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31 July 2018 | Draft

Oppositional Logic as Comprehensible Key to Sustainable Democracy

Configuring patterns of anti-otherness

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Introduction

Democracy is readily to be recognized as a configuration of opposing strategies, with the challenge being the coherence of that configuration. The tendency is to seek to reduce the multiplicity to a univocal perspective as exemplifying the singular "will of the people" -- variously marginalizing, out-maneuvering or eradicating any opposing voice. Some initiatives may however be framed as "bipartisan" and there may be obligations to work with "coalitions" of distinctive parties. There is however little quest for subtler insights into more fruitful configurations which might enable and ensure sustainability (*Criteria of democratic fairness in voting*, 2016) .

Given the nature of disagreement, it is necessarily extremely difficult to enable coherent discourse about incommensurable perspectives. As noted in the main paper, the approach here is to consider that there are various clues to a way forward but these are best understood as metaphors appealing differently according to preferences and [cognitive biases](#) which may be inevitable -- and necessary. The metaphors are perhaps best understood as complementary and indicative of progressive confluence towards a cognitive nexus whose very nature is a challenge to comprehension.

Sustainable governance may be usefully understood as requiring a form of "[anti-language](#)" to encompass the paradoxes and "cognitive twists" involved. As a container this corresponds metaphorically to that imagined as capable of containing the universal solvent [alkahest](#). The design considerations of a container whose content cannot be allowed to come in contact with it are now appropriately addressed in the ongoing [ITER](#) project for a nuclear fusion reactor, as discussed separately (*Enactivating a Cognitive Fusion Reactor*, 2008). It effectively calls for a process of "unsaying" or [apophasis](#), well framed by the Sanskrit adage *Neti Neti*.

Given the nature of the matter, the following exercise is an effort to summarize possibilities with illustrations and animations, **in the light of arguments in the main paper**, rather than to imply any form of closure which would be necessarily premature and inappropriate.

Oppositional logic encompassing requisite variety

Democracy is seemingly about the confrontation and configuration of alternative perspectives. Given the existence of a highly obscure academic preoccupation with the logic of opposition, there would seem to be strong case for exploring what those academic insights have to offer in informing a more coherent approach to the incommensurable perspectives with which governance is obliged to deal.

As noted above, the arguments are summarized separately (*Neglected recognition of logical patterns -- especially of opposition*, 2017)

and are the focus of a forum on [Oppositional Geometry: mathematics and philosophy of opposition](#) -- with a specific focus on "oppositional logic", as discussed in the main paper.

Of particular relevance is the capacity to transcend the binary logic which is seemingly the primary mode favoured in politics -- government versus opposition -- and readily to be understood as reinforcing its inadequacies and dysfunctions at this time. Typically political discourse frames any other perspective as "illogical" -- at best.

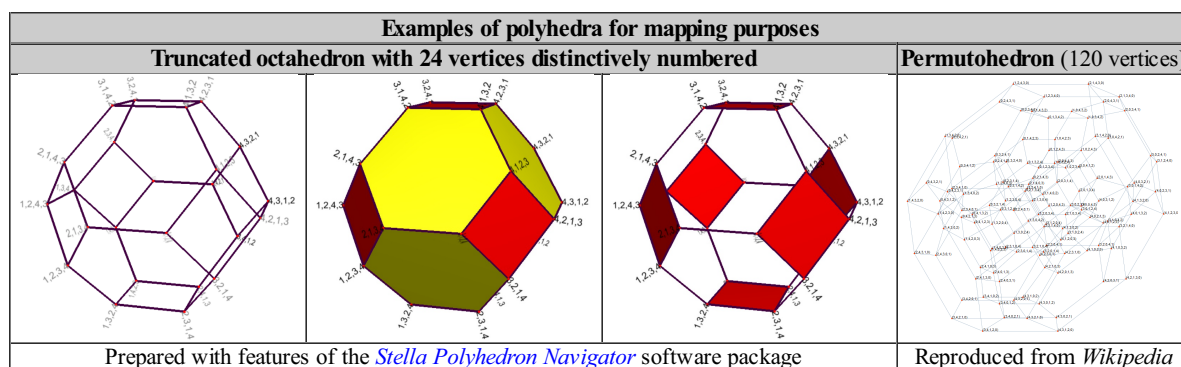
Oppositional geometry configuring variety

Current preoccupations with governance makes curious reference to "variable geometry" (Mike Goldsmith, [Variable Geometry, Multilevel Governance: European integration and subnational government in the New Millennium, Oxford Scholarship Online](#), November 2003; Alex Mills, [Variable Geometry, Peer Governance, and the Public International Perspective on Private International Law, Oxford Scholarship Online](#), March 2015; [Brexit Brief: the charms of variable geometry, The Economist](#), 11 June 2016; Xavier Comtesse, et al, [Governance mit variabler Geometrie, Avenir Suisse](#), 2002). Especially evident is the enthusiasm for the geometrical metaphor of "axis", as in "axis of evil" or "axis of terror" -- with only rare references to an "axis of good", and little insight into the management of the "cross-purposes" these axes imply.

Seemingly the metaphor offers inspiration with respect to more complex structures, but no effort is made to take advantage of the vast array of insights offered by geometry, as can be otherwise suggested ([Geometry of Thinking for Sustainable Global Governance](#), 2009; [Alternation between Variable Geometries: a brokership style for the United Nations as a guarantee of its requisite variety](#), 1985).

It is in this respect that the ambiguity of those preoccupied with oppositional logic in relation to oppositional geometry is especially suggestive as implying a complex bridge between the two modalities. Using a search engine with respect to images relating to "oppositional geometry" reveals an impressive array of structures of potential relevance to the logic of political discourse -- especially if the search is refined to focus on the tetrahexahedron (discussed in the main paper). However the references from that academic site relating to applications to politics offer only a single lead ([Alessio Morretti, The oppositional geometry of Badiou's political revolutions](#), 2015), with a richer collection relating to psychology, but none to sociology. Curious also is the use of "variable" in governance studies of "geometry", implying a greater sensitivity to transformation that is evident in the preoccupation of logicians.

The notes which follow endeavour to highlight both the geometry and possible dynamics in configuring distinctive elements. Many derive from use of the octahedron and related forms of primary interest in oppositional geometry. The emphasis here is how distinctive forms of otherness might be configured, especially when opposed by similarly distinguishable degrees of anti-otherness. Expressed otherwise, what forms offer surfaces onto which distinctiveness may be memorably mapped?



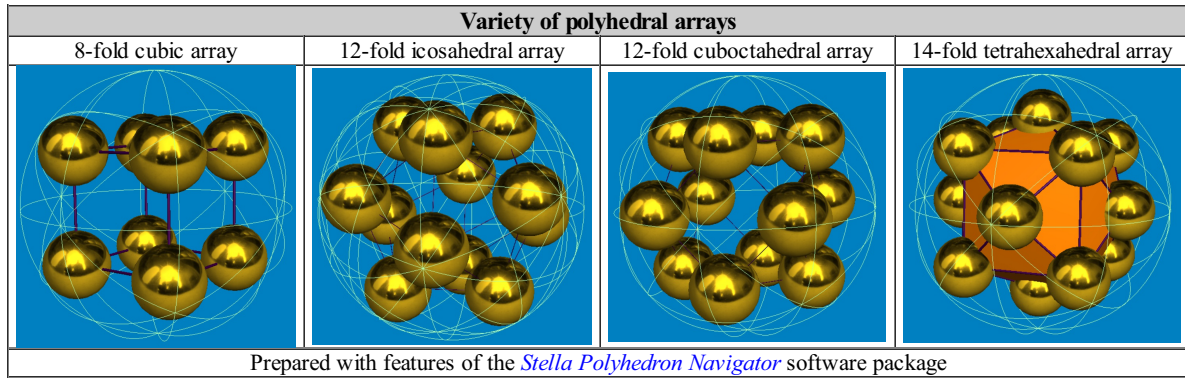
As noted by [Wikipedia](#), the truncated octahedron above can be represented by even more symmetric coordinates in four dimensions: all permutations of (1, 2, 3, 4). These form the vertices of a truncated octahedron in the three-dimensional subspace $x + y + z + w = 10$. Therefore, the truncated octahedron is the [permutohedron](#) of order 4 with each vertex corresponding to a permutation of (1, 2, 3, 4) and each edge represents a single pairwise swap of two elements. A version with 120 vertices (of order 5) is shown on the right above. The variant of order 6 has 720 vertices.

Visualization of memorable complex configurations

A verbal argument, especially when dependent on mathematical and logical jargon, needs to be presented otherwise if degrees of coherence are to be apparent to many -- hence the many polyhedral depictions in the forum on [Oppositional Geometry](#). To the extent that politics achieves a degree of credibility by appealing to symbols of coherence, most notably the sphere, there is a case for positioning points, principles, and lines of argument in some form of spherical configuration. Of particular interest is the manner in which the simplest polyhedra, widely known from architecture, can be employed to map strategic concerns -- especially in the case of those polyhedra which are the closest approximations to a sphere.

It is in this sense that the use made by oppositional geometry (logic) of variants of the octahedron is of particular interest -- notably as being the dual of the ubiquitous cube. Whilst the cube has long been used to illustrate simpler logical relations, it is the [truncated octahedron](#) that has become a particular focus in its dual form, namely the [tetrahexahedron](#) (as discussed [separately](#) and by Alessio Moretti, [The Geometry of Logical Opposition](#), 2009).

There appears to be a complex of insights potentially associated with geometrical transformations of the octahedron, including the [stellated octahedron](#) ([Framing Global Transformation through the Polyhedral Merkabah: neglected implicit cognitive cycles in viable](#)



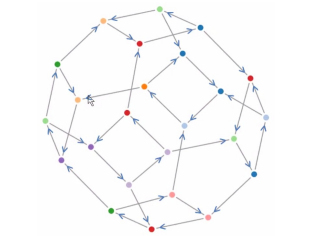
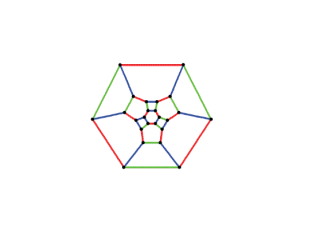
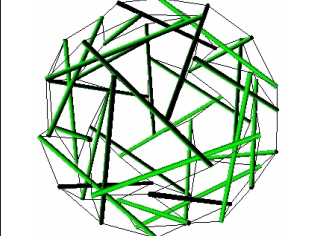
Dynamics of psychosocial systems suggested by force-directed layout

It is appropriate to note that the extensive range of available images on oppositional geometry are typically **static** variants of polyhedra (perhaps necessarily) -- typically transformations of the octahedron. "Necessarily" because the images are primarily designed for papers scheduled for academic journals. These are not designed to handle whatever may be implied by **animations in 3D** -- even when papers are made available online.

Missing from any representation of oppositional logic/geometry is therefore any sense that particular polyhedral edges in a configuration might be over-emphasized or under-emphasized in a context in which a particular otherness might be stressed. This takes the use of any polyhedral configuration beyond the logical abstractions for which the geometrical metaphor has been borrowed. The question is then whether it is possible visually to associate such contrasting degrees of emphasis with distortions of the original "ideal" configuration. Two possibilities are explored below.

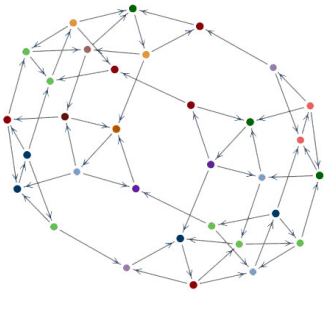
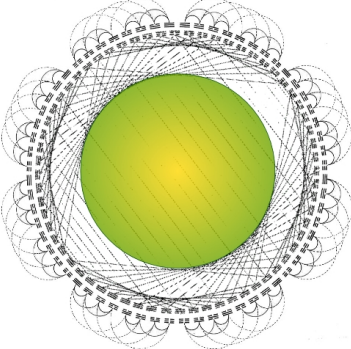
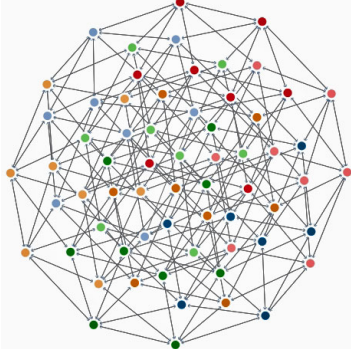
That on the left is derived from a more systematic exercise using **force-directed graph drawing** -- offering access to a range of other polyhedra (*Use of force directed layout to elicit memorable polyhedra*, 2015). Unfortunately, due to subsequent browser upgrades, incompatibilities notably restrict the interactive variant to Internet Explorer.

The animation in the centre is made from a suggestive distortion of the **truncated octahedral graph**, namely the graph of vertices and edges of the truncated octahedron. The distortions do not however affect the topological properties fundamental to its use for logical analysis. The animation on the right is a feature of the use of icosahedral **tensegrity** by management cybernetician Stafford Beer (*Beyond Dispute: The Invention of Team Syntegrity*, 1994). This explores the emergent balancing dynamics between non-compressible ("non-negotiable") and flexible elements in group discourse, as suggested with respect to a UN Earth Summit (*Configuring Globally and Contending Locally: shaping the global network of local bargains by decoding and mapping Earth Summit inter-sectoral issues*, 1992)

Screen-shot of force-directed layout of truncated octahedron dynamic variants (mp4 video; interactive, possibly only operative in Internet Explorer)	Animation of truncated octahedral graph suggestive of dynamics of group discourse with shifting emphases	Rotation of spherical tensegrity (indicative of "problem jostling")
		

In considering oppositional logic of any kind, it is appropriate to give consideration to the encoding of 64 contrasting conditions by the traditional Chinese classic -- the *I Ching*, as the *Book of Changes* -- and the 384 transformations between them. The 64 conditions (effectively of otherness) are the subject of distinctive metaphorical commentary which can be adapted into policy language, recognizing that the pattern as a whole has been much valued in Chinese governance over millennia (*Transformation Metaphors -- derived experimentally from the Chinese Book of Changes (I Ching) for sustainable dialogue, vision, conferencing, policy, network, community and lifestyle*, 1997). This goes far beyond the constraints of any simple binary encoding but is well-recognized as building upon it.

The 64 conditions can be uniquely mapped onto be 64 edges of the drilled truncated cube (*Proof of concept: use of drilled truncated cube as a mapping framework for 64 elements*, 2015), This lends itself to a force-directed layout presentation (below left). The central image (and animation) shows a traditional circular pattern of the 64 hexagrams with transformations between them. With each of the 64 conditions potentially transforming into an other through 6 distinctive pathways, consideration can also be given to the 64x6 transformations (namely 384). Since the transformations are in both directions, however, these can o be considered as only 192 bidirectional pathways.

Drilled truncated cube - 64 edges Screen shot of interactive force-directed version (with node labelling)	Adaptation of traditional configuration Screen shot of animation (mp4) of inner circle of trigrams relative to outer circle	64 vertices each with 6 transformations Screen shot of 192 2-way pathways force-directed layout animation
		

The above possibilities are discussed and further developed separately:

- [Visualization Enabling Integrative Conference Comprehension: global articulation of future-oriented 3D technology](#) (2018)
- [Enhancing Strategic Discourse Systematically using Climate Metaphors: widespread comprehension of system dynamics in weather patterns as a resource](#), (2015)
- [Path-ology: eliciting dynamic patterns of empowering and disempowering conditions](#) (2015)
- [Interplay of cognitive patterns in discourse on systemic change](#) (2015)

Higher dimensionality of psychosocial system reality

There is an almost universal assumption that the challenges of global governance can be handled through a 3D framework, readily articulated in 2D tabular form -- but with projections over time honouring a fourth dimension. As noted by [Sanjeev Seahra](#) with respect to *Why Bother with Extra Dimensions?*:

Yet despite the preponderance of common sense to the contrary, many people have been interested in the idea that the world is a fundamentally higher-dimensional arena. Over the years such a notion has acquired an eclectic legion of followers; including everyone from serious scientists to science-fiction writers, psychics to spiritualists, and authors to artists. ([Physics in Higher-Dimensional Manifolds](#), 2003)

Special visualization effects of every kind exploit this 4D framework -- although not in the formal articulations of governance. Given the demonstrable inadequacies and shortcomings, the struggle to encompass globality in 4D could be seen as a total failure to take advantage of the insights of mathematics and physics -- and 4D polyhedra, otherwise known as [polychora](#) ([Four-dimensional requisite for a time-bound global civilization?](#) 2015; [Comprehending the shapes of time through four-dimensional uniform polychora](#), 2015). In terms of polyhedral representation, the relevance of the tesseract to oppositional logic was noted in an animation in the main paper.

A major difficulty of dimensionality greater than 4 is its challenge to comprehension and the elusive (if not paradoxical) nature of forms which may only achieve coherence -- geometrical, topological or otherwise -- in higher dimensions. This continues to be a theme of mathematical popularizers (Edwin Abbott, [Flatland: A Romance of Many Dimensions](#), 1884; Ian Stewart, [Flatland](#), 2001; Dionys Burger, [Sphereland: a fantasy about curved spaces and an expanding universe](#), 1965). The relevance to the coherence and viability of governance seemingly remains to be explored.

Projective geometry: elaboration and reduction of complexity

Higher dimensionality helps to frame a condition in which the geometry of one level of dimensionality is transformed through projection into another. Thus points become lines (or edges), lines become faces (sides or circles), and faces (or circles) become volumes (or spheres).

In metaphoric terms this has implication for discourse about otherness as a "point" developing into a "line of argument", as discussed separately ([Engaging with Globality -- cognitive lines, circlets, crowns or holes](#), 2009). The process is illustrated and animated separately with respect to the symbolic [Merkabah](#) as [stellated octahedron](#) ([Cognitive implication in Merkabah as configuration of cycles essential to systemic viability](#), 2017).

Of particular relevance is the manner in which the process may be reversed, with lines becoming points. A complex configuration may thus be reduced, perhaps rendering it too simple to carry insights that can be mapped more explicitly onto more complex structures.

Otherness, anti-otherness -- and elusiveness

A major challenge of governance is the appropriate handling of otherness and anti-otherness, notably as it manifests in the preoccupations of opposing political parties -- or those elsewhere framed righteously as "enemies". Curiously the language used in political discourse readily identifies opposing forces as "demonic", if not explicitly "evil" -- especially if they are perceived as failing to respond to benevolent efforts to "reach out" to them in an effort to elicit their unquestioning agreement. Otherness seemingly always has the potential of being

framed as demonic.

There is a degree of implication that those making this distinction are necessarily "angelic", if only by comparison -- as the "forces of light" engaging the "forces of darkness". A particular difficulty is that the reverse assumption may be made by the "evil" -- perceiving themselves to be the "forces of light". Such relativism is itself readily deprecated as inadequate and simplistic to the challenge of engagement with otherness.

It is in this context that the elusive nature of otherness is usefully associated with values and their possible embodiment by deities and angels -- if not by demons. The existence and nature of "values" at this time could be usefully explored as being as surreal as that of "angels". How is the credibility attributed to the existence of "values" to be distinguished from that attributed to "angels" or "demons"? Surreal or not, angels are implicitly central to the preoccupation of the evangelism of Christianity in its different forms -- with their particular current influence on global strategy formulation.

The question is then whether such elusiveness is best explored through higher dimensionality. This would be consistent with the recognition by fundamental physics of the need for a number of dimensions far greater than 4, with up to 26 having been hypothesized. What dimensionality is required for the coherence of the values so frequently framed as fundamental by politicians?

Why indeed have pantheons of empires of the past distinguished and configured 8 or 12 deities, for example -- as the embodiment of distinctive values? **Why are such numbers also characteristic of sets of archangels -- as suggestively arrayed above?** Why does the number vary from myriad to such a limited set, if not zero? (*What are the Categories of Angels (archangels, thrones, dominions, seraphim)*, Catholic Straight Answers?)

It is such questions which call for insights from mathematical theology (*Mathematical Theology: Future Science of Confidence in Belief*, 2011) and axiological systems theory (Francisco Parra-Luna, *Axiological Systems Theory, Systems Science and Cybernetics/Encyclopedia of Life Support Systems*, 1999). How indeed to predict the number of intangible othernesses that may be distinguished? Is there indeed scope for speculative exploration as separately suggested (*Engaging with Hyperreality through Demonique and Angeliq? Mnemonic clues to global governance from mathematical theology and hyperbolic tessellation*, 2016).

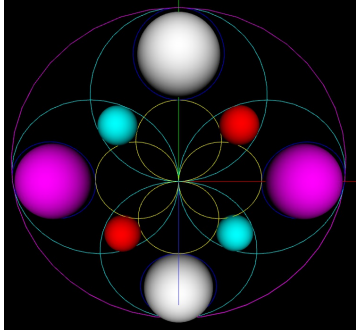
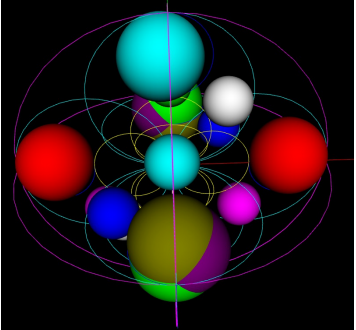
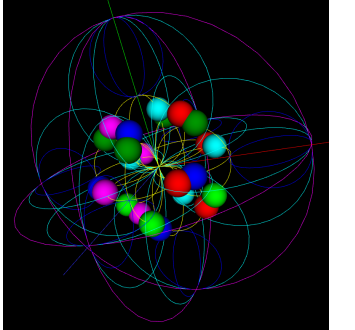
Sonification for subtle pattern recognition

It is intriguing to note the extent to which physics, notably astrophysics and fundamental physics, make use of **sonification** to enable pattern recognition in massive streams of data. Seemingly no argument is made for such use in policy making, despite the immense dependence on verbal declarations for debate and public relations. What patterns remain undetected?

This metaphor frames discussion of any univocal declaration (as in the main paper) -- notably as the solo performance of a supreme leader. This contrasts with recognition of the variety of "voices" in any democracy -- potentially vital to the viability of a psychosocial ecosystem, understood in terms of requisite variety.

The angel metaphor lends itself to articulation in such terms -- especially given traditional reference to "choirs of angels". Is the set of values better to be understood in choral and symphonic form through the complex interplay of multiple "voices" -- each necessarily exemplifying a instinctive form of otherness, potentially challenged with anti-otherness in musical terms? Given the interplay in music between concord and discord, how does the distinction of nine choirs of angels relate to the geometric distinctions with regard to nine-fold patterns (*Concordian Mandala as a Symbolic Nexus: insights from dynamics of a pentagonal configuration of nonagons in 3D*, 2016; *Use of Concordian Mandala for a 3D ordering of value polarities*, 2016)?

An instructive approach to the visualization of the dynamics between voices is presented below using colours to distinguish them (*24-fold Pattern Implied by Dynamics of the Lauburu in 3D*, 2016).

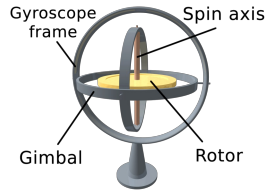
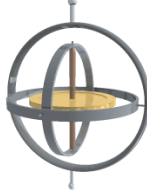

Screen shots and 3D animations of complementary "voices" using the geometry of mutually orthogonal lauburu to frame pathways of emergence and reabsorption		
Single-plane lauburu framework animation of 8-voice dynamics	Double-plane lauburu framework animation of 16-voice dynamics	Triple-plane lauburu framework animation of 24-voice dynamics
		
Video (mp4). Virtual reality (x3d, wrl)	Video (mp4). Virtual reality (x3d, wrl)	Video (mp4). Virtual reality (x3d, wrl)

Related animations are suggested by *Framing Cyclic Revolutionary Emergence of Opposing Symbols of Identity: Eppur si muove: Biomimetic embedding of N-tuple helices in spherical polyhedra*, (2017).

Gyroscopes for balance in higher dimensional navigation

Governance frequently makes reference to the need for balance in navigating the ship of state. This is proving all the more challenging

with respect to global governance, readily framed as rocked by the high seas ([Geoffrey Vickers](#), *Freedom in a Rocking Boat: changing values in an unstable society*, 1972). Fundamental to such navigation is the compass stabilized within a gimbal framework by a [gyroscope](#). This is a spinning wheel or disc in which the axis of rotation is free to assume any orientation by itself as a means of measuring or maintaining orientation and angular velocity. When rotating, the orientation of this axis is unaffected by tilting or rotation of the mounting, according to the conservation of angular momentum (Vittorio M. N. Passaro, et al, *Gyroscope Technology and Applications: a review in the industrial perspective*, *Sensors*, 17, 2017, 2284).

Gyroscope and gimbal	Gimbal stabilization of compass	Quadrantal spheres on each side of a compass
		
Reproduced from <i>Wikipedia</i>		

The functions of the gyroscope and the [centrifugal governor](#) were used together in a separate speculative discussion of the challenges of global governance (*Global Governance via a Double-breasted Strange Attractor: cognitive implication in a dynamic sexual metaphor*, 2009). A centrifugal governor is a specific type of [governor](#) with a feedback system that controls the speed of an engine by regulating the amount of fuel admitted, so as to maintain a near-constant speed, irrespective of the load or fuel-supply conditions. Especially intriguing, given the [problematic connotations of spin](#) in communications processes, is the recognition of its essential role in such devices.

Of particular relevance to this argument has been the use of gyroscope as a metaphor for the "inner-directed man" by the sociologist [David Riesman](#) (who had worked for Sperry Gyroscope). This was held to be one of three main cultural types: tradition-directed, inner-directed, and other-directed (David Riesman, Nathan Glazer and Reuel Denney, *The Lonely Crowd*, 1950). Riesman used the term "psychological gyroscope":

A new psychological mechanism is "invented": it is what I like to describe as a psychological gyroscope. This instrument, once it is set in motion by the parents and other authorities, keeps the inner-directed person, as we shall see, "on course" even when tradition, as responded to by his character, no longer dictates his moves

Riesman added:

This metaphor of the gyroscope, like any other, must not be taken literally. It would be a mistake to see the inner directed man as incapable of learning from experience or as insensitive to public opinion in matter of external conformity. He can receive and utilize certain signals from outside, provided that they can be reconciled with the limited maneuverability that his gyroscope permits him. His pilot is not quite automatic.'

The role of these devices for navigation (as conventionally understood) then frames the question as to their nature in any navigation in contexts of dimensionality greater than four (Sarah Laskow, *Watch Astronauts from the 1970s geek out with Gyroscopes*, *Atlas Obscura*, 9 October 2018). Given their importance to spacecraft, as illustrated there, what might be their implications for other modes of "navigation"? Could the "human values", upheld as fundamental for any collectivity, then be understood as "psychological gyroscopes" -- internalized values -- necessarily of higher dimensionality? Rightly or wrongly, the use of the metaphor has been subsequently called into question (David J. Ayers, *The Rise and Fall of Inner-Directed Character: From Dictate to Gyroscope to Radar*, *Slideshare*, 10 September 2018). However "psychological gyroscope" continues to be valued in contrast with the sensitivity of "radar" to the expectations of others (Vincent Barabba and Mark Paich, *Impact of Context in Selecting Decision Tools for use in Both the Public and Private Sectors*, *System Dynamics*, 2004).

What does "spin" mean in such contexts? How is a gyroscope in 5-dimensional space to be understood? Such questions are remarkably addressed by Sanjeev Sehra (*The Dynamics of Test Particles and Pointlike Gyroscopes in the Brane World and Other 5D Models*, *Physical Review*, 2002; *Physics in Higher-Dimensional Manifolds*, 2003)

The central issue is embodied by the question: "If extra dimensions exist, how would we know?" The goal is the elucidation of the observable consequences of a fairly wide class of 5-dimensional models; particularly in the context of test particle trajectories, pointlike gyroscope dynamics, and gravitational field equations.... We identify two main hypotheses that answer this question: either we are unaware of motion in the fifth dimension [the *ignorance hypothesis*], or we do not move in the fifth dimension at all [the *confinement hypothesis*].

If the current challenges of governance derive from the misleading assumption that that space is only of 4 dimensions. arguably there is indeed a case for exploring how balance is to be achieved in a space of higher dimensionality (5 or more), The role of "spin" beyond its simplistic exploitation as a communication metaphor then merits particular attention. How might appropriate gyroscopes function in the

navigation of the [adaptive cycle](#), for example? (Brian D. Fath, et al, *Navigating the adaptive cycle: an approach to managing the resilience of social systems, Ecology and Society*, 20, 2015, 2). References by physics to "brane worlds" invite speculative exploration of relevance to governance (*Global Brane Comprehension Enabling a Higher Dimensional Big Tent?* 2011).

Periodicity and memorability through cycles and waves

It is perhaps curious that efforts to represent and comprehend periodicity tend to take the form of periodic tables in 2D, as noted in the main paper (*Periodic engendering of distinctive otherness*). Various tools are offered to facilitate rendering such tables memorable, most notably in the case of chemical elements. Such an array of tools is not offered for polyhedra or crystal structures. To the extent that these represent arrays of othernesses, one could look in vain for periodic tables of othernesses -- of relevance to their governance, and the challenge of anti-otherness. Inspired by such patterns, possibilities meriting exploration include: *Periodic Pattern of Human Knowing* (2009) and *Tuning a Periodic Table of Religions, Epistemologies and Spirituality -- including the sciences and other belief systems* (2007).

As suggested with respect to *Hyperreality and anti-otherness*, both the periodicity and memorability can be understood as deriving from wave effects and the facility with which consciousness engages with them, most obviously in music and song. The coherence of polyhedra with degree of spherical symmetry can also be understood in that light -- especially when articulated in geodesic domes and built pantheons. Hence the argument for cognitive pantheons offering analogous qualities.

Transformability of cognitive pantheons

Whether associated with the set of polyhedra or music, the emphasis of this argument is on the transformation between modalities and the transformation pathways which enable this. This can be readily defined in geometrical and topological terms in the case of polyhedra -- for which animated visualizations are available. Such transformation is of course far more easily comprehended in familiar musical terms.

The question is how to use such templates to map the variety of otherness -- highlighting both the viable transformations between them and those which are problematic, for which the musical understanding of discord is helpful (if it cannot be encompassed by music of larger scope). Related issues are fruitfully explored by *catastrophe theory* in the light of the arguments of René Thom (*Structural Stability and Morphogenesis*, 1972), These are notably relevant in the case of psychodynamics (Rene Thom, *Semio Physics: A Sketch*, 1990; *Apologie du Logos*, 1990)

Especially intriguing is the possibility that the threads of this argument lend themselves to be interwoven in a self-referential mapping of some form, following the arguments of Douglas Hofstadter (*Gödel, Escher, Bach: An Eternal Golden Braid*, 1979).

Sustainability enabled by a pattern of feedback cycles

The quest for sustainability in relation to the dynamics between otherness and anti-otherness suggests that this is intimately related to the configuration of cycles as they may be associated with the geometry of polyhedral forms or their musical analogues. How many feedback cycles are required for sustainability -- and of what variety? What ensures that psychosocial sustainability is not inherently boring and therefore unstable?

Especially intriguing is the sense in which sustainability may be understood as an infinite game, as remarkably explored by James P. Carse (*Finite and Infinite Games: a vision of life as play and possibility*, 1986) and otherwise articulated by Niki Harré (*The Infinite Game: how to live well together*, 2018). Such insights are readily seen as inspired by the *Glass Bead Game* (1943) envisioned by Hermann Hesse. Such inspiration is challenged by more questionable uses of the insight (*Playing the Great Game with Intelligence*, 2013).


Relating sustainability to an infinite game frames the provocative question as to when familiarity with a game becomes boring -- as particularly defined. The game is then transformed from engaging into a problematic otherness -- necessitating anti-otherness strategies to inhibit emergence of unforeseen destabilizing variety. The vast array of polyhedra, together with their higher dimensional variants, then offers a metaphor whereby the "tokens" and "rules" of a game may be reframed as subject to transformation -- a shift from the static conventions of a rule-bound game.

Sustainable democracy might then be better understood as a truly infinite game capable of calling itself into question in ways as yet to be understood. These are perhaps suggested by the arguments of Nassim Nicholas Taleb (*The Black Swan: the impact of the highly improbable*, 2007; *Antifragile: things that gain from disorder*, 2012).

There is the intriguing sense that a game becomes boring and vulnerable to surprise following experience of cycles as repetitive. This could be understood as when it is remembered only too well, as suggested by the adage of George Santayana: *Those who cannot remember the past are condemned to repeat it* (1905).

In a global society variously dependent on cycles for sustainability. at what point does their repetition evoke "revolution" -- namely the cycle metaphor otherwise understood?

Speculative succinct summary of engaging opposition -- sustainably or otherwise (using widely recognized blue/red pill distinctions of choice from <i>The Matrix</i>)		
Caduceus (and Rod of Asclepius) (symbol of medicine and health care)	Caduceus-Hygieia animation	Hygieia Bowl of Hygieia (symbol of pharmacy and hygiene)
"Red-pill" awareness:		"Red-pill" awareness:

<ul style="list-style-type: none"> • mirror self-recognition • self-reflexive capacity • negative capability • "seen the enemy; them is us" • flying "otherwise" with coordination of counteracting wings • requisite alternation for movement, depth perception and regeneration 		<ul style="list-style-type: none"> • critical recognition of "blue pill" complacent complicity in game-playing • questioning ability of linear thinking to enable navigation of the curvature of the adaptive cycle • pattern recognition through use of bowl as scrying medium • engaging otherwise ("being the pill")
<p>"Blue-pill" awareness:</p> <ul style="list-style-type: none"> • comfortably adapted to conventions of demonizing otherness in game-playing • "if you're not with us, you're against us" • "flying" as driving metaphor • continuing struggle to fly with one wing competing against the other 		<p>"Blue-pill" awareness:</p> <ul style="list-style-type: none"> • uncritical dependence on medication to sustain accommodation to dis-comfort and dis-ease • assumption that adaptability needs only linear thinking -- despite experienced discomfort • use of substance dependence to cultivate the illusion that all is well -- bowl as primary source of lethe
<p>The animation includes an appropriately subliminal image of a "red pill" view down into the "scrying bowl" -- of a DNA cross-section, implied by the Caduceus, variously compared to a symbol of the <i>Flower of Life</i>, an exemplification of oppositional geometry</p>		
<p>Relevant arguments:</p> <ul style="list-style-type: none"> • <i>Psychosocial Transformation by "Pill Pushing"? Model-making, strategic advocacy and the myth of the "red pill"</i> (2016) • <i>Counteracting Extremes Enabling Normal Flying: Insights for global governance from birds on the wing and the dodo</i> (2015) • <i>Pricking the Bubble of Global Complacent Complicity: Hyperdimensional insights from the physics of bubble blowing, bursting and collapse?</i> (2017) • <i>Visualization in 3D of Dynamics of Toroidal Helical Coils -- in quest of optimum designs for a Concordian Mandala</i> (2016) • <i>Climbing Elven Stairways: DNA as a macroscopic metaphor of polarized psychodynamics</i> (2007) • <i>Transforming and Interweaving the Ways of Being Stoned: imagination, promise, rocks, memorials, petrification</i> (2006) 		

References

- G. William Barnard. Exploring Unseen Worlds: William James and the Philosophy of Mysticism. SUNY Press, 1997
- Gregory Bateson and Mary Catherine Bateson. Angels Fear: toward an epistemology of the sacred. University of Chicago Press, 1988
- Stafford Beer. Beyond Dispute: The Invention of Team Syntegrity. Wiley, 1994
- I. Bianchi and U. Savardi. The Perception of Contraries. Aracne, 2008
- Eveline G. Bouwers. Public Pantheons in Revolutionary Europe: comparing cultures of remembrance. Palgrave Macmillan, 2012
- James P. Carse. Finite and Infinite Games: a vision of life as play and possibility. Free Press, 1986
- Keith Critchlow. Order in Space: a design source book. Thames and Hudson, 1969
- Umberto Eco. The Search for the Perfect Language. Blackwell, 1995
- Barbara Ehrenreich:
- Bright-sided: How the Relentless Promotion of Positive Thinking Has Undermined America. 2009
 - Smile Or Die: How Positive Thinking Fooled America and the World. 2009
- Wendy Farley. Eros for the Other: retaining truth in a pluralistic world. Pennsylvania State Press, 1996
- Matthew Fox and Rupert Sheldrake. The Physics of Angels: exploring the realm where science and spirit meet. HarperCollins, 1996
- Buckminster Fuller. Synergetics: Explorations in the Geometry of Thinking. Macmillan, 1975/1979 [text]
- P. Gärdenfors. The Geometry of Meaning: semantics based on conceptual spaces. MIT Press, 2014

- A. C. Graham. *Disputers of the Tao: philosophical argument in Ancient China*. Open Court, 1989 [[summary](#)]
- Niki Harre. *The Infinite Game: how to live well together*. Auckland University Press, 2018
- Douglas Hofstadter. *Godel, Escher, Bach: An Eternal Golden Braid*. Basic Books, 1979
- Douglas Hofstadter and Emmanuel Sander. *Surfaces and Essences: analogy as the fuel and fire of thinking*. Basic Books, 2013
- W. T. Jones. *The Romantic Syndrome: toward a new method in cultural anthropology and the history of ideas*. Martinus Nijhoff, 1961
- Catherine Keller. *From a Broken Web: Separation, Sexism and Self*. Beacon Press, 1986
- George Lakoff and Rafael Núñez. *Where Mathematics Comes From: how the embodied mind brings mathematics into being*. Basic Books, 2001
- Emmanuel Levinas. *Alterity and Transcendence*. Columbia University Press, 1970
- Ali A. Mazrui:
- The Re-Invention of Africa: Edward Said, V. Y. Mudimbe, and beyond. *Research in African Literatures*, 36, 2005, 3, pp. 68-82
 - African Thought in Comparative Perspective. Cambridge Scholars Publishing, 2014
- Ernest McClain:
- Myth of Invariance: the origins of the gods, mathematics and music from the Rg Veda to Plato. Nicolas-Hays 1976
 - The Pythagorean Plato: prelude to the song itself. Nicolas-Hays 1978
 - Meditations through the Quran: tonal images in an oral culture. Nicolas-Hays 1981
- Mark S. Medley. *Imago Trinitatis: Toward a Relational Understanding of Becoming Human*. University Press of America, 2002
- Alessio Moretti. *The Geometry of Logical Opposition*. Université de Neuchâtel, 2009
- Jerome Ikechukwu Okonkwo:
- Creating More Space for African Philosophy: problems and prospects. *Journal of African Traditional Religion and Sustainable Development*, 1, 2016 [[text](#)]
 - Kwasi Wiredu: The African Face of Alterity and Dialogue, *Journal of Philosophy*, 2012
- Stephen Prothero. *God Is Not One: The Eight Rival Religions That Run the World -- and Why Their Differences Matter*. HarperOne; 2010
- David Riesman, Nathan Glazer and Reuel Denney. *The Lonely Crowd: a study of the changing American character*. Yale University Press, 1950 [[text](#)]
- D. H. Rouvray and R. Bruce King (Eds.). *The Mathematics of the Periodic Table*. Nova Science, 2005
- U. Savardi (Ed.), *The Perception and Cognition of Contraries*, McGraw-Hill, 2009
- Sanjeev S. Seahra. *Physics in Higher-Dimensional Manifolds*. University of Waterloo, 2003 [[text](#)]
- Michael A. Sells. *Mystical Languages of Unsayings*. University of Chicago Press, 1994
- Nassim Nicholas Taleb:
- The Black Swan: the impact of the highly improbable. Random House, 2007
 - Antifragile: things that gain from disorder. Random House, 2012
- Rene Thom:
- Structural Stability and Morphogenesis. W. A. Benjamin, 1972
 - Semio Physics: A Sketch. Addison Wesley, 1990
 - Apologie du Logos. Hachette, 1990
- Alexander Wendt:
- Quantum Mind and Social Science: unifying physical and social ontology. Cambridge, 2015
 - Flatland: Quantum Mind and the International Hologram. In: Mathias Albert, et al. (Eds), *New Systems Theories of World Politics*, Palgrave Macmillan, 2010
 - Social Theory of International Politics. Cambridge, 1999



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