



laetus in praesens

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Cognitive Engagement with Spike Dynamics of a Polyhedral Coronavirus

Alternation between assertive arrays and systemic patterns of comprehensible coherence

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Introduction

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Introduction

The presentations here follow from an argument previously made (*Reimagining Coronavirus in 3D as a Metaphor of Global Society in Distress: crowning pattern that connects spiky organisms, satellite constellations, nuclear explosions, and egomania?* 2020). There it was suggested that there were insights to be gained from the form of the coronavirus in 3D. In particular this highlighted the possible **isomorphism** between the configuration of spikes on the viral form and psychosocial forms potentially characterized in terms of "spikes". This approach was framed as consistent with the original inspiration of the [Society for General Systems Research](#).

Of some relevance to the seemingly unusual comparison made there is the focus of an interview with [Jeffrey Lewis](#) (John Krzyzaniak, *How the coronavirus outbreak is like a nuclear attack: An interview with Jeffrey Lewis*, *The Bulletin of Atomic Scientists*, 20 March 2020).

The virtual reality 3D models elaborated in the previous paper lend themselves to further development in order to explore such possible isomorphism -- especially as triggers to imaginative reflection on possibilities for engagement with spiky forms, as might be generically understood.

Whether or not the unusual dynamics presented in the models (previously and below) above enable and reinforce "new thinking" of relevance to engagement with the coronavirus remains to be seen. The models are of particular interest in ordering the relationships between global strategies which could each be understood as configurations of a certain number of assertive "spikes". Examples include the 8-fold set of the UN's [Millennium Development Goals](#), the 16(+1) set of [Sustainable Development Goals](#), and similar strategic patterns of greater or lesser complexity. These lend themselves to experimental mappings on polyhedra, as discussed separately (*Interplay of Sustainable Development Goals through Rubik Cube Variations: engaging otherwise with what people find meaningful*, 2017; *Time for Provocative Mnemonic Aids to Systemic Connectivity? Possibilities of reconciling the "headless hearts" to the "heartless heads"*, 2018).

As noted in the previous argument, many viruses take polyhedral form and may well be described as [icosahedral viruses](#) (D. P. Wilson, *Protruding Features of Viral Capsids Are Clustered on Icosahedral Great Circles*, *PLoS ONE*, 11, 2016, 4). In that light, and on the basis of information available, the preliminary experimental models of the coronavirus presented earlier were assumed to have 72 or 74 spikes. As 72, this would be consistent with the special coherence of 72-fold patterns in human cognition, whether in mathematical terms or in the light of various traditions (see [Wikipedia 72 \(number\)](#)). Traditional understandings of that coherence can therefore be drawn into imaginative reflection on the engagement with a 72-fold virus, or with other configurations of strategies of that order.

Given the psychosocial emphasis (as [detailed previously](#)), the following explorations are based as much on science as aesthetics -- therefore allowing for poetic licence, despite any controversy in that regard. The assumption made in this exploration is that strategic

reflection at this time can ill-afford the niceties of the conventional separation between disciplines. These seemingly enable the emergence of crises and the inhibition of "new thinking" in that regard. Argued otherwise, what perspectives are to be assumed irrelevant to a crisis of crises in which coherent response is only to be found at the price of "conceptual lockdown" -- requiring a form of "cognitive lockstep" to ensure that everyone follows the same script?

The question proposed in the earlier paper was whether and how the form of the coronavirus might help people to think fruitfully in new ways in preparation for future crises. How can humanity be enabled to imagine approaches more appropriate to the complexity of crises and distinct from the approaches which have engendered them? The possibility is considered further through suggestive 3D animations emphasizing the global coherence that is seemingly so lacking at this time -- despite promotion of "globalization".

Eliciting imaginative thinking from coronavirus of relevance to governance

Although the following common quotations are allegedly from Albert Einstein, efforts to clarify their source by Alice Calaprice (*The New Quotable Einstein*, 2005), have only indicated that they [correctly paraphrase his thinking](#):

- The significant problems we face cannot be solved at the same level of thinking we were at when we created them
- "The world we have created today as a result of our thinking thus far has problems which cannot be solved by thinking the way we thought when we created them

For example, as noted by Ian Goldin and Robert Muggah (*The world before this coronavirus and after cannot be the same*, *The Conversation*, 28 March 2020):

With COVID-19 infections now evident in [176 countries](#), the pandemic is the most significant threat to humanity since the second world war. Then, as now, confidence in international cooperation and institutions plumbed new lows.... Even as we attend to the countless emergencies generated by COVID-19, we need to think deeply about why the international community was so unprepared for an outbreak that was so inevitable. This is hardly the first time we've faced global catastrophes.... A global Marshall plan, with massive injections of funding, is urgently needed to sustain governments and societies.

Such sentiments are expressed otherwise by Bill Gates (*How We Must Respond To The Coronavirus Pandemic*, *TED Talk*, 29 March 2020). Whilst physicists have struggled for decades over insights into unity as physically understood in terms of many dimensions, the global unification implied by "we" and "plan" seemingly calls for little thought in that regard. The language of politicians prevails, namely that "we are all in this together", without addressing that many of us do not accept the superficial thinking behind such slogneering. The fact that the world population is not appropriately mobilised by such language -- and what **"we must do" from one perspective or another -- remains a profound mystery to those who have called for it so vainly over many decades** (*International Community as God or Sorcerer's Apprentice? Strategic chaos in the absence of an interlocking temporal pattern of longer-term cyclic processes*, 2015).

New thinking? Much is made of the need for "new thinking" with respect to a global civilization in crisis (Richard A. Slaughter (Ed.), *New Thinking for a New Millennium: the knowledge base of futures studies*, 1996; Edward de Bono, *New Thinking for the New Millennium*, 2000; William J. Williams, *New Thinking for a New Millennium: the processes and application of abstracting*, 2000). The implications have been highlighted separately (*Re-cognition of higher orders of insight through "new thinking"*, 2104; *Eliciting new thinking*, 2009).

It would seem that some such possibility is being explored otherwise as ["joined-up thinking"](#) (Rick Lewis, *Joined-up Thinking*, *Philosophy Now*, Nov/Dec 2014; Chris Frith, *Neuroscience: Joined-up thinking*, *Nature*, 2014; Philip Delves Broughton, *Joined-up thinking*, *Financial Times*, 8 June 2011; *Joined-up Thinking*, *Lloyd's News*, 1 December 2014; *EU development policy needs joined-up thinking*, *say MEPS*, *European Parliament News*, 25 October 2012). How is this form of integrative thinking enabled within the world wide web?

The challenge could be framed otherwise. Each year one might ask what is the "new thinking" to which governance is currently attentive? What new thinking has emerged from which disciplines -- or from the UN, from the OECD, from the EU, from NATO -- as might be a focus in their annual reports? How is such "new thinking" to be recognized and ranked? Should precedence be given to the thinking emanating from those most highly ranked -- a function of the *Almanach de Gotha* in determining [order of precedence](#) on diplomatic and social occasions?

The coronavirus pandemic is reinforcing that long-expressed call for "new thinking" -- even those articulated by authorities (*Annan calls for 'new thinking' in Mideast process*, *The Irish Times*, 22 February 2002; *Gorbachev's New Thinking*, *Foreign Affairs*, 1 February 1989), or as articulated by the [Cambridge Trust for New Thinking in Economics](#). Bluntly stated, few official reports are characterized by the quality of imagination attractive to larger proportions of the population.. The point has been separately argued (*Engendering 2052 through Re-imagining the Present*, 2012) -- which took the form of a review of an essentially unimaginative report presented to the Club of Rome (*Jorgen Randers, 2052: a Global Forecast for the Next Forty Years*, 2012).

Curiously it is innovators in technology who offer highly imaginative frameworks, most obviously manifesting in interactive gaming, virtual reality, the prospect of space exploration, and the like. They then function, to some degree, as surrogate officiants. They too may fantasize about their role in enabling more fruitful governance -- a more fruitful marriage between problematique and resolutique (John R. De La Mothe, *Science, Technology and Global Governance*, 2014; Benjamin Barber, *Dysfunctional Nations, Rising Cities: the opportunity facing Silicon Valley*, *2015 State of the Valley Conference*; Jonathan Visbal, *Governance Lessons from Silicon Valley*, *Bloomberg Business*, 13 May 2008).

Physicists proudly refer to the much-quoted statement by Niels Bohr in response to Wolfgang Pauli: *We are all agreed that your theory is*

crazy. The question which divides us is whether it is crazy enough to have a chance of being correct. My own feeling is that it is not crazy enough. To that [Freeman Dyson](#) added:

When a great innovation appears, it will almost certainly be in a muddled, incomplete and confusing form. To the discoverer, himself, it will be only half understood; to everyone else, it will be a mystery. For any speculation which does not at first glance look crazy, there is no hope! (*Innovation in Physics*, *Scientific American*, 199, 1958, 3)

Faced with global crises and social chaos, the question with regard to the much-sought "new thinking" with respect to "global governance", and the "governance of globalization", is whether any theory is "crazy enough" -- as may well be essential. In this light the newly announced UK initiative for high-risk innovative research, frames the question whether the requisite "craziness" will be inhibited by the same mindsets that have inhibited it previously (*UK to launch £800m 'blue skies' research agency*. *The Guardian*, 12 March 2020; *Dominic Cummings calls for 'weirdos and misfits' for No 10 jobs*, *The Guardian*, 3 January 2020).

Correspondences, analogy and metaphor as insight catalysts: Within the conventions of the various disciplines, correspondences and analogies between domains tend to be viewed with suspicion in the quest for articulations which are natural to the particular domain -- and make no reference to other domains. Of interest in this respect are the various theories of correspondences (*Theories of Correspondences -- and potential equivalences between them in correlative thinking*, 2007). Therein, as *Variations on any "theory of correspondences"*, the following are discussed:

- Metaphor and analogy
- Isomorphism
- Homology
- Cobordism
- Correlation
- General system
- Isophor
- Design
- Parallelism in rhetoric
- "Magic"
- Symbolism
- Archetypal psychology
- Synaesthesia
- Transdisciplinarity
- Psycho-cultural equivalence
- Mutuality of affection
- Value-centred "equivalence"
- Spiritual equivalence

The latter clarification was elaborated in the light of the role of correspondence in a fundamental mathematical discovery with regard to the so-called **monster group** (*Potential Psychosocial Significance of Monstrous Moonshine: an exceptional form of symmetry as a Rosetta stone for cognitive frameworks*, 2007).

A valuable discussion of the related nature of analogies has been made by [Douglas Hofstadter](#) and [Emmanuel Sander](#) (*Surfaces and Essences: analogy as the fuel and fire of thinking*, 2013), as a further development of Hofstadter's earlier work (*Fluid Concepts and Creative Analogies: computer models of the fundamental mechanisms of thought*, 1995) and an extension of his seminal work on music and self-reference (*Gödel, Escher, Bach: an Eternal Golden Braid*, 1979). The importance of metaphor is specifically highlighted with respect to the creativity of Albert Einstein.

Suppose therefore that, contrary to general assumptions, the early patent office procedures were indeed fundamental to Einstein's creative process, as argued separately (*Einstein's Implicit Theory of Relativity - of Cognitive Property? Unexamined influence of patenting procedures*, 2007). In the case of [Ludwig Wittgenstein](#), such a seemingly "ridiculous" possibility has been extensively argued by the philosopher [Susan G. Sterrett](#) (*Wittgenstein Flies a Kite: a story of models of wings and models of the world*, 2006).

Biomimicry and technomimicry: These naturally follow from any understanding of correspondences and analogy. The issue of mimesis is addressed by the theoretical biologist [Robert Rosen](#) (*Essays on Life Itself*, 2000):

...mimetic approaches have been pursued over the years and indeed go back to prehistoric times (where they were expressed in terms of the occult notion of *sympathies* and embodied in "technologies" of sympathetic magic). In our own country, the same underlying concepts appear under the rubric "artificial" (as in artificial intelligence and artificial life). (pp. 132-133)

As the imitation of the models, systems, and elements of nature for the purpose of solving complex human problems, **biomimetics** has been fundamental to development of flight technology (Janine M. Benyus, *Biomimicry: innovation inspired by nature*, 2009; Akhlesh Lakhtakia, et al., *Engineered Biomimicry*, 2013). Technomimicry, by which one technology is developed through some degree of imitation of another, is less readily recognized in principle, however much it may be a feature of practice.

Both are a source of further insight, separately or in combination (*Engendering a Psychopter through Biomimicry and Technomimicry: insights from the process of helicopter development*, 2011; *Reimagining Tesla's Creativity through Technomimicry: psychosocial empowerment by imagining charged conditions otherwise*, 2014).

General systems research and sympathetic magic: As noted above, the argument here is especially inspired by the approach of **general systems theory**, most notably promoted by [Ludwig von Bertalanffy](#) (*General system theory: a new approach to unity of science*, *Human Biology*, 23, 1951).

The quest for new insight, across the conventional boundaries by which it is inhibited, is usefully framed by an early **editorial** in *Zygon: Journal of Religion and Science* (16, 1981, 2). *Zygon* is interested in weaving together the multicolored strands of ideas and practices of religious traditions and the contemporary sciences. The focus of the issue, and the editorial, explores the contemporary insights of systems theory for developing a tapestry that portrays human nature, society, and the rest of nature as a dynamic whole.

In view of this current exploration it is interesting to reflect briefly on two of the many ways in which human beings have tried to weave together different aspects of human experience, in order to feel more at home in the world and to exert some control

over humans and the system of nature.

The first is the ancient idea of "imitative magic," an offshoot of "[sympathetic magic](#)" made famous by Sir James G. Frazer. This understanding of how things are related makes intelligible such diverse phenomena of tribal religion as the technology of voodoo, in which, for example, an image of a person is manipulated to control the actual person, and the various rainmaking practices, in which, for example, boulders are rolled down hills to simulate thunder or blood is dripped on the ground to assist sympathetically the natural production of rain. Similarly Elisha instructed the king to shoot arrows out of a window and then to go to strike the ground with them, in order to insure victory over the enemy (*2 Kings 13:14-19*). One might even wonder if sympathetic magic serves as a hidden assumption behind the Christian Lord's Supper, in which by partaking of bread and wine one enters into union with (communion) the body and blood of Jesus as the Christ.

The second way, that of scientific inquiry, has severed the type of causal connection postulated by sympathetic and imitative magic. Nonetheless, the attempt to weave out of our experiences a sense of unity that leads to some human control or influence continues in the making of analogies and the building of models by taking images or concepts from one area of experience and applying them to another. The [Bohr planetary model of the atom](#) and the billiard ball model in the kinetic theory of gases are two common, historical examples...

However, the building of models by generalizing from one area of human experience to the universe as a whole is always problematic. This is seen in the traditional problem of the relationship between the material and the mental. On the one hand, materialistic philosophies generalize physical models, developed through attempts to understand mechanistically the nonhuman aspects of the universe, to living forms. On the other hand, philosophers such as [Alfred North Whitehead](#) generalize the introspective experience of the human mind as having both a "physical" and a "mental" pole to all of existence, even to the atoms and the stars?

"Magic" may therefore be variously understood. Those skilled in any art or science are notably valued when their solutions to a challenge are described as "magic". Loosely defined, a social (or romantic) occasion is typically most highly valued if it is "magical". Some such understanding is widely promoted in marketing products and services.

As noted above, a more precise understanding of what makes such occasions magical was the focus of "natural magic" or "sympathetic magic", notably promoted by [Marsilio Ficino](#) (B. Copenhaver. *Natural magic, hermetism, and occultism in early modern science*, 1990) and contrasted with "demonic magic". As understood by its current practitioners (notably neo-pagans and wiccans), the "magical art of correspondences", based on an underlying theory of "correspondences", is held to be the basis of magic itself. These correspondences are considered to be hidden relationships among entities within the universe -- especially between human beings and the external world. They are understood as:

- links that unite seemingly disparate realms;
- a window on the structure of the cosmos;
- a lens between the macrocosm ('as above') and microcosm ('so below');
- based on analogical reasoning, which seeks similarities of pattern -- a "right-brain" approach (artistic, poetic, holistic) -- rather than "left-brain" cause-and-effect reasoning which scientific materialism insists is alone valid.

Framing an "opponent" otherwise: befriending coronavirus?

It is curious that there is so little familiarity with the range of modes through which any "other" may be framed, especially when the default is to frame the other as an "enemy". This limits the ways of thinking about the other, especially if there is urgent need for a creative remedial response to a situation readily framed and experienced as disastrous. Discerning the variety of others is also problematic when there is an unquestioned need for an enemy and the clarity of any strategy framing eradication (*Eradication as the Strategic Final Solution of the 21st Century?* 2014).

The need for an enemy as a means of ensuring strategic coherence has been evident in response to the Devil, to Communism, to Socialism, to Capitalism, to Terrorism -- and now to the Coronavirus (Mark Shields, *Needing an 'Enemy'*, *Creators Syndicate*, 26 August 2017; Andre Chavez, *The United States' Need for an Enemy: a study of the form, function, and evolution of the necessity of opposition since 1765*, GRIN Publishing, 2015; Howard F. Stein, *The Indispensable Enemy and American-Soviet Relations*, *Ethos*, 17, 1989, 4; *China's Need for an Eternal Enemy*, *Asia Sentinel*, 9 October 2006).

In his acknowledgement of the death of US national security adviser [Zbigniew Brzezinski](#), the economist [Paul Craig Roberts](#) argues that: *The most important truth of our time is that the world lives on the knife-edge of the American military/security complex's need for an enemy in order to keep profits flowing.* ([Zbigniew Brzezinski](#). *Foreign Policy Journal*, 3 June 2017).

Variety of "opponents", "enemies" and "challenges"? Recognition of a certain variety of "opponents" is characteristic of sports, game theory and artificial intelligence, most obviously in business and military strategy. Online game design actively seeks a greater "variety of enemies", for example. The question is whether a broader variety of "opponents" merits recognition as a source of insight into a wider variety of modes of engagement.

The question could be asked even more generally in terms of the variety of "othernesses" with which engagement might be required. Various approaches can be noted:

- *Cultural otherness*:
 - Guido Abbattista *Trophying human 'otherness': from Christopher Columbus to contemporary ethno-ecology (fifteenth-twenty first centuries)*

- Neville Newman (*Romanticism and its Others, Romanticism On the Net*, 16, 1999)
 - The fifth annual conference of the North American Society for the Study of Romanticism in 1997 was a success by any standards. Under the rubric of "Romanticism and its Others," the gathering was notable for both the rigorous definition and re-definition of otherness. Citing Simone de Beauvoir, the introduction to another journal's special issue arising out of the conference observes "Otherness is a fundamental category of human thought. Thus it is that no group ever sets itself up as the One without at once setting up the Other over against itself". Thus the conference title's inclusion of "Others" was particularly apt, given that the diversity of opinion, while obviously romantically informed, resisted a homogenization into a single group against which one single Other could be identified. "Defining 'others' and 'otherness' in the broadest possible sense, the papers presented made it abundantly clear that there is no one single "other."
- *Competing others*, most obviously in sport, business, politics, religion, and the like
- *Offensive others*, as may be framed from the perspective of particular understandings of human rights or other codes ***Valerie Curtis, * Mícheál de Barra, and Robert Aunger *Disgust as an adaptive system for disease avoidance behaviour*
 - Disgust is an evolved psychological system for protecting organisms from infection through disease avoidant behaviour. This 'behavioural immune system', present in a diverse array of species, exhibits universal features that orchestrate hygienic behaviour in response to cues of risk of contact with pathogens. However, disgust is also a dynamic adaptive system. Individuals show variation in pathogen avoidance associated with psychological traits like having a neurotic personality, as well as a consequence of being in certain physiological states such as pregnancy or infancy. (*Philos Trans R Soc Lond B Biol Sci*. 2011 Feb 12; 366(1563):
- *Anti-otherness*, recognized as inappropriate. as separately discussed (*Elaborating a Declaration on Combating Anti-otherness -- including anti-science, anti-spiritual, anti-women, anti-gay, anti-socialism, anti-animal, and anti-negativity*, 2018)
- *Threatening others*, readily framed as enemies
- *Attractive others*, most obviously in terms of beauty, assets, skills, and the like
- *Hypothetical others*, as imagined in the case of extraterrestrials
- *Tempting others*, ***

Cultural categories of otherness: As a challenge of perception, of some value are the variety "othernesses" distinguished by some *Systems of Categories Distinguishing Cultural Biases* (1993). The following systems are discussed there:

System of Magoroh Maruyama
System of Geert Hofstede
System of Kinhide Mushakoji

System of Will McWhinney
System of S Pepper
System of Mary Douglas

System of Howard Gardner
System of W T Jones
System of Emmanuel Todd

That of the philosopher W. T. Jones distinguishes seven "axes of bias". (*The Romantic Syndrome: toward a new method in cultural anthropology and the history of ideas. The Hague, Martinus Nijhoff*, 1961)

- *Order vs disorder*: Namely the range between a preference for system, structure, conceptual clarity, etc. and a preference for fluidity, muddle chaos, etc.
- *Static vs dynamic*: Namely the range between a preference for the changeless, eternal, etc. and a preference for movement, for explanation in genetic and process terms, etc.
- *Continuity vs discreteness*: Namely the range between a preference for wholeness, unity, etc and a preference for discreteness, plurality, diversity, etc.
- *Inner vs outer*: Namely the range between a preference for being able to project oneself into the objects of one's experience (to experience them as one experiences oneself), and a preference for a relatively external, objective relation to them.
- *Sharp focus vs soft focus*: Namely the range between a preference for clear, direct experience and a preference for threshold experiences, felt to be saturated with more meaning than is immediately present.
- *This world vs other world*: Namely the range between preference for belief in the spatio-temporal world as self-explanatory and preference for belief that it is not and can only be comprehended in terms of other frames.
- *Spontaneity vs process*: Namely the range between a preference for chance, freedom, accident, etc and a preference for explanations subject to laws and definable processes.

Enactive engagement with otherness

Each form of otherness naturally tends to evoke a particular pattern of response. The question is how to elicit new modes of response transcending the limitations of traditional patterns -- notably as may be suggest by the engagement with coronavirus. Some possibilities are discussed in the following:

- *Reframing the Dynamics of Engaging with Otherness* (2011)
- *Cognitive Embodiment of Nature "Re-cognized" Systemically: radical engagement with an increasingly surreal reality* (2018)
- *"Human Intercourse": "Intercourse with Nature" and "Intercourse with the Other"* (2007)
- *Encountering Otherness as a Waveform -- in the light of a wave theory of being* (2013)
- *Cognitive Implications of Lifestyle Diseases of Rich and Poor: transforming personal entanglement with the natural environment* (2010)

Unusual possibilities, to which some may have recourse in response to coronavirus, or which may be cited as an inspiration, include the following, in no particular order and potentially mutually entangled:

- *Stockholm syndrome*, namely the well-recognized condition in which hostages develop a psychological alliance with their captors

during captivity

- **Know thy enemy as thyself:** namely the classic adage from Sun Tzu (*The Art of Warfare*), and variously discussed Marcello Rollando *Know Thy Enemy as Thyself*, *Daily Kos*, 12 January 2016), allegedly remarked by Arthur Koestler to George Orwell, and a theme of Bible study ([video](#))
- **Martial art philosophy:** Rather than a question of winning or losing in battle with an "enemy", the challenge might be more appropriately framed in the transcendent spirit of Eastern martial arts as how to learn from one's opponent to avoid the questionable enthusiasm for the restrictive cognitive conventions of **zero-sum games**, as variously imagined (*Ensuring Strategic Resilience through Haiku Patterns: reframing the scope of the "martial arts" in response to strategic threats*, 2006; James P. Carse, *Finite and Infinite Games: a vision of life as play and possibility*, 1986). Are there new possibilities, if we recognize that the form and operation of the coronavirus is a mysterious image of who we are, whether collectively or individually? Trump / Putin / Xi ***
- **Integration of the shadow:** The successive phases in the evolution of insight are frequently depicted in Zen Buddhism by a traditional sequence of 10 ox-herding pictures, each with a brief commentary (cf D T Suzuki; Kubota Ji'un, *Ten Ox-herding Pictures with the Verses Composed by Kakuan Zenji*, 1996). As argued elsewhere (*Enlightening Endarkenment: selected web resources on the challenge to comprehension*, 2005; *Progressive integration of the shadow of non-self-reflexivity*, 2017), these are of special interest because of their indication of a person's progressive discovery and interplay with a shadowy element denoted by an ox (Consciously Self-reflexive Global Initiatives: Renaissance zones, complex adaptive systems, and third order organizations.
- **Mirroring the other**, namely the sense in which the engagement with the coronavirus resembles that of the action of **mirror neurons**. This is a neuron which triggers both when an animal acts and when the animal observes the same action performed by another. Thus, the neuron "mirrors" the behaviour of the other, as though the observer were itself acting. From the perspective of **common coding theory**, some researchers in cognitive neuroscience and **cognitive psychology** consider that this system provides the physiological mechanism for perception/action coupling. Birds, for example, have been shown to have imitative resonance behaviors and neurological evidence suggests the presence of some form of mirroring system.
- **Engaging with the other via similarities**, as especially cultivated in **homeopathy**, on the basis of a "Law of Similars", namely that a substance that causes symptoms of a disease in healthy people would respond to similar symptoms in sick people. As an example of alternative medicine, it is particularly deprecated by allopathic medicine as a pseudoscience, despite widespread use of products resulting from its methods -- and extensive efforts to prohibit them. The WHO recognizes that 170 Member States acknowledged their use of *Traditional, Complementary and Integrative Medicine*, however any such understanding includes practices based on "similarities", with or without the approval of medical science.

Controversially examples of the use of such practices in relation to coronavirus are already cited (George Vitoulkas, George Vitoulkas, *Homeopathy and Coronavirus*, *Defend Democracy Press*, 18 March 2020; Alakananda Dasgupta, *Indian Authorities Propose Use of Homeopathy to Prevent Coronavirus*, *The Scientist*, 7 February 2020; Bhavya Dore, *Hindu Nationalists Are Pushing Magical Remedies for the Coronavirus*, *Foreign Policy*, 9 March 2020; *Homeopaths promise coronavirus prevention and cures, as health officials criticise 'misinformation'*, *The Telegraph*, 2 March 2020; *How the Queen relies on homeopathic remedies to keep her well during the coronavirus outbreak*, *The Sun*, 27 March 2020). The controversy is separately discussed from a strategic perspective (*Remedies to Global Crisis: "Allopathic" or "Homeopathic"? Metaphorical complementarity of "conventional" and "alternative" models*, 2009)

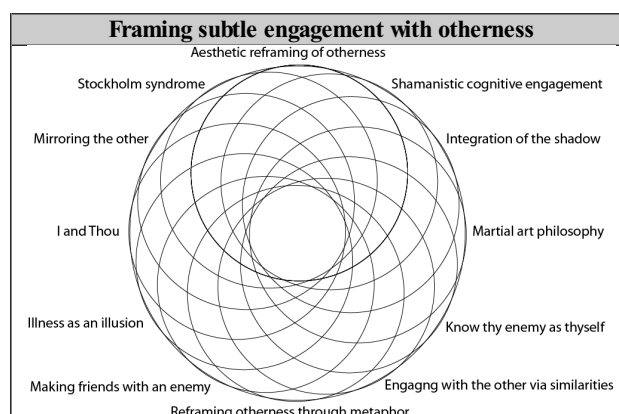
- **Reframing otherness through metaphor:** This approach can be understood in terms of "domestication" -- itself a metaphor (Robi Kroflic, *How to Domesticate Otherness: three metaphors of otherness in the European cultural tradition*, *Paideusis*, 16, 2007, 3; Ehsan Golahmar, *Metaphors the East Is Othered by*, *Journal of Language Teaching and Research*, 7, 2016, 5). Disease itself may be reframed by this means (Susan Sontag, *Disease as Political Metaphor*, *The New York Review of Books*, 23 February 1978). An conference is regularly held on "Metaphors of Marginality and Otherness"
- **Illness as an illusion:** (Meredith Oenning-Hodgson, *Illness as an Illusion of Misfortune: the Hermetic Wings of the Dragonfly*, *Psychological Perspectives*, 52, 2009, 1)
 - The author describes her relationship with the reality of Parkinson's disease—how she twists and turns and pivots and falls with this rapacious intrusion, and how a new, hitherto unknown space opens between Parkinson's and herself. This new space claims its own dynamic, objective reality. In attempts to consciously access the reality of this third space, the author faces paradox, "plays" with metaphor, and tries to recognize the right "reality." She considers Freud's reality and pleasure principles, Winnicott's iconoclastic declaration of "health being the ability to play with psychosis," and Jung's transcendent function. She also calls on Hermes with his wings to fly through otherwise impenetrable borders. As an incantation, an evocation or a pathway, she implores Hermes to breathe in flight. In the midst of this inner work, the dragonfly literally appears, emanating transformation.
 - Linda Edwards *The Other Side of the Valley: healing through altered states of consciousness* John Hunt Publishing, 2019
 - *At the core of Christian Science is the teaching that illness is an illusion caused by faulty beliefs, and that prayer heals by replacing erroneous thoughts with spiritual (true) ideas*

- **Making friends with an enemy (including a disease)?** As noted by the first source noted below, this is a strategy to challenge dysfunctional thinking and hopefully develop a more open relationship with the experience of pain:
 - Louisiana Pain Specialists: *Making Friends with Your Pain* (2016)
 - Milly Diericx: *Befriending the Wolf: The Guide to Living and Thriving with Lupus* (Morgan James Publishing, 2016)
 - Chung Han Man. *Befriending Cancer* (Page Publishing, 2018)
 - Dawn Nelson *Making Friends With Cancer* (Findhorn Press, 2000)
 - Sarah Rayner: *Making Friends with Depression*: (The Creative Pumpkin, 2016)
 - Sarah Rayner: *Making Friends with Anxiety* (CreateSpace, 2014)
 - Alan Fogel *Making Friends with Pain* (*Psychology Today*, 2 September 2009)
 - Elizabeth Flora: *Making Friends with Pain: Learning to Live Well with Chronic Illness* (Sadie Books, 1999)
 - Beth Patterson *Making Friends with Pain and Overcoming Suffering* 8 June 2015
 - Julie Peters *Befriending Pain* (*Spirituality and Health*, 1 September 2016)
 - Catherine Lewan: *Befriending Pain* (2 February 2018)
 - Vito Mucci: *Aggressively Befriending Pain: a guide to embracing opportunities* (*Community OM Times*. 27 February 2016)

Given the manner in which the coronavirus has been framed as an enemy to be eradicated, rendering highly suspect any views to the contrary, there is a case for recalling the prevalence of that attitude in past condemnation of all "bugs" and microbes. It is only very recently that there has been recognition of the extent to which a human is dependent on such micro-life, whether for agriculture or as embodied as an ecosystem within the body. The **human microbiome** is the aggregate of all microbiota that reside on or within human tissues and biofluids along with the corresponding anatomical sites in which they reside. The number of microbial cells and the number of human cells are both estimates, with recent research indicating that the number of human cells as approximately 37.2 trillion. The ratio of microbial-to-human cells is closer to 3:1, if not 1:1. This goes far beyond "befriending the enemy"; rather it is a case of "**my house is your house**". A virus is not however considered to be living, although if such was detected on Mars then "life" might then be reframed.

- **Aesthetic reframing of otherness** : For some the preference is to reframe otherness through song, music, dance, poetry, painting, or humour. Some traditions highlight the manner in which a threatening monster can be "enchanted" by music. Most recently this aesthetic mode has been evident in the case of coronavirus:
 - Nadja Sayej: *'It feels like wartime': how street artists are responding to coronavirus* (*The Guardian*, 25 March 2020;
 - Amanda Krause: *An artist is drawing famous characters with coronavirus references to show support for people impacted by the pandemic* (*Business Insider*, 26 March 2020).
 - Maria Kofman: *Artists draw life under coronavirus* (*Politico*, 20 March 2020)
 - Grace Ebert: *Artists Respond to the Coronavirus Outbreak by Flooding Social Media with a Japanese Yokai Said to Ward Off Epidemics* (*Colossal*, 13 March 2020)
- **Shamanistic cognitive engagement**: Exemplified by the classic tale of a rainmaker invited to a Chinese village, to bring rain -- for the village is experiencing drought. The rainmaker requests a cottage far from the village, and asks not to be disturbed. Three days later, rain and snow fall on the village. The rainmaker explains that he did not bring the rain. As he had felt immediately infected by the imbalance of the village people upon arrival, he took refuge to balance himself -- naturally balancing the outside world through that process -- and it rained.
- **I and Thou**, as articulated by **Martin Buber** (1923) in distinguishing between:
 - an attitude of the "I" towards an "It", towards an object that is separate in itself, which we either use or experience.
 - an attitude of the "I" towards "Thou", in a relationship in which the other is not separated by discrete bounds.

In the spirit of the argument here, these might be better configured visually, as tentatively indicated in the **Venn diagram** in 2D below. This has the necessary implication that the cognitive modalities variously overlap in whats which might be determined in the future. It is the underlying common experiential modality which is necessarily beyond any simple form of explication and is readily to be considered hyperdimensional. A 3D version would evoke other reflections more consistent with integrative global understanding.



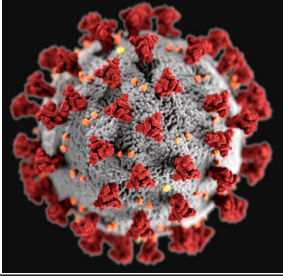
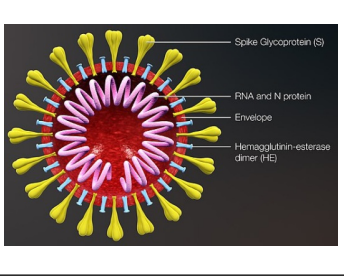
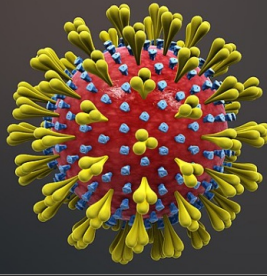
Together or separately, these might be recognized as forms of cognitive enactivism, as separately discussed (*Enveloping Development*

through *Cognitive Enactivism: engaging with climate change by changing apprehension of climate*, 2009; *Cognitive Implications of Lifestyle Diseases of Rich and Poor: transforming personal entanglement with the natural environment*, 2010). Response to the coronavirus pandemic, given the strategic confusion and misinformation, could be seen as variously analogous to an information disease, as speculatively explored (*Memetic and Information Diseases in a Knowledge Society: speculations towards the development of cures and preventive measures*, 2008).

- *Comprehensive distancing*, now known as **acceptance and commitment therapy** and involving combinations of **acceptance** and **mindfulness** strategies
- *Prosocial orientation*: evocation of empathy and compassion through exposure to suffering, as indicated by new research (Makiko Kondo, *Empathy An Evidence-based Interdisciplinary Perspective*, 2017; Daniel Lim, *The Influence of Suffering, Social Class, and Social Power on Prosociality: an empirical review*, 2017)
- *Transforming the experience of suffering*, whether through acceptance, self-acceptance, or as a method of counselling (Maxxine Rattner, *Rethinking Suffering: Allowing for Suffering that is Intrinsic at End of Life*, *Journal of Social Work in End-of-Life and Palliative Care*, 12, 2016, 3; Larry Berkelhamme, *Does Acceptance Reduce Suffering?* *PsychCentral*, 8 January 2015; Eli B. Recht (*Love Ends Suffering: an integration of spirituality and psychotherapy*, Pacifica Graduate Institute, 2020)

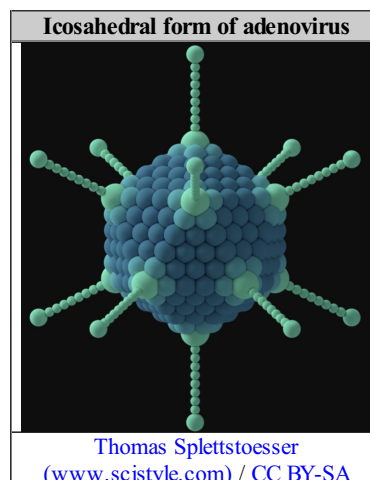
Reframing the coronavirus to elicit new thinking

The earlier paper used the following depictions of the coronavirus as a basis for triggering imaginative reflection.

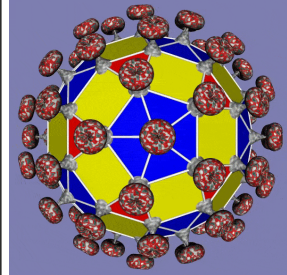
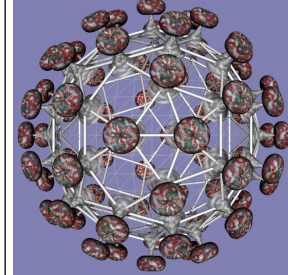
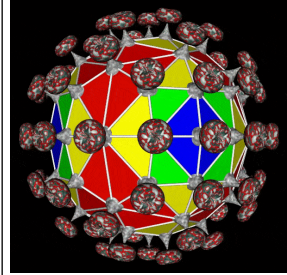
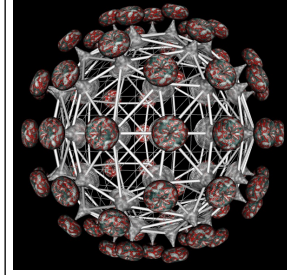
Depictions of the coronavirus		
<p>Ultrastructural morphology exhibited by coronaviruses. Note the spikes that adorn the outer surface of the virus, which impart the look of a corona surrounding the virion, when viewed electron microscopically.</p>	<p>Images combined from a 3D medical animation, depicting the shape of coronavirus as well as the cross-sectional view. Image shows the major elements including the Spike S protein, HE protein, viral envelope, and helical RNA</p>	
		
<p>CDC/ Alissa Eckert, MS; Dan Higgins, MAM / Public domain</p>	<p>Reproduced from <i>Wikipedia</i> https://www.scientificanimations.com/ CC BY-SA</p>	

As indicated by the subtitle of the earlier paper, emphasis was placed on visual transformation of the coronavirus in order to associate with other "spiky" patterns discussed in detail there (*Reimagining Coronavirus in 3D as a Metaphor of Global Society in Distress: crowning pattern that connects spiky organisms, satellite constellations, nuclear explosions, and egomania?* 2020). The following is one such example in which the association with polyhedral forms was emphasized. Analogous patterns were cited there from the global form of certain plants and animals (*Global "spiky-prickly" indications of a "pattern that connects"*, 2020).

Also noted was the tendency for viruses to take polyhedral form, as illustrated by the following image from a description of icosahedral capsids in *Wikipedia*.



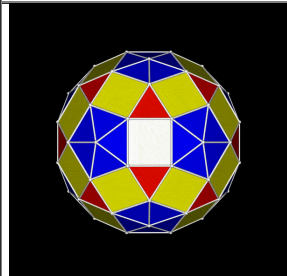
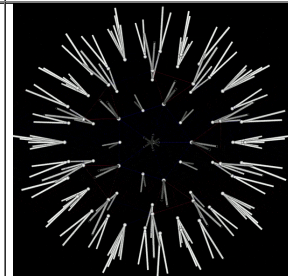
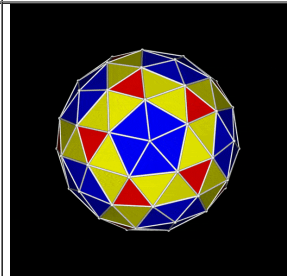
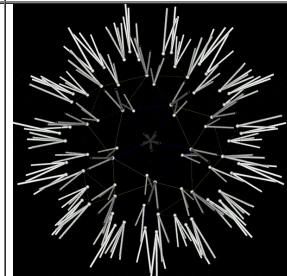
It was in the light of such polyhedral configuration that it was decided to configure together the 72-spikes of the coronavirus as shown below.

Global configuration of mushroom-clouds on vertices of polyhedra -- simulating a coronavirus			
72 vertices -- icosahedral symmetry (mp4; x3d)		74 vertices -- cubic symmetry (mp4; x3d)	
Animation of solid variant	Screen shot of wire frame variant	Animation of solid variant	Screen shot of wire frame variant
			
Combination and adaptation of polyhedral and mushroom-cloud models separately prepared by Sergey Bederov of Cortona3D			

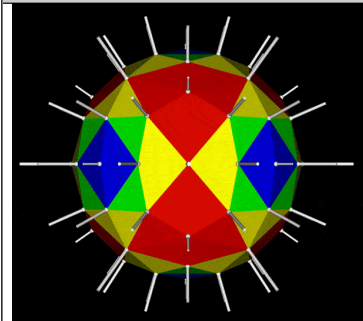
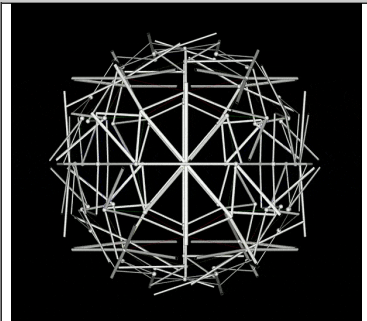
The earlier paper emphasized that such global patterns of spikes, however they might be configured in polyhedral form, offered insights into psychosocial organization which could be considered analogous whether in terms of general systems theory or as mnemonic aids (*Psychosocial "global implication" of a "pattern that connects"?* 2020).

Dynamics of raising and lowering spikes in polyhedral configurations

The argument in what follows focuses on the possible dynamics of a global configuration of spikes as it might relate to a polyhedral configuration of edges. This possibility can best be communicated visually using animations in 3D as shown below. The dynamics might for example be compared with the raising and lowering of missiles around the globe in response to perceived levels of threat (or the lack thereof). The protective use of spikes in this way is for example evident in the quill erection of [hedgehogs](#) and [porcupines](#). A human analogue might be recognized in the response to fear as ["hair-raising"](#). Such configurations of spikes also recall the design of naval mines and other weapons, as previously noted..

Animation of spike dynamics on selected polyhedra with 72 vertices (solid and wireframe variants)			
Pentakis rhombicosidodecahedron		Pentakis-snub-dodecahedron	
Solid	Wire	Solid	Wire
			
Polyhedral models kindly prepared by Sergey Bederov of Cortona3D, with animation timings slightly modified			

As explained in the earlier paper, the information available on the coronavirus suggested a configuration of 74 spikes -- on average. That pattern is reflected in the model below. An argument was however made for 72-spikes because of its significance in a variety of traditions and the geometric constraints of such a configuration, even in satellite constellations. That pattern is illustrated in the models above.

Animation of spike dynamics on a 6-frequency stellated geodesic sphere with 74 vertices (solid and wireframe variants)	
	
Animated polyhedral model kindly prepared by Sergey Bederov of Cortona3D	

As stressed in the earlier paper, of particular interest is how the "spikes" may be usefully recognized in relation to the challenges of governance. Thus they may be understood as the individual elements of a global strategy, as a configuration of global problems addressed by a global strategy. They might also be understood as the set of principles or values on which any such strategy was based -- by which it was informed. Similarly it might be understood as the set of values rendering any set of problems recognizable -- since in the absence of a value a problem is invisible and effectively non-existent.

It is from such a perspective that the manner in which a strategic configuration is ordered becomes of interest, namely how it is

coordinated and rendered coherent as a whole -- in global terms. This perspective contrasts with the use of checklists to articulate strategies or sets of values. Examples are the UN's Sustainable Development Goals or the UN's Universal Declaration of Human Rights. Arguably, notably in the light of pandemic crisis, and others currently ignored, there is a case for some urgency in the quest for systemic coherence and new ways of thinking about it, as separately discussed (*Time for Provocative Mnemonic Aids to Systemic Connectivity? Possibilities of reconciling the "headless hearts" to the "heartless heads"*, 2018).

Polyhedral mapping: Checklists -- as "to do" lists -- are inherently unmemorable, with little emphasis on their coherence or the manner in which they constitute a viable system. An alternative approach is to seek ways of mapping the elements of such checklists onto mind maps in 2D. The tendency is to avoid this, since there is indeed little understanding of how their elements are interrelated.

Another approach is to map the elements onto polyhedra in 3D. Various exercises in this respect have been undertaken in the following:

- *Experimental Visualization of Dynamics of the European Parliament in 3D* (2019)
- *Interplay of Sustainable Development Goals through Rubik Cube Variations: engaging otherwise with what people find meaningful* (2017)
- *Envisaging NATO Otherwise -- in 3D and 4D?* (2017)
- *Eliciting Memorable Spheres and Polyhedra from Hyperspace* (2015)
- *Metascience Enabling Upgrades to the Scientific Process: beyond Science 2.0 in the light of polyhedral metaphors?* (2014)
- *Coherent Value Frameworks: Pillar-ization, Polarization and Polyhedral frames of reference* (2008)

Spike dynamics? Of what are the spike dynamics in the above animations suggestive? There is the obvious sense in which strategic spikes are raised in defence of integrity or in affirmation of identity -- echoing the defensive 2D pattern of "circling the wagons". Any assertive strategic declaration or set of organizational principles could be understood in 3D in this way -- although typically presented as a checklist in 2D.

Potentially of far greater interest is the complementary pattern associated with the lowering of the spikes to render explicit a polyhedral configuration. In systemic terms this can be understood as a pattern of feedback loops through which global integrity is both sustained and rendered comprehensible.

More intriguing still, as discussed further below, are the "internal" links within the body of the polyhedron -- necessarily also a feature of the pattern of feedback loops and its memorability. Are the "external" links associated with the lowered spikes to be considered more "objective" (and less controversial) than the "internal" links -- potentially more "subjective" and therefore more controversial?

The animated models above suggest many modifications in support of other reflections. Thus the spikes might be raised or lowered:

- independently and randomly
- in groups, such as might be suggested by the mode of locomotion of sea urchins
- to different heights, with some spikes being of greater length than others
- rhythmically
- with distinctive coloration
- such as to focus internally rather than externally

What strategic and aspirational insights might then be associated with such possibilities as a pattern language?

"Strategic priapism"? The configurations and animations offering a visual language in which to highlight both potentially excessive assertion and the absence of systemic consideration of necessary feedback loops.

The argument can be made in terms of the proliferation of skyscrapers erected and the considerable psychological importance of having a "bigger spike" than others. This is evident within capital cities and between them. A simple mapping could for example be made of spikes onto vertices of a single polyhedron in the case of the 9-15 "Trump Towers" (with a further proposed) around the world (Aria Bendix, *Here are all the Trump Towers that have been built*, *Business Insider*, 25 January 2019). The polyhedron would then hold the set as a whole, implying a degree of global pattern coherence.

A similar visual exercise could be performed for the set of missile silos (or military bases), variously raised or lowered according to **threat level**. Of interest in this case is the sense in which the Permanent Members of the UN Security Council (and some other countries) each have a configuration of missile silos for the preservation of peace in the world. The visual mapping could then be made in terms of several polyhedral forms.

Potentially more intriguing are patterns of virtual spikes associated with articulations of global strategies composed of various numbers of constituent elements, principles or goals. These could be separately mapped onto distinctive polyhedra -- each such pattern to be recognized as a competing assertion of global intent. Especially interesting is any recognition of the interrelationship between the spikes of a given set -- when the spikes are lowered as suggested by the animations above.

Use of "priapism" is of course provocative, and perhaps necessarily so, since the difficulty in the case of each set of spikes is that there is little recognition of the pattern they constitute when lowered. Given the promotional pressure, and the associated ego needs, there is little consideration of such an alternative configuration -- or of its vital role in ensuring the sustainability of the configuration. Use of the metaphor is appropriate given the manner in which it has notably been evoked in relation to the American presidency (Arnold Beichman, *The President as Priapist*, *The Washington Examiner*, 2 June 2003). As surprisingly noted by Salvatore Mangione (*Physical Diagnosis Secrets*, Elsevier Health Sciences, 2012):

If we look back at the American presidency, we might conclude that priapism qualifies as a White House occupational hazard, were it not for the fact that this condition is usually not associated with sexual desire. (pp. 489-490)

Symbolic configuration of disparate strategic elements?

In a section on [Global connectivity as reinforced through symbolic configuration?](#) in the previous paper, the recognized value of symbols in holding patterns of much-valued insights was noted. The question was raised regarding the requisite complexity at this time of a global configuration appropriate to the challenges of a civilization in crisis. Given the sense of a multifold crisis, seemingly simplified by the singular nature of the coronavirus pandemic, the use of the form of that virus as a clue to more complex configurations is arguable appropriate -- if only as a challenge to reflection.

By how many elements is it appropriate to assume that the global crisis is characterized at this time? The UN found it appropriate to shift from the 8-fold set of [Millennium Development Goals](#) (2000) to a 16(+1) fold set of [Sustainable Development Goals](#) (2016). Other reputable reports have proposed 14, 15, 16 and the like.***. **None of these is organized in systemic terms, such as to highlight the interrelationships between their elements** -- or to explain **how different groups could favour different configurations**, thereby undermining emergence of the global strategic coherence to which they each purport to aspire. **Can it honestly be claimed that these articulations of strategic insight are adequate in a period of crisis with whose emergence the thinking they embody has been associated?**

As a provocation, however controversial, there is therefore a case for exploring traditional configurations, which dare to imagine the need for higher numbers of focal preoccupations -- and which seek ways to render their configurations coherent and memorable. As noted above, the range of potential connotations of value, mathematical and otherwise, is usefully suggested [Wikipedia \(72 \(number\)\)](#)

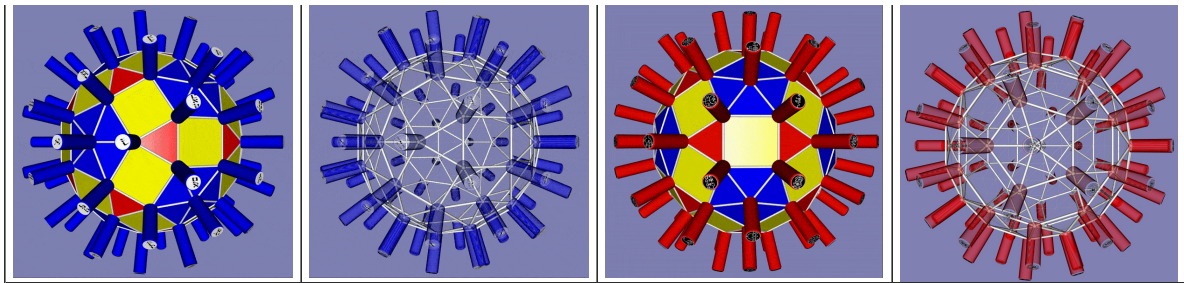
Traditional "Western" configuration: Any such pattern of coherence lends itself to further speculative exploration ([Engaging with Hyperreality through Demonique and Angelique? Mnemonic clues to global governance from mathematical theology and hyperbolic tessellation](#), 2016). The following was developed from an argument there regarding an experiment in [Hyperbolic reframing of the Demonique and Angelique of tradition](#). This has the merit of reflecting the qualitative distinctions in a pattern of 72, whereas the global configurations of spikes above only do so in terms of their geometrical orientation around the sphere.

The contrasting patterns help to frame reflection on whether the values, aspirations and strategies of humanity can be understood as encoded in the extensive reflection on a configuration of "angels" -- as noted in the discussion giving rise to themapping. The "demons" to which they are opposed could be similarly seen as represented a corresponding configuration of sigils by which the "demonic forces" are understood to be bound or held in check. Modern terminology would of course prefer a more neutral reference to "positive" and "negative" respectively -- although remarkably unwilling to articulate the variety of positive or negatives forces from a strategic perspective.

Indication in 2D of the dynamic nature of a "hyperdimensional" crown-corona	
Alternative experimental configurations alternating between the 72 angels and demons	
Animation of 8 sets of 9 (enlargements for detail: angels / demons)	Animation of 9 sets of 8 (enlargements for detail: angels / demons)
The allocation of sets to the star "tables" in the above schematics is based on the tabular form in which the 72 angel names (from the Shemhamphorasch) and the 72 demonic sigils (from the Ars Goetia) are typically presented. The rows are presented "around the tables" in one schematic, and the columns are presented "around the tables" in the other. The sequence around the tables is questionable, demanding further consideration.	

The question is how those configurations might be rendered comprehensible otherwise, inspired by the polyhedral form of the coronavirus --with its implications for systemic ordering vital to its integrity. The approach explored below for the model is to increase the width of the spikes and to place the symbols above on the ends, as shown below. .

Indication in 3D of the dynamic nature of a "hyperdimensional" crown-corona	
3D Configuration of "positive forces " as 72 "Angel names"	3D Configuration of "negative forces " as 72 "Demonic sigils"



Traditional "Eastern" configuration: Of corresponding relevance is the articulation of Chinese culture in the 64-fold pattern of hexagrams of the *I Ching*. An earlier circular configuration in 2D confirmed the reflection of [Gottfried Leibniz](#) in inventing the [binary coding system](#) in 1689 -- now so fundamental to computing.

As presented on the right below, particular transformations between conditions of change, as denoted by the hexagrams, are indicated according to that coding system. Interpretative descriptions of each are provided [separately](#). As a pattern indicative of a dynamic understanding of unity, it lends itself to experimental animations, as described separately ([Dynamic Exploration of Value Configurations: interrelating traditional cultural symbols through animation](#), 2008). One variant is accessible in video format ([Relating cultural symbols using dynamic I Ching configuration](#), YouTube).

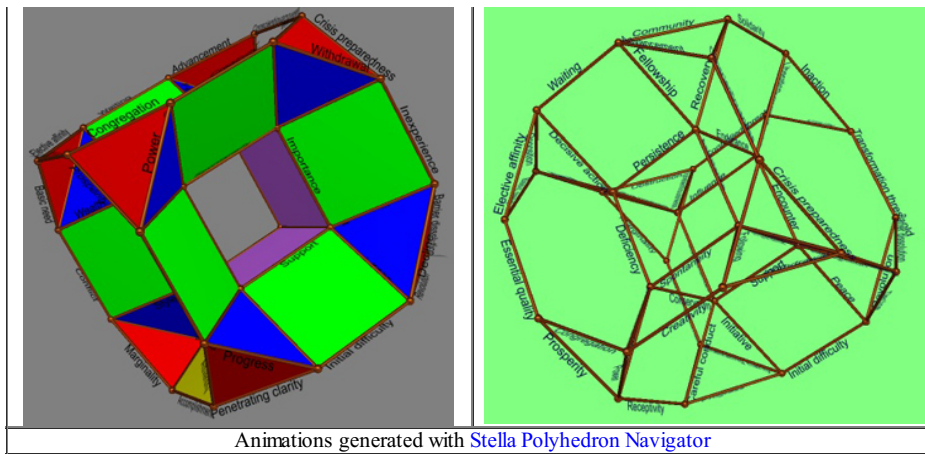
Examples of circular configurations of 64 <i>I Ching</i> hexagrams	
As communicated to Leibniz (1703)	Indicating transformations between conditions
By Unknown - Perkins, Franklin. <i>Leibniz and China: a commerce of light</i> . Cambridge UP, 2004. 117., Public Domain, Link	As used on this website, for which it was elaborated; further details of the configuration are provided separately

Of relevance to the polyhedral approach advocated here, the question is whether any such mapping can be fruitfully configured in 3D, as discussed separately ([Proof of concept: use of drilled truncated cube as a mapping framework for 64 elements](#), 2015)

The pattern of 64 is nearly unique within that polyhedral context. However one interesting candidate is the toroidal drilled truncated cube with 64 edges -- with which any set of 64 elements could be associated. The issue is whether the manner in which they can be positioned on that framework constitutes a configuration which is meaningful in relation to particular cases, such as the codons or the hexagrams. Furthermore, is it possible that known constraints in the patterning in such particular cases can together offer guidance in the attribution of the distinct elements -- of relevance to each case?

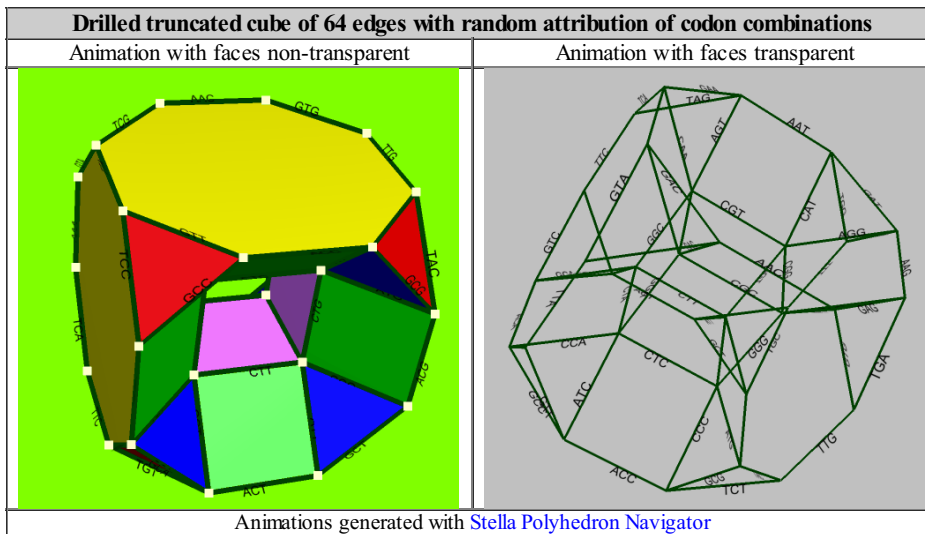
Preliminary experiments with this polyhedron have been undertaken previously with respect to the hexagrams alone -- but only to get a sense of the possibility, as a "proof of concept" ([Enabling Wisdom Dynamically within Intertwined Tori: Requisite resonance in global knowledge architecture](#), 2012). To be emphasized is the degree to which the Chinese coding system is complemented by a detailed pattern of metaphors through which distinctions between the 64 elements are made, as well as the meaning which can be associated between the transformations between them -- inviting a variety of patterns of interpretation of relevance to governance ([Transformation Metaphors derived experimentally from the Chinese Book of Changes \(I Ching\) for sustainable dialogue, vision, conferencing, policy, network, community and lifestyle](#), 1997). Again it should be emphasized that no comparable patterns have been articulated in memorable terms between the elements of sets of global strategies.

Drilled truncated cube of 64 edges with random attribution of hexagram names (reproduced from Enabling Wisdom Dynamically within Intertwined Tori: requisite resonance in global knowledge architecture , 2012)	
Selected faces transparent	All faces transparent



Animations generated with [Stella Polyhedron Navigator](#)

Possible use of this form as a means of interrelating genetic codons is illustrated by the following.



Animations generated with [Stella Polyhedron Navigator](#)

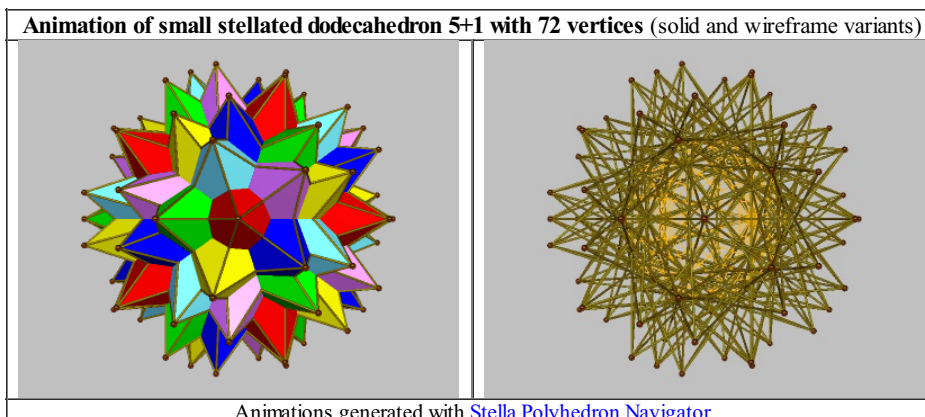
The juxtaposition above immediately raises the questions:

- how best to assign the elements into significant patterns in both cases
- whether mapping assignments in one case offer guidance and constraints for the other
- which of the preliminary assumptions made below should be called into question
- whether assignments could be better considered as dynamic rather than static (as suggested by resonance, and discussed below)

Illustration of geometric model changing between two possible capsids. A similar change of size has been observed as the result of a single amino-acid mutation ***

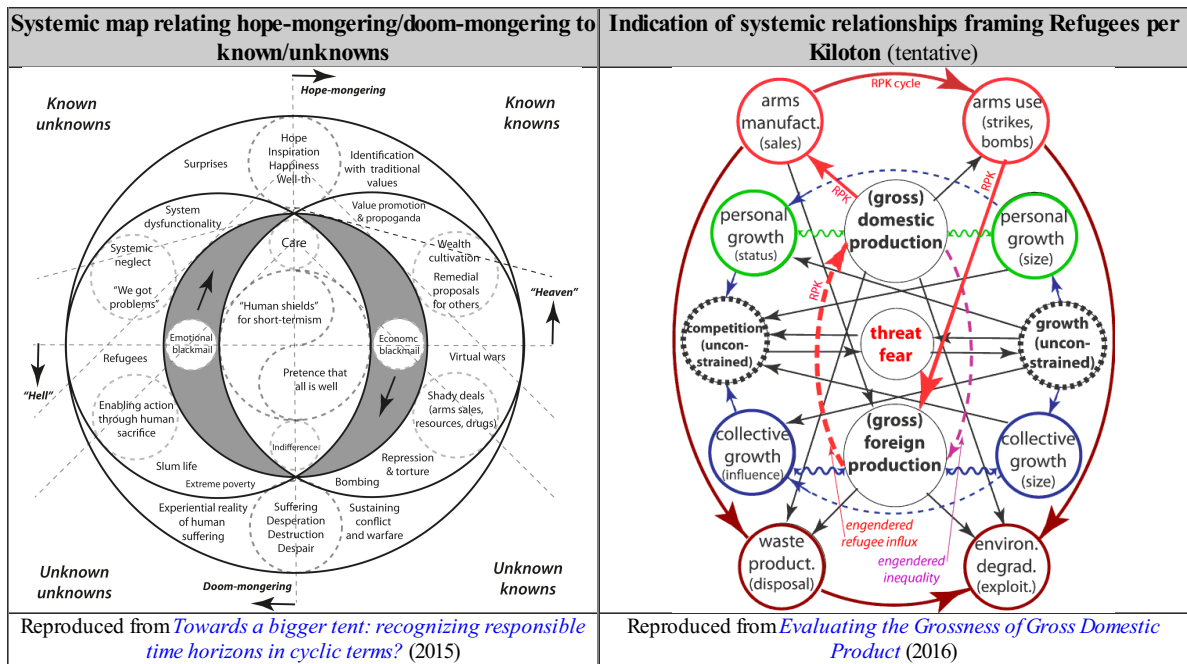
Patterns of systemic relationship from an "internal" perspective

The "superficial" features of polyhedra, as characteristic of the animations above, literally obscure their internal complexity and its roles in ensuring their integrity -- and the sustainability of any mappings for which they are used. This is highlighted by the wireframe variant of the animations below/



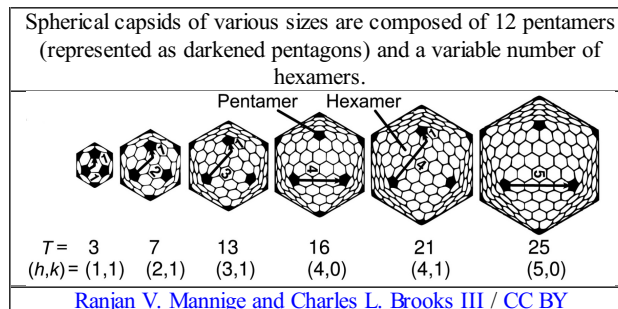
Animations generated with [Stella Polyhedron Navigator](#)

The argument can be presented other wisethrough exercises in mapping those insights which readily feature in global discourse. This can be suggested by the following "mind maps" -- both being suggestive of a need for a more comprehensive effort to interrelate insights of that nature.



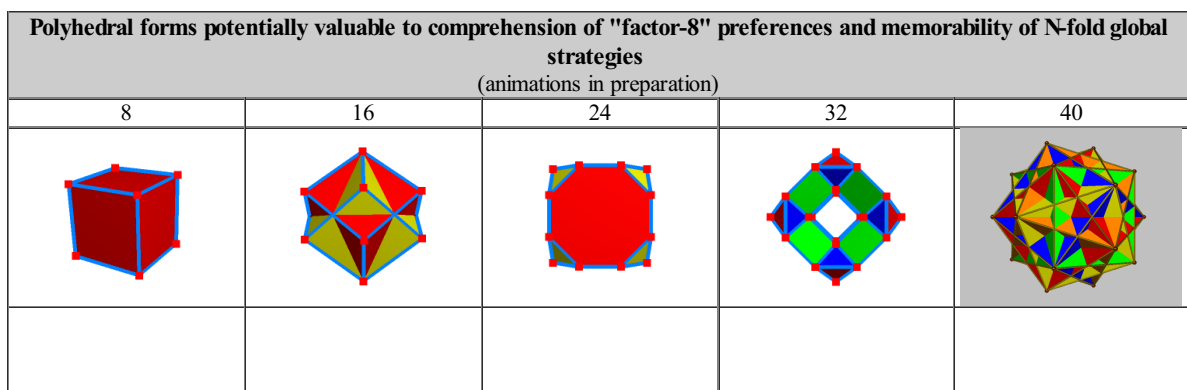
Distinguishing coherent patterns of strategic N-foldness -- from 8-fold to 80-fold

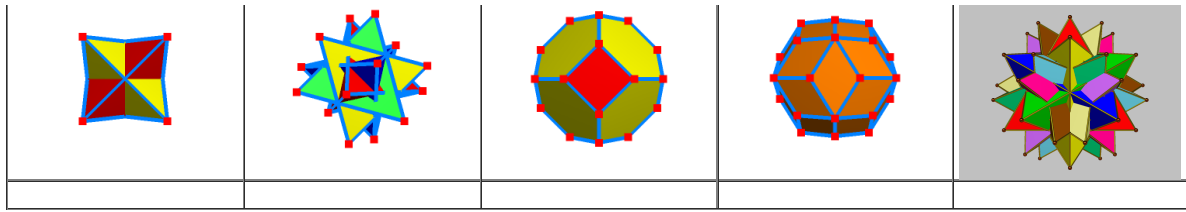
The argument development here was partly inspired by the polyhedral form of many viruses. The variety is usefully illustrated by the following image in which they are distinguished in terms of a triangulation number ("T-number"). The T-number is representative of the size and complexity of viral capsids (*List of geodesic polyhedra and Goldberg polyhedra*, Wikipedia).



The mysterious question, as yet to be clarified, is why sets of strategies are constituted by authorities and experts (without comment or justification) by particular numbers of elements, exemplified by the UN's 8 Millennium Development Goals and the 16(+1) Sustainable Development Goals. The issue can be explored more generally (*Patterns of N-foldness: comparison of integrated multi-set concept schemes as forms of presentation*, 1980). The clearest approach to an explanation, itself controversial, is that of cognitive psychologist George Lakoff (*Where Mathematics Comes From: how the embodied mind brings mathematics into being*, 2001).

The organization of viruses, as noted above, focuses on triangulation to which consideration is given separately (*Triangulation of Incommensurable Concepts for Global Configuration*, 2011). An exercise of interest here focuses on the 8-fold pattern as evident in both the UN's sets of goals (8 and 2x8) and in the more complex traditional configurations above (8x8 and 9x8). In the case of the Sustainable Development Goals, these are defined as having 169 "targets", with various numbers of targets per goals (see [checklist](#)), together with an associated set of some 230 indicators.





Is it a mere coincidence that 169 is 13×13 or is there some unexplored systemic significance to that? Some commentary is evident in the *Final list of proposed Sustainable Development Goal indicators* (E/CN.3/2016/2/Rev.1) as developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs) noting that the list is composed of distinct 230 indicators. In the absence of clarification of this "to do" list, is the cognitive challenge of recognition of this range from 169 to 230 to be compared to [Dunbar's number](#). This is a suggested cognitive limit to the number of people with whom a person can maintain stable social relationships. Proponents assert that numbers larger than this generally require more restrictive rules, laws, and enforced norms to maintain a stable, cohesive group. It has been proposed to lie between 100 and 250, with a commonly used value of 150 (*Comprehension of Numbers Challenging Global Civilization: number games people play for survival*, 2014)

Global plan, doughnut, torus, helix and/or pineapple?

In response to the chaos of coronavirus and its expected aftermath, there is widespread quest for a "plan" (Selman Gebrekidan, *The World Has a Plan to Fight Coronavirus*, *The New York Times*, 12 March 2020; Ari Schulman, *What's the Plan? Yes, the Covid-19 shutdown is necessary -- but it won't work without a vision of how it ends*, *The New Atlantis*, 21 March 2020). This is now being articulated in terms of a "Global Marshall Plan" (Isabel Silva, *A new Marshall plan? MEPs debate coronavirus response*, *Euronews*, 26 March 2020; *OECD Secretary-General: coronavirus "war" demands joint action*, 21 March 2020). The latter *Commits policy support, saying efforts must have "Ambition of Marshall Plan, vision of New Deal"*

Possibilities for an appropriate global strategic form, in the light of the above argument, are developed in a subsequent discussion (*Coronavirus -- Global Plan, Doughnut, Torus, Helix and/or Pineapple? Some modelling dynamics allowing for uncertainty in perception of order in governance?* 2020).

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