



# laetus in praesens

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## Exhortation to We the Peoples from the Club of Rome

### Review of "Come On! – Capitalism, Short-termism, Population and the Destruction of the Planet"

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Prepared on the occasion of the book launch during the 50th Anniversary celebrations of the Club of Rome (London, 26 April 2018)

## Introduction

A new "Report to the Club of Rome" has been prepared by [Ernst von Weizsaecker](#) and [Anders Wijkman](#) (*Come On! Capitalism, Short-termism, Population and the Destruction of the Planet*, 2018) as part of its 50th anniversary celebrations -- subsequent to its original foundation in Rome in 1968. Its declared mission is to promote understanding of the global challenges facing humanity and to propose solutions through scientific analysis, communication and advocacy.

The new report is divided into three main sections as succinctly described in a review by [Ugo Bardi](#), himself a member of the Club (*Saving the World: Top-Down or Bottom-Up? A Review of the Latest Report to the Club of Rome, "Come On", Resilience*, 13 April 2018):

- The first part, the review of the current trends, is - in my opinion - the best part of the book. It is a well thought-out review which doesn't shun from facing some politically unnameable subjects, such as that of overpopulation and of the need to stop its growth.
- The second part of the book is a review of the theories and models currently used to understand the situation in which we find ourselves. This section provides a description of religious views of the relation of humankind with the world, starting with the Pope's encyclical letter *Laudato Si'* and then moves to a detailed criticism of the current economic theories.
- Finally, the third part of the book. This is the most ambitious section, indeed it is as long as the first two summed together. It is also the most difficult and complex: what to do, in practice? Here, the authors face a problem that has affected the Club's analysis over the past 50 years: who should act to save humankind from destruction?

Since 1968 some 60 [reports to the Club of Rome](#), or variously associated with it, have been produced -- most notably following publication of *The Limits to Growth* in 1972. The concern here is how best to review another such report, in the light of the insights variously offered in the earlier reports. That concern has previously been partially articulated in a review of that pattern after 40 years (2012), updated for this occasion (*Club of Rome Reports and Bifurcations: a 50-year overview*, 2018).

The issue is how the insights have been accumulated over 50 years and how they are now articulated within the new report in the effort "to promote understanding of the global challenges facing humanity and to propose solutions through scientific analysis, communication and advocacy". Has the understanding of global challenges taken more coherent and insightful form? Is there indeed greater insight into the challenges of "communication and advocacy"?

Clearly the first part of the book is valued as a new clarification of the issues -- the "**problematique**"? -- on the assumption that the key factors have not been adequately articulated previously. Whether the issues have been presented in more systemic terms susceptible to more integrative comprehension -- as a catalyst for remedial action -- is obviously a concern.

In then reviewing a range of theories through which the current situation can be viewed and comprehended -- the "**resolutique**"? -- again the question is to what extent that set reflects a comprehensive range of envisaged modalities. What might some consider to have been excluded or misrepresented? Given the eternal strife among the model builders and advocates, what new insights are offered regarding the reconciliation of their conflicting perspectives -- a challenge articulated by **Nicholas Rescher** (*The Strife of Systems: an essay on the grounds and implications of philosophical diversity*, 1985)? Or is one approach simply to be favoured over all others?

Rather than advocating a "top-down" approach which has arguably been called into question over the past 50 years, the authors have focused on a "bottom-up" strategy. This is most clearly apparent in the third section of the book focusing on practical, implementable solutions -- the "**imaginatique**"? -- such as agro-ecology, the blue economy, regenerative urbanization, benign investments, and much more. The emphasis -- and hence the title *Come On!* -- is not to endeavour to force people not to do something by legislation ("top-down"). The focus is rather on encouraging people to choose to do something for their own benefit -- namely "bottom-up". Clearly this can be valued as a catalogue of possibilities. How people might choose between them, and whether the resulting pattern of choices is systemically viable, is another matter.

## Eliciting the Club of Rome's collective memory?

A useful test of the accumulating knowledge enabled for humanity by the Club of Rome is the extent to which reports previous to that of 2018 are indeed cited in some way in the most current report. The following table is somewhat indicative in that respect. As noted below, a more systematic approach could be undertaken with automatic text and citation analysis to derive a map of citations between any reports of any date. Note that some of the "reports" may not have been recognized in the same manner as a "Report to the Club of Rome" -- a distinction which is elusive in many of the bibliographical details and summaries.

The method of identifying the influence of past reports on the current report in the table was simplistic, exploiting the excellent search facility in the publisher's electronic copy made available to reviewers. The assumption made was that the thinking associated with authors of the previous reports could be suggested either by their citation there or by being listed as one of the collaborator in its elaboration. In the case of multiple authorship of reports, the counts are repeated. The assumption is weak in that the thinking behind the original report may only be represented to a small degree (as implied by a footnote citation).

Abridged version of a checklist of Club of Rome "reports" presented separately							
(only surname of first author/editor indicated; long report titles abridged; any mention in 2018 report indicated)							
Year	Title	Author	In 2018?	Year	Title	Author	In 2018?
1970	<a href="#">The Predicament of Mankind</a>	<a href="#">Ozbekhan</a>		1998	<a href="#">Ten Thousand Cultures, One Single Civilization</a>	<a href="#">Malitza</a>	1 citation
1972	<a href="#">The Limits to Growth</a>	<a href="#">Meadows</a>	12 citations	1999	<a href="#">Globalization and Culture [?]</a>	<a href="#">Tomlinson</a>	
1974	<a href="#">Mankind at the Turning Point</a>	<a href="#">Mesarovic</a>		1999	<a href="#">Governance in an era of Globalization</a>	<a href="#">Lubbers</a>	
1976	<a href="#">RIO Report: Reshaping the International Order</a>	<a href="#">Tinbergen</a>		1999	<a href="#">Die Kunst Vernetzt zu Denken</a>	<a href="#">Vester</a>	
1977	<a href="#">Goals for Mankind:</a>	<a href="#">László</a>		2000	<a href="#">Menschlichkeit Gewinnt</a>	<a href="#">Mohn</a>	
1978	<a href="#">Beyond the Age of Waste</a>	<a href="#">Gabor</a>		2001	<a href="#">Humanity at the Crossroads</a>	<a href="#">Ikeda</a>	
1979	<a href="#">Energy: the countdown</a>	<a href="#">de Montbrial</a>		2001	<a href="#">The Capacity to Govern</a>	<a href="#">Dror</a>	
1979	<a href="#">No Limits to Learning: Bridging the Human Gap</a>	<a href="#">Botkin</a>	1 citation	2001	<a href="#">World Economic and Environmental Order</a>	<a href="#">Tamames</a>	
1980	<a href="#">Road Maps to the Future</a>	<a href="#">Hawrylyshyn</a>		2002	<a href="#">Globalization, Governance and Sustainable Development</a>		
1980	<a href="#">Tiers-Monde: Trois Quarts du Monde</a>	<a href="#">Guernier</a>		2003	<a href="#">The Double Helix of Learning and Work</a>	<a href="#">Giarini</a>	
1980	<a href="#">Dialogue on Wealth and Welfare</a>	<a href="#">Giarini</a>		2004	<a href="#">Limits to Growth: a 30 year update</a>	<a href="#">Meadows</a>	12 citations
1981	<a href="#">L'Imperatif de Cooperation Nord-Sud:</a>	<a href="#">Saint-Geours</a>		2003	<a href="#">A New World Order without Ideologies</a>	<a href="#">El Hassan bin Talal</a>	
1982	<a href="#">Microelectronics and Society, for Better and for Worse</a>	<a href="#">Schaff</a>		2004	<a href="#">Global Foresight</a>	<a href="#">El Hassan bin Talal</a>	
1984	<a href="#">Le Tiers Monde peut se Nourir</a>	<a href="#">Lenoir</a>		2005	<a href="#">The Future of People with Disability in the World</a>	<a href="#">de Lorenzo Garcia</a>	
1985	<a href="#">The Barefoot Revolution</a>	<a href="#">Schneider</a>	6 citations	2006	<a href="#">Rethinking Civilization</a>	<a href="#">Tehranian</a>	
1986	<a href="#">The Future of the Oceans</a>	<a href="#">Mann-Borgese</a>		2006	<a href="#">Global Population Blow-Up and After</a>	<a href="#">Kapitza</a>	
1989	<a href="#">Africa beyond Famine</a>	<a href="#">Lemma</a>		2006	<a href="#">The Employment Dilemma and the Future of Work</a>	<a href="#">Giarini</a>	
1988	<a href="#">Africa Facing its Priorities</a>	<a href="#">Schneider</a>	6 citations	2006	<a href="#">Limits to Privatization</a>	<a href="#">von Weizsäcker</a>	23 citations

1988	<a href="#">Beyond the Limits to Growth</a>	Pestel		2007	<a href="#">The Art of Interconnected Thinking. Ideas and Tools for tackling with Complexity</a>	Vester	
1989	Problems of World Industrialisation			2009	<a href="#">Factor Five: Transforming the Global Economy through 80% Improvements in Resource Productivity</a>	von Weizsäcker	23 citations
1991	<a href="#">The First Global Revolution</a>	King	3 citations	2009	<a href="#">The Blue Economy</a>	Pauli	14 citations * collabor.
1993	The Limits to Certainty	Giarini		2011	<a href="#">Global Prospects for Full Employment</a>	Jacobs	2 citations * collabor.
1993	For a Better World Order	Rosensohn		2012	<a href="#">2052: a Global Forecast for the Next Forty Years</a>	Randers	22 citations * collabor.
1995	<a href="#">The Scandal and the Shame: Poverty and Underdevelopment</a>	Schneider	6 citations	2012	<a href="#">Bankrupting Nature: Denying our Planetary Boundaries</a>	Rockstrom	18 citations
1995	<i>Ist die Erde noch regierbar</i>	Dror		2014	<a href="#">Extracted: How the Quest for Mineral Wealth Is Plundering the Planet</a>	Bardi	2 citations
1995	<a href="#">Taking Nature into Account:</a>	van Dieren		2015	<a href="#">Change the Story, Change the Future</a>	Korten	12 citations
1997	<a href="#">Factor Four: Doubling Wealth, Halving Resource Use</a>	von Weizsäcker	23 citations	2015	<a href="#">On the Edge: The State and Fate of the World's Tropical Rainforests</a>	Martin	
1998	<a href="#">The Oceanic Circle</a>	Mann-Borgese		2015	<a href="#">To Choose Our Future</a>	Khosla	8 citations * collabor.
1998	<a href="#">The Limits Of Social Cohesion</a>	Berger		2016	<a href="#">Reinventing Prosperity: Managing Economic Growth to Reduce Unemployment, Inequality and Climate Change</a>	Maxton	17 citations * collabor.
1998	<i>La red</i> (The Multimedia Society)	Cebrian		2017	<a href="#">The Seneca Effect: Why Growth is Slow but Collapse is Rapid</a>	Bardi	2 citations

The concern with the accumulation of learning was the theme of an early report to the Club of Rome by [James W. Botkin](#), [Mahdi Elmandjra](#) and [Mircea Malitza](#) (*No Limits to Learning: Bridging the Human Gap*, 1979) -- reviewed, in the light of progressive memory erosion (*Societal Learning and the Erosion of Collective Memory: a critique of the Club of Rome Report: No Limits to Learning*, 1980).

What is to be concluded with regard to the new report in the light of the above table? Is the thinking behind reports which have not been cited to be considered obsolete or irrelevant -- whether or not it continues to influence many elsewhere through their dissemination? Is that erosion of relevance somehow a reflection of the so-called half-life of facts. This challenge for the scientific method promoted by the Club of Rome is usefully made in a book review included in the special issue of the *Scientific American* focusing on the *State of the World's Science* (October 2012). The review of *The Half-Life of Facts: why everything we know has an expiration date* (2012) by [Samuel Arbesman](#) is introduced with the phrase:

Many medical schools tell their students that half of what they've been taught will be wrong within five years -- the teachers just don't know which half.

Would such an assessment apply to the content of Club of Rome reports? Or is it that the associated thinking is to be considered as implied in some way in current thinking -- as a form of common knowledge -- and therefore not meriting citation? Is it to be assumed that the immediately preceding reports -- more frequently cited -- adequately incorporate reference to the insights of the earlier reports?

Clearly a more sophisticated concept map would help to understand the Club of Rome's thinking as a coherent body of systemic knowledge -- and the manner in which that insight culminates in the current report.

Another interpretation of both the table and any associated map would be as a reflection of the pattern of "likes" and "dislikes" implied by the present report. The Club of Rome as a gathering of human beings includes people who can be readily assumed to have a variety of attitudes to one another which impacts on the thinking which is brought forward at any one time -- or deliberately neglected. The human dynamics are a much neglected feature of the method of analysis promoted by the Club -- only evident by implication in the second section of the report on the variety of approaches variously favoured (*Knowledge Processes Neglected by Science: insights from the crisis of science and belief*, 2012). The report makes 3 references to the "bias" of others opposed to its thinking, but does not evoke the possibility of its own set of "biases", as might be perceived by others opposed to its methodology or agenda..

Such considerations are also a primary feature of the [paradigm shift](#) which the Club would claim to be advocating in the new report ([Thomas Kuhn](#), *The Structure of Scientific Revolutions*, 1962). The report makes one reference in passing to the need for a "paradigm shift" (p. 33).

## Possible relevance of contrasting styles and biases

This review is biased in a manner contrasting with that of the Club, namely in favour of a more systematic configuration of insights, issues and perspectives. Such a bias values the insights implied by the dynamics between actors past and present as constituting the

human system in process of development and transformation -- and characterized by an obvious conflict of perspectives which merits systemic understanding.

As with many insights of the current report, the bias in this review derives from publication of *The Limits to Growth* in 1972. That highlighted a handful of problematic resource sectors which naturally continue to feature in the current report. Having a responsibility at that time for the profiling of the thousands of international bodies catalogued in the *Yearbook of International Organizations*, the methodological reduction of their hundreds of preoccupations to a handful was irritating in the extreme. It gave rise from 1976 to what is now the *Encyclopedia of World Problems and Human Potential* as the embodiment of a complementary bias -- if not one to be understood as contrary.

It is through that framework that the current report is viewed, with the more general implication that the report will be similarly viewed through other extant biases. These are indeed recognized to a degree in the second section, but only in terms of the variety of economic theories -- variously deprecated. **The question here is whether a document promoted as a key strategy for humanity is of requisite variety (in cybernetic terms) to encompass the dynamics of the global system** as it would tend to claim to do -- if only as the best approximation available.

Although usefully assembled, **much of the substantive content of the new report is reasonably familiar to many**. What form is anything "new" expected to take? From the perspective of this distinctive bias, however, the question is **has it been organized in a more insightful manner** than in past reports? **Does it now enable comprehension of a higher order of systemic connectivity** thereby increasing the credibility of its strategic recommendations?

However, in seeking to engage the multiplicity of actors in that system, how is the variety of their biases to be taken into account? In switching from a "top-down" to a "bottom-up" strategy, how are those "at the bottom" to be effectively recognized by those "at the top" in making the report's recommendations? Is the binary switch sufficiently indicative of the logical complexity which needs to be encompassed?

The point can be developed further with respect to oppositional logic (Guoping Du, Hongguang Wang and Jie Shen, *Oppositional Logic, Logic, Rationality, and Interaction*, Springer, 2009, pp 319-319) and discussed separately in terms of a 4-dimensional polyhedral configuration of directions (*Neglected recognition of logical patterns -- especially of opposition*, 2017). Ironically the top-down distinction can be explored in relation to the left-right distinction so fundamental to policy models -- but through the biases implicit in writing (*Unquestioned Bias in Governance from Direction of Reading? Political implications of reading from left-to-right, right-to-left, or top-down*, 2016).

In the case of the profiling of actors in the international system, the *Yearbook* -- now online -- aggressively sought to encompass a wide variety of actors considered marginal by the intergovernmental system -- including actors like the Club of Rome. In the case of the *Encyclopedia* -- now online -- this involved profiling the thousands of ("marginal") problems with which thousands of constituencies were preoccupied -- including those reported by the Club of Rome. It also profiled the thousands of ("marginal") strategies advocated by such constituencies in the light of their particular biases, values and sense of human development. In so doing considerable attention was given to detailing the network of (systemic) links between organizations, problems, strategies, etc. A later concern was with how this complexity could be rendered comprehensible through interactive visualization.

How might this methodological bias frame any review of the current report? What other biases could usefully frame the review otherwise -- and how might these be understood as complementary?

## Systemic thematic analysis to facilitate integrative global comprehension?

Just as the current report can be seen as essentially recapitulating arguments made in previous reports to the Club of Rome with respect to the global challenge for humanity -- *plus ça change, plus ça reste la même chose* -- this can also be the case for any review of such a report. An earlier report, upheld by the Club to be of fundamental significance to its future agenda -- and the prospects for humanity -- is entitled: *2052: a Global Forecast for the Next Forty Years* (2012). This is suitably cited in the current report, notably with respect to its first section.

That earlier report was reviewed under the title: *Engendering 2052 through Re-imagining the Present: review of a report to the Club of Rome* (2012), which included the following sections:

Presentation context of the 2052 Report	Building with what is missing?
Titanic implications?	From appreciative inquiry to imaginative inquiry
Recognizing hidden dimensions -- the missing links?	Memetic warfare with aesthetic weapons?
Confidence and despair as existential indicators	Imaginative consciousness required to engage with the future?
Failure to integrate real-world dynamics	Reframing the 2052 Report through imaginative inquiry
Global sensemaking and collective self-reflexivity	Re-imagining the future through the present: re-engaging
Misrepresentation of the 2052 Report?	Dreamtime

The section on **Global sensemaking and collective self-reflexivity** made the following points:

- **Systemic analysis of past Club of Rome reports:** Potentially more incredible, given the modelling expertise by which that approach is informed, is the complete failure to benefit from any systematic approach to the variety of insights engendered in the extensive **set of 50 reports to the Club of Rome** (most of them of book length). Beyond simply segmenting them into *Wikipedia* style profiles (of which there are many variants), there is the proven possibility of using text analysis software to map out and interrelate the various preoccupations (using applications such as *Leximancer*, for example). This would enable a degree of self-

reflexivity on the part of the Club of Rome -- allowing it to go where the modelling approach of *Limits to Growth* has proven unable to venture. Its current inability to map its own insights exemplifies the problems of collective intelligence gathering and is indicative of the fate of the *2052 Report* -- whose insights cannot currently be related to the context of any such map.

- **Ignoring past wisdom:** The reasons this is not done are themselves worthy of considerable attention as characterizing the challenges of governance at this time. Irrespective of whether they are physically accessible together in any single physical location, it is more than ironic that the intellectual copyright is in fact owned by a scattering of commercial publishers variously resistant to the compilation of any synthesis. The information overload phenomenon suggests the high probability that few of the 50 reports have been examined by a statistically significant number of Club members -- even if they are aware of all of them and the range of topics treated. However, even if the insights could be portrayed in some new visual form, it is unclear that this integration would "make any more sense" or enable more integrative strategies -- despite the efforts of the [Global Sensemaking Network](#). This raises the question of the form required to make sense of relevance to governance of the future? To what extent is the Club of Rome attentive to this issue? Are the insights of the *2052 Report* likely to be eminently forgettable for that reason -- and essentially impossible to communicate widely?
- **Being one's own metaphor:** At this time, as with any initiative promoting change, the Club of Rome is very much a metaphor of its own problematic condition -- as insightfully articulated by [Gregory Bateson](#) in concluding a conference on the effects of conscious purpose on human adaptation: *We are our own metaphor*. (cited by [Mary Catherine Bateson](#), *Our Own Metaphor*, 1972, p. 304). Unfortunately there is a marked tendency to over-identify with the metaphor, making it difficult to obtain a sense of perspective.

Whereas the *2052 Report* explicitly regrets policy-making delays, and specifically recognizes a need to "kick-start" action, it might be asked what are the analogous delays within the Club of Rome and how appropriate paradigm change might be "kick-started" within it.

Until the Club of Rome understands how it is itself is part of the *problematique*, it cannot hope to understand the nature of the *resolutique* required. For that, as argued above, it needs to engender an appropriate *imaginatique* and to engage vigilantly with the dynamics of the *irresolutique*. This is the leadership it might have sought to provide. Despite its systemic laurels, it can be fruitfully concluded that the Club of Rome is "cybernetically underpowered" in its engagement with [requisite variety](#) (*Consciously Self-reflexive Global Initiatives: Renaissance zones, complex adaptive systems, and third order organizations*, 2007). This might not now be the case had it taken some account of the arguments of Hasan Ozbekhan (*The Predicament for Mankind: Quest for Structured Responses to Growing World-wide Complexities and Uncertainties*, 1970).

Curiously, despite the case variously made for facilitating comprehension of complexity through metaphor, the report makes only one reference to metaphor in its deprecation of the mechanistic metaphor of [Taylorism](#) (p. 86). This would be consistent with the more general deprecation of metaphor in science, despite arguments to the contrary.

The three sections of the report are deeply structured, as the table of contents indicates (I: 12 segments; II: 10 segments; III: 19 segments). This contrasts with many other Club of Rome reports. As before, no attempt seems to have been made to indicate the systemic relations between those segments (and their sub-segments) to provide a higher order of coherence. This follows the asystemic pattern evident in other seminal reports, as with the UN's *Agenda 21*, the *Millennium Development Goals*, or the *Sustainable Development Goals*. Extensive use is however made of illustrations (as discussed below).

With regard to the "human dimension", much can be said about the problematic response within the Club of Rome to the early arguments of Hasan Ozbekhan -- as variously documented (Matthias Schmelzer (*Born in the corridors of the OECD: the forgotten origins of the Club of Rome, transnational networks, and the 1970s in global history*, *Journal of Global History*, 12, 2017, 1, pp. 26-48; Ken Bausch, *Problematique and the Club of Rome*; A. N. Christakis. *A Retrospective Structural Inquiry of the Predicament of Mankind: Prospectus of the Club of Rome*, 2006).

The citation above by Mary Catherine Bateson at that time can be usefully echoed by her most recent arguments (*How To Be a Systems Thinker*, *Edge*, 17 April 2018):

At the moment, I'm asking myself how people think about complex wholes like the ecology of the planet, or the climate, or large populations of human beings that have evolved for many years in separate locations and are now re-integrating. To think about these things, I find that you need something like systems theory.... How do you deal with ignorance? I don't mean how do you shut ignorance out. Rather, how do you deal with an awareness of what you don't know, and you don't know how to know, in dealing with a particular problem? ...

One of the most essential elements of human wisdom at its best is humility, knowing that you don't know everything. There's a sense in which we haven't learned how to build humility into our interactions with our devices.... At the point where she said, *You guys need to look at what you're doing. What is the cybernetics of cybernetics?* what she was saying was, *Stop and look at your own process and understand it.....* The tragedy of the cybernetic revolution, which had two phases, the computer science side and the systems theory side, has been the neglect of the systems theory side of it. We chose marketable gadgets in preference to a deeper understanding of the world we live in.

## Uptake, influence and readership -- self-reflective impact analysis?

**Uptake:** Mary Catherine Bateson challenges: *You guys need to look at what you're doing*. A key question with respect to the Club of Rome reports, and the most recent one, is how the uptake of its insights is considered **within** the methodology used -- rather than with any implication that the systemic implications of the uptake are irrelevant to the substantive content. [Ugo Bardi](#), as an early reviewer of that report notes with respect to the the third part of the book:

This is the most ambitious section... It is also the most difficult and complex: what to do, in practice? Here, the authors face a problem that has affected the Club's analysis over the past 50 years: who should act to save humankind from destruction?

The initial attitude of the Club on this point was heavily influenced by the personality of the Club's founder, Aurelio Peccei. In the 1960s, Peccei had developed a vision that saw humankind as an *ekklesia*, a gathering of free and equal citizens of the world. As a consequence, the Club tended to propose actions that were to be agreed upon by all the citizens of the Earth by means of a democratic process. It was a top-down vision, in the sense that it implied that the choices made by the people were to be enforced by some kind of world government, or at least by an association of all the existing governments

As we all know, this approach has not worked. Peccei was misunderstood and the Club of Rome was accused of planning a world dictatorship and all sorts of nefarious actions, including even a new holocaust designed for population control. It was all false. As you can read in my book *The Limits to Growth Revisited*, it was just propaganda, but it turned out to be effective in demonizing the Club of Rome and protecting the special interests of various lobbies. But then, what to do? (*Saving the World: Top-Down or Bottom-Up? A Review of the Latest Report to the Club of Rome, "Come On", Resilience*, 13 April 2018)

Clearly *The Limits to Growth* (1972) has been highly influential to a degree -- but to whom, and with what effect? Much research would be required to determine the readership of the subsequent reports. How is a distinction to be made between readership and utility -- if not futility? Through a form of citation analysis which Club authors fail to undertake?

The more fundamental issue for the Club of Rome, and for any body making recommendations, is how to consider levels of uptake which are less than the critical mass required for the paradigm shift considered necessary in those recommendations? This is the problem sidelined, if not ignored, by the current focus on the "bottom-up" recommendations. Implicit in that challenge, with regard to readership, is how documents that are "read" have actually been read, namely the levels between extremely superficial and in depth. How are these to be distinguished?

Commentary on that problem could be articulated in terms of the process of the [Global Challenges Foundation](#) started in 2016 -- currently filtering several thousand "solutions" to the global decision-making challenge of the times. This process faces its own challenges, as discussed separately (*Global Challenge of the Global Challenge, ¿In-quest of a decision-making framework appropriate to a world in crisis?* 2016). The "solutions" selected for funding are presumably to be seen in the light of the third section of the Club of Rome report. As might be expected, no reference is made to the latter initiative in the current report.

**Remedial capacity?** In seeking uptake, the question of who is to be expected to respond -- and what are they expected then to do -- is clearly fundamental in the light of the historical track record since 1972. This argument was developed with respect to that framed by an earlier report to the Club (*Bankrupting Nature: Denying our Planetary Boundaries*, 2012), following its presentation in 2009 (*Recognizing the Psychosocial Boundaries of Remedial Action: constraints on ensuring a safe operating space for humanity*, 2009). The issue there was the "remedial capacity" in the light of "psychosocial boundaries", as framed by the following sections:

Planetary boundaries of the environmental system	Polyocular strategic vision
Necessity for urgent action, globally, regionally and locally	Systemic isomorphism
Global remedial action boundaries	Representation of boundaries of coherence of complex systems
Substantiating the remedial capacity boundaries	In quest of systemic functional connectivity

**Psychic numbing and care fatigue:** The argument can be articulated succinctly in the light of the phenomenon of "psychic numbing" in the face of the many crises articulated in the first section of the current report -- as variously reported in the media. This is described as a tendency for individuals or societies to withdraw attention from past experiences that were traumatic, or from future threats that are perceived to have massive consequences but low probability (Karen A. Cerulo, *Never Saw It Coming: cultural challenges to envisioning the worst*, 2006). Other authors have variously addressed the challenge, as indicated separately (*Embodiment of Change: Comprehension, Traction and Impact? Discovering enabling questions for the future*, 2011). It could also be associated with "care fatigue".

Arguably the phenomenon of psychic numbing also frames the response to issues which may have high probability in the eyes of some but are not an immediate threat as experienced by others. Despite the latter qualification, it is clear that little effective action may be engendered, even when a problem is immediately evident (air pollution, street violence, etc). Exposure to relevant information may even be counter-productive (*Starvation Imagery as Humanitarian Trump Card? Counterproductive emotional blackmail engendering worldwide indifference*, 2016). The point has been made otherwise in terms of the media response to a single death -- in contrast to the response evoked with respect to a thousand deaths. There is a sense in which -- fundamentally, in ways which call for careful consideration -- people do not care in an appropriate manner. This necessarily includes the authors of reports and reviewers thereof -- as well as those exhorting others to act.

**Self-reflective analysis:** In a period when "meta-data" is of major concern to data abuse and security, it would seem that there is a case for a far more fundamental "meta-analysis" of the engagement of bodies such as the Club of Rome -- otherwise to be recognized as overly simplistic. This follows from the arguments of Mary Catherine Bateson regarding the cybernetics of cybernetics. However that early preoccupation with [second-order cybernetics](#) has now been reframed by the arguments of such as [Stafford Beer](#) and [Maurice Yolles](#) regarding [viable systems](#) and [higher order cybernetics](#) (*Consciously Self-reflexive Global Initiatives: Renaissance zones, complex*

*adaptive systems, and third order organizations*, 2007).

## Club of Rome as an echo chamber constrained by a filter bubble?

**Bubbles and echoes:** In systemic terms, especially in the light of any [meta-discourse analysis](#), every body and its authors merit recognition as operating within a [filter bubble](#), as determined the response to information overload within an internet environment ([Eli Pariser](#), *The Filter Bubble: what the internet is hiding from you*, 2011). This metaphor of "epistemic bubbles" is complemented by that of the "echo chamber" within which each such community then functions, as remarkably argued by [C Thi Nguyen](#) (*Escape the echo chamber*, *Aeon*, April 2018):

Something has gone wrong with the flow of information. It's not just that different people are drawing subtly different conclusions from the same evidence. It seems like different intellectual communities no longer share basic foundational beliefs. Maybe nobody cares about the truth anymore, as some have started to worry. Maybe political allegiance has replaced basic reasoning skills. Maybe we've all become trapped in echo chambers of our own making -- wrapping ourselves in an intellectually impenetrable layer of likeminded friends and web pages and social media feeds... Where an epistemic bubble merely omits contrary views, an echo chamber brings its members to actively distrust outsiders.

That argument highlights the sense in which an echo chamber entraps those it encompasses in a manner analogous to that of a cult. A cult isolates its members by actively alienating them from any outside sources, with those outside actively labelled as malignant and untrustworthy. A cult member's trust is narrowed, aimed with laser-like focus on certain insider voices. The challenge is a general one in that the Club's worldview may exemplify that of the global civilization in general, should it be considered as operating within a filter bubble, as argued separately (*Pricking the Bubble of Global Complacent Complicity: hyperdimensional insights from the physics of bubble blowing, bursting and collapse?* 2017). Is the methodology of the report such as to enable a collective cognitive constraint to be detected (*Existential Challenge of Detecting Today's Big Lie: mysterious black hole conditioning global civilization?* 2016; *Global Economy of Truth as a Ponzi Scheme: personal cognitive implication in globalization?* 2016).

**Cocoons:** A related metaphor of value is that of the "cocoon" (John William Kuckuk, *Out of the Cocoon: Rethinking Our Selves: an Introduction to a New Future*, 2012). Is there a danger that the Club of Rome can be recognized as having "cocooned" itself -- whether or not this can be seen as anticipating the emergence of a "butterfly" from that pupal phase? In discussing the Club, that metaphor has however been used to describe others -- but not the Club ([Keith Suter](#), *Fair Warning: the Club of Rome Revisited -- the story*, *ABC*, 1999):

Anyone wishing to have a quiet life made a mistake being born in the twentieth century. The world is undergoing the biggest change since the Industrial Revolution began over two centuries ago, and the pace of change is increasing, not slowing down. People feel overwhelmed by change. There is a tendency for people to cocoon themselves in a culture of contentment. They often do not want to hear about the world's problems. Even when they acknowledge that changes in their lifestyle and patterns of consumption are required, they are unwilling to accept the challenge of those changes. This makes the task of encourage people to take action to build a saner and more sustainable world all the more important and yet all the more difficult.

Exploration of alternative metaphors of relevance has been made separately (*Beyond impoverished metaphors*, 2004). As discussed there, the necessary institutional metamorphosis for the 21st century has been explored by [John Elkington](#) (*The Chrysalis Economy: how citizen CEOs and corporations can fuse values and value creation*, 2001) through this caterpillar-butterfly metaphor from the insect chrysalis -- the stage in the life cycle of lepidopterons when, within a self-spun cocoon, rapacious (and somewhat ugly) caterpillars undergo a sensational re-configuration of both form and function, to emerge as delicate (and often beautiful) butterflies (or moths if their particular genes so dictate). For Elkington, the transformation is not achieved without radical shifts in the nature of the animal that involves "self-digestion" before metamorphosis is possible. He uses insights from this metaphor to illuminate many aspects of corporate transformation. In its review of the range of economic models in the second section of the report, no reference is made to this understanding.

**Avoidance and omission:** The operation of a filter bubble and an echo chamber raises the question as to whether key systemic issues continue to be in some way deliberately or inadvertently neglected by the report. As noted with respect to the earlier review of the Club of Rome's *2052 Report* (2012), launched just after that of [The Royal Society](#), entitled *People and the Planet* (2012), it is only recently that these have dared to engage again with the consequences of population increase -- but both of them in a more circumspect manner than in *The Limits to Growth* (1972). The review of *People and the Planet*, was explicit on this point (*Scientific Gerrymandering of Boundaries of Overpopulation Debate*, 2012).

This diffident circumspection is curious in the case of the Club of Rome in that one of its more recent reports specifically highlights the issue (Sergey P. Kapitza, *Global Population Blow-Up and After: the demographic revolution and information society*, 2006). That study is described on the Club of Rome site with the following introductory comment: *Of all global problems world population growth is the most significant*. Strangely the study is not mentioned in the new report, which does however venture to make the explicit critical point: *Hundreds of millions of couples lack access to contraception, a situation that the Catholic Church, until recently, helped to cement* (p. 29).

It is not difficult to suspect some form of "deal" or "understanding" between the "Club" and "Rome" to ensure that any strategic implications of overpopulation are carefully downplayed through the manner in which proposals on the issue are crafted -- as with "population" rather than "overpopulation" in the subtitle. Is the relation between *Laudato Si'* (24 May 2015) and the historic [Paris Climate agreement](#) (12 December 2015) to be seen as a similar exercise in denial, as variously argued previously (*Papal Concern for Climate*

*Change and Refugee Care: a means of concealing criminal systemic negligence?* 2015; *Institutionalized Shunning of Overpopulation Challenge: incommunicability of fundamentally inconvenient truth*, 2008)? Could "Rome" act otherwise? Is the "Club" necessarily complicit in the agenda of "Rome"?

The issue is all the more complex in that much controversy has been generated in the past by claims regarding a purported agenda of the Club of Rome with respect to overpopulation and its relations with Christianity in that regard. These have now acquired the status of conspiracy theory, especially in the light of questionable historical accounts (*The Club of Rome attempt to take over the Vatican*, *Executive Intelligence Review*, 11, 1984, 8).

Rather than simply deprecating such biases and omissions, there is a strong case for recognizing them as systemic processes, as can be speculatively argued (*Lipoproblems: Developing a Strategy Omitting a Key Problem -- the systemic challenge of climate change and resource issues*, 2009). A remarkable review of this phenomenon is made by Diego Galafassi (*The Transformative Imagination: re-imagining the world towards sustainability*, Stockholm Resilience Centre, 2018), in a section on "failures of imagination" due to psychological dynamics of risk aversion, denial, and cognitive overload, notes the following:

- Paul J. H. Shoemaker and Philip E. Tetlock: *Taboo Scenarios: how to think about the unthinkable* (*California Management Review*, 54, 2012)
- Karl Marie Norgaard: *Living in Denial: climate change, emotions and everyday life* (MIT, 2011)
- Stephen R. Carpenter, Carl Folke, Marten Sheffer and Frances Westley: *Resilience Accounting for the Noncomputable* (*Ecology and Society*, 14, 2009)

Related concerns have been addressed by other authors:

- Karen A. Cerulo: *Never Saw It Coming: cultural challenges to envisioning the worst* (2006)
- Nassim Nicholas Taleb: *The Black Swan: the impact of the highly improbable* (2007)
- Joshua Cooper Ramo: *The Age of the Unthinkable: why the New World Disorder constantly surprises us and what we can do about it* (2009)

## Exhorting "we the peoples" to "come on"?

**Exhortation:** The curious main title of the new report makes use of *Come On!* in a provocatively chiding manner in the titles of the three sections:

- C'mon! Don't tell me the current trends are sustainable
- C'mon! Don't stick to outdated philosophies
- Come On! Join us on an exciting journey towards a sustainable world

Use of *Come On!* suggests a form of exhortation *par excellence*. It necessarily evokes a variety of challenges in switching from "top-down" strategic management by authority:

- the switch can be compared to that of parental recognition that at a certain age children cannot be effectively commanded to act in a particular way. Indeed there is a need to encourage them, preferably by encouraging them to follow the parents. This would raise the question as to the manner in which the Club of Rome is indeed leading the way
- in terms of military strategy, *Come On*, recalls the situation in trend warfare where squad leaders were valued for their courage in being "first over the top". It is not clear how the Club or its authors can be understood in such terms
- it is indeed the case that many advocacy groups adopt a strategy of exhortation similar to *Come On*. The question would then be how successful has this strategy proven to be in practice and is it capable of mobilizing the critical number commensurate with the challenge? Especially relevant as case studies are the political and religious movements endeavouring to engender change over decades, if not centuries.
- in the case of religions, arguably some like Christianity have a track record of many centuries of urging "we the peoples" to *Come On* -- unfortunately thereby highlighting the manner in which religions engage in bloody conflict with other religions having equivalent slogans
- as a form of "marketing" or public relations, a "come on" may be understood as something (dubiously) done or offered to appeal to potential customers or to an audience. In interpersonal relations, this may constitute a flirtatious statement or gesture, even to showing romantic or sexual interest, especially in the form of "coming onto". Should *Come On!* be considered to be "a come on"? (It is unclear whether the authors or the publisher were familiar with this idiomatic connotation)

**Laudato Si':** The first segment of the second section is entitled *Laudato Si': the Pope raises his voice*, taking its title from the influential Papal encyclical *Laudato Si'* (24 May 2015). Most unfortunately questionable for a "Club of Rome", the report argues that it was selected as a means to begin the book's necessary discussion about environmental ethics and the religions of the world:

The Pope went into considerable detail, describing the facts and dynamics of environmental destruction, before calling for a new attitude towards nature. In paragraph 76, he stated that 'Nature is usually seen as a system, which can be studied, understood and controlled, whereas creation can only be understood as a gift...' The message being that humanity needs to acquire an attitude of modesty and respect, rather than of arrogance and power. *Laudato Si'* addresses the central problem of a widespread short-term economic logic which ignores the real cost of its long-term impact on nature and society...

The message of this historic encyclical is very clear: Humanity is on a suicidal trajectory, unless some strong, restraining rules are accepted that curtail the short-term utilitarian habits of our current economic paradigm. It could be wise to pay attention as well to the spiritual and religious dimensions of all civilization that have counselled similar restraints. As the Pope put it, 'All of

this shows the urgent need for us to move forward in a *bold cultural revolution*' (para 114, italicized by the authors, pp. 63-64).

The segment only mentions in passing the contributions of the [World Council of Churches](#) (of which Roman Catholic Church is not a member) and of the [Islamic Declaration on Global Climate Change](#) (2015). It makes no mention of the [Parliament of the World's Religions](#). The authors claim that *Laudato Si'* "addresses the central problem of a widespread short-term economic logic which ignores the real cost of its long-term impact on nature and society" is appropriate for many. But the segment avoids issues which could be considered more fundamental -- exemplified by the highly problematic relations between the religions and the manner in which they, and especially Catholicism, sustain the problematique of a global society it has proven so difficult to render sustainable. This perspective can be variously challenged (*Papal Concern for Climate Change and Refugee Care: a means of concealing criminal systemic negligence?* 2015).

With respect to any "broad cultural revolution", given the welcome focus on "population" (as indicated by the subtitle of the report) -- but significantly not on "overpopulation" -- the "fundamental issue" could perhaps be more precisely identified (*Root Irresponsibility for Major World Problems: the unexamined role of Abrahamic faiths in sustaining unrestrained population growth*, 2007; *Systemic Reliance of World Religions on Human Sacrifice: covert use of fatal conflict to ensure vital resource management*, 2014).

In any quest for such a revolution, the religions could be challenged for their failure to seek more insightful frameworks within which to reconcile their blatant differences, despite their claims to forms of consensus of the greatest subtlety. Arguably the possibility may lie in mathematical theology, given the inspiration that religion has offered to the most insightful mathematicians of all faiths (*Mathematical Theology: Future Science of Confidence in Belief*, 2011; *Global Brane Comprehension Enabling a Higher Dimensional Big Tent?* 2011).

**Leadership:** Rather than "top-down", *Come On!* suggests that the Club of Rome is nevertheless to be understood as taking the lead. Many would challenge this implication, even to the extent of arguing that the Club has a fair way to go before catching up with others who perceive themselves to have already taken the lead. This is of course a systemic problem -- if significant change is to be effected -- one in which there tend to be many claiming active leadership, whether lacking followers or not.

In addition to "care fatigue", many would of course claim a form of "leader fatigue" -- given the current mess into which "we the peoples" have variously been led. Many are fed up with the obvious difficulties that leaders of every kind have in dialoguing with each other -- and the ease with which the absence of dialogue deteriorates into active conflict. Cynicism is increasingly evoked by tokenistic appeals for peace -- "if only" others would subscribe to the enlightened perspective, long proposed by those claiming to uphold the highest values. What to do if people are resistant to exhortation -- as is increasingly proving to be the case?

The leading role given in the report to *Laudato Si'* (translated as *Praise Be to You*) invites more speculative reflection as being an exhortation in its own right. However faint, it bears a suspicious degree of resemblance to the "bottom-up" emphasis of a report framed as *Come On!*. Is the Club subconsciously aspiring to the style and role of the papacy? With respect to "exhortation", a recent comment on a subsequent apostolic letter -- *Gaudete et Exsultate: on the call to holiness in today's world* -- is relevant to any consideration of such a possibility (Father Jeffrey F. Kirby, *Pope's new exhortation: 'a signpost, a reminder, and a prophetic call'*, *Crux: taking the Catholic pulse*, 18 April 2018).

*Come On!* recalls the first word of one of the most popular Christian hymns: *Onward, Christian Soldiers* -- itself an exhortation to go "over the top", as in trench warfare. Given the exclusivity cultivated by the Catholic Church, any such associations are indicative of fundamental issues that remain to be resolved in promoting a "broad cultural revolution" -- especially under the auspices of a faith renowned for its exclusivity and inability to admit failings (as most recently exemplified by cover-up and procrastination in relation to sexual abuse).

Christianity, especially as represented by "Rome", is far from being as innocent in exacerbating the challenges of global civilization -- as its claims to insightful leadership so frequently imply. As noted above with respect to humanity at large, it does itself have a need "to acquire an attitude of modesty and respect, rather than of arrogance and power".

## Towards a New Enlightenment?

In concluding the second section of the book, the authors argue, in a remarkable departure for the Club of Rome, that there may be a need for a new Enlightenment -- rather than a renewed Rationalism. In exemplifying this, reference is made to the need for a philosophy of balance rather than exclusion. This is seen as implied in the Confucian understanding of Yin and Yang, as framed together by the Tao. The need for a more subtle balance is specifically cited with respect to that:

between humans and nature	between women and men
between short-term and long-term	between equity and awards for achievement
between speed and stability	between state and religion
between private and public	

**Restrictive binary thinking:** Whilst this emphasis is much to be welcomed, it could be asked whether this philosophy of balance (rather than exclusion) is exemplified by the thrust of the book. Binary thinking indeed has its implications for global decision-making (*Destabilizing Multipolar Society through Binary Decision-making*, 2016). The challenge could be presented with respect to the following as they feature in the report::

- **"Enlightenment" versus "Endarkenment"?** The possibility of such a Renaissance has indeed been variously argued (David Lorimer and Oliver Robinson (Eds.), *A New Renaissance: transforming science, spirit and society*. 2010). It is presented as a

transformation offering hope in contrast to the impending sense of doom -- and the doom-mongering with which it is associated. Cognitively it is framed as "the light at the end of the tunnel". This framing is conflated with the quest for the "positive" and the rejection of the "negative". This rejection exemplifies the absence of such balance ([Barbara Ehrenreich, \*Smile or Die: how positive thinking fooled America and the world\*, 2010](#)). The hope-mongering of political discourse and progressives is a feature of this imbalance ([Credibility Crunch engendered by Hope-mongering](#), 2008). The supreme irony is that "light", as obtained from electricity, has required an appropriate juxtaposition of both "positive" and "negative". Only the naive would strive to remove the "negative" wire which enables this.

Arguably "enlightenment" and "renaissance", as currently imagined with uncritical optimism, may well be victims of the binary thinking inhibiting the renewal they endeavour to imply. There is some probability that "endarkenment" may be a phase in a more mysterious cyclic process including "enlightenment", then to be otherwise understood ([Enlightening Endarkenment: selected web resources on the challenge to comprehension](#), 2005).

Similarly the enthusiasm for "renaissance" may be problematically related to the uncritical appreciation of ever more births on a resource-challenged planet ([Challenges of Renaissance: suggestive pattern of concerns in the light of the birth metaphor](#), 2003; [Missing the New Renaissance?](#) 2010). A more profound appreciation of "death" -- and its cyclic necessity -- may be called for in a global civilization widely recognized to be in danger of imminent collapse. Not to be forgotten is the highly problematic role of institutions like the Catholic Church in the process of the historical Renaissance.

- **"Anthropocene" versus "Neganthropocene"?** The report appropriately highlights the dramatic consequences of the [Anthropocene](#) (segment 1.4) arguing that: *for the sake of the socio-economic well-being of humankind, it is absolutely imperative that the world avoid the kind of environmental disasters resulting from trespassing planetary boundaries* (p. 17).

Missing however is any acknowledgement of a complementary argument, from a contrasting perspective, notably as framed by [Bernard Stiegler \(\*The Neganthropocene\*, 2018\)](#). Understanding of "the Anthropocene" is explored as a conceptual dead-end trap characterized by a form of banality and nihilism -- an entropic vortex -- that it is vital to move beyond. This reinscribes philosophical, economic, anthropological and political concepts within a renewed thought of entropy and negentropy. The argument engages the insights of Alfred North Whitehead, Jacques Derrida, Gilbert Simondon, Peter Sloterdijk, Karl Marx, and Benjamin Bratton.

- **"Bottom-up" versus "Top-down"?** It could be argued that the acclaimed strategic shift to "bottom-up" is primarily a consequence of the obvious failures of "top-down". Advocating the shift is somewhat misleading in that the "bottom-up" strategy is already widely practiced by "we the peoples" through civil society organizations (3.15). The recommendation implies that the authors are engaging in a catch-up process -- effectively appropriate insights already articulated by others (as is common between political parties). The challenge of balance will remain in that both will continue to be required and how they can be interwoven has yet to adequately understood.
- **"Leadership" versus "Followership"?** As presented, the report carries the implication that it is offering -- if not providing -- a vital form of leadership. Hence the title of the third section: *Come On! Join us on an exciting journey towards a sustainable world*. With the "bottom-up" emphasis, there is an implication that "we the peoples" are being exhorted to follow that leadership in some way -- or so it will be interpreted by many. Rather than leading "from the top", the Club would seem to be aspiring to be a leader "from the side".

Rather than the Club of Rome, like Moses -- bringing the tablets down from the mountain top for the people, after being inscribed by God ([Exodus 31:18](#)) -- is Moses now to be understood as having discovered the tablets among the people? As noted above, the binary nature of such directionality calls for much further clarification, especially given the widespread perception of "misleadership" by elites and the associated perception of "misfollowership" ([Emergence of a Global Misleadership Council: misleading as vital to governance of the future?](#) 2007; [Framing the interplay of \(mis\)leadership and \(mis\)followership: challenges and responsibilities](#), 2007).

Curiously the challenge of global governance (segment 3.16) seemingly takes little account of how multiple initiatives by "we the peoples" -- whether as leaders or followers -- are to be coordinated and governed, if that is indeed a systemic challenge involving civil society and collective leadership (3.15). It is especially strange in that an earlier report to the Club addressed this challenge ([Yehezkel Dror, \*The Capacity to Govern\*, 1995](#)), of which no mention is made, although this is noted on the Club site as the *first report dealing with governance commissioned and approved by the Club of Rome, testifying to the significance of this book*. Nor is any mention made of a subsequent study by that author ([For Rulers: Priming Political Leaders for Saving Humanity from Itself](#), 2017). In the light of experience to date, it could be asked whether "ungovernability" is potentially an issue of significance which the report could have appropriately addressed ([Ungovernability of Sustainable Global Democracy?](#) 2011).

In its appreciative reference to civil society organizations (CSOs), there is a strange irony to their recognition by the Club in that the latter may not see itself as a CSO -- just as in the past it defined itself as a "non-nongovernmental organization" (a non-NGO).

- **"Copyright" versus "Copyleft"?** The new report, as with its predecessors, is necessarily subject to intellectual property constraints, and the costs of its acquisition -- with the severely restrictive effects on dissemination and uptake of its insights. This issue is predictably avoided in the report, although it features in the discussion of [copyleft](#) as the practice of offering people the

right to freely distribute copies and modified versions of a work (with the stipulation that the same rights be preserved in derivative works down the line). The more fundamental question is whether the report can claim to be addressing the challenges of a knowledge-based society by restricting the dissemination of its insights in this way. The issue can be discussed metaphorically (*Inhibition of creativity through incarceration of knowledge*, 2018).

Ironically a systemic approach to the insights engendered by the Club, through some 60 reports (noted above), is inhibited in practice by the intellectual property rights by which the use of each is constrained. Thus a primary factor in enabling the use of text analysis software like *Leximancer* (mentioned above) is the ability to feed electronic versions of each study through that application. Publishers have been typically resistant to making electronic copies and are even more resistant to allowing their content to be processed in that way and made accessible online -- even though the technical issues of semantic analysis have been largely resolved, enabling concept maps to be automatically generated. On the other hand it is possible that the Club authorities do not want the set of reports to engender a single interactive map. Whilst many are familiar with Google Earth and Google Maps, which have addressed numerous copyright issues, it would appear that the conceptual equivalent has yet to be made available -- an irony in a global knowledge-based civilization.

- **"New" versus "Old"?** Emphasis is variously placed on the "new" in the report -- highlighting "success stories", and reforming what is considered to be "old" and outdated. In particular, emphasis is placed on a "new narrative" (3.1.1) for a "new enlightenment" (2.10). At the same time there is also concern with the "new hype" of disruptive technologies (1.11.1). Missing is the sense of learning from past failures and insights embodied in the stories of the past. The *Jataka Tales*, *Aesop's Fables* and the stories of *Nasreddin Hodja* are designed to serve simultaneously as children's stories and as carriers of deeper systemic insights for those who can distinguish them (*Reframing connectivity through metaphor*, 2011).

As yet to be discovered is whether such sets of tales indeed offer, at least implicitly, an adequate cognitive toolkit with which to deal with life's circumstances -- as they may indeed purport to do. As a traditional source of education in many communities, how might "higher education" be distinguished from "meta-education" following exposure to them? How is such education to be compared with that of *Russell L. Ackoff* (*Ackoff's Fables: irreverent reflections on business and bureaucracy*, 1991) or that compiled by V. S. M. de Guinzbourg (*Wit and Wisdom of the United Nations: proverbs and apothegms on diplomacy*, 1961)? These suggest a form of balance to be found between learning from the past and a preoccupation of the Club with the future, exemplified by its earlier report (*2052: a Global Forecast for the Next Forty Years*, 2012). How is a balance to be found between the wisdom of the past and insights of the new -- given the danger of "throwing the baby out with the bathwater"?

Rather than the report's emphasis on education for the future (3.18), more of a challenge is the nature of the "meta-education" offered by exposure to a set of Zen *koans* -- especially the classic set of 48 in the *Mumonkan* (*Higher Education 8 Meta-education? Transforming cognitive enabling processes increasingly unfit for purpose*, 2011). The balance may well have more to do with the present, as argued in reviewing the 2052 report (*Engendering 2052 through Re-imagining the Present*, 2012).

- **"Answer" versus "Question"?** The report is necessarily presented as the latest insightful "answer" from the Club of Rome -- in the light of the questions it has found it appropriate to ask. Missing is any sense of the creative interplay between question and answer. The identity of the Club could well be challenged by the question: *Am I Question or Answer? Problem or (re)solution?* (2006). Is the Club to be understood as an "answer", a "question", both, or neither?

In the enthusiasm for providing answers, is there an avoidance of questions (*Question Avoidance, Evasion, Aversion and Phobia*, 2006)? Are there questions of a higher order to be discovered -- in order to provide corresponding answers (*Engaging with Questions of Higher Order: cognitive vigilance required for higher degrees of twistedness*, 2004)? Paradoxically, in order to sustain creativity and innovation, is the issue one of *Sustaining the Quest for Sustainable Answers* (2003)? And what then of doubt and incomprehension (*Living with Incomprehension and Uncertainty: re-cognizing the varieties of non-comprehension and misunderstanding*, 2012)?

The online reader of the report allows the potentially trivial query as to how many times "answer" figures in the text (16 times), as well as "question" (26 times). It also enables a query for "?" (83 times). This raises the question as to what proportion of answers there should be to questions in a "healthy" future-oriented strategic report. Could reports be ranked on that basis? Will this be an issue in processing such reports using AI techniques of the future?

With respect to question avoidance, there is the intriguing issue of detecting a "deadly question" which would completely undermine the methodology of the report in enabling its transformation, as discussed separately (*World Futures Conference as Catastrophic Question: from performance to morphogenesis and transformation*, 2013). What is the question that the new report "cannot afford" to ask? Is there a fundamental "hole" in the argument of the report?

- **"Systemic modality" versus "Bulleted modality"?** The Club of Rome acquired its reputation from the use of *system dynamics*, exemplified in *The Limits to Growth* (1972). As stressed above with regard to methodological bias, the current report could be said to have opted for a "bulleted modality" whereby the segments within the three sections are distinguished. Typically, wherever that modality is used, there is little commitment to highlighting the systemic relations "between the bullets". This distinction has been remarkably clarified in two related articles by John Otto Magee (*German directness, American euphemisms: the hell of cross-cultural communication*, *Handelsblatt*, 24 February 2018; *Where Germans systematize, Americans break down*, *Handelsblatt*, 20 April 2018).

The latter argues: *Germans think systematically. They formulate their understanding of a decision to be made in a very broad and interconnected context. Therefore Germans do not always consider it helpful to take complexity and, as Americans say, "break it down" into its component parts. They aim to do the opposite, to see particulars in their interrelationships. They look for patterns, strive to understand complexity as a whole, as a system.*

In those terms, the methodology of the report could be challenged for having adopted an "American" approach -- despite the nationalities of the primary authors. The article clarifies further by distinguishing the processes primarily favoured in German under the terms: *Fragestellung* (how a question is formulated); *Überblick* (an overview through understanding a system as a whole); *Durchblick* (knowing what is discussed, and understanding both the details and the big picture); *Umsicht* (a "view around" at all tangential topics; a cautionary principle to mitigate risk). The question raised is how to achieve a compromise between the "German" and the "American" modalities. There are of course other "modalities", as identified separately (*Systems of Categories Distinguishing Cultural Biases*, 1993). Frequently cited are the 6 dimensions of *Geert Hofstede* (*Culture's Consequences: comparing values, behaviors, institutions, and organizations across nations*, 2001). Missing from Magee's summary, but clearly relevant to the concerns of the Club of Rome, are *Vorsicht* (precautionary attitude or vigilance, notably with respect to any forecast) and *Rücksicht* (perhaps best understood in terms of learning from the past).

- **"Agreement" versus "Disagreement"?** As with the articulation of many global strategic initiatives, the report is an invitation -- if not an exhortation -- to "agree" with its insights and recommendations. As presented online, the expression of agreement may take the form of using a "like" button. It criticizes alternative agendas with which many continue to identify. It makes no provision for those who "disagree", except what is implied by arguments for new approaches to education: *A consensus of leading educators is emerging who agree that radical change is needed in the global system of education, in order to meet the new and diverse needs of humanity we have been discussing* (p. 196).

This is the only indication of the "consensus" required, and the report makes no mention of "disagreement" or "dissent" -- perhaps as being "too negative". Unfortunately this strategic posture reflects only too closely many processes of the past which have failed to engender the levels of consensus they are believed by their advocates to justify. At the time of writing the point is usefully reinforced by a TED Talk (Zachary R. Wood, *Why it's worth listening to people you disagree with*, April 2018).

Religions, such as Christianity, are only too familiar with this challenge and how it can be met or avoided. Arguably what is missing is a new means of addressing the binary complex of agreement-disagreement in systemic terms (*The Consensus Delusion: mysterious attractor undermining global civilization as currently imagined*, 2011). It would seem that, so framed, there will always be disagreement and probably necessarily so -- if only as an aspect of the innovation process. There is clearly a need for a more fruitful modality through which to process "likes" and "dislikes" -- especially when there are few online facilities for expressing the latter.

Especially relevant to this dilemma is the condition under which disagreement engenders violence. The authors would be naive in assuming that many vested interests will fail actively to oppose the implementation of its recommendations -- interpreting "enlightenment" according to their own lights, however they are framed as characteristic of "endarkenment".

**Neglecting the dynamics of the unenlightened:** Highlighting the insight of the Pope through *Laudato Si'*, as noted above, authorizes a relevant papal insight through an apocryphal anecdote:

A group of architects invited the Pope to review their detailed model of a new seminary which he had commissioned. The Pope inspected it for such a time that the architects became very anxious. Finally the Pope turned to them and asked: *Will the seminarians be angels?*. Receiving the obvious negative reply, the Pope then asked: *Well then, where are the toilets?*

Should a similar question be addressed to the authors of the new Club of Rome report? For indeed it would seem that little provision is made for the unenlightened and the manner in which they so obviously tend to function in disrupting and corrupting carefully designed models. The extreme paradox is that those of any one discipline or faith typically frame those of any other as ignorant and unenlightened -- or at best misled.

Curiously, given a long-standing degree of opposition to the Club of Rome from non-Western cultures and other regions of the world, little is said of their "disagreement" -- presumably to be framed in terms of a relatively "unenlightened" condition calling for their "education".

**Balancing strategic dilemmas:** The emphasis placed by the report on the balance exemplified by *Yin and Yang* suggests that dualities, such as those above, merit articulation in the light of a richer pattern. Indeed it could be argued that the very reference to *Yin-Yang* in the report reinforces binary thinking -- in the absence of any such articulation.

Achieving a balance between the polar extremes highlighted above can be recognized in terms of the challenge of a set of strategic dilemmas rather than any singular dilemma, notably as highlighted on the occasion of the Earth Summit in Rio de Janeiro (*Systemic Mapping of Strategic Dilemmas*, 1992; *Sustainability through the Dynamics of Strategic Dilemmas*, 2005; *Configuration of inter-sectoral strategic dilemmas of sustainability*, 2012). The report only refers in passing to the climate dilemma -- and fails to recognize the range of dilemmas requiring balance. How many such dilemmas merit distinction and how are they to be understood systemically?

In citing the need for a necessary balance between "women and men", as exemplifying that need, the Club's collaborators come to the challenge somewhat "late in the day" given the vigorous challenges to gender conventions at this time. This is demonstrated by the controversies associated with the strands of the **LGBT movement** and the multiple gender identities by which people are now able (or asked) to identify themselves. These indicate how a sense of "balance" is currently elusive rather than simplistic. This dynamic complexity offers one (in)comprehensible frame through which to explore the notion of balance between other more general extremes -- with implications for the balance implied by sustainability.

There is therefore a case for drawing on the 8-fold articulation of that binary pattern -- widely featured in Chinese culture (and some flags) as the *BaGua* mirror, with its insightful encoding. This can be explored in the light of the challenges of the LGBT dynamics in 2D configurations (*Encompassing the "attraction-harassment" dynamic with a notation of requisite ambiguity?* 2017).

A corresponding articulation is provided by Edward Haskell (*Generalization of the structure of Mendeleev's periodic table*, 1972) through which he proposes a coaction cardioid to distinguish in cybernetic terms the patterns of relationship between a "controlling function" and a "work function", as discussed separately (*Cardioid Attractor Fundamental to Sustainability: 8 transactional games forming the heart of sustainable relationship*, 2005). He notably uses the ecosystemic relationship between species as an example. The understanding of balance is then an emergent feature of the dynamics between the kinds of polar extremes noted above -- recalling the dynamic integrity of the benzene molecule as a **resonant hybrid**, so fundamental to the organization of organic life.

Haskell's framework suggests the possibility of applying this to psychosocial relationships -- seemingly ever more highly charged, especially since the implications of "control" and "work" are controversially called into question as dynamically reversible (through "resonance"). There is the provocative possibility that the dimensions and senses of *Come On!* could be articulated by such a framework -- given the interplay between controller (leader) and controllee (follower), reframed by the dynamics to which the LGTB community is now so sensitive.

Possible 8-fold Positive-Negative Hybrid Conditions (following Haskell)				
		Y = "Control component"		
		Negative	Neutral	Positive
X = "Work component"	Positive	<i>predation</i> (positive negativity)	<i>allotrophy</i> (positive neutrality)	<i>symbiosis</i> (positive positivity)
	Neutral	<i>amensalism</i> (neutral negativity)	O (neutral neutrality)	<i>commensalism</i> (neutral positivity)
	Negative	<i>synnecrosis</i> (negative negativity)	<i>allopathy</i> (negative neutrality)	<i>parasitism</i> (negative positivity)

This 8-fold pattern can be compared to that of the *BaGua* pattern (*Patterns Essential to Individual and Global Health?* 2010; *Adaptive Hypercycle of Sustainable Psychosocial Self-organization: designing a mapping of a Chinese metaphorical pattern language*, 2010). The argument, with animated depictions, can be extended to 3D (*Patterning psychosocial relationships in 3D or more?* 2017; *Encoding meaningful psychosocial complexity otherwise*, 2018).

## Towards a higher order of coherent global strategic organization?

**Obsolete communication style?** As noted earlier, an overview of the report is provided by a detailed checklist of themes on the contents page. The online search enables the book to be very usefully searched. Using it, the range of 45 illustrations (many in colour) could be rapidly clustered into: graphs/bar charts (53%), photos/images (31%), and schematics (16%). Arguably none of these offered any sense of a concept map or systems diagram, as suggested above -- with the "schematics" relatively simplistic. In visual terms, there is an understandable bias to conventional statistical presentations and against any systemic representation of the relationship between the issues raised.

This bias contrasts with the early argument in 1968 of the political scientist **Harold Lasswell** (*The transition toward more sophisticated procedures*):

Why do we put so much emphasis on audio-visual means of portraying goal, trend, condition, projection, and alternative? Partly because so many valuable participants in decision-making have dramatizing imaginations...They are not enamoured of numbers or of analytic abstractions. They are at their best in deliberations that encourage contextuality by a varied repertory of means, and where an immediate sense of time, space, and figure is retained. (In: Davis B. Bobrow and J.L. Schinartz (Ed.). *Computers and the Policy-making Community; applications to international relations*. Prentice-Hall, 1968, p. 307-314)

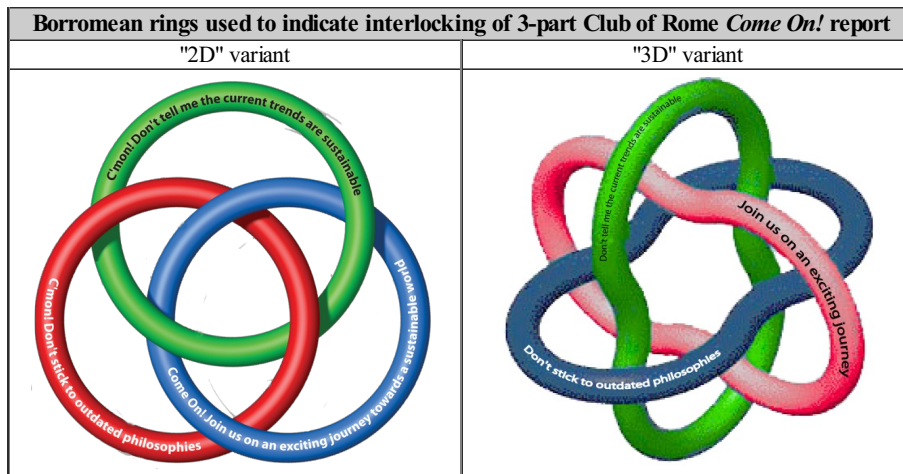
With regard to the early study "for" the Club of Rome by **Jay Forrester**, published as *World Dynamics* (1971), an effort was made at that time to exploit its systemic approach in extending the argument to enable comprehension of aspects of "world dynamics" that the study had neglected (*World Dynamics and Psychodynamics: a step towards making abstract "world system" dynamic limitations meaningful to the individual*, 1971).

**Does the chiding exhortation to "Come On!" then apply in a rather particular way to the Club of Rome itself and to its communication style?** Why are relevant schematic images not characteristic of its website -- given the importance of such images in *The Limits to Growth* (1972)? Beyond the case made above by Lasswell, the report's *Come On!* is also addressed to the young who are extremely familiar with sophisticated visualizations and variously alienated by text and conventional graphs.

The question is whether there is another style of imagery more capable of enabling many to comprehend the higher order of organization implicit in the report -- especially in terms of its complex connectivity and the paradoxes with which it may be necessary to engage.

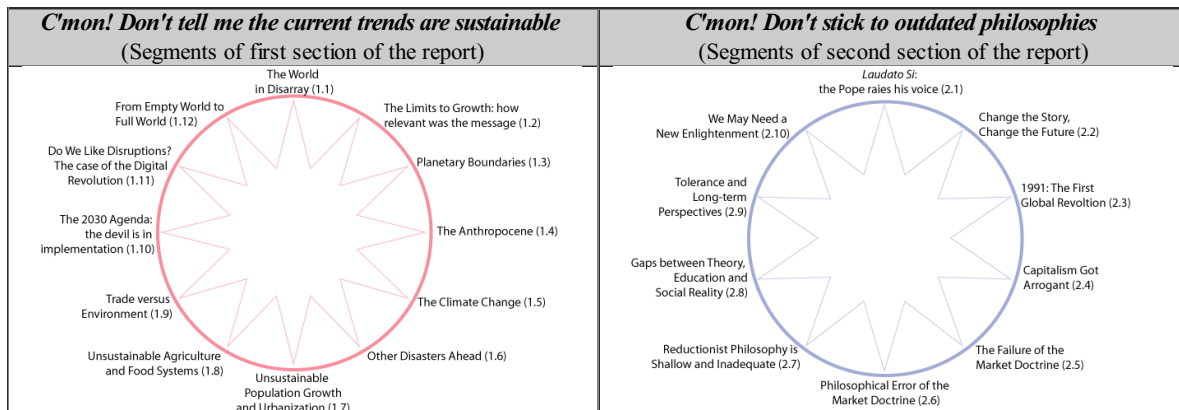
What "forms" might be more relevant to the challenge of "holding" and "containing" that complexity to enable integrative comprehension? Clearly a variety of forms may serve that purpose in some way -- each offering a different lens, with the implication that these may need to be understood as complementary in the sense of offering a conceptual analogue to a stereoscopic or "polyocular" image (Magoroh Maruyama, *Polyocular Vision or Subunderstanding*, *Organization Studies*, 25, 2004, 3, pp. 467-480).

**Interlocking:** Clearly the report implies a high degree of interlocking between its three main sections. This is partly addressed by specific commentary on the links between them. A challengingly succinct manner of highlighting such triadic interlocking is -- potentially -- through use of [Borromean rings](#) as below.

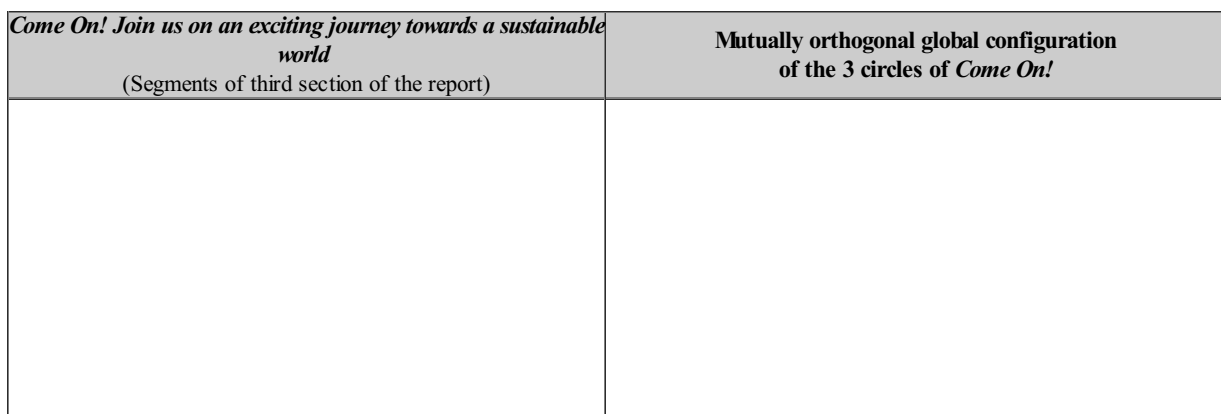


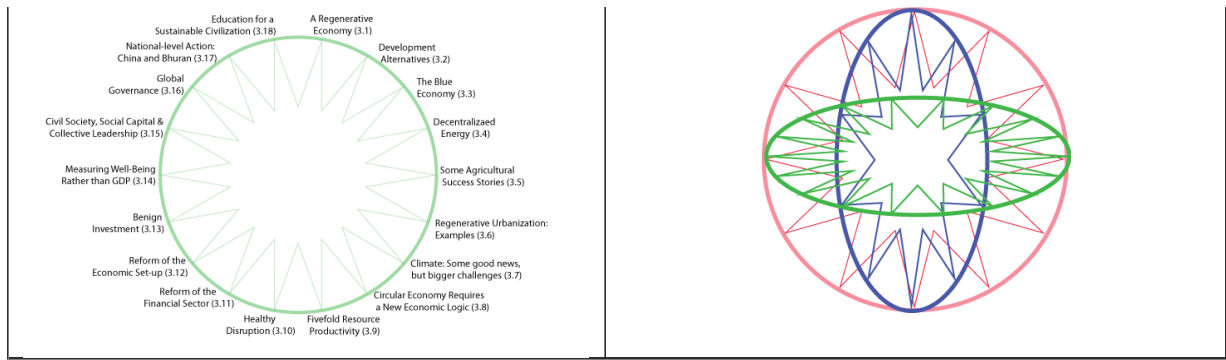
The variant on the right above is adapted from the logo of the [International Mathematical Union](#). The reasoning behind this choice of logo could be seen as a challenge to any global strategic presentation for humanity. How could the dimensions of the new report be represented succinctly as a challenge -- if not a puzzle inviting a collective response?

**From circle to sphere:** As a further exercise, the main segments of each of the 3 parts (as numbered in the *Come On!* report) could be presented on separate circles (below) -- as can be interlocked in the left-hand image above. This would help to reinforce the sense in which the linear progression of segments within the sections are more fruitfully understood as phases in a systemic cycle in which the final segment is effectively associated with the first. Or is linearity the message of the report -- contradicting the emphasis on a circular economy (3.8)?



The segments of the third section are similarly presented below-left. A suggestion of the global systemic integrity of the report as a whole might then be achieved spherically by treating each of the 3 circles as mutually orthogonal, as suggested by the configuration below-right. A more detailed configuration could of course include the texts, preferably in a 3D form allowing for interaction, rotation, and links to more detailed summaries of each segment.





Should strategic proposals be inherently circular? Somewhat ironically, given the emphasis in the report on *Laudato Si'* as a papal "encyclical", an argument can be made that there is indeed a need for "encycling" the report in some manner (*Encycling Problematic Wickedness for Potential Humanity*, 2014). Beyond the focus on "recycling", a pointer in this direction is offered in the report itself by noting that:

In stark contrast to the mostly 'linear-thinking executives' of major corporations all over the world, a small group of 'exponential entrepreneurs' are expected to find solutions to the big problems by exploiting the cycles of '6D's': digitization, deception (until enough growth is achieved), disruption, demonetization, dematerialization and democratization (p. 47).

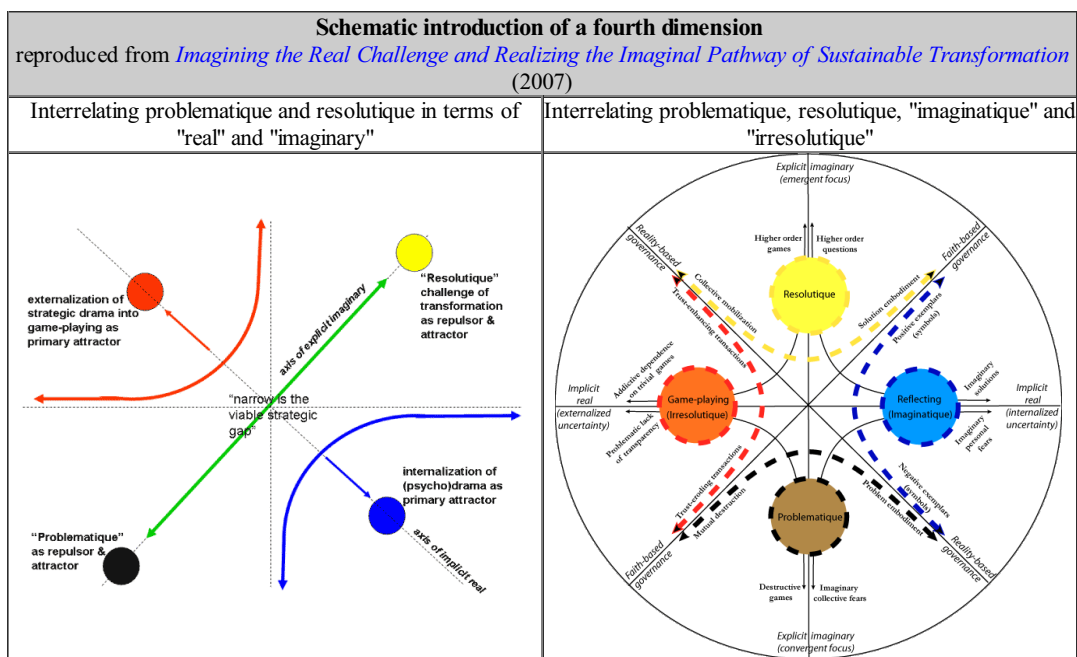
**Strategic implication of time:** The representations above, together with the text from which they were derived in the report, are essentially static. This is consistent with the current conventions of global reporting and strategic planning, despite the use of graphs endeavouring to respond to the time dimension. This could be considered a potentially dangerous bias, as discussed separately (*Dynamic Transformation of Static Reporting of Global Processes: suggestions for process-oriented titles of global issue reports*, 2013).

The new report makes the point with respect to Agenda 2030 that "the devil is in implementation" (1.10) -- effectively the process over time in which the best strategy encounters various forms of game-playing rendering outcomes uncertain. These are as evident between institutions implementing any strategy, as in their relation with vested interests, and whatever is perceived as the "dark force" opposing such change. Most evident is the phenomenon of corruption cited only once in the report (p. 63).

It is in this light that there is a case for recognizing the three sections of the report as indicative of the **problematique** and **resolutique** (as originally framed by the Club of Rome) and an **"imaginatique"**-- namely the imaginative initiatives in which "we the peoples" are now enjoined to engage by *Come On!*

Introducing imagination in this way is especially appropriate in the current period when all are increasingly required to navigate the surreal. This was argued earlier (*Engendering 2052 through Re-imagining the Present*, 2012) in reviewing an earlier report to the Club (*2052: a Global Forecast for the Next Forty Years*, 2012).

Missing from any such 3-fold pattern is however a time-oriented frame to encompass the game-playing over time as efforts are made to implement transformational strategies (*Strategic Embodiment of Time: configuring questions fundamental to change*, 2010). In an earlier exploration this was termed an **"irresolutique"** (rather than *"ludique"*). The four can be framed together in the schematics below.



**From global to toroidal:** It is remarkable to note the extent to which reference is made to "global", including that in the report to the challenge of "global governance" (3.16). This understanding is readily reduced to the geometry of a sphere as suggested schematically

above. The inappropriateness is however evident in the fact that not only does the Earth (as a "globe") rotate on an axis but it follows a circular pathway in revolving around the Sun. In effect it traces out a torus annually -- travelling through a toroidal tunnel.

In using global metaphorically, most notably with respect to "globalization", there is further confusion in the relation the Earth has to the Sun which features so significantly in life on Earth, but is so significantly absent from reference to "globality" and its governance. This role is however implicit in reference to energy and understanding of renewability. In a sense, as implied by the form of a torus, the Earth is readily assumed to be circulating around an emptiness -- a hole -- which paradoxically is the primary source of life.

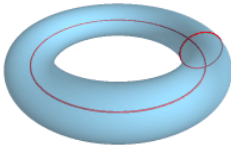
Especially intriguing is that typical reference to "global" obscures its integrative characteristics by the overriding emphasis on its planetary dimensions, as discussed separately (*Future Generation through Global Conversation: in quest of collective well-being through conversation in the present moment*, 1997). It is the use of "global" in mathematics and physics that clarifies the complex relation with "local" to a richer degree -- especially given the subtle understanding of "non-locality". Such subtlety is also recognized through some philosophies and the arguments of various spiritual disciplines.

There is no reference to a torus as such in the new report. One segment is however devoted to the work of the economist [Kate Raworth](#) (*Doughnut Economics*, 2017), as promoted by Oxfam. As a member of the Club of Rome, she argues that the current approaches to economics are centuries out of date. Although "flat", as the model is depicted in 2D (and despite its reference to "planetary", and a degree of "flat Earth" implication), the "doughnut" can of course be recognized as a torus, but not in terms of a global dynamic as argued above. As noted in the report (p. 159):

Raworth frames the challenge we face in a new way. Humanity's goal this century is to *meet the needs of all systems and living beings, within the means of the planet*; it can be pictured as being shaped like a doughnut (the kind with a hole in the middle), with outer and inner boundaries. The planetary boundaries, according to Rockström [featured in segment 1.3], are the outer, limiting ring; and a set of social challenges, much along the lines of the SDG agenda [featured in segment 1.10], are the inner ring. We need to contextualize our thinking, and she points out that context brings meaning.

This context can be understood otherwise, as argued separately (*Exploring the Hidden Mysteries of Oxfam's Doughnut: recognizing the systemic negligence of an Earth Summit*, 2012). This contrasts the Earth-System planetary boundaries with the boundaries of "remedial action capacity" (*Recognizing the Psychosocial Boundaries of Remedial Action: constraints on ensuring a safe operating space for humanity*, 2009).

The challenge to any simplistic. understanding of global (and a "doughnut") -- and to the possibility of more appropriately complex configurations of the elements of the report -- is usefully illustrated by the following animation.

Animation of torus-sphere transformation (Reproduced from <i>Wikimedia</i> )	
	Discussed in: <ul style="list-style-type: none"><li>• <i>Comprehension of Requisite Variety for Sustainable Psychosocial Dynamics: transforming a matrix classification onto intertwined tori</i> (2006)</li><li>• <i>Enabling Wisdom Dynamically within Intertwined Tori: requisite resonance in global knowledge architecture</i> (2012)</li><li>• <i>Visualization in 3D of Dynamics of Toroidal Helical Coils -- in quest of optimum designs for a Concordian Mandala</i> (2016)</li><li>• <i>Toroidal configurations as fruitful looperly</i> (In: <i>Changing Patterns using Transformation Pathways</i>, 2015)</li><li>• <i>Cognitive implication of toroidal forms and dynamics</i> (2011)</li><li>• <i>Toroidal cognitive container?</i> (2011)</li></ul>

The paradoxical cognitive ambiguity of the "global" relation to the Sun -- reminiscent to the [Galileo Affair](#) -- can be provocatively highlighted by the emphasis in the report to the role of the Pope in "raising his voice" (2.1) through the encyclical (*Laudato Si'*), followed by the Pope's recent emphasis on "holiness" (*Gaudete et Exsultate: on the call to holiness in today's world*, April 2018). There is then a case for recognizing and exploring the potential significance of "holes" of higher dimensionality, as discussed separately (*Cognitive mystery of holes, lacunae and incompleteness*, 2014; *Is the World View of a Holy Father Necessarily Full of Holes?* 2014).

**From toroidal to helicoidal:** The argument with respect to the toroidal movement of the planet is of course itself misleading in that the movement is in reality helicoidal -- in the form of a spiral -- since the [solar system is moving as a whole](#). Since the [double helix](#) has been recognized to be so fundamental to the biological organization of life at the molecular level, it is appropriate to note how it has been valued as a metaphor with respect to psychosocial organization.

It has been used in this way in a report to the Club of Rome (Orio Giarini and Mircea Malitza, *The Double Helix of Learning and Work*, 2003). This is described on the Club site as advancing fundamental paradigm-changing ideas in the field of education through drawing inspiration from the double helix structure of DNA, thereby strengthening the relationship between education and employment in order to bring *The Knowledge Society* within reach. The study is not mentioned in the new report, despite its emphasis on education.

No mention is made of a further elaboration of the metaphor to a triple helix. This could lend itself to ordering more fruitfully the relationship between problematique, resolutique and imaginatique -- as related to the three sections of the new report.


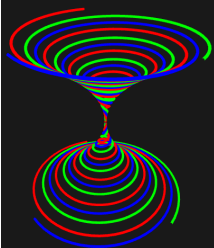

As described by the Triple Helix Research Group of Stanford University, the Triple Helix thesis is that the potential for innovation and economic development in a knowledge society lies in a more prominent role for the university and in **the hybridisation of elements from university, industry and government to generate new institutional and social formats for the production, transfer and application of knowledge** (*The Triple Helix Concept*; publications).

It is in this sense that the triadic thinking underlying the activities promoted by the [Triple Helix Association](#) merit particular attention, as instigated by [Henry Etzkowitz](#) (*Triple Helix: a new model of innovation*, 2005). This is suggested by a selection of its [international conference](#) themes and papers since 1996:

- [Addressing ecosystem challenges in an era of crises](#) (Heidelberg, 2016)
- [Academic-Industry-Government Triple Helix model for fast-developing countries](#) (Beijing, 2015)
- [Triple Helix as nucleus of innovation and economic growth](#) (Tomsk, 2014)
- [Triple Helix in a context of global change: continuing, mutating or unravelling?](#) (London, 2013)

As an institutional member, the [World Association of Triple Helix and Future Strategy Studies](#) (WATEF) is a scholarly association that promotes evidence-based methodologies to analyse complex social interactions to understand social and technological change. There is a remarkable range of research and other initiatives under the banner of the Triple Helix model (Marina Ranga and Henry Etzkowitz, *Triple Helix Systems: an analytical framework for innovation policy and practice in the knowledge society, Industry and Higher Education*, 27, 2013; [International Triple Helix Institute](#)).

This a provocation in terms of what the report does not appear to address (as noted below). It would seem that the institutional model has inspired exploration of a "triple helix" approach in domains such as learning, especially in the light of the cognitive implications of innovation (Eva Rydberg Fähræus, *A Triple Helix of Learning Processes: how to cultivate learning, communication and collaboration among distance-education learners*. Stockholm University, 2003).

Illustrations of the triple helix		
The geometry of the triple helix -- as a symbol -- is now closely associated with the triple helix approach.		
University of Melbourne	3D in virtual reality	Intersectoral schematic
		
<p>With respect to the image above-left reproduced from <i>Growing Esteem: a discussion paper</i> (University of Melbourne, 2014), the latter notes that:</p> <p>... to make this model a success, we will need to integrate further the three strands of the Triple Helix so that research, learning and teaching, and engagement powerfully reinforce each other....</p> <p>The University has employed considerable resources to pursue each of the strands of the Triple Helix. Yet the real power of the Triple Helix -- its integration -- remains only partially realised. Having pursued the individual goals of each strand, the University can now bind together all the strands of the Triple Helix through engagement....</p>		

The Triple Helix approach has been recently extended through advocacy of Quadruple Helix and Quintuple Helix models (*Systemic closure: fourth helix -- and beyond?* 2017). The implications have been variously discussed separately:

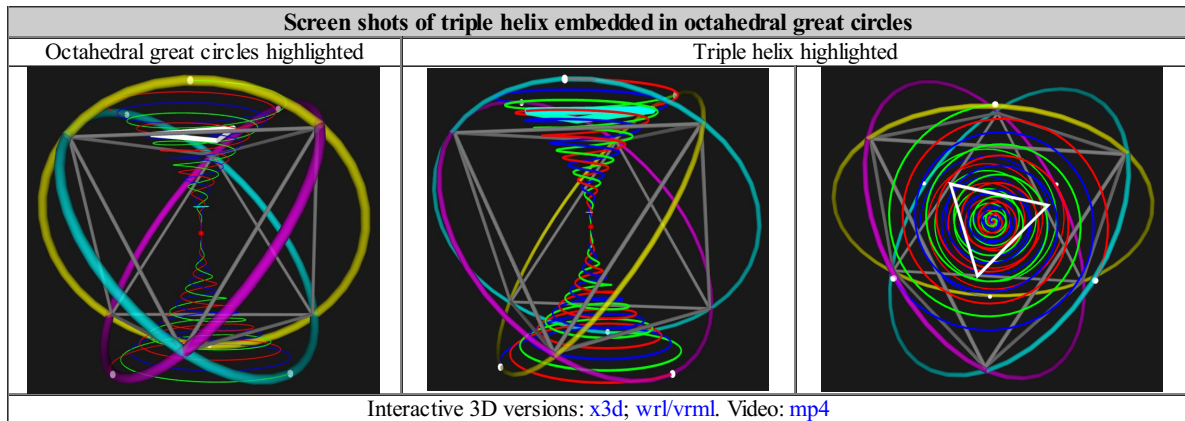
- *Psychosocial Learnings from the Spiral Form of Hurricanes: implications of the triple helix and the 3-fold triskelion as "cognitive cyclones"?* (2017)
- *Reconciling triskelion and triple helix: a topological transformation with psychosocial implications?* (2017)
- *Framing Cyclic Revolutionary Emergence of Opposing Symbols of Identity: Eppur si muove: Biomimetic embedding of N-tuple helices in spherical polyhedra* (2017)
- *Cognitive Implications in 3D of Triadic Symbols Valued in 2D: representations of the triskelion in virtual reality and implications for quantum consciousness* (2017)
- *Cognitive Osmosis in a Knowledge-based Civilization: interface challenge of inside-outside, insight-outsight, information-outformation* (2017)

**Systemic bonds between helical strands:** As noted above by the University of Melbourne, the further challenge is to explore the operational meaning to be given to the relationship between the triplex of strands -- as could be argued with respect to the three sections

of the new report. In the original DNA case this **bonding** is a prominent feature fundamental to the integrity of that molecule and its role in reproduction. How might they apply, as a metaphor, to the relation between problematique, resolutique and imaginatique?

The studies indicated above explored the representation of the triple helix in 3D using virtual reality techniques -- extended to the quadruple helix and the quintuple helix. The assumption made was that the bonds between the strands would not be of simple linear form linking two strands, but rather could be better explored as polygons -- in this case a triangle of bonds between the three distinct strands.

The question of the ends of the spiral forms was addressed experimentally by having them merge into circles linking the two ends -- thereby potentially fundamental to forming a feedback loop. These circles could then be understood as **great circles** framing a polyhedron -- most appropriately an octahedron in this case. One or more triangular polygons could then move from one extreme of the triple helix to the other. This is illustrated below by screen shots of the animation in interactive virtual reality -- a short **video** is also available.



**Alternative insights offered via coherence of polyhedral symmetries:** Beyond the role of polyhedra in relation to n-tuple helices, as indicated above, the question is whether they offer a means of eliciting alternative insights into the relations between the segments identified in the new Club of Rome report. As noted above, there are 40 such segments in total -- for the three sections (12, 10 and 18) - - excluding the elaboration of some into sub-segments.

Clearly it could be argued that these numbers are somewhat arbitrary -- if not completely so. On the other hand it can be argued that they should be respected as the outcome of very careful reflection on the ordering of the contents of the report. In that sense they imply a higher order than has been rendered explicit, other than through the checklist of nested segments on the contents page. It may be assumed that there is an underlying sense to the clustering and to the limited size of the 3 sets -- especially with respect to comprehension of the whole.

Little account is typically taken of the manner in which fundamental concepts are articulated into sets of a given number, although this lends itself to investigation (*Representation, Comprehension and Communication of Sets: the role of number*, 1978; *Examples of Integrated, Multi-set Concept Schemes*, 1984). The argument is partly supported by the more recent preoccupations of **George Lakoff** and **Rafael Nunez** (*Where Mathematics Comes From: how the embodied mind brings mathematics into being*, 2000).

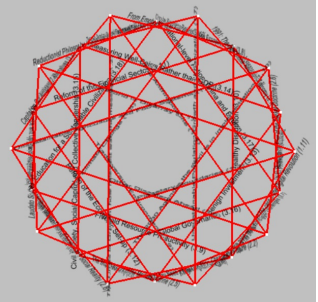
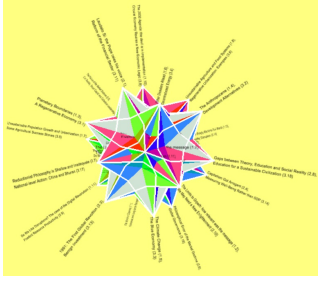
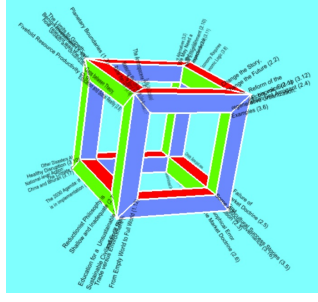
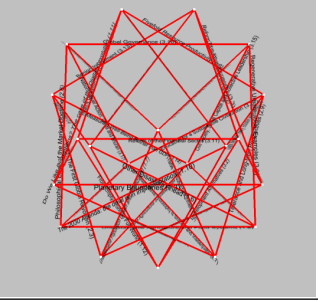
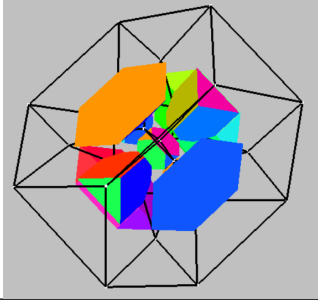

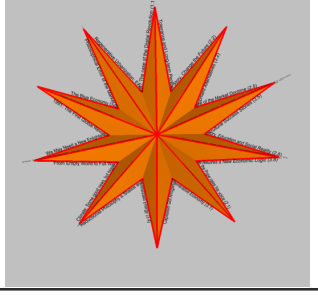
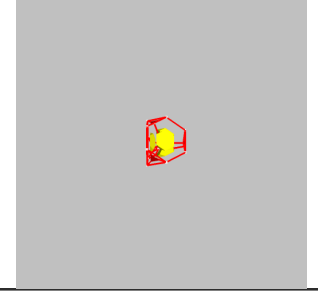
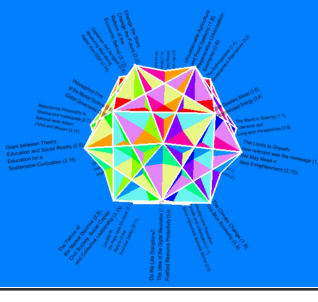
There is relatively little recognition of the large variety of polyhedra, with an amazing variety of symmetry properties facilitating comprehension, and the possibility that -- as a means for providing coherent mappings -- they may have much to offer as triggers for the imagination. Clearly any such triggers are to be welcomed in a period of crisis -- especially when they offer unusual ways of imagining relationships beyond those favoured by convention. **Can the coherence of the new report be understood otherwise?**

So framed, the question is **which polyhedra are suggestive as offering unusual properties of value to memorability?** The following are exercises in that respect, whether the 40 segments are to be mapped onto faces, vertices or edges -- and whthr or not that segmentation is to be taken "seriously".

It is appropriate to stress that no particular polyhedron constitutes the most appropriate mapping. Indeed it is the process of exploring the variety of polyhedra that offers greater insight -- with the possibility that those selected as more interesting are better to be understood as a set of complementary perspectives -- of ways of seeing the coherence of the new report. The addition of the texts may render comprehension difficult in static images where rotation and other effects are beneficial.

The column on the left (below) offers the advantage of a singular image whose complexity is clarified in the animation. Especially intriguing is its the unusual memorability of symmetry of its dual, also clarified with an animation. The lower images in the central column explore the assumption that the coherence of the report may in fact be best understood in 4D, with the images presented being projections into 3D. The lower image illustrates the morphing between the **truncated pentachoron** (18-Tip) and its dual.

40 segments of <i>Come On!</i> as variously mapped onto polyhedra		
(Images and animations prepared using <i>Stella Polyhedron Navigator</i> , and selected from its library of polyhedra)		
40 Edges	40 Faces	40 Vertices
Crossed Pentagrammic Cupolaic Blend 40 edges, 22 faces, 20 vertices	Bruckner 24,1 (8.6) 40 faces, 40 vertices, 60 edges	Leonardo cube 40 vertices, 48 faces, 96 edges,

		
Crossed Pentagrammic Cupolaic Blend (animation of above)	298-Deca (4D projection into 3D) 40 faces, 30 vertices, 60 edges,	Irregular dodecahedral compound 40 vertices, 24 faces, 60 edges
		
Dual of Crossed Pentagrammic Cupolaic Blend 40 edges, 20 faces, 22 vertices (animation of dual)	18-Tip and dual (4D projection into 3D) 40 faces, 10 vertices, 30 edges 30 faces, 20 vertices, 40 edges	Compound of 5 cubes 40 vertices, 30 faces, 60 edges
		

Clearly the indicative examples above raise a variety of questions with respect to the process of determining coherence for systemic and communication purposes. Ideally the ordering of the themes of a Club of Rome report (**durings its elaboration**) might be fruitfully challenged by the one (or more) polyhedra onto which they might be mapped -- rather than engage in the questionable exercise of identifying polyhedra onto which themes could be mapped (**after the themes had been determined**). As previously emphasized, the question is how best the system integrity of the argument is to be recognized.

An interactive process could be envisaged in which the issue of whether certain themes should be collapsed or articulated would be desirable. The above exercise has of course ignored the sub-segments which constitute partial articulation of the 40 segments. It has also ignored the possibility of mapping the three main sections of the report onto distinctive features of one (or more) polyhedra. Missing especially is the question of the systemic significance to be attributed or derived from the association of particular segments with particular portions of a polyhedron.

The pattern of edges forming a polyhedron then lends itself to interpretation both as polarities (thereby configured) and to pathways, as discussed in the following:

- *From Statics to Dynamics in Sustainable Community: navigating through chaos by playing on polarities as attitude correctors*, 1998)
- *Pathway "route maps" of potential psychosocial transformation?* 2015 (In: *Memetic Analogue to the 20 Amino Acids as vital to Psychosocial Life?* 2015)

## Towards a geometry of systemic thinking and its symbolism

**Geometry of thinking:** An approach such as that described above necessarily derives much of its inspiration from the extensive pioneering work of Buckminster Fuller (*Synergetics: Explorations in the Geometry of Thinking*, 1975), as discussed separately (*Geometry of Thinking for Sustainable Global Governance: cognitive implication of synergetics*, 2009).

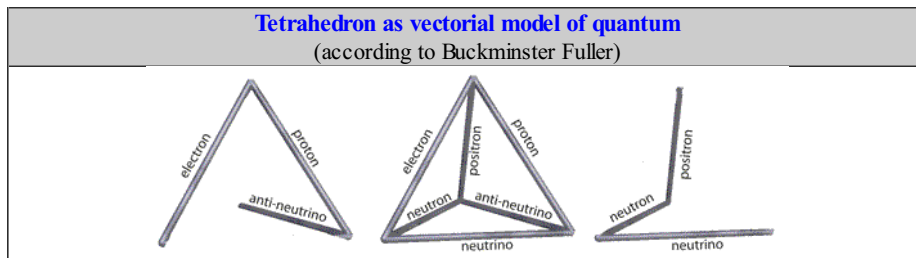
However, beyond the capacity to map the complexity of any complex strategic proposal lies the question of how people can engage with its meaning as an incitement to action -- in the spirit proposed by *Come On!* Other than through its reference to education, this dimension is neglected in the report. Arguably it is more closely associated with how people engage with a "psychoactive" symbol -- as with those of the Abrahamic religions -- as may be variously discussed (*Symbolizing Collective Remembering Otherwise: encompassing the "headless hearts" and "heartless heads" through their dynamic entanglement*, 2018; *Reconciling Symbols of Islam, Judaism and Christianity: catalytic methodology for effective interfaith dialogue*, 2017; *Cognitive Implications in 3D of Triadic Symbols Valued in 2D*, 2017).

The question is summarized otherwise by John Gaboury (*Tetrahedral Geometry and the Psyche: Implications of Natural Geometry for Typology, the Structure of the Unconscious, and Wholeness, The Jung Page*, 2004). It is of course a feature of the significance associated with mandala-type structures as psychoactive mapping devices in their own right, as may be variously discussed (\*\*\*) . Could, or should, the elements of the Club of Rome report be presented as a new form of mandala?

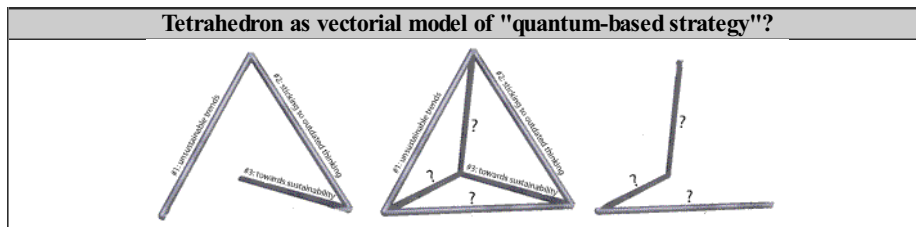
**Quantum reality:** Conventional considerations of the meaning to be associated with geometrical configurations can now be fruitfully challenged by speculative reflection on quantum consciousness, as notably articulated from an international relations perspective by Alexander Wendt (*Quantum Mind and Social Science: unifying physical and social ontology*, 2015; [video](#); [interview](#)). The implications are discussed separately (*Quantum consciousness implications of fundamental symbol patterns*, 2017; *Paradoxes of communicating fundamental insight through metaphor*, 2017).

Prior to such considerations, Buckminster Fuller considered the manner in which the tetrahedron (understood as a process with implied directionality) can be configured in two forms, as depicted below. For Fuller:

**Tetrahedron as Vectorial Model of Quantum:** The tetrahedron as a basic vectorial model is the fundamental structural system of the Universe. The open-ended triangular spiral as action, reaction, and resultant (proton, electron, and anti-neutrino; or neutron, positron, and neutrino) becomes half quantum. An association of positive and negative half-quantum units identifies the tetrahedron as one quantum.



Such thinking offers a provocative challenge to the 3-fold organization of the Club of Rome report -- especially given the absence of any systemic consideration of countervailing insight, too readily simply deployed as resisting appropriate social transformation -- even as "sin". From a psychosocial perspective, Fuller's depiction of "fundamental structure" might then be (very tentatively) labelled as follows - - inviting speculation on the analogues to the 6 quantum processes in relation to the 3 Club of Rome sections and their hypothetical "antitheses".



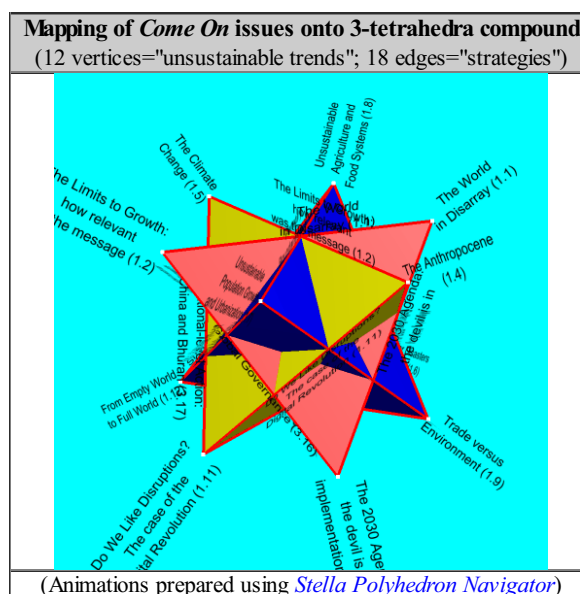
Speculative elaboration of central image above	
	<p>On the assumption that the triadic organization of the Club of Rome report lacks systemic dimensions (as articulated), the suggestive cyclic approach indicated above can be speculatively applied to the integrative understanding of the central image above. The cycles may then be understood as feedback loops of some kind.</p> <p>A cycle can then be associated with each of the four faces of the tetrahedron. These distinctively coloured cycles then offer the suggestion of broken or incomplete portions -- with the incomplete portions indicated by dotted lines. The complete portions then relate to the three sections of the Club of Rome report.</p> <p>The framing of the three sections in the Club report, can clearly be challenged in systemic terms as calling for a far more fundamental indication of their distinctive roles -- and how they might relate to the metaphors offered by the quantum terminology.</p> <p>Of particular interest is of course the nature of the three unnamed processes and how these may be neglected, implicit or unconscious in the articulation of the report. The question relates to the arguments of <b>John Ralston Saul</b> (<i>The Unconscious Civilization</i>, 1995; <i>Voltaire's Bastards: the dictatorship of reason in the West</i>, 1992)</p>

**Oppositional symbolism?** As noted above, the argument can be developed in terms of oppositional logic with respect to a 4-dimensional polyhedral configuration of directions (*Neglected recognition of logical patterns -- especially of opposition*, 2017).

In the quest for a means of engaging otherwise with the ("pathological") obsession with one pole (the "positive") of a binary, there is a case for deriving insight from the highly innovative rotational approach of **Nikola Tesla** to the relation between positive and negative in electromagnetic terms (*Reimagining Tesla's Creativity through Technomimicry: psychosocial empowerment by imagining charged conditions otherwise*, 2014; *Potential implications of alternation and rotation in psychosocial fields*, 2014; *Encycling positive and negative for future sustainability*, 2014).

In the quest for higher orders of integration and comprehensibility, the image above recalls speculation with regard to the symbolism of the Star of David understood as a particular unfolding into 2D of a tetrahedron. This association has the merit of offering indications as to the nature of all six systemic processes, even if they are expressed in mystical terminology. The possibilities are all the greater in that other speculation sees the **Merkabah** -- a **star tetrahedron** (or stellated octahedron) -- as a 3D variant of the Star of David, as can be variously discussed and illustrated (*Framing Global Transformation through the Polyhedral Merkabah: neglected implicit cognitive cycles in viable complex systems*, 2017).

To the extent that the distinction of 12 unsustainable trends (section #1) and 18 strategic initiatives (#3) is indicative of some unrecognized coherence, it is appropriate to note that these can be effectively mapped onto a **compound of 3 tetrahedra** (rather than the 2 of the star tetrahedron). This has 18 edges, 12 faces and 12 vertices -- as with its dual. As mapped below, this could be the most compact visualization -- despite setting aside the segments of the second section. Of course the question is whether the labels could be more meaningfully positioned to highlight systemic patterns.



**Sustainable Development Goals:** The report makes extensive reference to the UN's **Sustainable Development Goals** (47 citations), although it is strange that no reference is made to the early report to the Club by **Ervin László** (*Goals for Mankind*, 1977) -- especially given the latter's emphasis on the human dimension and the defensive arguments (1.2) with respect to the *The Limits to Growth* of that same period. Other than their articulation as a checklist, the SDGs are typically depicted as a flat tabular pattern of images, although a proposal has been made to depict them as a flat thematic pyramid. None of these formats offers a systemic sense of the complexities of their interrelationship -- to the extent that these are even recognized or seen as a challenge.

There is a strange sense that an assumption is made that strategic remedies to the global condition can be achieved through what might be caricatured as "keyhole analysis" and "keyhole surgery" -- each condition calling upon the insights of particular specialists, as with the contributors to particular segments of the report. Provocatively it can be usefully asked whether, as framed, humanity is in great danger of scoring an "own goal" -- rather than achieving them as envisaged.

The polyhedral argument can however be applied to their memorable symbolic organization through mapping them onto a cube with which "we the peoples" can variously engage (*Interplay of Sustainable Development Goals through Rubik Cube Variations: engaging otherwise with what people find meaningful*, 2017).

**Requisite integrative complexification?** In a period in which major investments are made in research and development in domains far beyond simplistic comprehension, it is ironic that the nature of strategic reports like that of the Club should be characterized by oversimplification. Or, rather than "oversimplification", the disparate elements of the report -- and their essentially linear arrangement -- are indicative of a complexity which cannot be contained within conventional "conceptual containers" of commensurate simplicity. The design of more appropriate containers is not however recognized as a challenge. It is in that sense that there is a case for borrowing from the quality of thinking and articulation which is engendering such containers in the natural sciences -- despite the questionable posture of such as **Alan Sokal**.

It is in this sense that there is a case for continuing to explore the relevance, **as an ordered articulation of the most fundamental insights** in process of elaboration -- in this case of the **Standard Model of Elementary Particles** explored with such intensity by physics. The possibility is discussed separately (*Beyond the Standard Model of Universal Awareness: Being Not Even Wrong?* 2010);

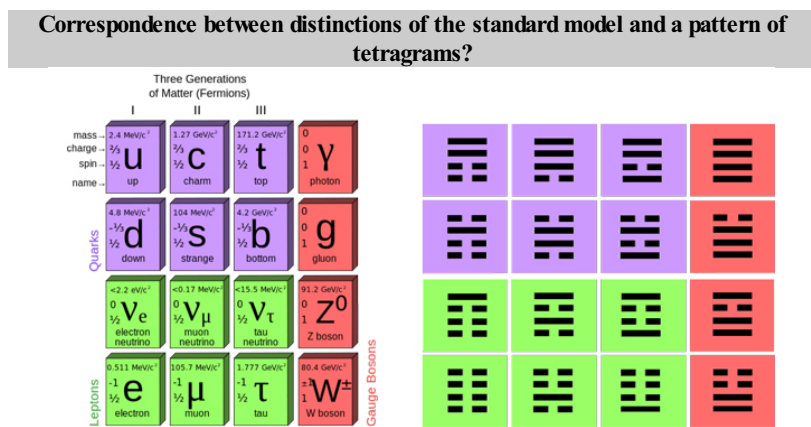
*Metaphorical Insights from the Patterns of Academic Disciplines: learning from the Standard Model of Physics?* 2012; *Multiplicity of relational conditions and any "standard model"*, 2018).

Of relevance to this discussion is the extent to which metaphor (as an aid to comprehension) is explicitly associated with the Chinese encoding -- cited above with respect to the 8-fold *BaGua* pattern) -- as with the 64 hexagrams of the *I Ching*, and the 81 tetragrams of the *Tao Te Ching* and of the *Tai Hsüan Ching (T'AI XU'AN JING)*. Such metaphor is evident in the effort to associate a comprehensive integrative cognitive engagement with features of familiar experience by which global governance is notably challenged. This includes psychosocial relationships, environmental categories ("earth", "air", "fire" and "water"), or especially their interrelationships (Douglas Hofstadter and Emmanuel Sander, *Surfaces and Essences: analogy as the fuel and fire of thinking*, 2013).

The approach is also relevant to the above argument in that traditionally such patterns are associated with clarifying the relationship between "Earth" and "Heaven". Meriting careful attention are the many correspondences explored in the work of Frank Dodd Smith, Jr. (*McKay Correspondence between Physical World and Mental World*, 2010)

As argued in this regard, the following figure positions a complete set of tetragrams such as to correspond to the pattern of the standard model of particle physics -- notably presented as a simple "box", in the light of the concern here with geometrical metaphors. Although the pattern of tetragrams has a degree of internal coherence corresponding to that of the standard model, as a tentative exercise it is merely designed to encourage reflection on any more appropriate ordering. A degree of resemblance to variations of the Rubik cube, and to the pattern of SDGs, suggests the kind of exploratory engagement required for its "resolution" as a meaningful pattern.

The order of rows and/or columns could be changed -- as was done in a second iteration, when columns 2 and 4 were switched to approximately more closely to the criterion of a magic square and its coherence.



Such configurations could be fruitfully seen as a challenge to the 3-fold or 4-fold articulations of strategic preoccupation at this time. How are problematique, resolutique, imaginatique and irresolutique to be understood as cognitively related with respect to global strategy -- especially given both the aspirations and denial with which they may be variously associated -- and the "goals" by which they may be informed?

**Comprehension as inherent in higher dimensionality implied by symbols:** The assumption is too readily made by the report that conventional strategic "language" can encompass the complexity with which humankind is confronted -- in a manner which is comprehensible and credible. The question is how the formulation of strategic challenges has the potential for eliciting engagement and action -- rather than alienation and indifference. It could however be assumed that the arguments with regard to complex polyhedral symbols and quantum reality are similarly unable to elicit comprehension and engagement. This ignores the sense in which symbols can have motivational potential through implying insights of a higher order accessible to the intuition -- if not to ordinary reason. That point has been made with regard to poetry by Gregory Bateson in explaining why 'we are our own metaphor', to a conference on the effects of conscious purpose on human adaptation:

One reason why poetry is important for finding out about the world is because in poetry a set of relationships get mapped onto a level of diversity in us that we don't ordinarily have access to. We bring it out in poetry. We can give to each other in poetry the access to a set of relationships in the other person and in the world that we're not usually conscious of in ourselves. So we need poetry as knowledge about the world and about ourselves, because of this mapping from complexity to complexity. (cited by Mary Catherine Bateson, *Our Own Metaphor*, 1972, pp. 288-289)

The report frequently refers to one of the Club's earlier reports by one of its collaborators (on segment 3.3), namely Gunter Pauli (*The Blue Economy*, 2009), and to the *Blue Planet Prize*. This recognizes outstanding efforts in scientific research or applications of science that contribute to solving global environmental problems. Arguably there is however a curious complementarity -- recognized by poets but yet to be fully recognized by science -- between the "external environment" and the "internal environment" within which motivation and engagement are engendered, as can be variously argued (*World Introversion through Paracycling: global potential for living sustainably "outside-inside"*, 2013). As argued above, "global" has "internal" as well as "external" implications -- appropriate to any consideration of a "global brain".

It is therefore appropriate to note the "symbolic" complementarity with a seemingly unrelated preoccupation which is discovering the remarkable possibility of cognitive processes involving higher dimensional forms, in the light of emergent neuronal connectivity in the

human brain. As summarized:

Using mathematics in a novel way in neuroscience, the [Blue Brain Project](#) shows that the brain operates on many dimensions, not just the three dimensions that we are accustomed to. For most people, it is a stretch of the imagination to understand the world in four dimensions but **a new study has discovered structures in the brain with up to eleven dimensions** - ground-breaking work that is beginning to reveal the brain's deepest architectural secrets..... these structures arise when a group of neurons forms a clique: each neuron connects to every other neuron in the group in a very specific way that generates a precise geometric object. The more neurons there are in a clique, the higher the dimension of the geometric object. ...

The appearance of high-dimensional cavities when the brain is processing information means that the neurons in the network react to stimuli in an extremely organized manner. It is as if the brain reacts to a stimulus by building then razing a tower of multi-dimensional blocks, starting with rods (1D), then planks (2D), then cubes (3D), and then more complex geometries with 4D, 5D, etc. The progression of activity through the brain resembles a multi-dimensional sandcastle that materializes out of the sand and then disintegrates. (*Blue Brain Team Discovers a Multi-Dimensional Universe in Brain Networks*, *Frontiers Communications in Neuroscience*, 12 June 2017)

The suggestion can then be made that theoretical possibilities for the optimum memory architecture of supercomputers might point to unusual ways in which the brain currently "rewires" itself -- using complex symbols as catalysts and triggers -- as a basis for "hypercomprehension" (*Imagining Order as Hypercomputing: operating an information engine through meta-analogy*, 2014; *Prefix "Recognition" as Prelude to Fixing Sustainability -- "Pro" vs "Con" ? Speculative review of missing emphases potentially vital for psychosocial balance*, 2017).

By what complex symbols should a Club of Rome report be accompanied to engender hypercomprehension and new new modes of action?

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