



laetus in praesens

Alternative view of segmented documents via Kairos

12 January 2015 | Draft

Changing Patterns using Transformation Pathways

Exploring "camp-us" inspiration by an alien world view as a metaphor

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Introduction

The following exercise derives from recent discoveries relating the codons of the genetic code governing life to patterns of numbers, as reported by Christopher Kemp (*Is the answer to life, the universe and everything 37 ?*, *New Scientist*, 20/27 December 2014). The report reviews research by Maxim Makukov, a cosmologist and astrobiologist at the Fesenkov Astrophysical Institute in Kazakhstan, in collaboration with the mathematician Vladimir shCherbak (*The "Wow! signal" of the terrestrial genetic code*, *Icarus*, 224, 2013). That title follows from a rare "Wow" moment in the SETI process in 1977 (J. R. Ehman, "Wow!" :- a tantalizing candidate, 2011). A case has been recently made for renewing the SETI process (Nicholas Weiler, *SETI Debates the Wisdom of Revealing Ourselves to the Galaxy*, *AAAS News*, 13 February 2015; Eric Hand, *Researchers call for interstellar messages to alien civilizations*, *Science Insider*, 12 February 2015; Nancy Owano, *SETI scientists say it's time to send messages to ET*, *Phys.org*, 14 February 2015).

Kemp duly notes the recognized existence of 64 codons resulting from various 3-fold combinations of the 4 DNA primary bases (A, C, G and T). It is the patterning of this array of codons that is the focus of the recent discovery. The preoccupation of the authors is with the possibility that a signal of extraterrestrial origin had been deliberately embedded in the code -- a code within a code.

Flippant or otherwise, the assumption that a pattern discovered in this way would be the answer to life, the universe and everything (from the perspective of mainstream science) calls for some reaction -- given the inadequacy of science to frame meaningful approaches to the challenges of life on this planet for much of humanity at this time. This concern has been argued separately (*Challenges More Difficult for Science than Going to Mars -- or exploring the origins of the Universe or of Life on Earth*, 2014). Especially interesting is the presumptuous manner in which the natural sciences and the report -- true to those patterns -- avoid the psychosocial implications of "life", as many are obliged to experience it, and as previously reviewed (*Knowledge Processes Neglected by Science: insights from the crisis of science and belief*, 2012).

The concern here is with how an "answer" might be represented in order to be meaningful to the enhancement of the engagement with life as it is lived by many worldwide, as may be speculatively explored (*Engaging with Insight of a Higher Order*, 2014). The argument here uses the framing of the Kazakh preoccupation to consider how recognition of the elusive "extraterrestrial" insight is remarkably mirrored by the challenge to Western science of recognizing the subtle insight of terrestrial "aliens" -- in particular that of the Chinese. For, although remarkably well written and documented, the Kazakh argument fails to acknowledge the potential relevance of a very similar pattern of 64 elements long valued (and studied) in Chinese tradition with respect to governance and decision-making.

The code "embedded within the code", then to be explored, is that relating to problematic patterns of polarization and disassociation characteristic of the unfruitful dynamics of "life" in global society. To this end, the focus here is on reframing the relationship between the "us" of the conventional world view ("camp-us"), as inspired by the alien insights of "them" -- potentially experienced as meaningless or terrifying (by "camp-us"). The code within the code is therefore about the memetic challenge of "us and them" in this respect (*Us and*

Them: Relating to Challenging Others -- patterns in the shadow dance between "good" and "evil", 2009). As a literary device, use of "camp-us" in this context also suggestively includes the "US camp" in its quest for world domination at this time -- despite controversy with regard to the increasing role of China in global society. The patterning of the distinctions illustrated by the four DNA bases (A, C, G and T) is used here as a source of valuable guidance to that exploration.

The basis for the following approach is that if an ultimate "answer" is to be as meaningful as imagined, then it should be comprehensible to a far higher degree by a wider proportion of the population -- effectively governed by that answer, both within their biology and within their psychology, as potentially recognized by biosemiotics. For "them", an image takes people to places where explanations by "us" struggle to follow. With what insight is one able to see the world whole when challenged by the paradox of "us" and "them"?

This suggests a requirement that people be able to engage with the pattern rather than be simply confronted with it by informed elites, as separately explored (*Engaging with Insight of a Higher Order*, 2014). This concern is in the spirit of various authors (Joseph Campbell, *The Inner Reaches of Outer Space: metaphor as myth and as religion*, 1986; Henry Skolimowski, *The Participatory Mind: a new theory of knowledge and of the universe*, 1994; George Lakoff and Rafael Núñez, *Where Mathematics Comes From: how the embodied mind brings mathematics into being*, 2000).

The argument here focuses on the use of symmetrical polyhedral forms as a means of ensuring coherence and memorability, whilst enabling new modes of interaction. This is in the spirit of meaningful symbols used in the past. Familiarity with multimedia technology could prove significant in this respect -- in contrast with academic reliance on text with only those most limited use of memorable imagery of integrative value.

Code within code as story within story: associating familiar and unfamiliar

Restrictive approaches, from a purely genetic perspective, can be usefully contrasted with the multidisciplinary study framed as **biosemiotics**, as edited by **Marcello Barbieri** (*The Codes of Life: the rules of macroevolution*, 2007). Building on a range of disciplines - from biology and anthropology to philosophy and linguistics - this draws on expertise in the study of organic, mental and cultural codes brought together by the emerging discipline of biosemiotics. It suggests that the genetic code was only the first in a long series of organic codes, and that it has been the appearance of new codes that have paved the way for the major transitions in the history of life.

Despite this broader framework, it is curious to note the failure to mention the potential of any Chinese insight into the matter, even though this is integrated with a rich understanding of life -- one long adapted to healing processes. Similarly a separate study makes only passing reference to: *The TAO, biosemiotics and the problem with semantic closure entailed by reflexivity* (Mario Giampietro, et al, *The Metabolic Pattern of Societies: where economists fall short*, 201, pp. 71-73).

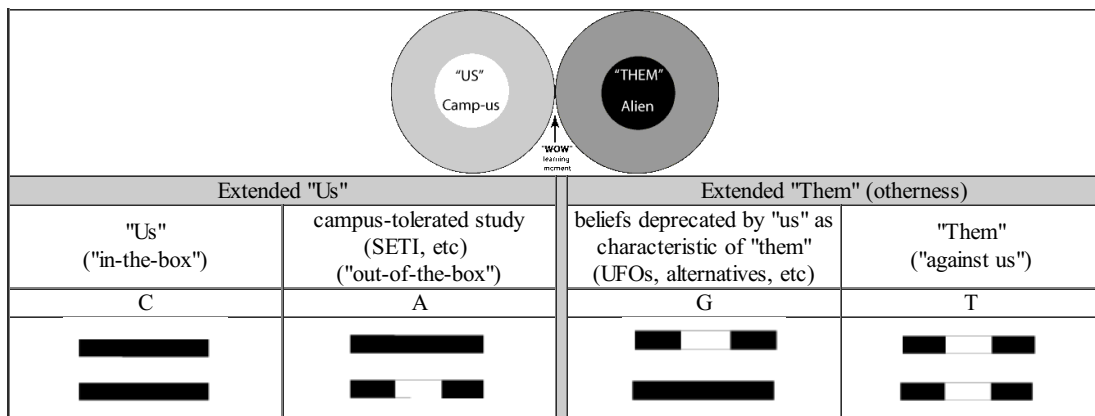
The argument with respect to 64 distinct codons, as the key to life, is based on 3-fold combinations of the DNA bases (A, C, G, T). The polarization fundamental to the global dynamics of life could however be usefully distinguished in terms of pairs such as:

- legitimate -- illegitimate
- intelligible -- unintelligible
- intelligent -- unintelligent
- credible -- incredible
- restricted access -- open access
- meaningful -- meaningless
- serious -- flaky
- right -- wrong
- probable -- improbable
- registered property -- unowned
- friendly (like us) -- terrifying (unlike us)
- relevant -- irrelevant

"Us" versus "Them": These **polar mindsets** could however be seen as characteristic of "us" (at one extreme) and of "them" (at the other). Rather than seeking definitional closure at all costs, there is a case for distinguishing **intermediate mindsets** that are typically excluded:

- one characterized primarily as conditioned by the perspective of "us"
- the other as condition by perspectives of "them"

These two intermediate conditions constitute "grey areas". The four conditions could be schematically represented by the following.



Learning from the Taliban as an example: The relevance of the schematic above can be usefully explored in relation to the current Western response ("Us") to **radical Islam** ("Them"). The question after a decade of conflict is whether there is anything to be learned from "Them" -- an inquiry that could be fruitfully extended to include **radical Christianity** and **radical Judaism**.

In commenting on the views of a panel of experts (*What Have We Learned: lessons from Afghanistan and Iraq; Pick Your Battles:*

ending America's era of permanent war?, *Foreign Affairs*, November/December 2014), Marc Jampole notes that *Foreign Affairs* writers all learn the same thing from recent wars -- unfortunately, it's how to fight future wars (*OpEdge*, 4 November 2014). This judgement applies to other commentaries (Paul D. Wolfowitz, *Lessons Learned: The Iraq Invasion*, *World Affairs*, May/June 2013; Stephen M. Walt, *Top 10 Lessons of the Iraq War*, *Foreign Policy*, 20 March 2012; Patrick Devenny, *Legal Advice from the Taliban*, *Foreign Policy*, 29 May 2009).

The slightest effort to learn from ISIS or the Taliban is however framed as highly controversial and suspicious, if not traitorous -- a faint voice to be silenced by any means (Joris de Bres, *Blowing Up The Bamiyan Buddhas: It Makes You Think*, *New Zealand Herald*, 5 December 2002; The Saker, *I am NOT Charlie*, *Information Clearing House*, 8 January 2015; Rony Brauman, *Ce qu'il y a de non Charlie en moi*, *Le Monde*, 16 janvier 2015). As noted by Michel Chossudovsky (*The Attacks on Charlie Hebdo and the "Kosher Grocery Store"*, *Global Research*, 9 January 2015):

While the French media in chorus point to the jihadist threat to "Freedom of Expression", not a single French media has had the courage of raising the broader issue of [State sponsorship of terrorism](#) and the insidious role of the French government and its intelligence apparatus in supporting Al Qaeda affiliated entities not only in the Middle East and Africa but also in France. In a bitter irony, the campaign following the terrorist attack on Charlie Hebdo has not contributed to sustaining "Freedom of Expression". In fact quite the opposite. It has contributed to a new wave of media censorship

Rather than desperately seeking closure in terms of a single voice, under the banner of solidarity with "us" in the face of the threat of "them", where is the recognition of the need for multiple voices to counter the blinkered danger of "yes men" -- singing from the same hymn sheet, as argued in a special issue of *Le Monde* (*Non à l'Union sacrée*, 16 janvier 2015)? How is insight to be gleaned from any contrarian voice -- to be valued rather than condemned, as was the *diabolus in musica*? The case has been variously argued by Edward de Bono (*Six Thinking Hats*, 1985; *Six Action Shoes*, 1991; *Six Frames For Thinking About Information*, 2008). Valuable insights are offered by Aaron Doncaster, *Learning from the Taliban: a message to the western anti-war movement*, *Rad-Green*, 14 November 2009). How to move beyond the assumption that "Them" are unquestionably wrong and "Us" are unquestionably right?

Is there no case for questioning the collective psychosis regarding Charlie Hebdo at a time when the Coalition of "Us" is ensuring the deaths of many of "Them" in Syria? These are deaths systematically uncounted, forgotten and unmourned by "us" (*US-led coalition launched 29 air strikes against Isis on New Year's Eve*, *The Guardian*, 1 January 2015). Is there no shame on "us" for framing the killing of "them" as a matter of international honour for "us", as separately explored (*Honour Essential to Psycho-social Integrity*; John V. Whitbeck, *Reflections From Paris Who is marching anywhere to honor those killed in Baga?* *Information Clearing House*, 12 January 2015)?

There is seemingly no notion that there may be something of significance to be learned from "Them", beyond how to convert them -- or to subdue them militarily, as implied by threats (Nick Cullather, *Bomb them Back to the Stone Age: An Etymology*, *History News Network*, 10 June 2006; *Ted Cruz: Bomb ISIS 'Back to the Stone Age'*, *NewsMax*, 30 August 2014). How is the methodology and purpose of the International Centre for the Study of Radicalisation (ICSR) then to be assessed (and challenged) in producing its latest report *Talking to the Taliban: Hope over History?* (2013)?

As with the Catholic view of Protestants over centuries (duly reciprocated), "they" are considered [beyond the pale](#), lacking any reasonable intelligence, sense of honour, or other values worthy of respect. The savagery of "them" is highlighted by every means, for purposes of propaganda; that of "us" is effectively censored (*Beheading versus Befooting: in quest of the lesser evil for the greater good*, 2014). The basic message of "camp-us" is: **Nothing to learn; we know all that needs to be known.**

As yet there has been no "Wow" moment of recognition that: **They may have a point.** But what could it possibly be -- a code within a code? Where are they coming from? Why do they consider it "right"? Are those with radical perspectives -- like Osama bin Laden -- tortured and/or killed **before** endeavouring to comprehend their worldviews? What of value has been learned from those in the [Guantanamo Bay Detention camp](#)? This is perhaps to be recognized as the kind of "camp-them" which "camp-us" would create for any aliens, as with the [reservations](#) for indigenous peoples in the past, and as dramatized by the science fiction movie *District 9* (2009)?

There is great historical irony to the repetition of the patterns and mindsets framed by the manual of the Inquisition known as *The Hammer of the Witches* (1486) -- curiously echoed in the metaphor of recent policy recommendations (*Hammer and Anvil: How to Defeat ISIS*, *Foreign Affairs*, 8 January 2015). Military and cultural historians of the future may well frame matters quite otherwise (*Transforming the Unsustainable Cost of General Education: strategic insights from Afghanistan*, 2009). As Sun Tzu advised in *The Art of War*: **It is said that if you know your enemies and know yourself, you will not be imperiled in a hundred battles; if you do not know your enemies but do know yourself, you will win one and lose one; if you do not know your enemies nor yourself, you will be imperiled in every single battle.**

As concluded by Steven Metz (*Strategic Horizons: U.S. Must Learn the Real 'Lessons' of Afghanistan*, *World Politics Review*, 16 January 2013):

The lesson is that the conceptualization of counterinsurgency that has driven the United States for the past decade only works under a very specific set of circumstances. If these circumstances are not present, America needs a radically different approach. Unfortunately, there are few signs so far that this has been learned. Within the U.S. military, the idea still dominates that with a bit of tweaking and refinement, the methods used in Iraq and Afghanistan can provide a model for the future. If this continues, disasters await.

In those terms, what did "Us" learn? Why do the various texts on "why do they hate us" indicate that so little has been learned from "them" (Lee H. Hamilton, *Why Do They Hate Us? The Huffington Post*, 4 December 2014)? Ironically Hamilton's argument helps to clarify the answer (point by point) by failing to recognize how many of the values held by "us" **in principle** fail to correspond to the reality of implementation **in practice**, as perceived by "them":

We treat people humanely. We abide by the rule of the law. We are a generous and caring people. We offer a vision that will provide for a better future for the world's children, beginning, first and foremost, with a promise of life over death. We believe deeply in the power of education and economic opportunity. We oppose indiscriminate violence. We strongly encourage political participation and tolerate differing points of view.

This hypocrisy helps in understanding why so many are attracted to "them" -- and not to "us"? (Ziauddin Sardar and Merryl Wyn Davies, *Why Do People Hate America?* 2003; Ryan Mauro, *Understanding Islamic Extremism, The Clarion Project*, 26 January 26, 2014; Tawfik Hamid, *Understanding Islamic Extremism*, 2011; Michael S. Rozeff, *Truly Massive Display of Hypocrisy by Western Leaders, Information Clearing House*, 11 January 2015).

"Camp-us", according to its critics, can however also be understood as constituting a form of "extremism" exhibiting its own form of "terrorism" (Peter Bergen and David Serman, *U.S. right wing extremists more deadly than jihadists, CNN*, 20 April 2014; Noam Chomsky, *America, the World's Leading #1 Terrorist State: U.S. covert operations routinely resemble acts of terrorism, AlterNet*, 3 November 2014; Noam Chomsky, *Charlie Hebdo We Are All -- Fill in the Blank, Information Clearing House*, 11 January 2015). Rather than Charlie Hebdo, there are potentially valuable learnings from exploring identification with those attracting universal disapproval, as separately discussed in the case of Anders Behring Breivik and Josef Fritzl (*Gruesome but Necessary: Global Governance in the 21st Century? Extreme normality as indicator of systemic negligence*, 2011; *Looking in the Mirror -- at Josef Fritzl ? Global conditions on reflection*, 2009).

Given how little useful learning there appears to have been, does this disprove the argument of Marvin Minsky (*Why intelligent aliens will be intelligible*, 1985)? What does the lack of learning capacity imply for any potential contact with real extraterrestrials, as separately discussed (*Communicating with Aliens: the psychological dimension of dialogue*, 2000; *Writing Guidelines for Future Occupation of Earth by Extraterrestrials: be done by as you did?* 2010).

Relevance of I Ching pattern? To benefit from the patterns explored with respect to the 3-fold combinations of the 4 DNA bases (A, C, G and T), the latter are used here to label the 4 mindsets (polar and intermediary) as indicated by the correspondences in the table above. The argument can be developed further by representing the distinctions using the binary symbolism of broken and unbroken lines. Their correspondence with "us" as "unbroken", and "them" as "broken", is of some mnemonic value -- especially as indicating the assumed "integrity" of the former and the "flakey" nature of the latter (especially when framed as "alienated").

Of particular relevance to any commentary on the recent Kazakh discovery is the traditionally recognized binary coding pattern of 64 hexagrams of the classic Chinese *I Ching* (or *Book of Changes*). This has been an inspiration to various mathematicians -- although, as a pattern of signs, it does not appear to feature significantly in biosemiotics, nor in the study on which Kemp reports. In contrast with a purely mathematical approach, this pattern has been applied to challenges of life, collective governance and personal decision-making over centuries -- long preceding the genetic code (despite the assumptions of biosemiotics). As a pattern, its resemblance to that of the genetic code has long been variously remarked (Katya Walter, *Tao of Chaos: DNA and the I Ching -- unlocking the code of the universe*, 1994; Johnson F. Yan, *DNA and the I Ching: the Tao of life*, 1993; Martin Schonberger, *I Ching and the Genetic Code: the hidden key to life*, 1992). A checklist of related resources is offered by Andreas Schöter (*Yijing*).

The juxtaposition of codons and hexagrams patterns, as seemingly unrelated approaches, could be seen as a potentially fruitful response to the challenges of comprehending "life" and "everything" -- and a less presumptuous one, given its multicultural assumptions (*Enhancing the Quality of Knowing through Integration of East-West metaphors*, 2000). The possibility has been discussed separately (*Archetypal otherness -- "DNA vs. I Ching"*, 2007) as a means of reframing the problematic polarization which characterizes so much of global dynamics (*Climbing Elven Stairways: DNA as a macroscopic metaphor of polarized psychodynamics*, 2007).

Comprehensible configuration of patterns: The approach taken here is not to argue any such case in detail but rather to consider ways of configuring patterns of 64 distinctions so that they are comprehensible as a whole and memorable to a greater degree than the "laundry lists" of codons typically presented as the key to understanding life. As described by Kemp himself, the recent discovery is based on arguments which are "often dense and impenetrable, filled with complex mathematical formulae".

With respect to the number 37, as the key feature of the report, Kemp notes the discovery that: "37 recurs frequently within the code. For example, the mass of the molecular 'core' shared by all 20 amino acids is 74, namely 37 doubled". In an allusion to the imaginative tale of Douglas Adams regarding the meaning of life, Kemp comments: "Forget 42". This had been quixotically declared by Adams to be the *Answer to the Ultimate Question of Life, the Universe, and Everything* -- as determined by a supercomputer designed by "hyper-intelligent pan-dimensional beings".

The number 37 thus relates to the argument of the authors that their result supports the hypothesis of **directed panspermia**, namely an early intervention by extraterrestrials (*Space Ethics to Test Directed Panspermia, Life Sciences in Space Research*, October 2014). It is however curious that the argument for an extraterrestrial origin of a code hidden within the genetic code should exclude potential insights regarding "life" from a code of "extra-western" origin. This is all the more striking given references to "hidden", "key" and "life" in earlier literature relating to the genetic code and the *I Ching*. [The potential relevance of that number is discussed further in an [annex](#)]

"Wow" moment with respect to Chinese intelligence? Given the degree to which the "Wow moment" of SETI research has inspired the Kazakh report, it is appropriate to ask whether an analogous "Wow" moment might be recognized as having characterized the

acknowledgement of the intelligence of the "aliens" of global society -- whether that of indigenous peoples or of the Chinese. When could this message from China be understood as exhibiting intelligence by the West? Historical markers before and after the SETI "Wow" might include:

- 1300: *The Travels of Marco Polo* (c. 1300), a book that introduced Europeans to Central Asia and China.
- 1703: recognition of the importance of the **binary code** by **Gottfried Leibniz** (*Explication de l'arithmetique binaire, qui se sert des seuls caracteres 0 et 1; avec des remarques sur son utilite, et sur ce qu'elle donne le sens des anciennes figures Chinoises de Fohy, Memoires de l'Academie Royale des Sciences*. 1703). This provided an explanation of binary arithmetic, using only the characters 0 and 1; emphasizing its usefulness, and how it gave sense to the ancient Chinese figures of Fuxi.
- 1911: phases in recognition of the so-called "Yellow Peril", dating from the late 19th century, as originally reviewed in 1911 (Greenberry G. Rupert, *The Yellow Peril, or, the Orient vs. The Occident As Viewed by Modern Statesmen and Ancient Prophets*, 2009)
- 1924: **Carl Jung** foreword to the *I Ching* as translated by **Richard Wilhelm** (*I Ging: Das Buch der Wandlungen*, 1924)
- 1956: **Joseph Needham** (*The System of the Book of Changes*. In: *Science and Civilization in China; the fundamental ideas of Chinese science*, 1956).
- 2014: **World Bank report** that China's economy will surpass that of the USA in 2014 (Joseph S. Nye, *China's Questionable Economic Power*, *Project Syndicate*, 6 November 2014)

Perhaps the "Wow" moment could be usefully understood in terms of "Western-Oriented Worldview".

Proof of concept: use of drilled truncated cube as a mapping framework for 64 elements

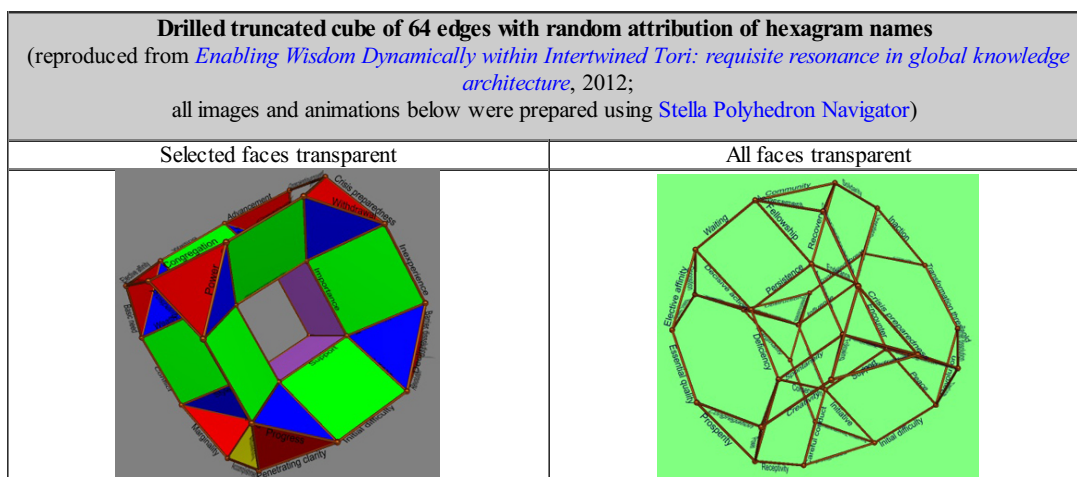
Rather than engage immediately in two-culture controversy regarding any relation between 64 codons and 64 hexagrams, the concern here is the **identification of a framework which could hold this variety in a manner which offers a sense of coherence and comprehensibility** -- beyond conventional presentations of such patterns. The focus is therefore on patterns and how they may be fruitfully configured.

Previous exercises have considered the use of spherically symmetrical polyhedra for such mapping purposes (*Towards Polyhedral Global Governance: complexifying oversimplistic strategic metaphors*, 2008). The switch to 3-dimensional mapping, in contrast to any 2D ("flat Earth") framework, is potentially consistent with requirements for coherence and comprehensibility. Experiments to that end have been undertaken with respect to traditional symbol systems (*Representation of Creative Processes through Dynamics in Three Dimensions*, 2014).

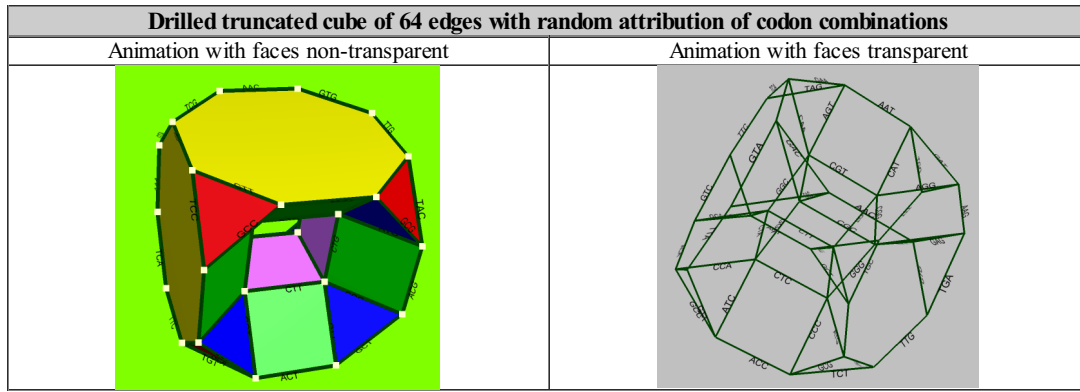
The polyhedral approach to representation of the genetic code has notably been explored by **Chi Ming Yang** (*The naturally designed spherical symmetry in the genetic code*, 2003; *On the 28-gon symmetry inherent in the genetic code intertwined with aminoacyl-tRNA synthetases -- the Lucas series*, *Bulletin of Mathematical Biology*, 2004). He makes use of a quasi-28-sided polyhedron (an icosikaiotagon). A relation to the Kazakh approach is considered by Tidjani Négadi (*A Connection between Shcherbak's arithmetical and Yang's 28-gon polyhedral "views" of the genetic code*, *Internet Electronic Journal of Molecular Design*, 2003). Use is made of the complementarity of the much simpler icosahedron and dodecahedron by Mark White (*The G-ball, a New Icon for Codon Symmetry and the Genetic Code*, 2007). Ironically, in the light of the argument above, although Chi Ming Yang is based in China he makes no reference to the *I Ching* pattern of hexagrams.

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).



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



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)

The above images are reminiscent of [Rubik's Cube](#) with all the widely appreciated challenges it has represented. Is it possible that a virtual form would enable the "movement" of the 64 edges of the drilled truncated cube (by recolouring them). It is appropriate to note that one variant of Rubik's original (3x3x3), known as [Rubik's Revenge](#), has 64 coloured faces (4x4x4). Such a process could be reminiscent of the symbolic value associated with manipulation of circlets of beads ([Designing Cultural Rosaries and Meaning Malas to Sustain Associations within the Pattern that Connects](#), 2000). A step in this direction is a game inspired by the genetic code, called [Mutation](#), invented by Mark White and played on the surface of a sphere.

Mapping attributions: preliminary assumptions from patterns of codons

The concern here is whether a laundry list of codons or hexagrams can be presented otherwise. In both cases there are example of presentation in tabular form as a kind of matrix offering a higher degree of order. Some degree of meaning can be associated with such a configuration. More interesting is the possibility that greater meaning can be associated with a configuration in 3 dimensions. Many insightful remarks in this respect are offered by Mark White ([The G-ball, a New Icon for Codon Symmetry and the Genetic Code](#), 2007), notably:

The standard codon table is merely a data object, but it is conceptually a "linear" object that demonstrates an arbitrary arrangement subjectively chosen from a large number of logically equivalent structures. We might "line up" all codons in any old way that all equal the limited epistemic value of this arrangement. Therefore, the patterns observed in the data itself will always be largely subjective. The G-ball, on the other hand, is a data object chosen from only two possible objects of this form (it has a mirror twin). The data patterns seen here are un-weighted and therefore are the natural patterns of this form. The one chosen... reveals more aesthetically pleasing patterns in the data than does its mirror, so this degree of subjectivity should not be too disturbing. A dodecahedron is a real object, and it is shown here via Cayley's theorem that its symmetry elements can be used to create an isomorphic data object to completely represent the sequence symmetry of this specific set of nucleotides and codons. The G-ball wins out on comparisons of objectivity.

With respect to mutually informing the codon and hexagram cases, the initial assumptions made are as follows with respect to the codons:

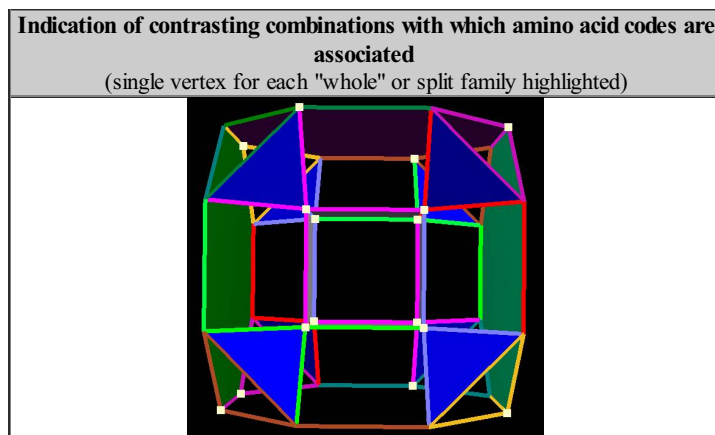
- utility of the toroidal **drilled truncated cube**. Some other polyhedra could be considered, although the challenge of 64 is a constraint
- arbitrary attribution of C, T, A and G to the 4 **traditional encoding combinations of broken and unbroken lines**, as discussed separately ([Archetypal otherness -- "DNA vs. I Ching"](#), 2007):

T	C	A	G

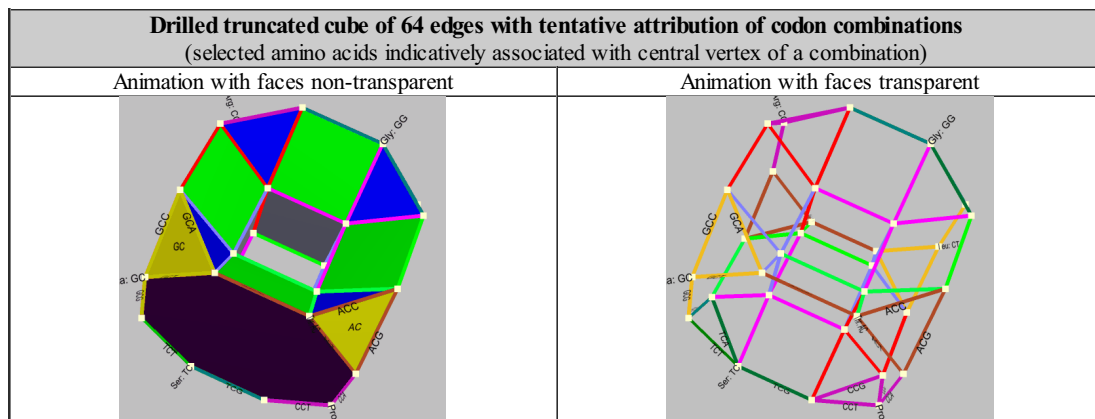
Clearly other attributions could be made. It should be noted that the codons are conventionally understood as 3-fold combinations

of any of those 4 -- as denoted by the letters above. A hexagram of 6 lines is then a combination of 3 pairs of 2 lines (whether broken or unbroken), but is traditionally represented as 2 groups of 3 lines (termed trigrams). It is unclear why the more fundamental binary code has not been used to make the 4-fold distinction, or considered as potentially offering further insight -- especially given its value in exploring patterns of distinctions (as discussed below). It would appear that the letters derive from Thymine, Cytosine, Adenine and Guanine.

- association of the distinction made between **"whole"** and **"split"** families of codons with distinctive configurations of lines on the drilled truncated cube (as shown below):
 - "whole" families were assumed to be triangular configurations of 3 codons with the fourth attached to one vertex. The singular nature of the latter suggested that it might be provisionally associated with a pair of unbroken lines.
 - "split" families were assumed to be 2 distinctive configurations of 4:
 - one in a star formation linked to a single vertex
 - one in a non-star configuration of 2 distinct forms
 - the configurations can be presented in contrasting orientations on the drilled truncated cube:
 - the amino acid specified by the codon combinations were associated as follows on the drilled truncated cube
 - the single amino acid specified by a "whole" family is indicated in relation to the (central) vertex of the triangular configuration
 - the two amino acids associated with each split family could be then associated with one inner vertex (or with both)



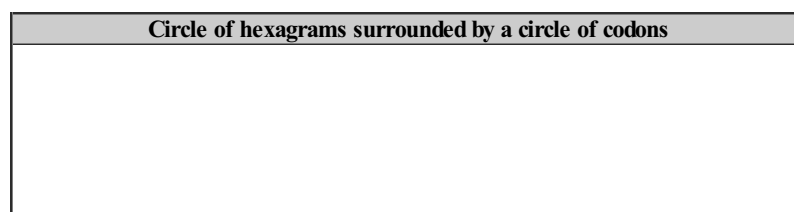
- a tentative attribution of the **family patterns** to the structure was made as follows (with others to be considered)::
 - "whole" families on the outer "ends" of the form, in one particular orientation
 - "split" families as inner configurations of lines, in one particular orientation

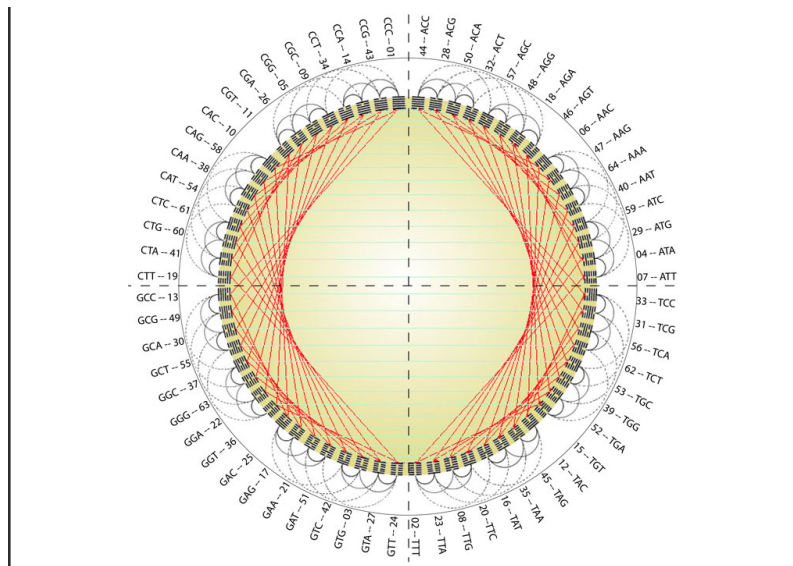


Further guidance is suggested by the possibility that patterns oscillate, as suggested by animations below.

Complementary mapping of *I Ching* hexagrams

Central portion of schematic below (as originally elaborated in *Diagram of 384 Relationships between I Ching Hexagrams*, 1983)





*** add A T C G to diagram

It is appropriate to note the manner in which the ordered ring of hexagrams is divided vertically into two halves (or "hemispheres") and also into four quadrants (corresponding to the four DNA bases, as indicated). Also of relevance is the indication of the traditionally recognized patterns of transformation between the conditions indicated by the hexagrams -- fundamental to the alternative title of the *I Ching* as being the *Book of Changes*.

Six such transformations result from changes to any one line of a hexagram (from broken to unbroken, or vice versa). Other transformations result from changes to two or more lines together. Hexagram configurations are mirrored across any diameter of the circle as a consequence of transformations to all six lines.

Circumferential ring of codon combinations (according to the pattern in the *The I Ching, or, Book of Changes* as translated by Richard Wilhelm and Cary F. Baynes, 1967).

Circumferential ring of codon combinations									
	Upper	Ch'ien	Chên	K'an	Kên	K'un	Sun	Li	Tui
Lower									
Ch'ien		01 [CCC] Creativity	34 [CCT]	05 [CGG]	26 [CGA]	11 [CGT]	09 [CGC]	14 [CCA]	43 [CCG]
Chên		25 [GAC]	51 [GAT]	03 [GTG]	27 [GTA]	24 [GTT]	42 [GTC]	21 [GAA]	17 [GAG]
K'an		06 [AAC]	40 [AAT]	29 [ATG]	04 [ATA]	07 [ATT]	59 [ATC]	64 [AAA]	47 [AAG]
Kên		33 [TCC]	62 [TCT]	39 [TGG]	52 [TGA]	15 [TGT]	53 [TGC]	56 [TCA]	31 [TCG]
K'un		12 [TAC]	16 [TAT]	08 [TTG]	23 [TTA]	02 [TTT]	20 [TTC]	35 [TAA]	45 [TAG]
Sun		44 [ACC]	32 [ACT]	48 [AGG]	18 [AGA]	46 [AGT]	57 [AGC]	50 [ACA]	28 [ACG]
Li		13 [GCC]	55 [GCT]	63 [GGG]	22 [GGA]	36 [GGT]	37 [GGC]	30 [GCA]	49 [GCG]
Tui		10 [CAC]	54 [CAT]	60 [CTG]	41 [CTA]	19 [CTT]	61 [CTC]	38 [CAA]	58 [CAG]

It is appropriate to note the existence of other patterns of hexagrams as summarized separately (*Strategic Patterns in terms of Knowing, Feeling and Action*, 2008).

Alternative patterns of hexagrams												
1st	2nd (*T)	3rd	Codon [hex.]	2nd (*C)	3rd	Codon [hex.]	2nd (*A)	3rd	Codon [hex.]	2nd (*G)	3rd	Codon [hex.]
			TTT [02]			TCT [62]			TAT [16]			TGT [15]

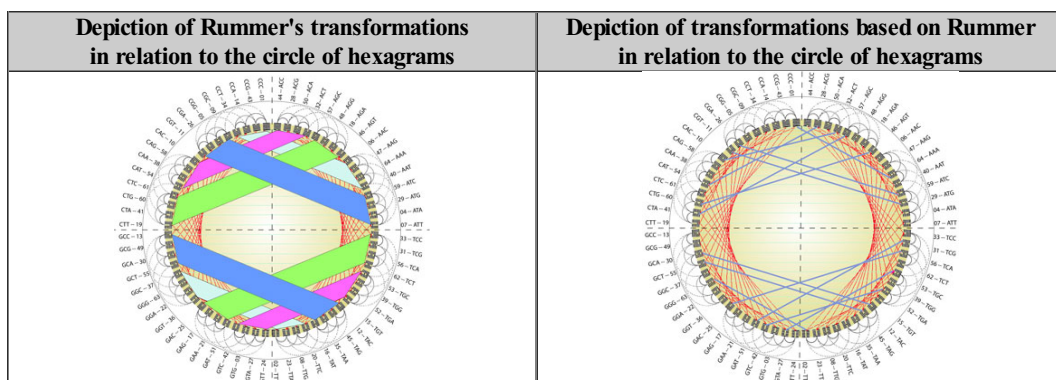
T	==	TT	==	TTT	TTT	TTC [20]	TC	==	TTT	TCC [33]	TA	==	TTT	TAC [12]	TG	==	TTT	TGC [53]
				TTT	TTT	TTA [23]			TTT	TCA [56]			TTT	TAA [35]			TTT	TGA [52]
				TTT	TTT	TTG [08]			TTT	TCG [31]			TTT	TAG [45]			TTT	TGG [39]
C	==	CT	==	CTT	CTT	CTT [19]	CC	==	CTT	CCT [34]	CA	==	CTT	CAT [54]	CG	==	CTT	CGT [11]
				CTT	CTT	CTC [61]			CTT	CCC [01]			CTT	CAC [10]			CTT	CGC [09]
				CTT	CTT	CTA [41]			CTT	CCA [14]			CTT	CAA [38]			CTT	CGA [26]
				CTT	CTT	CTG [60]			CTT	CCG [43]			CTT	CAG [58]			CTT	CGG [05]
A	==	AT	==	ATT	ATT	ATT [07]	AC	==	ATT	ACT [32]	AA	==	ATT	AAT [40]	AG	==	ATT	AGT [46]
				ATT	ATT	ATC [59]			ATT	ACC [44]			ATT	AAC [06]			ATT	AGC [57]
				ATT	ATT	ATA [04]			ATT	ACA [50]			ATT	AAA [64]			ATT	AGA [18]
				ATT	ATT	ATG [29]			ATT	ACG [28]			ATT	AAG [47]			ATT	AGG [48]
G	==	GT	==	GTT	GTT	GTT [24]	GC	==	GTT	GCT [55]	GA	==	GTT	GAT [51]	GG	==	GTT	GGT [36]
				GTT	GTT	GTC [42]			GTT	GCC [13]			GTT	GAC [25]			GTT	GGC [37]
				GTT	GTT	GTA [27]			GTT	GCA [30]			GTT	GAA [21]			GTT	GGA [22]
				GTT	GTT	GTG [03]			GTT	GCG [49]			GTT	GAG [17]			GTT	GGG [63]

corresponding inversion -- undoing ***

Indicative mutual constraints between codon and hexagram patterns

These are of relevance to the quest for a meaningful configuration of the organization of the codon/hexagrams on the drilled truncated cube:

- distinctions made between the two "halves" of the pattern of 64 can be used to suggest a degree of correspondence between:
 - 32 codons organized into 8 families of 4 "whole" families and 32 organized into a second cluster of 8 "split" families
 - traditional organization of 64 hexagrams into 8 "houses" of 8 hexagrams each, readily split into two "halves" as indicated in the circular configuration of hexagrams (*Organization of I Ching hexagrams in terms of traditional "houses"*, 1995)
- recognized "transformations" of those patterns noted with respect to the Kazakh report:
 - in the codon case, those conventionally distinguished are:
 - the transformation of **Yuriy Rumer** by which "whole" families can be transformed into "split" families (as indicated below left)
 - a second transformation based on Rumer's transformation, using the subset of codons with either three identical or three different bases. These give rise to two sets of 7 transformations (as indicated below right)
 - seven other transformations and symmetries are indicated by Kemp as having been recognized by the Kazakh research (but are less than evident from that report)
 - in the hexagram case, those traditionally distinguished are a primary feature of the *I Ching* as the consequence of transformations of any of the 6 lines of a hexagram (from broken to unbroken, or vice versa), thereby engendering another hexagram (as noted above)



From within the "camp-us" modality, as noted above, there are remarkably few exceptions to the lack of exploration of the interplay between the codon and hexagram patterns -- most notably from the perspective of biosemiotics. One early exception -- in passing -- appeared in the pre-conference *Abstracts for the First Gatherings in Biosemiotics* (Copenhagen 2001) is that of Abir Igamberdiev (*Semiokinesis - Semiotic autopoiesis of the Universe*, modified version of that published in *Semiotica* 135, 1-23):

A well-known biosemiotic structure, the genetic code, has its invariants (triplet structure, complementarity, four elementary letters) that could be derived from the model of reflection. The reflective structure may generate triads of binary compositions forming combinations which number is multiplied by four (Igamberdiev, *Life as Self-determination*, 1999) and this is directly deduced from the triadic reflective action.

The similar generalized structures (square matrices of grouping of pairs of opposites corresponding to the temporal progression of the phenomenal world) are present in Chinese *I Ching* book and it may represent a general rule for establishing invariants through the unfolding of reflection (Merrell, 1992). It can be followed in the genetic code model as finite reflective structure of **Gödel numbers** (that initially appears as a result of infinite reflection into finite). The letter (number) N (e.g., adenine) reflects in its complementary number N' (e.g., thymine), then duplication of signs leads to the appearance of additional letters N₁ (guanine) and N₁' (cytosine).

The combination of these letters satisfying the principles of consistency, simplicity and optimality generates the observed structure of the genetic code. It is arbitrary in the sense of the Saussurean arbitrariness of sign, but it satisfies optimality principles of construction of Gödel numbers during Wittgensteinian language game. The pattern of genetic code can be explained on the basis of search of the optimal variant of reflective domain structure.

Thus we have Peircean trinary structure in living system: a) metabolic network, b) genome as a signifying embedding within metabolic network, and c) superposition of genome rearrangements as an interpretante of the genomic system. Following Aristotle (*De Anima*, II, 1) metabolic network corresponds to hyle (matter) of living being, genome corresponds to 'the entelechy as a possession of knowledge' and language game generated by genome corresponds to 'the entelechy as an actual exercise of knowledge'

For Tidjani Négrad. (*Rumer's Transformation, in biology, as the negation, in classical logic*, *International Journal of Quantum Chemistry*, 94, 2003):

... we make a connection between the Rumer transformation, used in the study of the genetic code-doublets, and the negation of classic logic. A unified classification is given, relying on two Klein's 4-groups describing the symmetries of the 16 doublets of nitrogenous bases and those of the 16 binary connectives of classic logic, both groups being subgroups of a larger noncommutative group with eight elements we identify as the dihedral group *D4*.

Such arguments notably serve to frame the issue of how the binary code of the *I Ching* might be related to that of the DNA bases. This question is the subject of detailed exploration in a very remarkable study, supported by many illustrations, by Fernando Castro-Chavez (*Defragged Binary I Ching Genetic Code Chromosomes Compared to Nirenberg's and Transformed into Rotating 2D Circles and Squares and into a 3D 100% Symmetrical Tetrahedron Coupled to a Functional One to Discern Start From Non-Start Methionines through a Stella Octangula*, *Journal of Proteome Science and Computational Biology*, 2012). He notes:

The four nucleotides of the genetic code: T, A, C, G have specific physicochemical properties deserving a careful analysis, as also do the codons and amino acids produced by them; however, it is important to first recognize the value of binary systems in bioinformatics as applied to the DNA genetic code. The most ancient 64-grid representation seems to predate the Chinese civilization but somehow was preserved by them, representing faithfully the binary order of the genetic code through the most ancient or primeval pairs of trigrams that integrate each of the 64 hexagrams of the *I Ching* table, also called the *Book of Changes* or *Book of Mutations*. This article shows that some basic principles of software engineering can be applied to this ancient binary genetic code system.

From without the "camp-us" modality, however, as noted by M. Alan Kazlev (*The I Ching and the Genetic Code*. *Kheper.net*, 2005):

There are actually on the Internet a number of different correlations assigning the *I Ching* bigrams and hexagrams with the nucleotide bases. Different authors use different assignments to bases and numbers (6,7,8,9). Another assignment is the one used by Chris Lofting of *I Ching plus* who gives a detailed discussion. Still other correlations can be found. It is rather disappointing that there is no agreement on this matter.

Challenging cognitive business-as-usual: expecting the unexpected

The articulation of patterns with respect to either codons or hexagrams, or both, obscures a radical dimension. Following the argument of Terrence Deacon (*Incomplete Nature: how mind emerged from matter*, 2012; *The Symbolic Species: the co-evolution of language and the brain*, 1997), this may be framed in terms of the fundamental role of "what is missing". As he expresses it:

Ironically and enigmatically, something missing is missing... The problem is this: *Such concepts as information, function, purpose, meaning, intention, significance, consciousness, and value are intrinsically defined by their fundamental*

incompleteness. They exist only in relation to something they are not.... So what is shared in common between all these phenomena? In a word, nothing -- or rather, something not present. (p. 1 and 23, *emphasis in original*)

The recent exploration of the codon pattern is inspired by the possibility of "a code within the genetic code" implanted by aliens. It has been used here as a metaphor through which to explore the encounter with otherness (***) -- possibly offering unexpected insights. However such otherness might extend to assumptions made in elaborating the argument itself. These might be associated with:

- use of **key as a metaphor** in relation to understanding of life: This anticipates use of the key, as in opening locks and doors. What is it assumed that humanity would do with such a key -- especially in the light of the disaster that is currently being engendered through degradation of the natural environment, extinction of species, and the unknown consequences of genetically modified organisms? Is much of relevance to be learned from "grasping" any key, as an associated metaphor (*Beyond Harassment of Reality and Grasping Future Possibilities: learnings from sexual harassment as a metaphor*, 1996) ?
- use of **cracking code as a metaphor**: As with "key", the common use of this metaphor in relation to the genetic code is consistent with a mechanical approach to life -- reminiscent of depictions of the first use of tools by primates in order to crack nuts. As illustrated by the movie *Avatar* (2009), this is a highly questionable way of relating to alien otherness.
- focus on **explanation and answers**: The conventional framing of the quest for answers obscures the oft-cited insight of Albert Einstein: *The significant problems we face can not be solved at the same level of thinking we were at when we created them*. Does the mode in which science is undertaken and reported inhibit recognition of the transformation of language appropriate to comprehension of the otherness potentially represented by alien insight?
- **existential relevance**: If insight discovery relating to life is to be of relevance to the experience of living -- as so presumptuously claimed -- how does description of the insight move beyond the challenge framed by Jack Nicholson in *As Good as It Gets* (1997): *I am drowning here, and you're describing the water*.
- **surprise**: There is a sense in which answers and explanations acceptable to a conventional "camp-us" framework obscure recognition of the impact of surprise, as extensively argued by Nassim Nicholas Taleb (*The Black Swan: the impact of the highly improbable*, 2007; *Antifragile: Things That Gain from Disorder*, 2012). What is the surprise characterized by the encounter with otherness, whether terrestrial or extraterrestrial? How is this discontinuity encompassed by the conventional language of explanation and answers?
- **challenging question**: Any conventional answer or explanation typically implies or evokes new questions. Again, however, is the nature of the surprise such that the very nature of any conventional "question" becomes questionable? Does the encounter with the insight of otherness call into question the questioning process -- as explored by Zen use of the *koan*?

Together these challenge the argument above, perhaps most specifically with respect to:

- objectivity vs subjectivity, as systematically reinforced by science and challenged by religion and the arts (*Conditions of Objective, Subjective and Embodied Cognition: mnemonic systems for memetic coding of complexity*, 2007).
- belief and identity of the living person in relation to explanations and their comprehension -- in contrast with the objectivity implied by the semiotic triangle
- recognition of the degree to which the "other" constitutes a mirror highlighting attributes which otherwise go unrecognized or are denied -- recalling the significance attached to the *mirror self-recognition test*, as discussed separately in relation to aliens (*Self-reflective Embodiment of Transdisciplinary Integration (SETI): the universal criterion of species maturity?* 2008).
- acknowledgement of a "deadly" question fatal to superficial assumptions of integrity from a "camp-us" perspective. Use of "deadly" usefully focuses attention on the "hole" in that integrity with which the "missing" of Deacon (2012) may be associated, as separately discussed (*Cognitive mystery of holes, lacunae and incompleteness*, 2014; *Cognitive and experiential black holes*, 2014).

For Peter Ping Li (*Toward Research-Practice Balancing in Management: the Yin-Yang method for open-ended and open-minded research*. In : Catherine L. Wang, et al., *West Meets East: building theoretical bridges*, 2012):

In particular, the either/or logic (i.e. the epistemology of dualism or dichotomy) in the West has generated the hyper-specialist knowledge that has become increasingly impermeable boundaries between disciplines..., which forces management research to confine itself to the narrow domain where the old light of the Western methodology can reach rather than where the key to the relevant and complex knowledge is lost. The inherently and increasingly holistic dynamic reality is forcing us to look for our "lost key" in the right place with new light away from the wrong place under the old light from the West. The right place is where the East and West meet, while the new light is a *geocentric* (the West-East balancing) meta-paradigm. (p. 93)

In the light of these challenges to cognitive business-as-usual, the 4-fold pattern explored above could be extended to recognize the radical challenge of otherness to a "camp-us" framework:

- a conventional **answer** as reinforcing the "camp-us" perspective
- a conventional **question** framed at the boundary of the "camp-us" perspective -- boundary testing -- notably in an effort to pick holes in any alternative
- a condition of uncertainty oscillating between **question and answer**

- a condition in which **neither question nor answer** is experienced as appropriate

A form of this "quadrilemma" figures in study by [Kinhide Mushakoji](#) (*Global Issues and Interparadigmatic Dialogue; essays on multipolar politics*, 1988).

Transcending mechano-linearity versus fruit-loopery

For Peter Ping Li (*Toward Research-Practice Balancing in Management: the Yin-Yang method for open-ended and open-minded research* (Catherine L. Wang, et al., *West Meets East: building theoretical bridges*, 2012):

We need to understand the underlying reasons why the ancient Chinese chose to emphasize the holistic and dynamic nature of complex phenomena or issues by embracing contrary and contradictory elements as the opposites-in-unity, in contrast to the selection by the Greeks to emphasize the reductionistic and static features of simplified phenomena or issues by accepting compatible elements... In other words, the Chinese epistemological frame of Yin-Yang Balancing integrates "completeness" with "consistency" with the bigger emphasis on the former than the latter, by the Western either/or logic advocates "consistency" exclusively at the expense of "completeness". The critical distinction is rooted in the *Gödel Theorems*, which posit that consistency and completeness constitute a real paradox, so a complete statement must be inconsistent, and a consistent statement must be complete... However, completeness and consistency can be both achieved at the same time and in the same aspect when we reframe the two as partially compatible and partially conflicting, thus a shift from paradox to *duality* as opposites-in-unity according to the frame of Yin-Yang Balancing... so the inevitability and desirability of ambiguity will be taken as the key implications of Gödel Theorems. (p. 100-101)

Universal standard of alienation? The editors of the *New Scientist*, in which the above-mentioned review of the Kazakh discovery appeared, make frequent use of the term "fruitloopery" to deprecate arguments from beyond the "camp-us" modality (*Towards a universal crackpot standard*, *New Scientist*, 28 April 2010). As noted within the review, concerns had been expressed as to whether the pattern detection was significant, rather than a feature of numerology -- notably given the SETI implications. Clearly the review closely escaped being excluded as an example of "fruitloopery".

As a caricature, the term is especially useful to the development of this argument. It raises the question as to how the "camp-us" modality might be caricatured from any "alien" perspective. Such an exercise had been previously undertaken with respect to deprecatory use of "greenies" (*Burnies versus Greenies? Refocusing the communication challenge for the Greens*, 2013). A possible complement to "fruitloopery" -- in this spirit -- might then be "mechano-linearity". Any counter argument citing quantum mechanics could even justify the attribution, especially since electromagnetic patterns play so little part in the organization and processes of science -- except in terms of the most simplistic understanding of polarity and the use of [negative campaigning](#).

Use of "crackpot" is a further invitation to the imagination. What might be imagined to be the "pot", and how might it be "cracked"? As noted above, why the focus on "cracking" problems -- as with the genetic code? Is the pot to be understood as the container within which imaginative reflection occurs? Given the importance attached to the container metaphor by cognitive psychology, what insights might be offered from that perspective? There is some irony to use of the metaphor in that modern representations of [decision trees](#) may be related to [patterns of cracking](#), as discussed separately in relation to observation of cracking in early divination (*Dynamic structure of events within event-space*, 2010). There it was noted in the light of Japanese research that:

In the domain of physics, cracks and creases are phenomena by means of which a discontinuity or a localization of energy may spontaneously be produced in an apparently uniform field, with homogenous distribution of matter and energy, in other words, something is produced out of nothing.

As mechano-linearity, the fundamental problem for the methodology of science is that it cannot legitimately conceive of imagination, despite arguments to the contrary regarding the creative process. Imagination is the essence of fruitful loopery. Science, in its present "pot" is in urgent need of "repotting" -- as suggested by the pressures for [open science](#) and [Science 2.0](#) -- if indeed it is to be fruitful for humanity (Larry Hodgson, *Steps for Fool-Proof Repotting*).

Fruitful loopery: Given the unfruitful characteristics of "mechano-linearity" in practice, use of "fruit" is especially significant in the light of the desperate quest of many for fruitful lives in an increasingly mechanized society -- as systematically reinforced by the "camp-us" modality, and as argued by such as [Paul Feyerabend](#) (*The Tyranny of Science*, 2011; *Conquest of Abundance: a tale of abstraction versus the richness of being*, 1999).

Use of "loopery" is of potentially greater relevance to this argument by contrast with "camp-us" "linearity". It is indeed appropriate that an "alien" modality should be seen as embodying loops to a high degree. This is consistent with the embodiment in **practice** of cybernetics, as espoused in **principle** (if at all) by the "camp-us" modality. The argument is even more pertinent to the extent that an "alien" modality should embody not only first-order cybernetics (evident to a degree in "camp-us" processes) but also second-, third-, and even fourth-order cybernetics, as may be variously recognized (*Consciously Self-reflexive Global Initiatives: Renaissance zones, complex adaptive systems, and third order organizations*, 2007; Maurice Yolles***). A focus on loops is of course fundamental to current strategic preoccupation with the challenges of recycling and waste disposal. .

However, rather than engage in reinforcing fruitless polarization of the argument, it may be reframed by the kinds of arguments presented by [Douglas Hofstadter](#) (*Gödel, Escher, Bach: An Eternal Golden Braid*, 1979; *I Am a Strange Loop*, 2007). With respect to loops, further possibilities may be envisaged (*Sustaining a Community of Strange Loops: comprehension and engagement through*

aesthetic ring transformation, 2010; *Encycling Problematic Wickedness for Potential Humanity*, 2014). As admirably argued by Hofstadter, the fruitfulness of loops derives from insight into self-reflexivity -- usefully associated with higher orders of cybernetics.

Rather than simply seeking permanent certainty and closure, the preoccupation of "loopery" is with how to encompass uncertainty fruitfully in the moment. Following Hofstadter's earlier work on *Fluid Concepts and Creative Analogies* (1995) the approach is framed in his most recent work with a colleague, [Emmanuel Sander](#), as being dependent on analogy (*Surfaces and Essences: analogy as the fuel and fire of thinking*, 2012).

Self-reference: The difficulty for both semiotics and the life sciences is perhaps usefully summarized in the words of Abir Igamberdiev (*Semiosis and reflectivity in life and consciousness. Semiotica* 123, 1999): *Biological systems are characterized by the presence of a semiotic structure in the absence of a subject, ie, of the language's owner separated from the language itself.*

Given the argument of Deacon (2012), the core issue is that the subjective locus and dynamics of the experienter of life is missing from descriptive models. These then resemble shells in the absence of the inhabitant by which such frameworks may have been engendered. Explaining life in those terms is then essentially both fruitless and meaningless. It is from such a perspective that the recent *magnum opus* by [Fritjof Capra](#) and [Pier Luigi Luisi](#) (*The Systems View of Life: a unifying vision*, 2014) may be fruitfully questioned (*Transcending an Asystemic View of Life*, 2014).

As discussed previously (*Representation, Comprehension and Communication of Sets: the Role of Number*, 1978), the result of the formal exercise of [George Spencer-Brown](#) (*Laws of Form*, 1969) to separate what are known as algebras of logic from the subject of logic, and to re-align them with mathematics, is the explicit, and extremely elegant logical re-integration of the observer. His final chapter, entitled "reentry into the form" commences with: *The conception of the form lies in the desire to distinguish. Granted this desire, we cannot escape the form, although we can see it any way we please* (p. 69). It ends with:

An observer, since he distinguishes the space he occupies, is also a mark . . . In this conception a distinction drawn in any space is a mark distinguishing the space. Equally and conversely, any mark in a space draws a distinction. We see now that the first distinction, the mark, and the observer are not only interchangeable, but, in the form, identical. (p. 76)

For [Francisco Varela](#), in his own extended calculus based on a 3-valued system: *self-reference, time, and re-entry (into form) are seen as aspects of the same third value arising autonomously in the form of distinction (A Calculus for Self-reference, International Journal of General Systems*, 1975). Use of a third value enables the system to explore self-referential situations which are the basis for the limitations examined by Kurt Gödel. In his conclusion Varela describes his achievement as follows:

The starting point of this calculus, following the key line of the calculus of indications, is the act of indication. In this primordial act we separate forms which appear to us as the world itself. From this starting point, we thus assert the primacy of the role of the observer who draws distinctions wherever he pleases. Thus the distinctions made which engender our world reveal precisely that: the distinctions we make and these distinctions pertain more to a revelation of where the observer stands than to an intrinsic constitution of the world which appears, by this very mechanism of separation between observer and observed, always elusive. In finding the world as we do, we forget all we did to find it as such, and when we are reminded of it in retracing our steps back to indication, we find little more than a mirror-to-mirror image of ourselves and the world. In contrast with what is commonly assumed, a description, when carefully inspected, reveals the properties of the observer. **We, observers, distinguish ourselves precisely by distinguishing what we apparently are not, the world.** (p. 21) [*emphasis added*]

Experiential psychological functions: With respect to decoding the 4-fold pattern of the *I Ching*, as associated with the 4 bigrams (old yin, young yin, old yang, young yang), the issue is their distinctive, experiential cognitive significance. How then to enable a psychological feel for the 4-fold pattern as a whole -- and for its elements separately? The issue was fruitfully evoked in 1921 by [Carl Gustav Jung](#) (*Psychological Types*, 1971) in distinguishing four primary types of **psychological function**, namely 4 main functions of consciousness -- and recognizing the possibility of their integration through the **individuation process**:

- two perceiving functions: **Sensation** and **Intuition**
- two judging functions: **Thinking** and **Feeling**

These functions were held to be modified by 2 main attitude types: extraversion and introversion. Jung theorized that the dominant function characterizes consciousness, while its opposite is repressed and characterizes unconscious behavior. Consequently the 8 psychological types are as follows:

Extraverted sensation	Extraverted intuition	Extraverted thinking	Extraverted feeling
Introverted sensation	Introverted intuition	Introverted thinking	Introverted feeling

These modality biases were extrapolated by [Katharine Cook Briggs](#) and [Isabel Briggs Myers](#) to form the **Myers-Briggs Type Indicator** (MBTI) consisting of four opposite pairs, or dichotomies, namely a pattern of 16 possible psychological types. Although Jung wrote an extensive foreword to the standard translation of the *I Ching*, he did not endeavour to associate 4-fold or 8-fold types with the pattern of hexagrams. Various commentators have however speculated on the possibility of similar correspondences between MBTI and that pattern.

Clearly the danger of conventional psychological typing is potential entrapment in mechano-linearity by which subjective dynamics are effectively designed out. The implications may be explored more generally (*Beware of Legality, Accountability, Marketability, Security!*

Configuring a focus for awareness through a cognitive twist

Locus of "a place to be": With respect to Deacon's argument concerning what is "massing", this could be understood as the nature of the configuration framing a "place to be", usefully recognized by [Christopher Alexander](#). He characterizes this as a "central quality without a name" (*The Timeless Way of Building*, 1979) -- notably giving rise to *A Pattern Language* (1977). This could be extended to cognitive environments, as discussed separately (*Pattern of transformations as a dynamic quality without a name*, 2012)

A significant merit of spherical polyhedral mapping exercises is that through their globality they suggest and frame a central locus. The issue is how the polyhedral configuration constitutes a focusing device for awareness variously engaged with the elements of that configuration (*Spherical Configuration of Categories -- to reflect systemic patterns of environmental checks and balances*, 1994). This may have collective implications (*Spherical Configuration of Interlocking Roundtables: Internet enhancement of global self-organization through patterns of dialogue*, 1998; *Spherical Representation of Icosidodecahedral Net of Strategies: configuring strategic dilemmas in intersectoral dialogue*, 1992)

It is curious, given the widespread strategic use of optical metaphors, and the preoccupation with "image", that "locus" and "focus" are not considered in this light. The use of the drilled truncated cube suggests that locus and focus are especially associated with understanding of the "hole" through the configuration (*Cognitive mystery of holes, lacunae and incompleteness*, 2014).

Cognitive twist "through the looking glass": The titles of [Lewis Carrol](#) famed tales (*Alice's Adventures in Wonderland*, 1865; *Through the Looking-Glass, and What Alice Found There*, 1871) obscure recognition that his primary occupation was as a mathematician and logician. The associated phrases "through the looking glass" and "down the rabbit hole" are indicative of the nature of a "cognitive twist" in encountering and engaging with what is alien and otherwise (from a conventional "camp-us" perspective).

The paradoxical nature of the twist can be variously discussed and illustrated (*Sphere eversion as guide to the cognitive twist of global introversion?* 2013; *Requisite cognitive inversion: higher orders of twistedness*, 2014). As discussed separately (*Cognitive "twist"*, 2007), of particular interest is the possibility of understanding the "cognitive twist" in terms of the [adaptive cycle of complex systems](#). Many helpful images of this are available on the web in two and three dimensions.

The phrase "down the rabbit hole" has recently been used in a multimedia presentation to frame the recognition of an emerging reality based on a spiritual connection between quantum physics and consciousness (*What the Bleep! Down the Rabbit Hole*, 2006). The cognitive nature of going "down the rabbit hole" can be usefully explored in terms of the inversion characteristic of optical systems in representing and focusing an image. As a form of "loopery" it can be usefully explored in terms through the form of a torus (*Now as the Ultimate Cognitive Strange Attractor: a continuing invitation "down the rabbit hole"?* 2014). As indicated there, the drilled truncated cube has a toroidal form as one of the [toroidal polyhedra](#).

SETI: Epiterrestrial vs. Extraterrestrial? The cognitive implication of the "rabbit hole" and the "looking glass" -- whether understood as "down" or "through" -- suggests that "extraterrestrial" might be more fruitfully understood as "epiterrestrial". By analogy, this would follow from the hyped arguments regarding the deterministic implications of the [Human Genome Project](#), prior to its completion in 2003 -- followed by embarrassed recognition of the predictive limitations of the mapping, reinforcing the subsequent preoccupation with [epigenetics](#).

Such indications challenge the framing of the question of P. C. W. Davies (*The Eerie Silence: are we alone in the Universe?* 2010). There is the possibility that "extraterrestrials" may "exist" in unsuspected forms "right under our noses" -- consistent with the classic phrase *None so blind as those who will not see*.

Just as a case can be made for the embedding of a "code within a code", the question is whether "SETI" could be fruitfully explored otherwise, as separately argued (*Sensing Epiterrestrial Intelligence (SETI): embedding of "extraterrestrials" in episystemic dynamics?* 2013). The argument is developed there in the following sections:

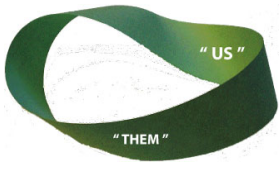

- [Dynamic insensitivity of the natural sciences](#)
- [Phenomenological implications of "fundierung" for "epi-thinking"](#)
- [Clues to the nature of "epiterrestrials" from usage of the "epi" prefix?](#)
- [Comparison of "epi" with other potentially indicative prefixes](#)
- [Potential insights from an "episystemic" perspective](#)
- [Re-cognizing "supernatural": superstition as superposition?](#)
- [Embodiment of extended intelligent identity in time](#)
- [Correspondences: "epi", Euler identity, and sexual dynamics?](#)
- [Re-cognizing "human" in an "epiterrestrial" context](#)

Of particular relevance is the degree to which episystemic intelligence and identity might be associated with wave forms, as separately discussed (*Encountering Otherness as a Waveform -- in the light of a wave theory of being*, 2013; *Being a Waveform of Potential as an Experiential Choice: emergent dynamic qualities of identity and integrity*, 2013). This suggests that, from the objective coherence of a "camp-us" perspective, the incoherent intangibility of "otherness" could be most fruitfully understood as a waveform -- especially since "loopery" is readily recognized as a characteristic of such forms, with their susceptibility to modulation.

Toroidal configurations as fruitful loopery

Paradoxical cognitive twist: The nature of such a "twist" in reconciling "camp-us" and "alien" perspectives -- namely the transformation associated with "rabbit hole" and "looking glass" are the surfaces of the [Möbius strip](#) and of the [Klein bottle](#), as shown below. Especially

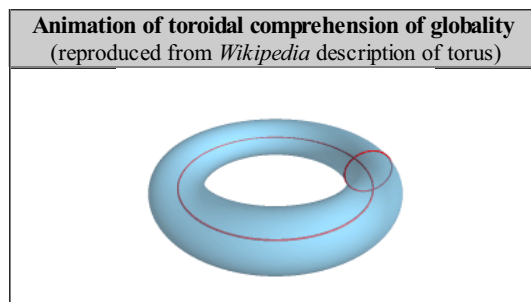
noteworthy is the manner in which both are associated with a curious form of "hole". Each frames that hole in ways which raise the question as to the meaning which might be associated with such nothingness.

Suggestive paradoxical cognitive relationship between "Us" and "Them" (images adapted from <i>Wikipedia</i>)	
Möbius strip	2D representation of the 4D Klein bottle immersed in 3D space
	

These paradoxical forms suggest a means of representing the relationship (or transition) between the objectivity of "mechano-linearity" and the subjectivity of "fruitloopery", as separately discussed otherwise (*ij: Defining the objective ∞ Refining the subjective ?!: Explaining reality ∞ Embodying realization*, 2011). Use of these forms is consistent with arguments of [Steven M. Rosen](#) (*The Moebius Seed: a visionary novel of planetary transformation*, 1985; *Bridging the "Two Cultures": Merleau-Ponty and the crisis in modern physics*, 2009).

The cognitive issue is how to engage with the associated experiences as can be variously discussed (*World Introversion through Paracycling: global potential for living sustainably "outside-inside"*, 2013; *Living as an Imaginal Bridge between Worlds: global implications of "betwixt and between" and liminality*, 2011). These help to frame the question as to the insight one requires to be able to see the world whole when challenged by the paradox of "us" and "them" -- and potentially to enable that globality (*Intercourse with Globality through Enacting a Klein bottle: cognitive implication in a polysensorial "lens"*, 2009).

Toroidal configuration: In a society whose organization is widely represented as "global", it is remarkable that the intimate relationship of the geometry of that form with the [torus](#) is systematically neglected -- despite its consideration by astrophysicists with respect to the [shape of the universe](#) (notably the [three-torus model of the universe](#)).



Could the challenge of "global civilization" be more fruitfully explored through a torus, notably as exemplifying various forms of cyclic looping otherwise framed as of cognitive or strategic significance (feedback loops, recycling, business cycles, adaptive cycle, life cycles, and the like)? More intriguing is the possibility that the [noosphere](#), rather than as a "sphere", could be better understood through the form of a [Klein bottle](#) -- a topological variant of the torus.

The value of the a torus in the development of this argument has been explored separately:

- *Enabling Wisdom Dynamically within Intertwined Tori: requisite resonance in global knowledge architecture* (2012)
- *Exploring the Hidden Mysteries of Oxfam's Doughnut: recognizing the systemic negligence of an Earth Summit* (2012)
- *Implication of Toroidal Transformation of the Crown of Thorns: design challenge to enable integrative comprehension of global dynamics* (2011)
- *Comprehension of Requisite Variety for Sustainable Psychosocial Dynamics: transforming a matrix classification onto intertwined tori* (2006)

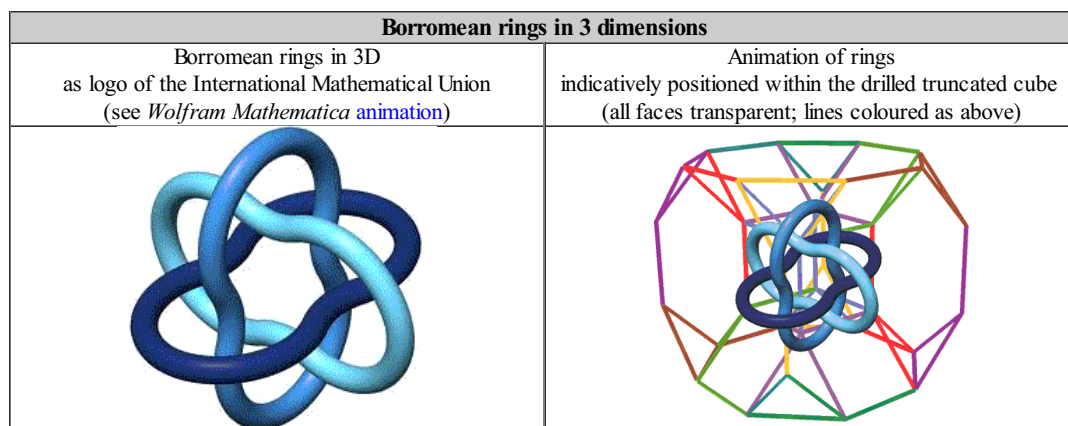
The proposed relevance of the toroidal drilled truncated cube can be considered in this light.

Aside from its potential value in configuring seemingly disparate elements, of particular interest (as argued above) is the locus it suggests for living awareness -- a focus for the dynamics of life in the moment. This may be variously considered through a set of complementary metaphors, each necessarily with limitations:

- a furnace, in the sense of providing a central, dynamically enclosed, container within which unusual processes can occur. This would be consistent with the inspiration of alchemy with respect to an [athanor](#) to provide heat for alchemical digestion. This metaphor can be explored through the recent work of Steven Rosen (*Dreams, Death, Rebirth: a multimedia topological odyssey into alchemy's hidden dimensions*, 2014)
- a [fusion reactor of toroidal form](#), as with that under development through [ITER](#) (the International Thermonuclear Experimental

Reactor), discussed below with respect to "cognitive fusion". Aside from the latter implications, the effort to combine mechano-lateral design principles with the challenges of fruitful loopery is particularly significant. This is especially the case through the recognized need to sustain a fundamentally alien environment of 150-300 million degrees Celsius -- ten times *Hotter than the Sun* (*ITER Mag*) -- in order to enable a sustainable source of energy (*Bringing the Power of the Sun to Earth, Fusion for Energy*). This highlights the manner in which life itself may be sustained by the dynamics of the 64 elements, however they may be imagined to be configured. This reinforces the sense in which, from the perspective of mechano-linearity, life is itself truly alien -- calling for extraordinary conditions analogous to "millions of degrees Celsius". Does the "pot" required for Science 2.0 call for enactment of a toroidal reactor for cognitive fusion?

- a digestive tube through which reality is attentively consumed, namely a form of "attention scoop", digesting present experience, engaging with the future, and moving on from the past (*Investing Attention Essential to Viable Growth: radical self-reflexive reappropriation of financial skills and insights*, 2014).
- dynamically intertwined loops, as depicted in the form of *intertwined tori* -- one with the "digestive function", and a second ensuring its stability (as with the fusion reactor).
- *wiring diagram*, as suggested by the connected edges of the structure, especially when understood as conductors for patterns of control information in a cybernetic sense (feedback loops, etc). This perspective is notably relevant in terms of the control of the system of magnets of a toroidal fusion reactor, with the implications for control of the flow of attention by analogy to plasma. Of related potential interest is some analogue to *Feynman diagrams* (*Potential of Feynman Diagrams for Challenging Psychosocial Relationships? Comprehending the neglect of an unexplored possibility*, 2013).
- *metabolic pathways*, as with wiring diagrams, involving psychosocial analogues to the operation of the 20 amino acids -- as a form of "cognitive metabolism". This would constitute a dynamic form of concept map or semantic map
- *mandala*, as constituting a mirror (a "looking glass"), or a means of framing the "rabbit hole", as a focus for attention. This metaphor is suggested by the design symmetry of the drilled truncated cube
- *Borromean ring* configuration in three dimensions (below left). It is set experimentally within the drilled truncated cube (below right) to suggest the existence of processes discussed below.



The relevance of Borromean ring configuration to various authors is fruitfully discussed by Levi R. Bryant (author of *Difference and Givenness: Deleuze's Transcendental Empiricism and the Ontology of Immanence*, 2008) in a blog text on *Borromean Machine-Oriented Ontology: strange strangers, and alien phenomenology* (*Larval Subjects*, 24 July 2012). In the latter Bryant notes:

What Latour articulates is thus a sort of Borromean knot, organized around the real, power and interest, and the discursive. In Lacan's final teaching everything changes. Where before the symbolic held pride of place, subordinating the real and imaginary to its structurations, now the three orders (real, symbolic, imaginary) are on equal footing without one dominating the others. The key to the borromean knot is that the three rings of string are tied in such a way that no ring is directly tied to the other. If one ring is severed, the other two slip away because they aren't directly attached to one another like a chain. Each order thus has its own autonomy....

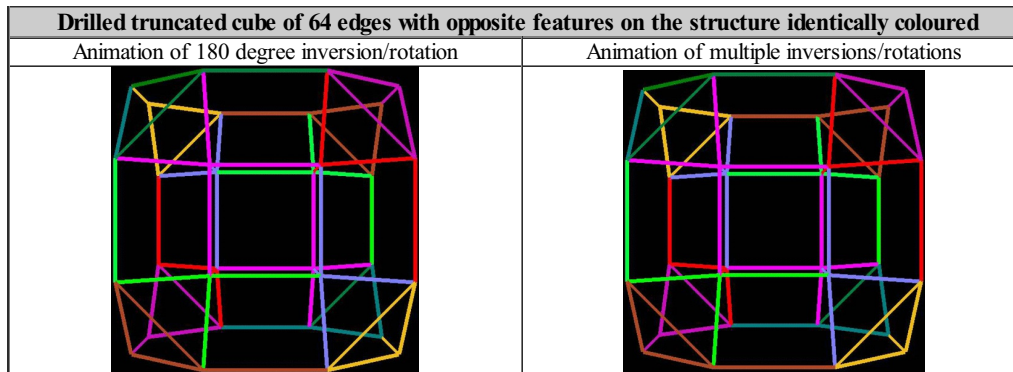
The domain of the imaginary is the domain of what Bogost has called "alien phenomenology", what Jakob von Uexkull called "ethology", and what I have called "transcendental empiricism". Alien phenomenology explores the phenomenological worlds of *other* entities, or what Morton has called "strange strangers". In contrast to traditional phenomenology, it is not a phenomenology of these entities, but a phenomenology of how these entities encounter the world about them. It is not a phenomenology of how things are given to *us* -- though all of that is retained -- but a phenomenology of how the world is given to these beings. It is what Luhmann, Maturana, and Varela called "second-order observations"; an observation not of a thing, but of how *that being* observes. Alien phenomenology thus suspends the unquestioned totalizing tendency of the way in which *we* encounter the world.

Bryant's arguments are placed in a post-phenomenological context by Tom Sparrow (*The End of Phenomenology: metaphysics and the*

new realism, 2014).

Resonance hybrid: It is appropriate to note the recognition of the core structure of bases / codons. Given the recognition of the circular form of the [benzene molecule](#) as fundamental to organic compounds and life, the fact that its circulate structure takes the form of a [resonance hybrid](#) is especially significant. It could be considered a primary example of fruitful loopery -- especially in the light of its dynamic nature, in contrast with early efforts to describe it in terms of mechano-linearity. Indicative arguments in support of this from a biological perspective are those of Abir Igamberdiev (*Dynamics and Mechanisms of Oscillatory Photosynthesis, Biosystems*, 2011)

There is a case for exploring the possibility that such a structure -- of more complex form -- could be fundamental to the effective configuration of the 64 elements within the toroidal drilled truncated cube. Being fundamental to life through the pattern of codons, there is a logical elegance to that more complex pattern in three dimensions -- especially as a resonance hybrid.



Dynamic mapping implications: As a resonance hybrid this would then suggest that the attribution of codons (or hexagrams) to particular portions of a fixed structure needs to be reframed in dynamic terms. There is then a sense in which oscillation is fundamental to any mapping. With respect to attribution of hexagrams, this would notably follow from the secondary title of the *I Ching* as the *Book of Changes*, or *Book of Mutations*.

Whilst a particular relationship may be appropriate between opposite portions of the structure (as indicated above), oscillation may involve "flipping" or "switching" of attributions between those positions (as recognized in the case of hexagrams). This is best illustrated by animations of systematic inversion..

The variety of possibilities of inversion, especially as suggested by that between hexagrams, points to the possibility of reframing attributions based on the four bigrams or any codon correspondence.

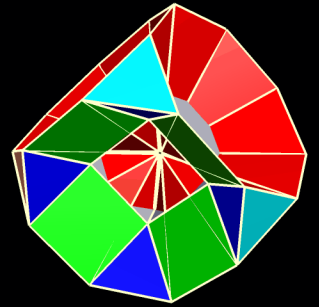
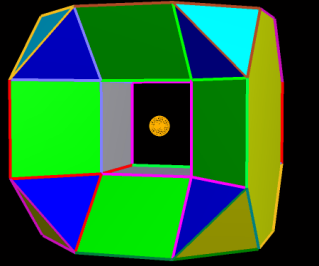
Cognitive fusion: Placing the subjective locus within the "drilled hole" of the structure offers the suggestion that this is the attentive focus for "creative fire" (following Hofstadter and Sander, 2012).

It is in this sense that a form of circulation within (and around) the toroidal tube can be considered as potentially enabling "cognitive fusion", as separately argued in the light of the design constraints for the ITER nuclear fusion reactor (*Enactivating a Cognitive Fusion Reactor: Imaginal Transformation of Energy Resourcing (ITER-8)*, 2006). The ITER magnet system comprises 18 superconducting toroidal field and 6 poloidal field coils, a central solenoid, and a set of correction coils that magnetically confine, shape and control the plasma inside the vacuum vessel. The question is how some such analogue might apply in the case of the controlled flow and focusing of attention, as might be suggested by the alchemical metaphor of [circulation of light](#), discussed separately (*Circulation of the Light: essential metaphor of global sustainability?* 2010). It is with the alchemical framing that the traditional Chinese quest for the elixir of immortality was associated.

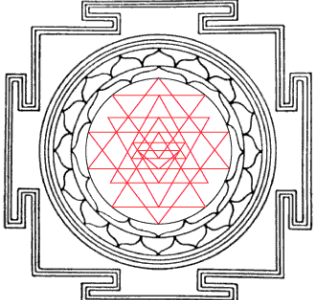
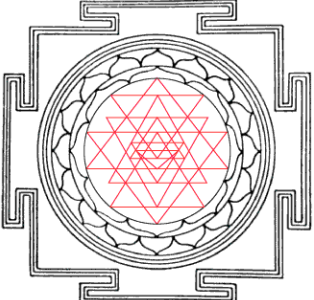
As discussed separately (*Engaging with Globality through Cognitive Circlets*, 2009), cognitive fusion is understood within a military context as the integration of two technologies, temporal event correlation and case-based reasoning (G. Jakobson, L. Lewis and J. Buford, *An Approach to Integrated Cognitive Fusion*, 2004). This forms part of a more general concern with "information fusion" which is the focus of a journal (*Information Fusion: an international journal on multi-sensor, multi-source information fusion*) and of the [International Society of Information Fusion](#), with its own [fusion conference series](#) and its *Journal of Advances in Information Fusion*. In the spectrum data, information, knowledge, wisdom, this explores considerations that might be considered a precursor to knowledge fusion (cf Richard Scherl, *Introduction to Knowledge Fusion and Representation*, 2004). This has been defined by [Anthony Hunter](#) (*Fusion Rule Technology: a knowledge fusion framework for structured reports*, 2006) as:

the process by which heterogeneous information from multiple sources is merged to create knowledge that is more complete, less uncertain, and less conflicting than the input. We can view knowledge fusion as a process that creates knowledge. Knowledge fusion can also involve annotating the output information with meta-level information about the provenance of the information used and the mode of aggregation.

The question is the extent to which the "information" or "knowledge" focus bridges the gap to psychoactive engagement with that knowledge, even to its embodiment following the arguments of such as [George Lakoff](#) and [Mark Johnson](#) (*Philosophy In The Flesh: the embodied mind and its challenge to western thought*, 1999). For such cognitive fusion, the unusual questions of [complementarity and self-reflexivity](#), [dematerialization and virtualization](#), [coactive contextual relations](#), and the role of [myth and symbol making](#) can be specifically addressed through the analogy to nuclear fusion.

Animation indicative of the locus/focus of awareness within the drilled truncated cube (as engendered in terms of the 6 octagonal faces)	Animation suggestive of the dynamics of expansion/contraction of awareness in relation to a point of focus (as contained within the toroidal configuration)
	

Magnetic field rotation? Display of various circles, associated with the geometry of the drilled truncated cube (above right), also suggests further reflection in terms of their possible rotation, as explored with respect to *Creativity through Technomimicry: psychosocial empowerment by imagining charged conditions otherwise*, (2014). The suggestion there was reinforced by the following animation of the *Sri Yantra* of the Shri Vidya school of Hindu tantra --, consistent with reference to the mandala metaphor above.

Experimental animations of classic Sri Yantra core "wiring" configuration	
Animation through 8 phases	Animation through 16 phases
	

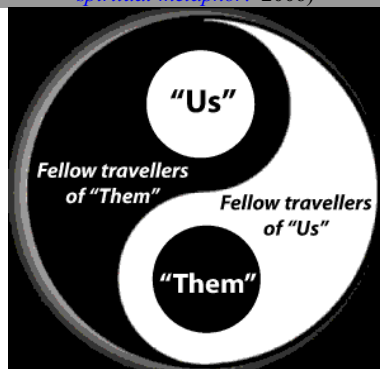
- TCAG ... orders of cybernetics ?

Memetic analogue to the 20 amino acids as vital to psychosocial life?

An [annex](#) is used to address two issues arising from the above discussion:

- identifying 20 "amino acids" of a memetic code potentially vital to psychosocial life
- the question of the possible cognitive pathways between 64, 20, and 12 in the light of the focus given to 37 as reflecting a hidden code

Tao of "Us" and "Them"
 animation usefully explored as a 2D rendering of a 4D Klein bottle
 (adapted from *Snoring of The Other: a politically relevant psycho-spiritual metaphor?* 2006)



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