here the base number 1 and the dimensional number 1/3 are actually quantitative and qualitative with respect to each other.

Therefore in a more accurate experientially refined approach to mathematics we would no longer understand numbers as static quantities but rather as dynamic interactive entities always entailing two complementary aspects that are - relatively - quantitative and qualitative with respect to each other. And the interaction of these aspects enables continual transformation in the nature of number to take place.

Sets: These concerns follow from earlier exploration of sets of preferred sizes (*Representation, Comprehension and Communication of Sets: the role of number*, 1978; *Patterns of N-foldness; comparison of integrated multi-set concept schemes as forms of presentation*, 1984).

The preoccupation relates to the issue of the "chunking" capacity of human memory as highlighted in one of the most highly cited papers in psychology (George A. Miller, *The Magical Number Seven, Plus or Minus Two: some limits on our capacity for processing information*, *Psychological Review*, 1956). Related issues have been explored from the perspective of cognitive psychology by George Lakoff and Rafael Núñez (*Where Mathematics Comes From: how the embodied mind brings mathematics into being*, 2000).

Topology and remainder: It is appropriate to note in passing the possibility of further insight from the preoccupation with remainder in the field of topology (A. V. Arhangel'skii, *Two Types of Remainders of Topological Groups*, *Commentationes Mathematicae Universitatis Carolinae*, 2008; Peter Collins, *Extensions of topological spaces with strongly-discrete remainder*, *Topology and Appl.* 1999). The implication of "compactification" would appear relevant to the above argument (A. V. Arhangel'skii, *Remainders in compactifications and generalized metrizable properties*, *Topology Appl.*, 2005).

The term "sobrification" is introduced in this connection by Rudolf-E. Hoffmann (*Sobrification of partially ordered sets*, *Semigroup Forum*, 17, 1, pp. 123-138; *On the Sobrification Remainder*, *Pacific J. Math.*, 83, 1, 1979, pp. 145-156):

... the notions of "ideal" and "idealcompletion" of an (upper semi-) lattice may be considered as special cases of a construction from set-theoretic topology, the "sobrification" of a space

Error / Mistake as neglected remainder

Errors and mistakes are understood differently in different contexts. Etymologically "error" derives from "wandering" or "straying". In contrast with an illusion, it can sometimes be dispelled through knowledge. A **statistical error** (or *residual*) is not a "mistake" but rather a

difference between a computed, estimated, or measured value and the accepted true, specified, or theoretically correct value. It could be inferred that further information -- effectively a "requisite remainder" -- is then necessary in all such cases to correct and complete the pattern. In science and engineering in general, an error is defined as a difference between the desired and actual performance or behavior of a system as being necessary for its control. This suggests another interpretation of "remainder".

In religion, great significance is attached to error understood as [sin](#) -- a hindrance highlighting the learning challenges which remain, possibly inhibiting access to a beneficial afterlife for believers. Identification with the sin may even define the person as a sinner who will "remain behind" when others are "raised up". By extension beyond the religious domain, the degrees of "sin" -- and the remainders they imply -- may offer further insight (*Sins of Hot Air Emission, Omission, Commission and Promission*, 2009). Any such extension opens the possibility of applying more formal insight to elicit further understanding of remainder (*Towards a Logico-mathematical Formalization of "Sin": fundamental memetic organization of faith-based governance strategies*, 2004).

Various authors have explored the advantages of learning by making mistakes, rather than following the conventional approach to focusing on the right answer in so-called "errorless learning", as reviewed by Henry L. Roediger and Bridgid Finn (*Getting It Wrong: surprising tips on how to learn*, *Scientific American*, 20 October 2009). It has been found that learning becomes better if conditions are arranged so that students make errors (Nate Kornell, Matthew Hays and Robert Bjork, *Unsuccessful retrieval attempts enhance subsequent learning*, *Journal of Experimental Psychology. learning, memory, and cognition*. 2009). Trying and failing to retrieve the answer is actually helpful to learning.

As pointed out by Donald Michael (*On Learning to Plan and Planning to Learn*, 1973) regarding "On the requirement to embrace error":

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

These points highlight the possibility of a "philosophy of error", as discussed by Frederick Rosen (*The Philosophy of Error and Liberty of Thought: J. S. Mill on logical fallacies*, *Informal Logic*, 26, 2, 2006). Such a philosophy could be reframed to encompass remainder, especially in the case of theological or religious error -- and notably if "theology" was understood in terms of belief in general (*Mathematical Theology: future science of confidence in belief*, 2011).

Especially relevant to insight into remainder is the manner in which time, even cyclic time, may be effectively engendered by error, as suggested by the adage of [George Santayana](#): *Those who cannot remember the past are condemned to repeat it.*

Excellence with respect to the remainder

Ironically excellence and the extraordinary are typically defined in relation to a remainder -- those who do not manifest those qualities, possibly to be described pejoratively as "losers". The pursuit of excellence can then be understood as necessarily engendering a remainder, numerically large in the case of the process of the Olympic Games or that of meriting a Nobel Prize.

Vital role of the missing: The impressive exploration by Matthew E. May (*In Pursuit of Elegance: why the best ideas have something missing*, 2009) is notable for having been embraced by the conference process of the design world through [TED](#) (Technology, Entertainment, Design). The book is remarkable for the manner in which it positions the quest for excellence at a nexus of the operating principles of:

- **symmetry**, understood as an organizing principle fundamental to both art and science, as the dynamic properties of ordering, organizing and operating rather than the static proportions of objects. Its significance is however highlighted in the event of its absence. May notes the implications of fractal organization.
- **seduction**, ensuring creative engagement captivating attention, understood through the absent or underdefined -- with the presence of absence triggering the imagination about what is unknown. May notes the fundamental importance of omission in the arts, notably the techniques of *sfumato* in painting and *non finito* in sculpting
- **subtraction**, namely the systematic elimination of excess in a spirit of economy, most notably through doing less in a form of effortless simplicity -- even "not doing" -- replacing value-destroying complexity with value-creating simplicity. May cites the statement of [Oliver Wendell Holmes](#): *I wouldn't give a fig for simplicity this side of complexity, but I would give my life for simplicity on the other side of complexity,*
- **sustainability**, understood as the ability to maintain some quality indefinitely, with the proviso that its integrity is maintained without compromise and with the recognition that finite resources are the very source of innovation

In stressing that it is creative tension that lies at the centre of elegance, May asserts that it is the ability to achieve all four factors simultaneously that is evident in the many examples which he cites. With respect to each, May emphasizes the fundamental role of the missing (as intimation) rather than articulation to the degree possible. He expresses the quest for elegance as follows:

Scientists, mathematicians, and engineers search for theories that explain highly complex phenomena in stunningly simple ways. Artists and designers use white, or "[negative space](#)" space to convey visual power. Musicians and composers use pauses in the music -- silence -- to create dramatic tension. Athletes and dancers search for maximum effect with minimal effort . In Japan, architects and martial artists pursue *shibumi*, a word appropriately without definition but meaning, very loosely translated,

"effortless effectiveness". Physicians draw on the [Occam's razor](#) principle in an effort to find a single diagnosis to explain the entirety of a patient's symptoms, shaving the analysis down to the simplest explanation. Filmmakers, novelists, and songwriters strive to tell stories that seem simple but that foster multiple meanings yet achieve universal resonance. But, no matter how determinedly we pursue it, elegance is an elusive target. As a principle it resists reduction -- it's difficult to decode. (pp. 16-17)

May's subsequent book focused on *shibumi* (*The Shibumi Strategy: a powerful way to create meaningful change*, 2010).

Paradoxical conflation: There is a degree of paradox to May's articulation, implied by the use of "pursuit" in his title. Elegance can be fruitfully understood as inconsistent with what is conventionally understood by "pursuit" -- especially when the conventional mindset is reinforced by the use of "target" in the quotation above (cf *The Quest for the Socio-Economics of Non-Action*, 1993).

The argument has been developed separately in relation to the quest for the chalice of the grail legend, to the questionable use of military metaphors, and (speculatively) to engagement with reality (*In-forming the Chalice as an Integrative Cognitive Dynamic: sustaining the Holy Grail of global governance*, 2011; *Enhancing Sustainable Development Strategies through Avoidance of Military Metaphors*, 1998; *Beyond Harassment of Reality and Grasping Future Possibilities: learnings from sexual harassment as a metaphor*, 1996).

There would appear to be a strange relationship -- meriting reflection -- between May's "missing" and the earlier argument with respect to "remainder" (including that in the [Annex 1](#)) :

- the deep significance associated with remainder in a variety of forms, as underlying more superficial manifestation and definition
- the problematic significance specifically associated with those who have been remaindered and left behind in various ways -- possibly as a consequence of initiatives acclaimed as "elegant"
- the sense in which the pursuit of "excellence" is effectively an extractive industry -- dependent on its distinction from the remainder -- and as such an "excescence" (as argued in the case of speculators on the financial markets)

As professor of theatre and dance, the merit of further reflection is most elegantly highlighted by William Davies King (*Collections of Nothing*, 2008):

My collecting is perverse and paradoxical.... In a sense I'd call it the god Not-There, the absence of immanence. What I like is the potency of the impotent thing, the renewed and adorable life I find in the dead and despised object, something in nothing. I am held by this divinity... (p. 42)

There is an ambiguous conflation of:

- missing as "designing out" to achieve economy and elegance -- where this may in practice include those "laid off" to this end as "not fit for purpose", and thus constituting a remainder
- stripping of excess as indeed recognized in elegant design -- although analogous "stripping" may also be recognized in the shedding of illusions (as fundamental to certain meditative approaches to spiritual development) as well as associated practices of voluntary simplicity (undertaken in quest of "elegance" in personal lifestyle)
- the fundamental importance of the "presence of absence" (in both cases)

*Thirty spokes share the wheel's hub.
It is the centre hole that makes it useful,
Shape clay into a vessel;
It is the space within that makes it useful.
Cut doors and windows for a room;
It is the holes which make it useful.
Therefore profit comes from what is there;
Usefulness from what is not there.
(Lao Tzu: *Tao Te Ching*)*

Evolutionary influence of the absent

An extremely valuable perspective on the argument here is offered by the recent work of [Terrence W. Deacon](#) (*Incomplete Nature: how mind emerged from matter*, 2011). His point is succinctly made by the distinct titles of his summary of his revolutionary new theory in its print and online variants (*The importance of what is missing*, *New Scientist*, 26 November 2011; *Consciousness is a matter of constraint*, *New Scientist*, 30 November 2011). His theory follows naturally from his previous book (*The Symbolic Species: the co-evolution of language and the brain*, 1997). Appropriately, like May, Deacon has used the above verse from the *Tao Te Ching* as a focus for his reflections (*Emergence: The Hole at the Wheel's Hub*, 2006).

His most recent work is presented as follows [*emphasis added*]:

As physicists work toward completing a theory of the universe and biologists unravel the molecular complexity of life, a glaring incompleteness in this scientific vision becomes apparent. **The "Theory of Everything" that appears to be emerging includes everything but us:** the feelings, meanings, consciousness, and purposes that make us (and many of our animal cousins) what we are. These most immediate and incontrovertible phenomena are left unexplained by the natural sciences because they lack the physical properties--such as mass, momentum, charge, and location--that are assumed to be necessary for something to have physical consequences in the world. This is an unacceptable omission. **We need a "theory of everything" that does not leave it absurd that we exist.**

Incomplete Nature begins by accepting what other theories try to deny: that, although mental contents do indeed lack these material-energetic properties, they are still entirely products of physical processes and have an unprecedented kind of causal power that is unlike anything that physics and chemistry alone have so far explained. Paradoxically, **it is the intrinsic incompleteness of these semiotic and teleological phenomena that is the source of their unique form of physical influence in the world.**

Incomplete Nature meticulously traces the emergence of this special causal capacity from simple thermodynamics to self-organizing dynamics to living and mental dynamics, and it demonstrates how specific absences (or constraints) play the critical causal role in the organization of physical processes that generate these properties. The book's radically challenging conclusion is that we are made of these specific absences-such stuff as dreams are made on -- and that **what is not immediately present can be as physically potent as that which is.** It offers a figure/background shift that shows how even meanings and values can be understood as legitimate components

Deacon's argument is strongly grounded in a discussion of theories of information (*What's Missing from Theories of Information?* 2010) in which he argues:

Theories of information that attempt to sort out problems concerning the status and efficacy of its content - as it is understood in thoughts, meanings, signs, intended actions, and so forth -- have so far failed to resolve a crucial dilemma: how what is represented could possibly have physical consequences. The legacy of this has been played out in various skeptical paradigms that either conclude that content is fundamentally relativistic, holistic, and ungrounded or else is merely epiphenomenal and ineffectual except for its arbitrary correlation with the physical properties of the signs that convey it.

The core of his argument is that

... the apparent conundrums that make this notion controversial arise because we begin our deliberations with the fallacious assumption that in order for the content of information to have any genuine real world consequences it must have substantial properties, and so must correspond to something present in some form or other. By contrast, I will show that this assumption is invalid and is the ultimate origin of these absurd skeptical consequences. **The crucial property of content that must be taken into account is exactly the opposite: its absence.** But how is it possible for a specific absence to have definite causal consequences? [*emphasis added*]

Deacon's *New Scientist* summary focuses on the nature and emergence of consciousness in the light of the evident failure of cognitive neuroscience to offer adequate explanations. He argues:

... **have we been looking in the wrong places for clues?** ... brain researchers and philosophers of mind have focused on brain processes, neural computations and their correspondences with the material world. But what if we should be focusing on what is not there instead? ... I believe that in order to overcome this stalemate **we need to pay more attention to what is intrinsically not present in everything** -- from life's functions and meanings to mind's experiences and values. [*emphasis added*]

Deacon contrasts this approach with any conventional understandings of mysticism by relating it to "constraint" as recognized in the field of statistical mechanics, namely the degrees of freedom not realized in a dynamical process. As Deacon expresses it -- in terms which recalls a theme of the aesthetic argument of May:

Constraints reflect what is not there, and the more constrained something is, the more symmetric and regular it is

He addresses the challenge of whether missing attributes disassociate his theory from empirical science by comparing two fundamental theories: Darwin's theory of natural selection and Shannon's theory of information. He argues:

Yet despite their familiarity and importance, few recognise the powerful insight unifying these theories: both depend on attending to the relationship between what is present and what is specifically absent.... In both cases, what is not present (but could have been) is as important as what is present, whether for determining functional appropriateness or information.

Of relevance to the discussion below regarding zero, Deacon argues:

Our current scientific predicament reminds me of Zeno's paradox... No matter how many details we discover about brains or the quantum fluctuations that might (or not) be taking place inside synapses, we get no closer to a physical account of conscious experience. Zeno's paradox was solved when mathematicians figured out how to calculate with values that are virtually zero -- a trick that ultimately became the basis for calculus. So **perhaps this paradox of the mind will only dissolve when we learn how nature operates with the physical analogues of zero** -- the functions, meanings and experiences by which something virtual may become actual. [*emphasis added*]

Might the current paradoxes and dilemmas of governance be resolved with an analogous focus on nothingness?

To current developments in complexity theory, non-linear dynamics and information theory, Deacon adds what he terms a "game-changing twist" in the form of "emergent dynamics". This:

... shows how a process I call "teleodynamics" forms a bridge from matter to what matters... To explain teleodynamic (end-directed) processes, such as those found in organisms or human minds, we need to step beyond the way complexity and information theories use "constraint", to explain how constraints can become their own causes, how constraints can become capable of maintaining and reproducing themselves. This is essentially what life accomplishes. But to do this, life requires more than self-organisation and more than molecular self-replication: it must persistently recreate its capacity for self-creation.

In the case of living organisms such self-organizing teleodynamic systems have a key property. Deacon terms this the absential, namely a phenomenon "whose existence is determined with respect to an... absence.". Such "absentials" include beliefs and norms to which people subscribe. Mind is then to be understood not as having emerged from matter but rather from the constraints on matter. It is these constraints which then shaped the emergence of "higher level" properties -- mind and thought -- that are not susceptible to reduction. Of special interest is the manner in which this understanding is not dependent on a matter-centered approach to consciousness.

Fundamental integrative role of nothing – the ultimate remainder ?

In a period when many are faced with a condition in which nothing remains of their hard-earned savings, or nothing remains of their aspirations in life, the nature of the "nothing" -- with which people are expected to survive (and thrive) in their remaindered condition -- merits radical rethinking.

In a context of competing perspectives striving to cancel each other out -- as in the strategic arena of global initiatives of questionable scope -- there is a strong case for reflecting on "nothing" as a mysterious "remainder" associated with the formulation of these initiatives.

At the time of writing, a particular focus on "nothing" is provided by a special issue of the *New Scientist* (*Nothing: the intangible idea that rules the cosmos*, 19-23 November 2011), introduced by theoretical physicist [Brian Greene](#) (*Nothingness: Why nothing matters*). For Greene:

Shakespeare had it right, even in ways he couldn't have imagined. For centuries, scientists have indeed been making much ado about nothing -- and with good reason. **Nothing, or rather what we've long taken to be nothing, may be the key to understanding everything** from why particles have mass to the expansion of the universe... nothing is a rich and subtle subject whose biography is far from finished.... Since the time of Newton, we have thus gradually realised that nature has masked the identity of nothing with a Shakespearian deftness. With the relentless rise of science, we have slowly peeled back the obscuring layers, revealing vital intangibles at the very heart of reality, a grand triumph for nothing. [*emphasis added*]

For physicists, the global strategic implications of these insights are necessarily irrelevant and meaningless, as remarkably demonstrated by the notorious [Sokal Affair](#). However, given the arguments for "technomimicry" developed elsewhere (*Technomimicry as analogous to biomimicry*, 2011), if physics and technology can be "allowed" and "encouraged" by society to articulate extraordinarily counterintuitive insights, there is a case for exploring the implications of such thinking as a template of relevance to other domains -- if only as a "technomnemonic" source of fruitful metaphor.

Zero: Especially valuable for the above argument regarding the subtle nature of "remainder" is the explication in that issue of the progressive emergence of zero, as articulated by Robert Webb (*Zero, the number they tried to ban*, *New Scientist*, 19-24 November 2011). He notes:

- early Christian religious rejection of its implication of a "godless" central void.
 - This merits reflection to the extent that the preoccupation of the argument here would be condemned for similar reasons
- Hindu insight in AD 624, due to astronomer [Brahmagupta](#), into the possibility of negative numbers, enabling a continuous range between positive and negative -- through *sunya*, namely nothingness -- leading to a new way of doing mathematics (including the handling of debt).
 - In many forms of current debate, it is however appropriate to note the extent to which the "negative" is systematically condemned, as highlighted by [Barbara Ehrenreich](#) (*Smile Or Die: how positive thinking fooled America and the world*, 2010).
- although finally appreciated in Europe in 1202, the use of *zero* was banned in 1299 by the authorities of the city of Florence on the grounds that the new ability to inflate a number's value hugely, by simply adding a zero to the end, was an invitation to fraud.
 - Analogous concerns might now be expressed with regard to the circulation of trillions of dollars of public debt in the global financial system -- essentially based on nothing and created artificially out of nothing, as with the process of [quantitative easing](#) (*From Quantitative Easing (QE) to Moral Easing (ME)*, 2010). Curiously the process nevertheless leaves many with nothing and with little recognition of any impropriety -- hence the merit of the arguments of [Stéphane Hessel](#) (*Time for Outrage!* 2011)
- use of zero as a number was subsequently a victim of religious debate regarding the orthodoxy of the void, and its implication in contested belief in heliocentric movement of the planets
 - Is it conceivable that many current challenges of governance derive from what corresponds conceptually to the [zero-less number notation system used in the Roman Empire](#) -- possibly contributing to its collapse through the difficulty of managing funds?
- the development in 1637 of [Cartesian coordinates](#), as a marriage of algebra and geometry, placed zero at the "unmoving centre" of

the coordinate system

- Is it conceivable that an analogue to "zero" could emerge at the "origin" of a future coordinate system, as implied separately (*Spherical Accounting: Using geometry to embody developmental integrity*, 2004; *Spherical Configuration of Categories to Reflect Systemic Patterns of Environmental Checks and Balances*, 1994)?
- calculus then showed how zero merged into the infinitesimally small to explain how anything could change its position -- zero becoming a form of prime mover
 - Does this point to a future possible role for "zero" in the psychosocial system?

It might then be asked whether Webb's concluding bemusement as to how a number could have caused so much confusion and distress over centuries could be of relevance to the concern here with the subtle significance and nature of "remainder" and with those left with "nothing". Also of relevance is the sense in which people, notably so-called "losers", may be described as "zeros" -- a comment related to their assessment as "nobodies".

Nothing: The issue includes a summary by Ian Stewart (*Counting starts with an empty set*, *New Scientist*, 19-24 November 2011). He notes:

- the mathematicians' version of nothing is the **empty set** as a vital building block for the whole of mathematics
- the challenge has been to understand numbers themselves, for example what is the nature of what is common to two of anything
- the concluding insight emerged from mathematical logic and Fourier analysis, leading to the definition of 1 as being the set whose only member is the empty set, namely nothing. The print edition of Stewart's article is appropriately titled *Nothing in Common*.

In noting that the whole sequence of numbers "tracks back" to the empty set, Stewart concludes:

The building materials here are abstractions: the empty set and the act of forming a set by listing its members.... Once you've defined the positive whole numbers, similar **set-theoretic trickery** defines negative numbers, fractions, real numbers (infinite decimals), complex numbers... all the way to the latest fancy concept in quantum theory or whatever. **So now you know the dreadful secret of mathematics: it's all based on nothing.** [*emphasis added*]

It is well-recognized that the empty set is not the same thing as *nothing*; rather, it is a set with nothing *inside* it and a set is always *something*. The paradoxical aspects of this continue to be a focus of philosophical comment.

As with Webb's insights, it might then be asked whether insights of analogous significance could be constructed from the nothingness explored here -- notably for the remaindered left with "nothing". What are they then able to do? **Does everything "track back" to nothing in a sense that has not been well understood or appropriately appreciated?** Might it be said that other forms of "set-theoretic trickery" have been practiced on the unsuspecting?

Holes: In a third article in the special issue, the role of nothing at the heart of electronics is described by Richard Webb (*Computers are powered by holes*, *New Scientist*, 19-24 November 2011). With respect to understanding of the operation of the transistor, he notes:

- the curious entity which had originally seemed to control the workings of the transistor had eluded everyone -- because it was not there
- semiconductors -- the key to transistor operation -- sometimes let a current pass and sometimes block its passage
- understanding was achieved by recognition of what were initially described as mobile "absences of an electron" -- acting like positive charges and moving the wrong way on a magnetic field, subsequently to be caricatured as "holes"
- it was the "presence of an absence" of electrons that resulted in the unique behaviour, it what was named named a **p-n junction** owing to its two distinct areas of positive and negative charge carriers
- the breakthrough came from the recognition that the "hole" was real, not just the "absence of something" but a true "nothing-that-is", with an independent existence -- capable of coexisting with electrons -- then named as the **p-n-p transistor**

As Webb concludes: the hole went from strength to strength, now to be found at the heart of every computer chip:

Modern life has become unimaginable without this curiosity whose nature took two decades to reveal: the nothing that become something and changed the world.

Again, what fruitful insights into psychosocial organization might be possible through recognition of a "hole" that was real, not just the "absence of something" but a true "nothing-that-is", with an independent existence. How would this enable fruitful relationships between "positive" and "negative" -- perhaps opening up a new mode of communication through psychosocial "transistors", yet to be discovered? Aspects of this possibility have been explored by Ron Atkin (*Multidimensional Man; can man live in 3-dimensional space?*, 1981).

Emptiness: A fourth contribution focuses on the nature of the vacuum of empty space. Paul Davies (*The turbulent life of empty space*, *New Scientist*, 19-24 November 2011) notes:

- empty space is richer than a mere absence of things -- and it plays an indispensable part in much of modern physics
- the question raised was the mystery of how one charge feels the pull of another, namely how two magnets sense each other's presence
- although the region of space pervaded by an electric or magnetic field can be said to be not empty, the will-o'-the-wisp "stuff" it contains is a far cry from what is normally considered to be matter; fields might possess energy and exert pressure, but they are not made up of anything more substantial
- the modern conception of the vacuum is one of a seething ferment of quantum-field activity, with waves surging randomly this

way and that; what one gets is a picture of the vacuum that is reminiscent in some respects of the classical ether -- filling all space and having measurable physical properties such as energy density and pressure

- the notion that space is a mere void with no physical properties is no longer tenable
- the remaining mystery is how [dark energy](#) works -- with the ultimate fate of the universe intimately linked to the properties of the vacuum

The comments by May (above) indicated the degree of current recognition of the special function of emptiness by the various arts. Extreme importance is attached to this in certain spiritual traditions, as noted below. The question is the nature of the further possibilities in the light of mode of thinking by which physics has been empowered.

Philosophy of nothingness: There is an extensive philosophical literature on nothingness, for example:

- [James Heisig](#), *Philosophers of Nothingness: an essay on the Kyoto School* (2002)
- Roger-Pol Droit. *The Cult of Nothingness: the philosophers and the Buddha* (2007)
- Christopher Loots, *The Ma (...) of Hemingway: interval, absence, and Japanese esthetics in our time*. *Hemingway Review*, Spring 2010, 29, 2, pp. 74-88
- [Keiji Nishitani](#), *Religion and Nothingness* (1983)
- [Kitaro Nishida](#), *Last Writings: Nothingness and the Religious Worldview* (1993)
- Brian Schroder, *Dancing through Nothing: Nietzsche, the Kyoto School, and Transcendence*. *Journal of Nietzsche Studies*, April 2009, 27, pp. 44-65
- Rob Cook, *Nothing is Real: Toward a Sunyata/Pleroma Dialectic, Religion East and West*, October 2006, 6, pp. 1-20
- [Jean-Paul Sartre](#), *Being and Nothingness* (1943).

The embodiment of "nothing" in form ("mattering") and in process ("happening") is explored separately as "importing" "nothingness" or "emptiness" through recognizing and enactivating patterns of associations (*Import of Nothingness and Emptiness through Happening and Mattering*, 2008). The terms in the title are ambiguously interpreted with respect to the transformation of "nothingness" into "somethingness", in the sense that each has both a tangible and an intangible sense, pertaining to matter (form) and to significance. The question was considered under the following headings:

- [Varieties of nothingness and emptiness](#)
- [Questionable understanding of emptiness and nothingness](#)
- ["Mattering" and "Happening"](#)
- ["Nothing" emerging through combinations of "mattering" and "happening"](#)
- [Dynamic complexification: integration of "no time"](#)
- [Emergence of "nothing": creating "cognitive shelters" and "cognitive vehicles"](#)
- [Emergence of "nothing": globalization as exemplar](#)
- [Emergence of "nothing": "import" of significance](#)
- [Polarization and the dynamics of nothingness](#)

Interweaving contrasting styles of remaindering

The necessarily disparate nature of the threads evoked above raises the question of how they may best be interwoven to offer a "seductive" pattern of elegant coherence, following arguments presented separately (*Interweaving Thematic Threads and Learning Pathways*, 2010). A vital key to fruitful comprehension can arguably be associated with an aesthetic quality, as stressed above and separately (*Enacting Transformative Integral Thinking through Playful Elegance*, 2010).

The challenge may even be seen in terms of a play on use of the weaving metaphor in response to the above-mentioned poetic accusation by John Keats. That metaphor has been exploited as a key to greater aesthetic appreciation through science by [Richard Dawkins](#) (*Unweaving the Rainbow: science, delusion and the appetite for wonder*, 1998).

The tentative "weaving experiment" is presented separately in the following sections, as an Annex 2 (*Interweaving Contrasting Styles of Remaindering*, 2011):

- [Ordering of clues to contrasting styles of "remaindering"](#)
 - [Figure 1a](#): abridged version
 - [Figure 1b](#): expanded version of Figure 1a
- [Axes of bias](#)
 - [Figure 2](#): Possible attribution of 7 axes of preferential bias to correspond to Figure 1, highlighting extremes typically "remaindered" (tentative)
- [Degrees of coordination of cognitive modalities](#)
 - [Figure 3](#): Indication of degrees of coordination of cognitive modalities identified in Figures 1 and 2
- [Sustainable discourse](#)

Responding to strategic dilemmas of governance: explore absence rather than consensus?

The design principles of tensegrity have been presented as offering vital clues to ordering the strategic dilemmas -- effectively Deacon's "constraints" -- which were evident on the occasion of the [United Nations Conference on Environment and Development](#) (Rio de Janeiro, 1992), as presented separately (*Configuring Globally and Contending Locally: shaping the global network of local bargains by decoding and mapping Earth Summit inter-sectoral issues*, 1992).

With respect to the challenges of collective global governance, Deacon's remark (cited above) may be of wider systemic relevance:

... have we been looking in the wrong places for clues? ... I believe that in order to overcome this stalemate we need to pay more attention to what is intrinsically not present in everything -- from life's functions and meanings to mind's experiences and values... Constraints reflect what is not there, and the more constrained something is, the more symmetric and regular it is.

Ironically in the case of global governance, this suggests the merit of exploring what is "not there", rather than desperately seeking to give form to "agreement" and "consensus" in practice -- which are so evidently absent (*The Consensus Delusion*, 2011; *Using Disagreements for Superordinate Frame Configuration*, 1992). Consistent with Deacon's point is the fact that the most symmetric, regular forms are those associated with the polyhedra basic to tensegrity (*Towards Polyhedral Global Governance: complexifying oversimplistic strategic metaphors*, 2008). Tensegrity is fundamental to the management cybernetics insights of **Stafford Beer** (*Beyond Dispute: The Invention of Team Syntegrity*, 1994). Appropriately, in the light of Lao Tzu's reference (above) to "thirty spokes share the wheel's hub", Beer's approach is based on the three-dimensional **icosahedron** -- with thirty edges configured around an empty "hub".

Especially intriguing are the manner in which "absence" and "emptiness" are designed into such structures and is indeed "central" to their organization. Valuable insights, consistent with Deacon's argument, are also offered through the mathematics of **q-analysis**, namely the theory and application of mathematical relations between finite sets (Ron Atkin, *Multidimensional Man; can man live in 3-dimensional space?*, 1981). Atkin has applied this to the analysis of communication patterns within complex organizations, as summarized separately (*Social organization determined by incommunicability of insights*, 1995). This has the considerable merit of providing formal recognition to "absence" as a "hole" in the geometry of communication and comprehension.

The case for exploring the absence of agreement, rather than on the increasingly desperate dependence on achieving it, is reinforced at the present time by the continuing shambles of climate change negotiations (Kristin Palitz, *Comprehensive Agreement Beyond Reach in Durban*, IPS, 7 December 2011) and by the evident shambles of the quest for effective agreement regarding an orderly global financial system.

Becoming zero: recognizing the engendering potential of nothingness

Strategic initiatives in challenging domains are typically presented and upheld as appropriately integrative and "unified" endeavours. Whether deliberately or unconsciously, any neglected aspects or consequences are then effectively ignored -- as negligible "remainders", as with "collateral damage". The relationship was formally recognized to a degree in the challenge to the IMF for structural adjustment "with a human face" (UNICEF, *Development with a Human Face*, 1997). Any integrative strategy is thus singular -- resulting from a decision-making process, or model, as the chosen "one". Its implementation is framed as though it had "zero" consequences.

Whilst celebrating the experience and authority of those associated with the singular strategy, this process obscures the experiential implications for those framed by the "zero", whose world may be effectively reduced to "nothing" thereby. There is therefore an intimate experiential relationship to be explored between "remaindering" and the experience of "nothingness".

One and Zero: Although the abstract nature of the relationship between one and zero has acquired concrete relevance in the binary encoding of information in computers, the wider psychosocial and strategic implications have yet to be fully acknowledged. Ironically, although the binary coding system was partially inspired by that of the traditional Chinese *I Ching*, the cognitive implications recognized therein are far from being acknowledged -- any more than the metaphors which appear necessary to the comprehension of their qualitative implications. Possibilities are discussed separately (*Transformation Metaphors derived experimentally from the Chinese Book of Changes (I Ching) for sustainable dialogue, vision, conferencing, policy, network, community and lifestyle*, 1997).

Valuable work has been undertaken on the significance of binary encoding by **Xavier Sallantin** (*Le Livre Zéro ou la Gen?se du sens*, 1982; *L'épistémologie arithmétique*, 1976) -- partially summarized elsewhere (*Game comprehension and identity transformation*, 1983).

Most curious are the implications of:

- zero divided by one as necessarily zero, but **without** remainder (as with division of zero by other numbers, and in contrast to division of any other number by one)
- one divided by zero as infinity, but **without** remainder (as with division of other numbers by zero)

"Next zero": The historically problematic process through which the value of "zero" was finally recognized (as noted above), highlights the merit of reflecting on the psychosocial and cognitive challenges of recognizing the emergence of the "next zero" capable of playing an analogously transformative role. What more is there to be understood in the function of "nothing"? How might this relate to the calls for "new thinking" and the expectations regarding its nature, notably articulated through the **World Centre for New Thinking** by **Edward de Bono** (*New Thinking for the New Millennium*, 1999; *Think! Before It's Too Late*, 2009)?

In the light of the worldwide indignation currently given focus by the Occupy movement and by Stéphane Hessel (*Time for Outrage!* 2011), **are there unexplored existential possibilities for the "remaindered" -- those left "with nothing", offered "nothing", and treated as "nothing", even as "nobodies"?**

Curiously "zero" has long been associated with meaning a "worthless person". In the light of the logico-mathematical "trickery" (discussed above), associated with the so-called **empty set**, are the dynamics of civilization currently enabling fundamental insight into the "value" of "worthlessness" -- into existential nothingness? Are there currently mysterious ways in which the "zeros" might consider themselves as engendering and forming the "next zero"?

"Chosen One": How might that possibility relate to the great significance attached by many to understandings of the "Chosen One" in

various worldwide faith-based traditions -- whether understood as a country, a people, or a **Messiah**. Such significance has recently been explored in the science fiction *Matrix series* of films, comic books, video games, and animation (1999, 2003) with its central imaginative focus on the role of "The One". This followed as similar focus in *The Highlander* series (tagline: "*There Can Be Only One*"). In such mythopoeic frameworks, "the one" is upheld as a redeemer for those who are constrained to have "nothing". This merits further consideration with respect to the challenges of global governance (*Relevance of Mythopoeic Insights to Global Challenges*, 2009). The "global" form could even be understood as a three-dimensional depiction of "zero".

Being nothing: There is a curious contrast to be explored between the extreme importance attached to "being number one" as compared with "being nothing". The prestige attached to "one" is widely evident in a competitive society focused on: having the highest GDP per capita, constructing the tallest building, being the fastest, having the most medals, being of greatest intelligence, and the like. Curiously, in English at least, one must have "won" to achieve this -- and, necessarily, only a few can aspire to this attribute. However many have intimate experience of "nothing" -- whilst associating their identity with a sense of being "one" rather than "many".

In this confusion of associations it is now recognized as extremely strange that with regard to one of the greatest financial crises -- which has effectively remaindered many and left them with "nothing" -- it has become evident that "no one" is to be held to account.

No One's Responsible?

Caring for fragile systems is a necessity.

Everyone was asked to do it.

Everyone was sure that Someone would do it.

Anyone could have done it, but No One did.

Someone got angry because it was Everyone's job.

Everyone knew that Anyone could do it

No One realised that Someone wouldn't do it.

The result was that Everyone blamed Someone

Because No One did what Anyone could have done.

Variant of a "poem" discussed separately (*Responsibility for Global Governance*

Who? Where? When? How? Why? Which? What?, 2008)

Attraction of emptiness: Perhaps more curious are the aspirations which follow from having become "number one", frequently involving a desire to escape to "emptiness" and the "absence" of others -- even to possess the wilderness with which it may be associated. This dynamic is otherwise evident in the legendary tales of romance between someone who has everything (royalty) and someone who has nothing (a commoner and/or pauper) -- typically male and female respectively.

More fundamental, and more provocative, is the Freudian symbolism associated with that dynamic by which new generations are engendered -- the eternal quest for "zero" by "one". This impulse may even be recognized, as a form of remaindering, in the competitive efforts of sperm in quest of a gamete. The dynamic is only too evident through popular recognition of the variety of ways in which the "ones" (especially the "1%") endeavour systematically to "screw" the "zeros" (most notably the "99%"), despite (or because of) an "emptiness" with which they are associated.

Transformative power of nothing: The widespread striving to be "number one", so characteristic of current civilization, would then seem to obscure a unique "strength" implied by zero and "being nothing". As with the transformative function of zero in the number system (as discussed above), it would seem that "nothing" can transform the understanding of "one". In preceding "one", "zero" might even be understood as taking a form of qualitative "precedence" over one. This implies a misplaced focus on "being number one" and presenting the more fundamental challenge of "becoming zero" -- as celebrated to a degree in certain traditions and meditative practices. This could be understood as powerfully illustrated by the traditional Zen sequence of *Ten Ox-Herding Pictures* portraying degrees of insight -- passing through what is depicted as "zero", as prerequisite for a new form of cognitive engagement with the world.



Both Ox and Self Forgotten by **Max Gimblett**

Eighth in the sequence of *Ten Oxherding Pictures*

(from an exhibit sponsored by **The Japan Society in New York**, 2010).

In this image no picture is represented since at this stage *shunyata* (emptiness) is realized. Both the searcher and the ox were previously realized as one but now even that conception is dropped.

This is *satori*. This is liberation.

Nothing worth experiencing when everything is already experienced.

The 10-fold pattern was discussed with respect to *Integration of Perceived Problems* in commentary on the [World Problems Project](#). The perceived "problems" profiled there can of course be readily understood as the "remainders" of inadequate strategic initiatives profiled in the complementary [Global Strategies Project](#).

Ambiguity and uncertainty: The strange relationship between the psychosocial implications of one and zero in practice would seem to call for an analogue to the [Uncertainty Principle](#) of quantum mechanics, expressed by [Werner Heisenberg](#) as:

One can never know with perfect accuracy both of those two important factors which determine the movement of one of the smallest particles -- its position and its velocity. It is impossible to determine accurately *both* the position and the direction and speed of a particle *at the same instant*.

The possibility of a generalization has been envisaged by Garrison Sposito (*Does a Generalized Heisenberg Principle Operate in the Social Sciences? Inquiry*, 1969) in the light of the interference phenomena induced by transference distortions that may occur when human beings investigate the behaviour of one another. Related concerns regarding indeterminacy in the social sciences have been expressed by [other authors](#).

Such a principle could clarify the ambiguity, regarding the nature of consensus, between:

- agreement understood **statically** as an undifferentiated "unity" (without remainder), manifesting as an integrated (unified) worldview, or a "global" strategic initiative. The "harmonisation" associated with the conceptual and institutional manifestation of such unity necessarily precludes the co-existence of challenging alternatives. Understanding of "one" is then essentially static and **complete** for all time -- encompassing "everything". There can be only one Theory of Everything.
- agreement understood as a consensual **dynamic**, an empty [resonance chamber](#) containing the harmonious interplay of a range of "voices". The consensus is inherent in the dynamic, without any static counterpart. Understanding of "zero" is then essentially dynamic -- as a container encompassing "nothing" and eternally **incomplete**.

Quality vs. Quantity: Recalling the comments by Peter Collins (above) regarding "qualitative" and "quantitative" characteristics of the experience of numbers, this ambiguity might be notably recognized in the manner in which:

- "one" takes on the characteristics of "zero" when understood as encompassing everything
- "zero" takes on characteristics of "one" when "nothing" is experienced integratively -- when everything is already experienced

Qualitative "evisceration": There is also ambiguity in practice, in the case of "one" and "zero", between an associated experience of:

- plenitude: "one" as everything, "zero" as all-encompassing (in the meditative sense of emptiness)
- emptiness: "one" as hollow (despite possessing everything), "zero" for those experienced as empty or lacking all self-esteem

Figure 1: Holding pattern for 8 dynamically uncertain relationships between "one" and "zero"								
	"One"				"Zero"			
Inner existential experience (subjective")	Fulfilling oneness	Fulfilling oneness	Fulfilling oneness	Fulfilling oneness	Fulfilling nothingness	Fulfilling nothingness	Fulfilling nothingness	Fulfilling nothingness
	Unfulfilled nothingness	Unfulfilled nothingness	Unfulfilled nothingness	Unfulfilled nothingness	Unfulfilled oneness	Unfulfilled oneness	Unfulfilled oneness	Unfulfilled oneness
Psychosocially reinforced self-appreciation	Fulfilling oneness	Fulfilling oneness	Fulfilling nothingness	Fulfilling nothingness	Fulfilling oneness	Fulfilling oneness	Fulfilling nothingness	Fulfilling nothingness
	Unfulfilled nothingness	Unfulfilled nothingness	Unfulfilled oneness	Unfulfilled oneness	Unfulfilled nothingness	Unfulfilled nothingness	Unfulfilled oneness	Unfulfilled oneness
External perception by others ("objective")	Fulfilling oneness	Fulfilling nothingness	Fulfilling oneness	Fulfilling nothingness	Fulfilling oneness	Fulfilling nothingness	Fulfilling oneness	Fulfilling nothingness
	Unfulfilled nothingness	Unfulfilled oneness	Unfulfilled nothingness	Unfulfilled oneness	Unfulfilled nothingness	Unfulfilled oneness	Unfulfilled nothingness	Unfulfilled oneness

Using the classic [BaGua trigrams](#) of the *I Ching* as a coding mnemonic, this table endeavours to hold the ambiguity of eight connotations of different combinations of "one" and "zero" -- where:

- either "one" is valued, especially in its conventional integrative sense (as in the left-hand portion of the table), thereby holding:
 - conditions in which any appreciation of "fulfillment" may be undermined by an underlying sense of inner emptiness and deep personal despair
 - conditions in which there is a sense of failure to "get an act together"
 - conditions reflecting failure to be recognized or chosen as "the one", and even to be treated as "nothing", as in:
 - interpersonal relationships, with the trauma of rejection
 - employment and professional relationships, with the trauma of rejection as a "nobody"
 - leadership
- or "zero" is valued, especially in appreciation of ["emptiness of form"](#) and [voluntary simplicity](#) (as in the right-hand portion of the table), thereby holding:
 - conditions in which any appreciation of that "unfulfillment" (as inner richness) may be undermined by a sense of external inadequacy
 - conditions in which there is a sense of failure to strip away non-essentials

The dynamic between the above conditions has been explored separately in another context (*Cardioid Attractor Fundamental to Sustainability: 8 transactional games forming the heart of sustainable relationship*. 2005)

Emergent potential of the "next zero"

Transcending definition: The nature of the uncertainty necessarily precludes "definition", as suggested by theological reflection on *apophysis* or "unsaying, separately discussed with respect to individual identity (*Being What You Want: problematic kataphatic identity vs. potential of apophatic identity?* 2008). The image above invites imaginative exploration of cognitive associations to:

- the vortical dynamics of a *smoke ring* (*Enabling Governance through the Dynamics of Nature: exemplified by cognitive implication of vortices and helicoidal flow*, 2010)
- the geometry of a torus (*Implication of Toroidal Transformation of the Crown of Thorns: design challenge to enable integrative comprehension of global dynamics*, 2011)
- a strange *attractor*, namely a set towards which a *dynamical system* evolves over time (*Human Values as Strange Attractors*, 1993; *Cardioid Attractor Fundamental to Sustainability: 8 transactional games forming the heart of sustainable relationship*, 2008).
- a challenging form of mirror, as implied by both the *mirror test* of self-awareness (*Self-reflective Embodiment of Transdisciplinary Integration (SETI): the universal criteria of species maturity?* 2008) and the "magical" possibility of "stepping through" it (*Stepping into, or through, the Mirror: embodying alternative scenario patterns*, 2008)
- a "stargate", variously imagined and depicted in science fiction (*People as Stargates: an alternative perspective on human relations in space-time*, 1996)

Co-relating one and zero dynamically: The apparent simplicity of the *Möbius strip* facilitates consideration of the paradoxical cognitive implications of "zero", as remarkably explored by *Douglas Hofstadter* (*I Am a Strange Loop*, 2007) following his widely appreciated study of self-reflexivity (*Gödel, Escher, Bach: an Eternal Golden Braid*, 1979). As a circular loop, it is a surface with only one side due to an inbuilt half-twist -- resulting in right-handed and left-handed variants.

Figure 2: Möbius strip



This simple form can therefore be understood as embodying both one and zero -- although with a requisite degree of uncertainty. Appreciation of its nature requires that it be "traversed" -- implying the necessary cognitive dynamic indicated above. It is suggestive of the nature of the "next zero" through the challenge it poses to conventional thinking, as variously discussed (*Psychosocial Work Cycle: beyond the plane of Mobius*, 2007; *Sustaining a Community of Strange Loops: comprehension and engagement through aesthetic ring transformation*, 2010).

Much of the challenge lies in the "twist" -- as traditionally essential to any good story plot (*Engaging with Questions of Higher Order: cognitive vigilance required for higher degrees of twistedness*, 2004). As with the argument of Deacon (2011), it appears necessary to recognize the manner in which, as an attractor, the form does not "exist" in any conventional sense.

"Next wheel"?: It is worth considering whether the cognitive transformation associated with "re-cognition" of "nothing" -- the "next zero" -- will engender an innovation in technology. What are the cognitive analogues to *zero-point energy* and the associated technological explorations? If discovery of "zero" is to be understood as associated with invention of the wheel, what might be the "next wheel"? And, citing Lao Tzu again, what is the corresponding "re-cognition" with respect to the "hub" of that next "wheel", as a progression beyond:

*Thirty spokes share the wheel's hub.
It is the centre hole that makes it useful...
Therefore profit comes from what is there;
Usefulness from what is not there.*

Imagining the "next wheel" necessarily calls for a degree of playfulness in the quest for clues, as separately argued (*Enacting Transformative Integral Thinking through Playful Elegance*, 2010; *In Quest of Mnemonic Catalysts -- for comprehension of complex psychosocial dynamics*, 2007). In that spirit it could prove fruitful to "confront" the cognitive implications of:

- the 30 spokes of the *Tao Te Ching* (cited above)
- the 30 edges of the *icosahedron* fundamental to the argument for syntegrity of Stafford Beer (1994)
- the *30 pieces of silver* for which Judas Iscariot is alleged to have betrayed Jesus on the occasion of the Last Supper (*Gospel of Matthew* 26:15)
- the 30 birds described in the Iranian Sufi *Conference of the Birds*, a quest for the *Simorgh* - exploiting a word play referring to both the mysterious bird in Iranian mythology (similar to the *phoenix* bird) and to "*si morgh*" - meaning "thirty birds" in Persian.
- the 30 parts (*juz*) of roughly equal length into which the *Qur'an* is divided to facilitate nightly recitation during the month of Ramadan
- the 30 transcendent virtues ascribed to a Buddha
- the 30 degrees of perfection through the acquisition of ascetic virtues according to the Christian perspective of *Saint John Climacus*. He uses the analogy of *Jacob's Ladder* as the framework for his spiritual teaching.
- the *Gregorian Thirty*, namely the the Benedictine practice of a continuous series of 30 masses on 30 consecutive days (as instigated by Pope Gregory the Great) through which it has traditionally been believed that the soul of a deceased person would be

released from the punishments of Purgatory and enter Heaven.

- the 30 facets of the [NEO Personality Inventory](#), composed of five factors (extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience) each with six subordinate divisions.

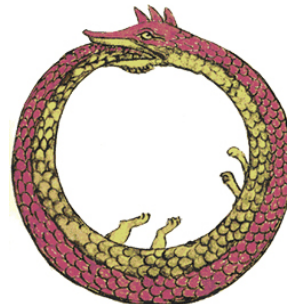
To these might be added the efforts of various cultures to embody and encode their fundamental insights into the segments of a "wheel" in the form of circlets of [prayer beads](#) (*Designing Cultural Rosaries and Meaning Malas to Sustain Associations within the Pattern that Connects*, 2000). The resultant pattern might then be compared with the checklists of bullet points -- so assiduously articulated in the presentation of global strategies. As is more evident in the case of the spokes of a wheel, each effectively functions as a kind of "footprint" through which insight engages with reality in order to "transport".

Curiously, if not predictably, it is such a "to-do checklist list" of issues which the Occupy movement has been challenged by its critics to produce. There is only scorn for the possibility that its supporters might think otherwise -- in quest of a mindset more adequate than that engendering the current crises.

Circular "quest" of one: The overriding ambition to be "number one" can be fruitfully reframed by the metaphors of circularity above. The question fundamental to that quest is where "one" is going. The challenge is highlighted by the recognized tendency to travel in a circle -- when walking with deliberation towards a goal in a featureless wasteland. In this sense, the succession of steps in traversing the desert then goes "nowhere", except back to the starting point. Whereas the development of calculus (as noted above) provided a means of solving Zenó's paradox through enabling treatment of values which were virtually zero, this suggests an analogue in the one-pointed steps of the ambition to be "number one" -- appropriately reminiscent of the [Ouroboros](#) and the much-cited verse of [T. S. Eliot](#).

*We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know it for the first time.*

T. S. Eliot, *Little Gidding* (1942)



Depiction of Ouroboros (from Wikipedia)

In a world of "spin" and "smoke and mirrors", the argument has been fruitfully anticipated by the classic remark of [Chuang-tzu](#) (*The Pivot*):

Tao is obscured when men understand only one of a pair of opposites, or concentrate only on a partial aspect of being. Then clear expression also becomes muddled by mere wordplay, affirming this one aspect and denying the rest. Hence the wrangling... each denies what the other affirms, and affirms what the other denies. What use is this struggle to set up "No" against "Yes", and "Yes" against "No"?... When the wise man grasps this pivot, he is in the center of the circle, and there he stands while "Yes" and "No" pursue each other around the circumference.

This is given particular focus when the "yes" and "no" are understood in terms of "belief" and "unbelief" (perhaps understood as [nihilism](#)). Whilst the two modes can play off against each other, the interrelation may take additional forms through "belief in unbelief" (the [paradox of nihilism](#)) or "unbelief in belief" (as in traumatic personal loss of faith). Such complexification merits extension of "theology" to encompass "belief" in general, as discussed separately (*Mathematical Theology: Future Science of Confidence in Belief*, 2011). Such considerations are especially significant in a world characterized by faith-based governance, in which particular forms of "belief" may be required, with "unbelief" severely sanctioned or criminalized as [apostasy](#) (C. H. Spurgeon, *The Sin of Unbelief*, 1855). In an analogous manner, absolute forms of "belief" may be condemned in the form of [fundamentalism](#) or [integralism](#) -- notably framed as "[extremism](#)" supportive of terrorism (*Norms in the Global Struggle against Extremism*, 2005).

Secret sharing, shapeshifting and embodiment

The implications of the argument are developed further in [Annex 3](#) in the following sections:

- [Resonance: enacting the world through shapeshifting](#)
- [Aesthetics of human understanding through embodiment](#)
- [Secret sharing: fundamental role of remainder?](#)

Conclusion

The different threads of the argument point to a possible relationship between attitudes towards society in which people have been variously remaindered. This is exemplified by the case of unemployment in which lives are most obviously "remaindered" -- as highlighted by the Occupy movement worldwide. These attitudes take concrete form in the treatment of the natural environment and the many species effectively remaindered.

Requisite strategic complexity? The future may well find strange the contrast between the global strategic fumbblings on matters seemingly of great moment to human civilization compared to the sophisticated preoccupations of physicists. As implied by [string theory](#), they now affirm that there are 10^{500} universes --- a [multiverse](#) in parallel with the universe conventionally held to be known to some

degree (Robert Adler, *Ultimate Guide to the Multiverse*, *New Scientist*, 26 November 2011). As noted by Adler:

Even quantum mechanics implies that our universe is a single snowflake in a blizzard of parallel universes... Now we must learn to live in a universe which offers an enormous multitude of choices. Finding out why our universe is as it is, when there is such a vast number of alternatives, is one of cosmology's biggest challenges.

Most curious is the level of complexity, beyond the comprehension of the "99%" (if not the "99.999%"), now considered appropriate to the explanation of the physical context of the world -- and upheld as legitimate by society and worthy of appropriate reward.

Obsessive priorities? Whilst the speculations and experiments of physicists on these matters are generously supported and encouraged by taxpayers, if unknowingly, it is unclear why not an iota of this creative capacity is seemingly applied to the challenges of governance of a civilization in crisis. This contrasts with the conscription of willing physicists into the design of every more destructive weapons. The point is made by Margaret Wertheim (*Pythagoras' Trousers: god, physics, and the gender wars*, 1995):

... the physics community has become almost fanatically obsessed with a goal that I suggest offers very few benefits for society. That is the dream of finding a unified theory of the particles and forces of nature... a "theory of everything" (TOE)... Such a theory is really a quasi-religious rather than a scientific goal... Even the most ardent TOE proponents acknowledge that this theoretical synthesis is unlikely to have *any* application to daily human life -- not even for military purposes... The sheer expense of pursuing this goal has thus transformed it into an issue for society at large... I suggest that contemporary physicists' obsession with a theory of everything is socially irresponsible... Since a theory of everything would be not only utterly irrelevant to daily life and concerns, but also incomprehensible to the vast majority of people, TOE physicists can be likened to the late medieval Scholastics. This is the twentieth-century equivalent of asking how many angels could dance on the head of a pin. (pp. 13-14)

It could be argued that this is indicative of the **remaindering of planetary civilization on a truly "cosmic" scale**. Ironically the insights of astrophysicists follow from detection of **cosmic microwave background radiation** (CMB) -- "relic radiation" left over from an early stage in the development of the universe, specifically the **Big Bang**.

Precluding future insight? No comparisons are made with the currently deprecated reflections of the **Scholastics** of the past -- the honoured equivalent of the physicists of today. As indicated by Wertheim, no mention is made of the question by which their reflections were later dismissed: *How many angels can dance on the head of a pin?* Curiously, however, as stressed by Wertheim, those empowered to reflect on the existence of 10^{500} universes have "nothing" to offer to the challenges of today -- other than a speculative sense of context which the future may well deprecate in turn. In endeavouring to become "Lords of Time", physicists forget that the present is a moment of insight precluding those of the future. In this way the creative capacity of the future is discounted -- and its peoples remaindered.

Given their incapacity to reflect on any **matter** by which global governance is challenged, it might be considered profoundly ironic that at the time of writing physicists expect to announce the "breakthrough of the century" with respect to understanding of **matter** -- as a consequence of a degree of success in their quest for the so-called **God particle**.

Requisite alternatives for governance? Conventional reflection regarding alternatives to the governance of society -- typically formulated by the remaindered -- is stretched by the possibility of a single alternative, let alone the possibility of the 10^{500} seriously suggested by physics. The variety of those universes is offered as an invitation to the imagination (John D. Barrow, *The Book of Universes: exploring the limits of the cosmos*, 2011). Any possible psychosocial alternatives are deprecated and mocked.

Is there something inherently inadequate in the creative capacities of physicists, or is it the case that the psychosocial challenges of global governance are somewhat more complex than those required for comprehension of the the physical universe?

Comprehension constraints? More curious still, as noted by Adler, is acceptance by physics of "*anthropomorphic reasoning to constrain the amount of dark energy, the ratio of dark energy to ordinary matter, and the mass of elementary particles such as neutrinos and quarks.*" According to the belief system of physics, this reasoning enables the particularities of "our" universe to be winnowed out of the multiverse.

However dubious according to convention, **does this offer a justification for using human capacities and constraints in "chunking" information to explore the capacity and preferences for ordering the issues of global governance?** Are such constraints consistent with those to which Deacon refers (as discussed above)? Should these be invoked in more fruitful approaches to the only too evident divisive polarization of policy discourse? With what degree of complexity might this now be done -- given the comparison with the 11 (or more) dimensions of string theory and the 10^{500} universes it infers?

Physicists rejoice in the subtleties with which they struggle and the manner in which the majority are effectively remaindered by their constrained comprehension capacity. The pattern is evident in major discoveries of mathematics with regard to the most elegant symmetry, upheld as fundamental to the structure of the universe -- as with the so-called **Monster symmetry group** of some 8×10^{53} elements. How is the profound significance of such fundamental order to be derived from psychosocial organization and how is recognition given to the constraints on comprehension (*Potential Psychosocial Significance of Monstrous Moonshine: an exceptional form of symmetry as a Rosetta stone for cognitive frameworks*, 2007; *Dynamics of Symmetry Group Theorizing: comprehension of psycho-social implication*, 2009)?

For those remaindered by the subprime mortgage crisis, there is a profound irony to the fact that one of the few applications of the complexity sciences to human affairs -- namely in the stock market -- had resulted in the disastrously widespread use of the **Gaussian**

copula in risk management. As noted by its discoverer, few using it understood it (*Uncritical Strategic Dependence on Little-known Metrics: the Gaussian Copula, the Kaya Identity, and what else?* 2009).

CMB discovery moment? The current preoccupations of the Occupy movement and the "indignant" are considered surprising by the so-called "**Masters of the Universe**" at the core of the "1%". Their lack of recognition of the universal background of resentment amongst the "99%" may perhaps be usefully compared to that of astrophysicists prior to 1964 -- when the cosmic microwave background radiation was fortuitously detected.

The "1%" might now be said to be having their "CMB discovery moment". The "microwave" is now detectable. Of course, following 1964, astrophysicists successfully argued internationally for the construction of a multiplicity of massive **radio telescopes** capable of detecting that "relic radiation" to be able to "see" and understand the condition of the universe at the time of its alleged origins some 15 billion years ago. Little is said about the "radio telescopes" necessary to detect the psychosocial analogue -- although one may suspect that security services worldwide understand the urgency of doing so. Their objective will be to suppress the CMB in question -- as with the tale of **King Canute and the rising tide**, or the banning of zero by Florentine authorities in the 13th century.

Trashing the planet? The Occupy movement and its sympathizers are deeply concerned at the remaindered world in which they are obliged to live as a consequence of the systemic neglect of the "1%" and those complicit with their interests. The systematic trashing of the planet into a wasteland -- a scrap heap -- is perhaps even more evident in the intangible psychosocial realm than in its tangible forms. It is a matter of personal experience for many, especially evident in rising levels of despair and lifestyle diseases (*Implication of Personal Despair in Planetary Despair*, 2010; *Cognitive Implications of Lifestyle Diseases*, 2010). These manifestations are of course shared in part by the "1%" despite their access to every possible remedial resource.

There is a real sense, especially for the young, that they are wasting their lives away in this wasteland. Their lives might well be said to have been deliberately "pre-remaindered". Benefiting from the creativity and legitimacy of physics, should each recognize the right to his or her own "universe" -- one of the 10^{500} ?

Necessary civilizational collapse? Is there a larger tragic sense in which the world needs to be "remaindered" -- transformed disastrously into a civilizational wasteland through a process of collective "stripping"? A **dark night of the collective soul**? From such a larger perspective of the grand sweep of human history, is it through this "learning" process -- however it plays out in civilizational collapse and **end times scenarios** -- that the vital role of the underlying "remainder" (as variously identified in **Annex 1**) will be collectively and consciously recognized?

Given the news at the time of writing regarding global economic recession, will the remaindered be able to rejoice at the possibility of receiving a "particle" of God for Christmas 2011 -- or might that be a "wave" from God? Or might that be for the end of 2012 -- as some physicists precariously suggest? There is naturally some uncertainty regarding the matter.

Eliciting harmony? The Occupy movement has been widely deprecated for its failure to articulate the concerns of the "99%" in the conventional terms which the "1%" are so skilled at manipulating to their own advantage -- to enable the continuing deprecation of the planet. Critics highlight the dissension amongst sympathizers of that movement -- as with the World Social Forum and other social change movements. Such critics fail to recall the role of music and song in offering new forms of cohesion to the student protests of 1968. They fail to notice how a degree of unusual harmony is offered to such varied expression -- a harmony capable of allowing for the expression of multiple "voices" and a variety of "instruments", in contrast to the desperately simplistic conventional efforts to ensure that everyone "sings from the same hymn sheet", as discussed separately (*Enabling a 12-fold Pattern of Systemic Dialogue for Governance*, 2011).

Will this be a mode of response to the complex of issues highlighted by such as Jared M. Diamond (*Collapse: How Societies Choose to Fail or Survive*, 2005), John Ralston Saul (*The Unconscious Civilization*, 1995), Charles Handy (*The Age of Unreason: new thinking for a new world*, 1989), Thomas Homer-Dixon (*The Upside of Down: catastrophe, creativity, and the renewal of civilization*, 2006).

Indication of the "next zero"?

Thirty modalities frame the core of global governance.

It is the empty centre that ensures it is sustainable...

Therefore development emerges from what is there;

Sustainability from what is not.

(Adaptation of Lao Tzu: *Tao Te Ching*)

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