



# laetus in praesens

Alternative view of segmented documents via Kairos

18 March 2013 | Draft

## Psychosocial Implication in Gamma Animation

### Epimemetics for a Brave New World

-- / --

#### Introduction

Current genetic concerns as a metaphor for current memetic realities

Divisive caricatures of complex psychosocial processes

Fourfold generic visual pattern of psychosocial dynamics

Reframing the scope for creative gamma animation

Genetic patterns as an indicative template for memetic patterns

Requisite confusion to engender an elusive functional literacy?

Epimemetics, biomimetics, epimimetics and biomemetics

Fruitful gamma resonance within a pattern of mnemonic associations?

Gamma as change in the rate of change of value

Unsustained awareness implied by gamma inversion

Relational insight dynamics in terms of a "gamma" perspective

Extending the alphabet and its representation?

Conclusion

References

## Introduction

The much cited novel by Aldous Huxley (*Brave New World*, 1931) is recognized as having anticipated many more recent problematic developments in society and its technologies. Huxley developed the argument in subsequent publications (*Brave New World Revisited*, 1958; *Island*, 1962). It is notably valued for its social criticism and for the implications of the distinction it makes between social castes: Alphas, Betas, Gammas, Deltas, and Epsilons. At the top of the caste system, Alphas and Betas perform the more intellectual jobs. Unlike the lower castes, they are not clones, allowing for more individual personalities. The lower three castes do more menial and standardized work and are usually clones. A "?savage" was outside the integrated portions of society and its classes.

As social satire, the novel envisages a world in which the population of Gammas, and the lower castes, is deliberately accelerated by [genetic engineering](#) -- consistent with continuing approaches to unconstrained population increase. The ever increasing inequalities between the well-endowed and the underprivileged of the novel are echoed in current concerns regarding the "1%", as highlighted by the [Occupy Movement](#) (slogan: *We are the 99%*) and continuing social unrest. The fundamental issues have been articulated by [Stéphane Hessel](#) (*Time for Outrage!* 2011). The outcome of the protest has been analyzed by [Noam Chomsky](#) (*Occupy*, 2012), itself reviewed by [Maria Popova](#) (*Occupy: Noam Chomsky's Guide to the History and Practice of Protest*, *Brain Pickings*, May 2012)

The concern in what follows is to consider the possibility of "Gamma animation", reframed by aesthetic licence to provide catalytic mnemonic associations for more fruitful critical thinking regarding divisive processes in society and the possibilities they represent. A particular concern is the widespread tendency to exclusivism and demonisation, to assertions of what is deemed right from a particular perspective and a rejection (as dangerous) of alternative views variously promoted by others.

Huxley's articulation of society into castes through genetic engineering (in the novel) is seen here as already well advanced -- but in terms of [memetic engineering](#) ([Alex Burns](#), *Memetic Engineering*, *Disinformation*, 15 May 2001). Aspects of the process have again been analyzed by Noam Chomsky (*Manufacturing Consent: the political economy of the mass media* (1988), co-written with [Edward S. Herman](#)).

The aesthetic licence is exploited here through animated depictions of a stylized variant of the Greek letter Gamma within a framework juxtaposing supposedly incommensurable attitudes. Allusion is also made to the role of both gamma brain waves and to gamma radiation as intimating the more fundamental consequences of more radical critical thinking for a psychosocial system in crisis -- partially consequent on questionable attention to gamma in financial trading. Reference is also made to the cognitive implications of rituals of calligraphy in sacred languages -- using gamma as one example, but with suggestions regarding the psychosocial implications of other

letters, to be potentially understood as the basis of an "enwholing language" relevant to that crisis.

## Current genetic concerns as a metaphor for current memetic realities

*Brave New World* is a widely read novel on which many university students have been required to write term papers. The problematic psychosocial implications of the genetic policies of the "world state", as described by the novel, have long been the subject of commentary -- anticipating as they do so many emergent processes of globalization and its governance. Less evident, and in a variety of guises, a degree of [psychological manipulation](#) and [operant conditioning](#), featuring in the novel, have already combined to profoundly change society.

The dilemmas posed by genetics, as highlighted by the novel, are a matter of current debate. Despite the associated controversies, the genetic issues discussed by some are "safely" disassociated from the potential psychosocial consequences, as explored by Huxley. As noted by [Emily Anthes](#) (*Frankenstein's Cat: cuddling up to biotech's Brave New Beasts*, *Scientific American*, 2013):

One lab in China is even tackling the human genome by way of the mouse genome. There, researchers are randomly disabling mouse genes one at a time, in order to identify the function of each gene. By essentially throwing darts at a genetic dartboard to see what happens, the researchers have filled 45,000 mouse cages with mutant mice.

Huxley's novel has however been used to clarify the debate on genetic implications by [Valerie Hartouni](#) (*Brave New World in the Discourses of Reproductive and Genetic Technologies*, 1993) within the context of a compilation by Jane Bennett (*In the Nature of Things: Language, Politics, and the Environment*, 1993). Hartouni notes:

Huxley's vision seems to have become a means of extending our own, of seeing or imagining ourselves beyond the present (historical) frame, concretely situated in a future that certainly looks "real", even if it is not yet realized, that is also known, and that, being both "real" and "known", is within our power to control. From the vantage point the text provides... a base map from which contemporary thought and imagination confidently took its bearings. Out of the technoculture of one age he is said to have drawn, in astonishingly accurate detail, the contours of another, not yet our own perhaps, but similar enough in the wake of radically new and expanding biotechnical possibilities as to be both its maps and measure (pp. 86-87)

Hartouni explicitly sets out to offer a reading of the place the novel holds "both in popular debate and across the range of contending literatures concerned with the development and deployment of new reproductive and genetic technique" (p. 87). However **no attention is given to the possibility that these genetic techniques might constitute an (unconscious) metaphor of the current reality regarding the development and deployment of new reproductive and memetic techniques.** From this perspective Hartouni's arguments, and her reading of Huxley, can be "re-read" through a metaphorical transformation. From that perspective, her following remarks can then be read otherwise:

The primary feature of life in the twenty-first century, as Huxley imagines it, is its one-dimensionality: totalitarian rule by a "world-state" that maintains itself not through brute force, but through the therapeutic control of the minds, bodies, desires, and judgments of its members. Indeed, in this new order, the state has seized control of the means of reproduction and, according to Huxley, finally joined to it the principle of mass production. All the essential choices have been made: humans are objects of design, ecto-genetically produced as needed and to precise requirements, in standardized, uniform batches. Each member is a sterile, stabilized part of a sterile, stable whole, predestined biologically as well as socially, engineered according to a particular set of technical specifications for a particular set of social purposes, and conditioned physiologically as well as psychologically "to like their inescapable social destiny". (p. 90)

Through a memetic frame, it can be argued that humanity is already characterized by Hartouni's reading:

While stunted physiologically and psychologically, members of the select Alpha class are nevertheless capable of making choices and assuming responsibilities, they possess the last vestiges of humanity, of distinctly "human" yearning and, for Huxley clearly, distinctly "human" possibility. Gammas, Deltas, and Epsilons, by contrast, are made up of genetically reduced beings, "deliberately bred downward or backward on the evolutionary scale". (p. 91).

This is consistent with the widespread current concern regarding "[dumbing down](#)" within the media and educational systems, notably universities. Following an extensive discussion of human rights and governance in relation to the genetic issues -- and with no mention of any memetic interpretation -- Hartouni then usefully concludes:

The question confronting us now is not whether we should alter our identities and the identities of the many communities we occupy: The question about these incessantly fluid configurations is "how", "in what ways and combinations", and "subject to what conditions"? What sort of people(s) and society are we and are "we" likely to become, should we become that sort of people(s) and society, and how do "we", whoever and however "we" are and are configured, individually and collectively, decide? (p. 106-107)

## Divisive caricatures of complex psychosocial processes

Politics is characterised by distinctions between "government" and the "opposition", notably between "left" and "right" -- with all these imply regarding "agreement" and "disagreement" in relation to governability (*Ungovernability of Sustainable Global Democracy?* 2011). Much controversy surrounds the distinction between "science" and "religion", between "development" and "environment", or between "male" and "female". Such controversies are evident with regard to ethnic groups, especially in the case of the Middle East. The question is whether there is a way of reframing such simplistic distinctions, as previously argued (*Transcending Simplistic Binary Contractual Relationships: what is hindering their exploration?* 2012).

**Fourfold distinctions:** The case of "science vs. religion" was explored separately (*Eliciting wholth through associating mathematics and theology*, 2013), noting the remarkable review of the dimensions of the science-religion relationship offered in *Wikipedia (Relationship between religion and science)*. It provides a typology of the kinds of interaction characteristic of the relationship between science and religion, according to physicist and theologian **John Polkinghorne** (*Science and Theology*, 1998) following earlier work (**Ian G. Barbour**, *Nature, Human Nature, and God*, 2002; **John Haught**, *Science and Religion: from conflict to conversation*, 1995):

- *Independence:* treating each as quite separate realms of enquiry.
- *Conflict:* stating the disciplines contradict and are incompatible with each other.
- *Dialogue:* suggesting that each field has things to say to each other about phenomena in which their interests overlap.
- *Integration:* aiming to unify both fields into a single discourse.

However this fourfold articulation might itself be said to be remarkably simplistic from a mathematical perspective since it does little to recognize, or reconcile, the complex relationships implicit in this "fourfold way" of engaging with the "other". One approach suggested was to "expand" that fourfold articulation through application to the above pattern of the insight into a "quadrimma" from an Eastern perspective, as articulated by Kinhide Mushakoji (*Global Issues and Interparadigmatic Dialogue*, 1988):

4-fold interrelationship of incommensurable 2-fold perspectives		
	From a scientific perspective	From a religious perspective
Independence (ignoring any other)	science	religion
Conflict (defensive boundary protection)	<b>not-science</b>	<b>not-religion</b>
Dialogue (engagement with otherness)	science <b>and</b> not-science	religion <b>and</b> not-religion
Integration (transcendent reframing of relationship)	<b>neither</b> science nor not-science	<b>neither</b> religion <b>nor</b> not-religion

This approach introduces a necessary degree of paradox and uncertainty to an essentially complex relationship (cf. Garrison Sposito, *Does a generalized Heisenberg Principle operate in the social sciences ? Inquiry*, 1969). A related fourfold approach emphasizing the pattern as a complex cognitive system is presented separately as a diagram (*Imagining the Real Challenge and Realizing the Imaginal Pathway of Sustainable Transformation*, 2007).

**Eightfold distinctions:** The Eastern perspective on the fourfold can also be expanded in other ways through both the classic binary encoding system which inspired Leibniz and the mathematical insights of the **Fibonacci series** (*Tao of Engagement -- Weaponised Interactions and Beyond: Fibonacci's magic carpet of games to be played for sustainable global governance*, 2010).

The oversimplification of a fourfold pattern could also be highlighted by contrast, for example, with the richer articulations offered by the various "eightfold ways" -- whether of **physics**, of **Buddhism**, or of **policy analysis** -- especially in the light of the argument of **Stephen Prothero** (*God Is Not One: the eight rival religions that run the world -- and why their differences matter*, 2010).

## Fourfold generic visual pattern of dynamic relationships

Simple visualizations can be used to relate fourfold distinctions.

Visualization of 4-fold interrelationship of incommensurable 2-fold perspectives			
From a science perspective		From a religious perspective	
religion ("tolerable", but misguided)	science (conventional and appropriate)	science ("tolerable", but misguided)	religion (conventional and appropriate)
unacceptable religion ("dangerous superstition")	unacceptable "science" ("unfortunate", regrettable behaviour)	unacceptable science ("dangerously unethical distortion")	unacceptable "religion" ("unfortunate", regrettable behaviour)

Here the convention used is to attach primary conscious significance to the upper half of each table, and to the right-hand half of each table -- holding a sense of "right" and even "rectitude". The left-hand quadrants then hold a sense of the challenging and questionable -- possibly with associations to "sinister" (even "evil"), as twisted irrelevancies characteristic of the misleading alternative understanding of "others". The views on the left are then characteristic of "them" -- on the "other side of the tracks" -- in contrast with those cultivated by "us" (on the right).

Those quadrants in the lower half of each table are even more questionable (whether especially deprecated in terms of the preferences of science or of religion). They are characterized by a degree of secrecy. Those identified as "unfortunate" and "regrettable", include the scandals typical of both science and religion in which conventional science and religion are respectively complicit. It includes the "dirty tricks" typical of scientific research or the sexual abuse by clergy -- considered exceptional incidents. The preference is to handle them

"internally", typically without affecting the views of those who believe in science or religion, as the case may be. These are the readily deniable activities "under the table" or "in the black" -- acknowledged condescendingly in private "with a hood and a wink" by those of "greater experience", who know "how things really work".

Activities in the lower left quadrant are most readily qualified as "criminal", calling for immediate inquiry and action, if exposed before wider audiences (and supported by incontrovertible evidence). In the case of religion they give rise to *fatwas*, diplomatic pressure, or excommunication. Science lacks an equivalent, although traces are evident in processes of "striking off" lists of accreditation or funding. It is from this quadrant that strategic surprises emerge as explored by Nassim Nicholas Taleb (*The Black Swan: the impact of the highly improbable*, 2007). He argues for a radical reconsideration of strategies in that light (*Antifragile: how to live in a world we don't understand*, 2012).

As the contrasting examples illustrate, if a binary political case were to be used (with respect to "right-wing" and "left-wing" factions), the comments on "right" and "left" columns in the table would continue to apply. The same would be true in the case of "male" and "female", or "Israeli" and "Arab".

Understood as a minimal framework, it is designed to hold contrasting areas of activity whose existence those in the upper left quadrant must necessarily recognize to some degree. More interesting however is to use this simple format to adapt the more general presentation of the earlier table:

Pattern of 4-fold interrelationship of incommensurable 2-fold perspectives			
From a science perspective		From a religious perspective	
science	neither science nor not-science	religion	neither religion nor not-religion
not-science	both science and not-science	not-religion	both religion and not-religion

This suggests a "transcendent" upper right quadrant in each case and one typical of "tolerance" in the lower right case. Neither has proven as yet to be especially fruitful of new insight.

Using Huxley's distinctions, it might be said that Alphas -- effectively as gatekeepers -- successfully monopolize control of the upper right quadrants, irrespective of the binary theme articulated by such a fourfold framework (science-religion, male-female, etc). In the case of Betas, with a vested interest in the status quo as followers of Alphas, they are primarily associated with the right-hand column in each case -- notably in the light of their role as interface with the "unfortunate behaviour" of the lower right quadrant, however this may be "arranged" under the direction of Alphas (who would not wish to be informed of it). Deltas and Epsilons navigate to the extent possible in the lower quadrants.

## Reframing the scope for creative gamma animation

Despite the clarity of emerging understanding regarding genetic structure and epigenetic processes, it is only too evident that insight into psychosocial structures and processes is proving inadequate to coherent governance of society. Simply and bluntly stated, the Alphas continue vigorously to deny having made a mess of it for everyone else, and it is unclear whether the Betas will continue to be "better off". Many have called for "new thinking" as a consequence. It is only too clear that the "old thinking" is not engaging effectively with the conflicting perspectives which are endangering society.

In a speculative spirit there is therefore a case for endeavouring to "borrow" a degree of clarity from the thinking applied so assiduously to genetics, as a source of inspiration for clarity with regard to psychosocial issues. This is consistent to some degree with the approach of *biomimetics* (discussed below). The question is whether the degree of complexity considered necessary for an adequate comprehension of genetic information is to be found in consideration of the social processes noted in the examples cited above. Clearly it is not.

Genetics requires more complex insight, as evident from its explanation and the challenge to their comprehension. As caricatured by political dynamics, this complexity is not to be tolerated as credible. It is reduced to quarrelsome binary dynamics in which each deprecates the other, whether framed as "negative" -- or possibly even as "evil" and "demonic". The pattern as a whole may be (cynically) celebrated by all parties as "democracy".

In the light of Huxley's satire however, as echoed by the analyses of Chomsky and the like, there is a fundamental issue regarding the dynamics between Alphas, Betas, and the other classes. Rather than frame this in socioeconomic terms, there is a case for assuming that, like genes, the issue is of a more profound conceptual nature. Just as "genes" are physically invisible to most, the approach might be framed in terms of "memes", which can be assumed to be equally "invisible".

In cognitive terms, using the metaphors of optics so favoured in strategic thinking, there would seem to be an inability to bring into "focus" and "resolve" the nature of the factors engendering chaos. Using this metaphor, the optical inadequacies resulted in a case made for more powerful "cognitive instruments" by Joël de Rosnay (*The Macroscope*, 1979) and by a colleague (Luc de Brabandère, *Le Latéroscope: systèmes et créativité*, 1990).

There is a strange ability of the Alphas of today, faithfully supported by the Betas, to shuffle categories like card sharps at a casino or a local fair. Now something "exists", then it does not -- especially evidence and promises. The tendency is consistent with "casino" processes, as variously criticized (Susan Strange, *Casino Capitalism*, 1986; Henry Giroux, *Authoritarian Politics in the Age of Casino Capitalism*, *CounterPunch*, 27 August 2012). Patterns of categories are casually rearranged according to circumstances in order to elicit

confidence -- with as much foresight as any focus on arranging the deckchairs on [RMS Titanic](#) for an evening of relaxation. The process is conceptually related to [gerrymandering](#) (*Scientific Gerrymandering of Boundaries of Overpopulation Debate*, 2012). Categories are treated as intellectual property in which some have a very heavy investment.

The Gammas do not necessarily have such an investment, especially when faced with existential challenges. They are however faced with the consequences of the actions of those who do -- and of their own enthusiasms and negligence. They are however free proactively to borrow from the nimbleness of the Alphas, epitomized by the cognitively liberating political philosophy of the American [neocons](#) -- as described to Ron Suskind (*Without a Doubt*, *The New York Times*, In: The Magazine, 17 October 2004):

The aide said that guys like me were "in what we call the reality-based community," which he defined as people who "believe that solutions emerge from your judicious study of discernible reality." I nodded and murmured something about enlightenment principles and empiricism. He cut me off. "That's not the way the world really works anymore," he continued. "We're an empire now, and when we act, we create our own reality. *And while you're studying that reality -- judiciously, as you will -- we'll act again, creating other new realities, which you can study too, and that's how things will sort out.* We're history's actors . . . and you, all of you, will be left to just study what we do." [emphasis added]

## Genetic patterns as an indicative template for memetic patterns

Psychosocial dynamics, especially with respect to insights for coherent governance, can be considered to be a total mess at this time -- if only as indicated by the incapacity of the Alphas and the Betas to respond effectively to emerging crises. There would seem to be no relevant insight of a requisite complexity comparable to that of genetics. It is naively assumed that psychosocial dynamics can be adequately framed by the simplistic sets of categories -- if not simply "we right" and "you wrong", or "we know" and "you ignorant". The essence of US foreign policy has been declared to be "*you're either with us, or against us*", as separately discussed (*Us and Them: Relating to Challenging Others -- patterns in the shadow dance between "good" and "evil"*, 2009).

It is therefore appropriate to speculate on the possibility that the challenge of elucidating a "memetic code" could bear a degree of resemblance to that indicated by the history of the stages in navigating the confusion regarding a possible [genetic code](#). In that sense it could be said that the earliest stages are far from being achieved. How much complexity is required, given the challenge of progressive understanding of an adequate genetic code?

Suppose, for example, that the fourfold pattern of dynamics (above) is indeed to be considered a generic pattern typical of any binary psychosocial situation. Could the "categories" so framed be understood as corresponding in some way to the four [nucleotide bases](#) fundamental to the genetic code, conventionally symbolised by the letters G, A, U, and C)? This would in itself be a challenge since the four together are as suggestive of disassociative dynamics as of associative dynamics, of denial and of non-transparency. But is that not what is required to frame experiential reality and the dynamics of agreement and disagreement?

If significance could be associated in some way with such a pattern, what further insights would emerge from genetics? Much work resulted in recognition of the role of the constituent elements of the genetic code. The nucleotide bases (or nitrogenous bases or simply "bases") derive their significance from their ability to form base-pairs and to stack upon one another leading directly to the helical structure of [DNA](#) and [RNA](#).

With such properties, already comprehension of a memetic correspondence is challenged. Especially because of the manner in which that comprehension is necessarily embroiled in the pattern, undermining self-reflexivity, there would seem to be little understanding of what the memetic analogue to "DNA" or "RNA" might be -- despite the arguments of the inventor of "meme", namely [Richard Dawkins](#) (*The Selfish Gene*, 1976), and the many studies of [memetics](#) which it inspired.

The point was clearly made by Agocs Viorel ("*Minimum separabile" and the memetic code*, 1 February 2003), regarding the nature of the debate on memetics:

I also think that the debate has been going on for too long at the abstract level and it is time to make the shift to the concrete. The reason there are so many unbelievers is that we do not have any reference to the MEMETIC CODE and a mechanistic model of the structure of the meme. We also do not have a proper definition regarding the ENCODING MEDIUM of the memetic code. But, in the process of correcting this, we forget that prior to the gene was the protein and prior to the codon was the amino-acid. We already knew a lot about the amino-acids and the proteins long before we knew anything about the gene itself. We have been following the wrong path all along all along trying to find out the structure of the meme first. It is like trying to break the nutshell from inside out. It is known that the gene is built up from sub-units we call codons and we define this in reference to the amino-acids. If the gene have such sub-units, I wonder why shouldn't the meme have too?

Curiously the genetic code is based on patterns of three (of the four) [nucleotide bases](#) forming a [codon](#). The three-nucleotide codon specifies a single amino acid in a nucleic acid sequence. Such a codon using 3 nucleotide bases can code for a maximum of  $4^3$  or 64 [amino acids](#). The pattern of 64 combinations fundamental to the genetic code is typically presented in an [RNA codon table](#) or a [DNA codon table](#) -- each indicating which codons "code for" each of the 20 amino acids actually encoded by the codon triplets in the human genetic code. Individual amino acids may be "coded" by more than one different codon.

## Requisite confusion to engender an elusive functional literacy?

Set against the complexity of psychosocial dynamics, how is the nature of any potential correspondence to a memetic code to be comprehended? Given the challenge of self-reflexivity, there is the probability that the result will **not** take the form of a "mechanistic

model" (as suggested above) but is more likely to be associated with an element of paradox -- potentially requiring extensive use of metaphor. Expectations of "closure", according to the conventions of "old thinking", are unlikely to be expected. The manner in which Dawkins is himself embroiled in a one-sided view of the science-religion controversy -- as indicated in *The God Delusion* (2006) -- is indicative of the challenge to "objectivity", discussed separately (*Defining the objective ∞ Refining the subjective ?! Explaining reality ∞ Embodying realization*, 2011; *Conditions of Objective, Subjective and Embodied Cognition: mnemonic systems for memetic coding of complexity*, 2007).

A valuable indication of the dynamics associated with both innovation and its comprehension is suggested by the much-quoted statement by [Niels Bohr](#) in response to a fundamental theoretical approach articulated by physicist [Wolfgang Pauli](#):

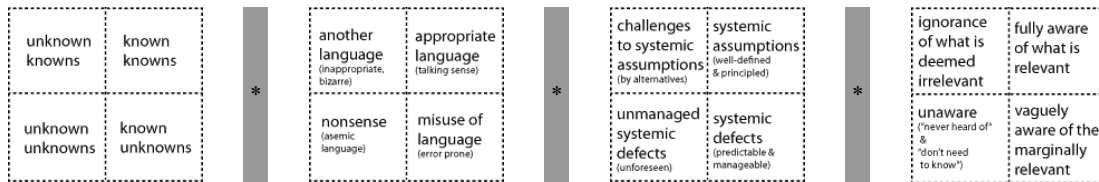
We are all agreed that your theory is crazy. The question which divides us is whether it is crazy enough to have a chance of being correct. My own feeling is that it is not crazy enough.

To that [Freeman Dyson](#) added:

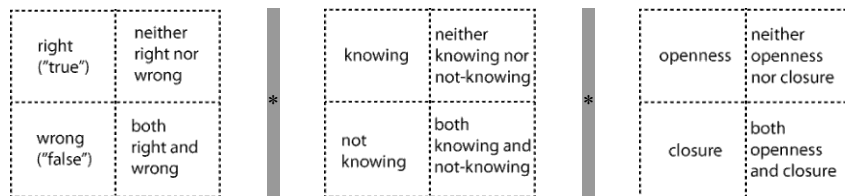
When a great innovation appears, it will almost certainly be in a muddled, incomplete and confusing form. To the discoverer, himself, it will be only half understood; to everyone else, it will be a mystery. For any speculation which does not at first glance look crazy, there is no hope!(Innovation in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

Or perhaps, as expressed by Shakespeare: *Though this be madness yet there is method in it.* (*Hamlet*, 1603)

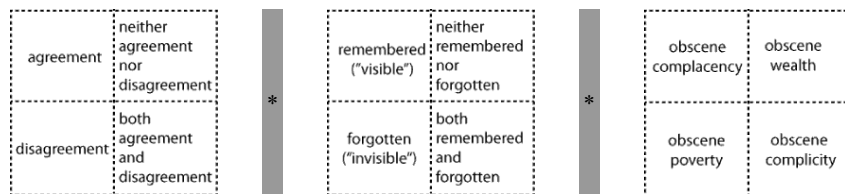
The extent of embedding within the dynamics, which it would be desirable to encompass in some way, is indicated by the following. Typically (by convention here) the focus of assertion and awareness (the "psychic centre of gravity") is in the upper-right quadrant with various degrees of conscious and unconscious interaction with the perspective of the other quadrants.



These fourfold patterns imply a degree of equivalence which is not readily held through "categories", as might be suggested by the following

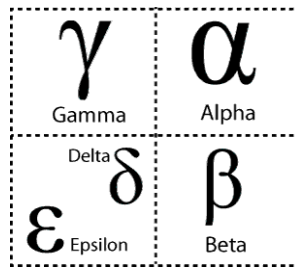


Although seemingly abstract, the "confusion" would seem to be required to address the following problematic dynamics.



**In order to enable the requisite openness, it is therefore better to be recognisably wrong than to imply closure.** The concern here is **not** to "crack the memetic code" but rather to explore ways of thinking through which adequate "functional literacy" might be achieved to engage with the psychosocial dynamics implied above. In doing so in what follows, **the focus is on patterns and not on whether attributions within patterns are correct.** The process should necessarily arouse disagreement. The challenge is to find patterns of self-reflexivity which can also embody disagreement, rather than invite agreement -- simplistically. The work of [Douglas Hofstadter](#) is suggestive in that respect (*Gödel, Escher, Bach: an Eternal Golden Braid*, 1979; *I Am a Strange Loop*, 2007) as separately discussed (*Sustaining a Community of Strange Loops: comprehension and engagement through aesthetic ring transformation*, 2010).

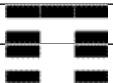

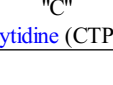
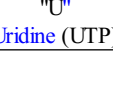
The confusion in the process is usefully suggested by the ambiguity of attributing phrases to particular positions in the above fourfold tables. There is necessarily always a case for attributing them otherwise. This recalls the paradox of the wave-particle distinction in fundamental physics, framed by the [Uncertainty Principle](#). In this context the ambiguity might be highlighted by using Huxley's classes, as in the following.



Whilst the allocation of Alpha is useful, the "visibility" of Alphas (and the ability to distinguish them) raises questions. They are well-disguised by the Betas complicit with them -- and their existence is readily "forgotten". The issue is highlighted by the Delta/Epsilon case, since their condition is typically "invisible" from other perspectives -- and they too are readily "forgotten" and "ignored". They may be treated as "invisible" -- as "nobodies".

This could suggest that the Alpha perspective "transcends" the framework in some way, rather than being placed within it. They might be replaced by Betas within the framework, with Deltas moved into the current position of the Betas. The ambiguity of the relation between Gammas and Betas in the above framework also merits attention. Their positions could also be reversed given the manner in which Betas partake of some of the characteristics in the upper row, and the Gammas those of the lower row. Such remarks point to the extent to which there is a need to engage with ambiguity.

The irony of any "modern" quest for a "memetic code" is that China has long valued an articulation of a pattern of 64 hexagrams, each formed from 3 binary pairs. As a pattern those triplets suggest comparison with the combination of 3 nucleotide bases forming a codon. Possible interpretation of the fourfold pattern can then be encoded using that system, as previously explored (*Discovering Richer Patterns of Comprehension to Reframe Polarization*, 1998).

Suggestive basis for correspondences between hexagram components and triphosphates composing genetic codons?	
Guanosine (GTP) "G" 	Adenosine (ATP) "A" 
Cytidine (CTP) "C" 	Uridine (UTP) "U" 

Much is now known to science regarding the properties and functions of the nucleotide bases, and of their combination to form any of the 64 codons basic to the the genetic code. On the other hand, Chinese culture has devoted extensive thought to the role of the fourfold pattern, indicated by the binary coding in the table, and to the insights offered by a combination of any three in a hexagram -- one of 64. The question is whether there is any meaningful correspondence between these two patterns -- as suggested by the table -- and how this is then to be found and comprehended (cf. *Theories of Correspondences -- and potential equivalences between them in correlative thinking*, 2007). A case for such exploration is well made by the arguments of *Susantha Goonatilake (Toward a Global Science: mining civilizational knowledge*, 1999)

The question can be framed otherwise in terms of what of significance might be done with a memetic code in the light of the controversy aroused by current and proposed applications of the genetic code. Comprehension of the genetic code involves one form of challenge and mystification. The desperate efforts to possess aspects of the code as intellectual property, for example, are a sad commentary on science -- which typically would deny its complicity, as discussed separately (*Knowledge Processes Neglected by Science: insights from the crisis of science and belief*, 2012). That of the Chinese encoding offers another -- perhaps necessarily replete with ambiguity and metaphorical allusion -- as well as questionable mystification by its enthusiasts.

Curiously, progress on the path towards such a code in the case of psychosocial relations is also marked at this time by an immediate tendency to treat any such code as intellectual property -- as with some of the patterns of *personality types*. This is an exemplification of the closure dynamic highlighted in the above pattern, and discussed elsewhere (*Future Coping Strategies: beyond the constraints of proprietary metaphors*, 1992). Strangely the prime objective is to accumulate wealth in one form or another -- possibly in an extremely intangible form.

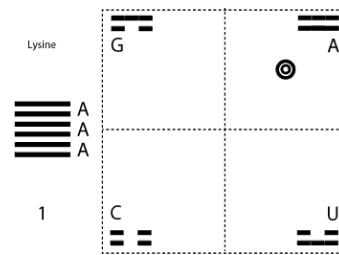
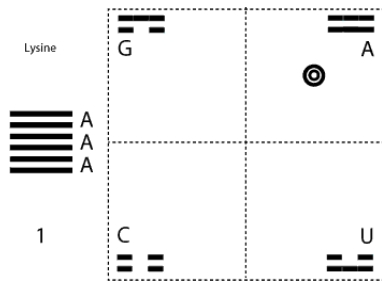
This suggests that the control of resources by Huxley's Alphas is echoed in the intentionality with regard to monopolistic acquisition of intellectual property (preferably a "killer app") by "covert Alphas" -- enabling access to it "under licence" for whatever the market will bear. No question of key insights being considered a "world heritage". "Alpha" might be better considered as an embryonic mindset emerging from the pattern of interactions, as with functions associated with the other letters. Dawkins too might be considered an Alpha, for example, in his quest for a form of scientific closure which would definitively exclude those of alternative persuasion -- even of those yet to come.

Discovery of the genetic code offers a further lesson through the manner in which its deterministic nature was anticipatively over-hyped and through the subsequent obligation to focus on epigenetics as a complementary source of insight. The same might be expected of any memetic code and the complementary role of epimemetics. This is strikingly evident in advocated patterns of psychological types which focus, in their visual presentation, on the types in isolation rather than on the dynamics within which they are embedded.

(attribution of nucleotide bases to hexagram elements as in table above;  
hexagrams on the left to be read upwards)

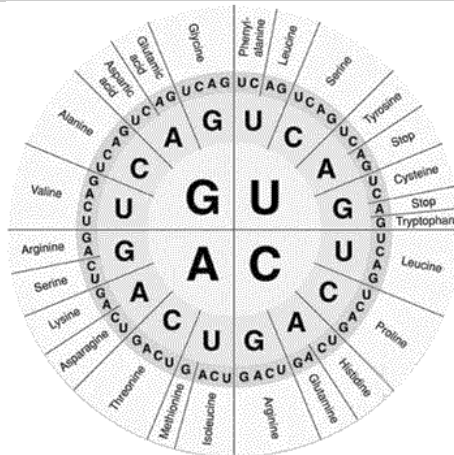
**Sequence in conventional hexagram order**  
(faster animation)

**Sequence in alphabetic order of codon**  
(slower animation)



These animations can be understood as experiments to determine whether patterns are detectable visually in cycling through the two sequences, possibly at different speeds, as with movie frames. What resemblance might such patterns have to "letters" ? Would the role of gamma as a second order derivative in finance (as noted below) suggest the possibility of meaningful pattern recognition in the case of the rate of the rate of change in the speed of the animation? How do such questions relate to the sense in which the codons are indicative of forms of [resonance](#) within a pattern of resonance which characterises the whole, as indicated by the [circular pattern of hexagrams](#) (the logo of this website). The pattern may be understood as a form of [resonance hybrid](#). The emergent "letters" might then be understood like [Chladni patterns](#).

**Representation of genetic code**  
(Reproduced from [Plant Life](#);  
for an alternative representation see [Wikipedia image](#) showing structures of amino acids)



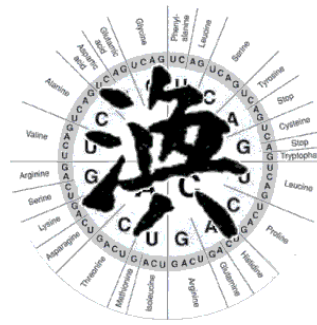
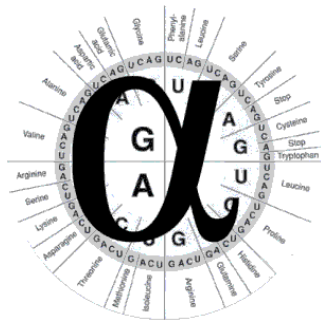
The term "alphabet" is often used in relation to the genetic code. Its appropriateness is reinforced by the above diagram, whether the "letters" are to be considered in association with the underlying (U, A, G, C), or with their triplet combinations, or with the amino acids for which they encode around the circumference in the diagram above. It is of course the 20+ amino acids which are numerically of the same order as [conventional alphabets](#) -- which typically range from in excess of 20 to less than 64. It is to be expected that the fourfold pattern may itself be contested ([Expanding the Genetic Alphabet May Be Easier Than Previously Thought](#), *Science Daily*, 3 June 2012; Eörs Szathmáry, *Why are there four letters in the genetic alphabet?* *Nature Reviews Genetics*, 4, December 2003, pp. 995-1001).

This pattern could be considered to some degree isomorphic with that of the memetic code, as suggested here. The current predilection for alphabets of limited size to achieve "literacy" (clearly inadequate to the psychosocial challenge), then suggests that this may imply and disguise "alphabets" or another kind -- necessary for the "functional literacy" as yet to be achieved.

This suggests a fruitful contrast between the formation of letters in the Latin-style alphabets, depicted by a limited number of lines within the fourfold framework above, and the use by the Chinese of [ideograms](#) (or logograms) of greater complexity. The pattern of strokes through which these are constructed could then be understood as linking the 64 triplets singly -- in contrast to Latin-style alphabets linking their clusters as amino acids. As "ideograms" they naturally hold a closer degree of isomorphism to what they represent. However they also disguise the functional dynamics in their own way, as well as their cognitive implications -- to which calligraphy may offer a degree of access (as suggested below).

**Suggested association of a letter of a conventional  
alphabet with 20+ amino acids**

**Suggested association of a Chinese ideogram  
with 64 codon triplets**

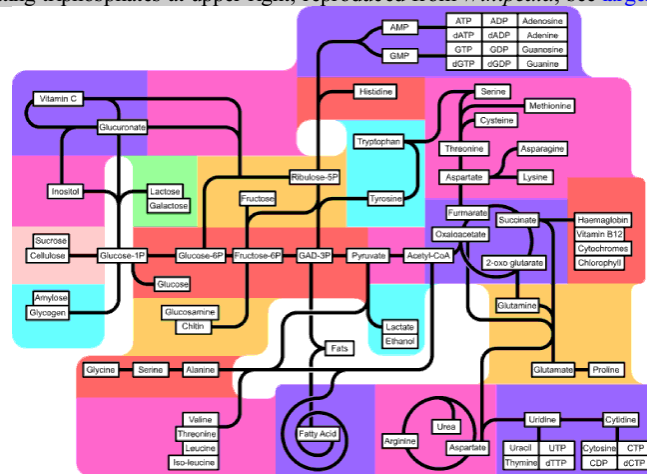


Much was made of the expected results of the [Human Genome Project](#) to map the approximately 20,000-25,000 genes of the [human genome](#) from both a physical and functional standpoint. By comparison, in the light of the above argument, the [number of Chinese characters](#) (ideograms or [logograms](#)) has been variously estimated as being of the order of 50,000.

It is through combinations of "letters" that "words" are constructed. The question here is how the cognitive implications of a letter (through the dynamics of its construction) are effectively "diluted" (or lost) through their combination in this way. The further implication is that the diluted significance is then primarily associated with the word -- potentially giving rise to a sense of a "lost language". The argument above suggests that the ability creatively to interrelate the dimensions of the fourfold pattern is more powerfully evident through the letter -- as may be the case with a complex Chinese character. It is appropriate to note that such a character is associated with each of the 64 [hexagrams](#).

An alphabet, whatever the number of letters considered adequate, is effectively a cognitive systems diagram of psychosocial dynamics. However it is presented through its letters individually and separately -- posing the question of how to fit them together meaningfully, as with a jigsaw puzzle or a Rubik Cube. The map of known [metabolic pathways](#) is suggestive in that respect. The challenge is the nature of its psychosocial analogue, as discussed separately (*Magic Carpets as Psychoactive System Diagrams*, 2010)

**Map of metabolic pathways**  
(indicating triphosphates at upper right; reproduced from [Wikipedia](#), see [larger version](#))



Biochemists make use of songs to memorise and recall these complex pathways (Harold Baum, *Biochemists' Song Book*, 1995; [MP3 files](#)). It is appropriate to speculate on the songlines appropriate to a psychosocial map, as variously considered (*A Singable Earth Charter, EU Constitution or Global Ethic?* 2006).

## Epimemetics, biomimetics, epimimetics and biomemetics

As noted above, a deterministic focus on the genetic "alphabet", and any psychosocial analogue in terms of typology, has proven to be significantly inadequate to the challenge. Hence the concern with epigenetics, namely the dynamic context within which genetics is embedded. A similar case can be made for epimemetics as a means of holding the dynamics between categories of any kind. The argument here is an abridged version of a case made separately (*Epimemetics, biomimetics, epimimetics and biomemetics*, 2010). An earlier case was made in reflection on constrained understanding of human awareness (*Beyond the Standard Model of Universal Awareness*, 2010).

[Epigenetics](#) emerged as a discipline to show how nurture combines with nature to engineer biological diversity (Nessa Carey, *The Epigenetics Revolution: how modern biology is rewriting our understanding of genetics, disease, and inheritance*, 2012; Richard C. Francis, *Epigenetics: how environment shapes our genes*, 2012; Thomas Woodward and James Gills, *The Mysterious Epigenome: what lies beyond DNA*, 2011).

One of the few approaches to epimemetics, but primarily for commercial marketing purposes, is that of Russell Wright, a search engine optimization auditor -- co-creator of the [Theme Zoom](#) search engine marketing tool, based on a keyword reporting system and "9 different keyword types". He promotes a [natural language](#), [neurolinguistic](#), [neuromarketing](#), memetic approach in a video sequence (*Your Epimemetic Awakening: Unmapping the Web*, 2010; *Unmapping the Web: genes, memes, memes and epimemetics*, 2010).

From a cognitive perspective it is useful to contrast this preoccupation with biomimetics (or biomimicry) as a source of insight, effectively exploited in the argument above. This suggests the following pattern, especially in the light of the argument for cognitive engagement with nature:

- **epimemetics** (as noted above), including the sense of harmony and elegance in "play", characteristic of the use of **word play** and metaphor, as purportedly associated with the *Language of the Birds*; possibly as celebrated in Taoist "crazy wisdom" and in provocative use of the Zen *koan* (cf *Enacting Transformative Integral Thinking through Playful Elegance*, 2010; *Humour and Play-Fullness: Essential integrative processes in governance, religion and transdisciplinarity*, 2005). This extends to the creative exploration of potentially significant correspondences (*Theories of Correspondences -- and potential equivalences between them in correlative thinking*, 2007). It might also include **apophysis** and "unsaying" (*Being What You Want: problematic kataphatic identity vs. potential of apophatic identity?* 2008)
- **biomimetics** (or **biomimicry**), understood as the examination of nature, its models, systems, processes, and elements to emulate or take inspiration from it in order to solve human problems (*Enabling Governance through the Dynamics of Nature: exemplified by cognitive implication of vortices and helicoidal flow*, 2010).
- **epimimetics** (a proposed neologism), understood as a form of mirroring (*Stepping into, or through, the Mirror: embodying alternative scenario patterns*, 2008). It is characteristic of the **art of memory** (mnemotechnics) and its supportive contexts (**memory palaces and theatres**) as documented by **Frances A. Yates** (*The Art of Memory*, 1966). Given the mirroring typically offered through humour, it might hold the humour imagined to be characteristic of the laughing discourse of the gods with regard to the nature of reality and their place in it.
  - Aristotle: *The gods too are fond of a joke.*
  - Albert Einstein: *Whoever undertakes to set himself up as judge in the field of truth and knowledge is shipwrecked by the laughter of the gods.*
  - Japanese proverb: *Time spent laughing is time spent with the gods.*

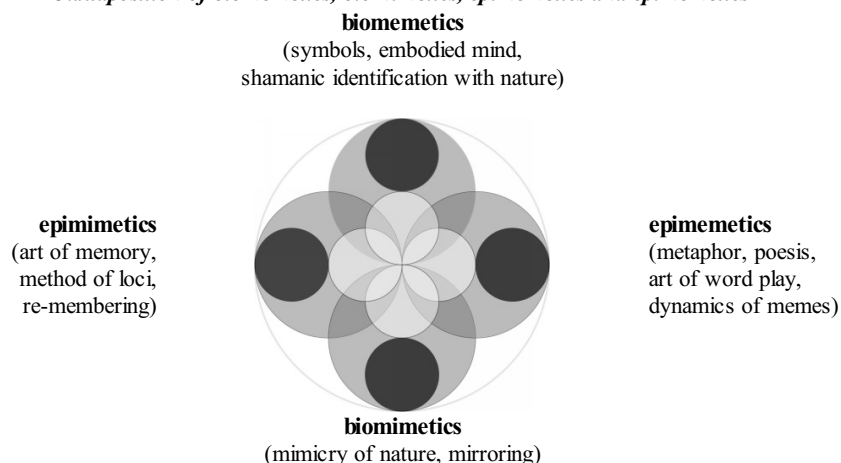
Hence the connotation of the laughing *Language of the Birds* as being a language mirroring that of the gods -- although whether they "interject" is another matter (*Re-Emergence of the Language of the Birds through Twitter? Harmonising the configuration of pattern-breaking interjections and expletives*, 2010). There is the charming possibility that any typology of humour, or of dramatic plots, might effectively emerge through combinations of "conceptual primes" -- recalling the widely distributed tale of a prison (in Russia), where the number of a joke in a well-known repertoire was sufficient to elicit laughter (rather than its telling).

- **biomemetics** (a proposed neologism, although extant as a misspelling of biomimetics), which might be understood as a degree of identification with nature, whether as a rich set of fundamental symbols, or as variously practiced by deep ecologists and shamans, notably within Australian Aboriginal culture (A. P. Elkin, *Aboriginal Men of High Degree*, 1977). This degree of cognitive engagement (possibly via totems) is extensively documented by Darrell A. Posey (*Cultural and Spiritual Values of Biodiversity*, 1999). It may also be an interpretation of the argument regarding issues of self-reflexivity and embodiment of **George Lakoff** and **Mark Johnson** (*Philosophy In The Flesh: the embodied mind and its challenge to western thought*, 1999).

Of particular relevance are the studies of anthropologist **Jeremy Narby** (*The Cosmic Serpent: DNA and the origins of knowledge*, 1999; *Intelligence in Nature: an inquiry into knowledge*, 2005; *Psychotropic Mind: the world according to Ayahuasca, Iboga, and Shamanism*, 2010). He describes the methodological challenge of reconciling indigenous knowledge with conventional anthropological and microbiological approaches and understanding. The hypothesis he tests is that "shamans take their consciousness down to the molecular level and gain access to biomolecular information". He stresses the highly detailed understanding of indigenous knowledge of the structure and processes of DNA, represented visually in forms recognizable to microbiologists.

These could be suggestively interrelated as follows.

#### Juxtaposition of biomemetics, biomimetics, epimemetics and epimimetics



**Fruitful gamma resonance within a pattern of mnemonic associations?**

The visualization of relationships above gives a degree of focus to the challenge of their comprehension in the context of problematic "us and them" dynamics -- "me right, you wrong".

As a catalyst for imaginative reframing of possibilities, the suggestion here is to recognize and benefit from the curious variety of phenomena with which "gamma" is associated -- the notions with which it resonates. The "ordinariness" of Huxley's Gammas is effectively embedded in an extraordinary pattern of gamma-related associations -- many of which are considered fundamental to the organization of reality. The quest for "comprehension catalysts" follows from an argument presented separately (*In Quest of Mnemonic Catalysts -- for comprehension of complex psychosocial dynamics*, 2007).

The argument here is that there is scope for playing creatively with the implications of such associations, given the importance of play and humour to creativity, as separately argued (*Humour and Play-Fullness Essential integrative processes in governance, religion and transdisciplinarity*, 2005; *Playfully Changing the Prevailing Climate of Opinion: climate change as focal metaphor of effective global governance*, 2005; *Enacting Transformative Integral Thinking through Playful Elegance*, 2010).

This exploration could be compared to that of the much-cited work of Gareth Morgan (*Images of Organization*, Sage, 2007) which distinguishes organizations as: machines, organisms, brains, cultures, political systems, psychic prisons, flux and transformation, and as instruments of domination (see [review](#)). It might also be compared to the imagining of God, as proposed by Sallie McFague (*Metaphorical Theology: models of God in religious language*, 1982; *Models of God: theology for an ecological, nuclear age*, 1987).

In addition to the Gammas of Huxley's novel, some provocative examples of the use of gamma noted in *Wikipedia*, include:

- **Gamma and light:** In physics, a [photon](#) is an elementary particle, the quantum of light and all other forms of electromagnetic radiation, and the force carrier for the electromagnetic force. It is usually denoted by the Greek letter gamma. Light is of course used as one of the most fundamental metaphors for insight, as in enlightenment, as separately discussed ([Circulation of the Light: essential metaphor of global sustainability?](#) 2010)
- **Gamma rays:** Also known as [gamma radiation](#), is electromagnetic radiation of high frequency and therefore high energy. It is denoted by the letter gamma. As ionizing radiation, the rays biologically hazardous. They are notably produced by the decay from high energy states of atomic nuclei, through "gamma decay". Some gamma rays are of extraterrestrial origin. Known as [gamma-ray bursts](#), they produced by a variety of astronomical processes generating very high-energy electrons. First thought to be particles (like [alpha particles](#) and [beta particles](#)), gamma rays were discovered to be electromagnetic radiation, not massive particles. A [gamma camera](#), also called a scintillation camera or Anger camera, is a device used to image gamma radiation emitting radioisotopes, a technique known as scintigraphy.
- **Gamma and relativity:** In physics, the [Lorentz transformations](#), in accordance with [special relativity](#), are used to explain how the speed of light is observed to be independent of the reference frame, and to understand the symmetries of the laws of electromagnetism. The transformations describe how measurements of space and time by two observers are related. They reflect the fact that observers moving at different velocities may measure different distances, elapsed times, and even different orderings of events. Superseding the approximations of Galilean transformation of Newtonian physics, it may include a rotation of space. Deriving from these transformations, the [Lorentz factor](#) appears in several equations and is denoted by lower-case gamma. Upper-case gamma may be used in discussion of [superluminal motion](#).
- **Gamma and statistics:** In statistics, [Goodman and Kruskal's gamma](#) measures the strength of association of cross tabulated data when both variables are measured at the ordinal level. A value of zero indicates the absence of association.
- **Gamma and colour:** In colour correction between frames in media graphics, with an effect fading from one to the other, gamma cross blends the whole image from one to the other, resulting in a smooth transition that is easier on the eye.
- **Gamma and brainwaves:** A [gamma wave](#) is a pattern of [neural oscillation](#) in humans with a frequency between 25 to 100 Hz (typically 40Hz). According to one theory, such gamma waves may be implicated in creating the unity of conscious perception (the [binding problem](#)). They are distinguished from [alpha waves](#) (8-12Hz), [beta waves](#) (12-30Hz), [mu waves](#) (8-13Hz), [delta waves](#) (0.1-4Hz), and [theta waves](#) (4-7Hz).
- **Gamma and reproduction:** deriving from the Ancient Greek terms for "husband" (*gametes*) "husband" and "wife (*gamete*), a [gamete](#) is a cell that fuses with another cell during fertilization (conception) in organisms that reproduce sexually. In species that produce two morphologically distinct types of gametes, and in which each individual produces only one type, a female is any individual that produces the larger type of gamete (an ovum) and a male produces the smaller tadpole-like type (a sperm).

Visually the depiction of the lower case Greek letter gamma is formally reminiscent of:

- **Gamma and the Zodiac:** The symbol of Aries, as the first constellation in the [Zodiac](#), closely resembles that of the letter gamma. As such it evokes a multiplicity of associations -- offering the ambiguity of both the [astronomical](#) and the [astrological](#). In astrology it is symbolised by the Ram -- through the visual resemblance to its horned head (offering a further set of associations, often considered problematic)
- **Gamma and human gender representation:** Curiously the letter gamma resembles schematic depictions of both male and female genitalia of humans. In the case of the female, this includes the vagina, uterus, Fallopian tubes, and ovaries. In the case of the male, the inverted schematic depicts the testicles and penis. These are each in their way central to psychosocial dynamics, with the female genitalia as the ultimate attractor, and those of the male associated with having "balls" (*cojones*) and the capacity "to perform".
- **Gamma in texting:** Approximating the letter Y, it is not surprising that Y is a part of [NetLingo](#), used as a [texting acronym for "why" or yes](#)". It is thus intimately related to the question mark
- **Gamma cross:** The symbol known as the Gamma cross is also known as the Roman Catholic cross, the consecration cross and the inauguration cross. Its use as a halo or gloria, as a sign of power, is indicative of the spiritual power or energy that to holy persons are held to emanate. In its original form it was known as the [gammadion](#) through its resemblance to a configuration of the

upper-case form of the letter gamma. As such it also recognized as resembling the swastika.

Aside from the use of colour in awareness ribbons, Huxley associated particular colours with the social castes: Alpha (grey), Beta (mulberry), Gamma (green), Deltas (khaki), Epsilon (black). It is curious that a significant cluster of those preoccupied by the current irresponsibility of the "1%" are the "greens", namely the Gammas in Huxley's tale -- to be seen as confronting the ash-grey clothed Alphas, as suggested separately (*Burnies versus Greenies ? Refocusing the communication challenge for the Greens*, 2013). This notes the irony of the current fashion/design slogan: *Green is the New Black*.

Symbols have a widely appreciated role in psychosocial systems, as variously described (Roland Barthes, *Empire of Signs*, 1983). They are powerful devices for the communication of understanding, and central to many forms of marketing. Of relevance here is how symbols "work" (Dan Gronwald, *How Symbols Work: imprints or stereotypes? MythicDreams.org*, 25 March 2011). The matter has been extensively explored by such as Carl Jung with Marie-Louise von Franz (*Man and His Symbols*, 1964). As sought by a successor to Jung, John R. Van Eenwyk (*Archetypes and Strange Attractors: the chaotic world of symbols*, 1997):

... to clarify how symbols work, how they accomplish what they do; it is about the mechanics of our interactions with them. These concerns are more than academic. Studying what symbols do, clarifies what symbols are. This, in turn, helps us to interact with them more effectively when they appear. And that, ultimately, helps us to manage the power they exert on us....

Analytical psychology and physical and mathematical science all employ virtually identical metaphors to understand particular phenomena, but this does not guarantee that they are accurate metaphors or that they describe the same phenomena. The evidence is growing, however, that chaos theory and analytical psychology are describing similar dynamics, albeit in very different realms.

What forms vital to psychosocial transformation carry, reinforce and suggest new meaning?

## Gamma as change in the rate of change of value

In the context of this exploration it is extraordinary to discover the importance of [gamma in financial trading](#). There it offers a measure of the rate of change in the [delta](#) with respect to changes in the underlying asset's price. In a world focused on change, gamma is an indicator of the change in the rate of change. With respect to finance, this must necessarily be understood as the change in one of the most tangible forms of value -- if notional and symbolic. Given the argument for the value of playing (as noted above), it is strange that "playing the markets" is a well-recognized phrase and that gamma should be so fundamental to the skills involved.

As the second derivative of the value function with respect to that underlying price, [gamma is an important measure of the convexity of a derivative's value](#), in relation to the underlying price. It is important because it corrects for the [convexity of value](#). Convexity refers to non-linearities in a [financial model](#). In other words, if the price of an underlying variable changes, the price of an output does not change linearly, but depends on the [second derivative](#) of the modeling function. Geometrically, the model is no longer flat but curved, and the degree of curvature is called the convexity.

Ironically, in a period of the severest financial confidence in the country of its origin, the use of the term gamma in mathematical finance derives from "[the Greeks](#)". The name is used because the most common of these sensitivities are often denoted by Greek letters. These are the quantities representing the sensitivities of the price of [derivatives](#) to a change in underlying parameters on which the value of an instrument or portfolio of financial instruments is dependent. The range, precision and subtlety of such little known measures is incredible, given the fuzzy inadequacies and oversimplifications in the case of debate regarding change in psychosocial systems. *Wikipedia* offers entries on:

### 1. First-order Greeks

1. [Delta](#): measures the rate of change of option value with respect to changes in the underlying asset's price.
2. [Vega](#): measures sensitivity to [volatility](#). It is the derivative of the option value with respect to the volatility of the underlying asset.
3. [Theta](#): measures the sensitivity of the value of the derivative to the passage of time: the "time decay."
4. [Rho](#): measures sensitivity to the interest rate: it is the derivative of the option value with respect to the risk free interest rate (for the relevant outstanding term)
5. [Lambda](#) (Omega): is the percentage change in option value per percentage change in the underlying price, a measure of leverage, sometimes called gearing.

### 2. Second-order Greeks

1. [Gamma](#): measures the rate of change in the delta with respect to changes in the underlying price.
2. [Vanna](#): (or DvegaDspot and DdeltaDvol): is a second order derivative of the option value, once to the underlying spot price and once to volatility.
3. [Vomma](#) (Volga, Vega Convexity, Vega gamma or dTau/dVol) measures second order sensitivity to volatility. It is the second derivative of the option value with respect to the volatility, or, stated another way, vomma measures the rate of change to vega as volatility changes.
4. [Charm](#) (or delta decay, or DdeltaDtime): easures the instantaneous rate of change of delta over the passage of time.
5. [DvegaDtime](#): measures the rate of change in the vega with respect to the passage of time. It is the second derivative of the value function; once to volatility and once to time.
6. [Vera](#) (or Rhova): measures the rate of change in rho with respect to volatility. It is the second derivative of the value function; once to volatility and once to interest rate.

### 3. Third-order Greeks

- **Color** (gamma decay or  $D\gamma$ ): measures the rate of change of gamma over the passage of time
- **Speed** (or the gamma of the gamma or  $D\gamma_{spot}$ ): measures the rate of change in Gamma with respect to changes in the underlying price.
- **Ultima** (or  $D\gamma_{vol}$ ): measures the sensitivity of the option vomma with respect to change in volatility.
- **Zomma** (or  $D^2\gamma_{vol}$ ): measures the rate of change of gamma with respect to changes in volatility.

Collectively these have also been called the risk sensitivities, risk measures, or hedge parameters. Together "the Greeks" are vital tools in **risk management**. Ironically again, "the Greeks" (including gamma), have been fundamental to the development of the continuing financial crisis -- especially given the manner in which these were based on the dubious packaging and marketing of financial derivatives.

So-called "cross gamma" is important for the financial trader because in many hybrids products, the value in terms of higher coupon comes from huge cross gamma. So when pricing these products the trader needs to analyse how much of this cross gamma can be captured in the market. Correlation assumptions are a way traders can decide how much of the value from cross gamma can be passed on in terms of enhanced coupons while trading the product. In a delta-hedge strategy, gamma is sought to be reduced in order to maintain a hedge over a wider price range. A consequence of reducing gamma, however, is that **alpha** too will be reduced.

A highly controversial study by a former risk manager, **Nassim Nicholas Taleb** (*Antifragile: how to live in a world we don't understand*, 2012), has addressed the conditions which are a source of strategic surprise -- developing an argument made in earlier work (*The Black Swan: the impact of the highly improbable*, 2007). Considerable attention is given to the management of convexity (*Black Swans and Antifragility: a vivid reconceptualization of risk and resilience*, *NPQ: nonprofit quarterly*, 20 March 2013). Taleb argues for recognition of antifragility, in contrast to fragility, where high-impact events or shocks can be beneficial. He coined the term because he considered that existing words used to describe the opposite of "fragility," such as "robustness," were inaccurate. Antifragility goes beyond robustness; it means that something does not merely withstand a shock but actually improves because of it.

However, as argued in a critical review by Eric Falkenstein:

The book is really a big spread argument that it's good to be long gamma, bad to be short it. Gamma is the essence of an option, why there's 'time decay' or **theta**, a predictable expense that anticipates the payoff times the probability. Whether or not this theta is adequate for the gamma is whether an option is priced fairly or not, and generally people pay too much for gamma... Being long options (positive gamma), especially out-of-the-money options, has been a losing strategy. (*Taleb Mishandles Fragility*, 27 November 2012)

The recognition of the importance of gamma with respect to one fundamental form of change raises valuable questions as to how it -- together with the other "Greeks" -- could usefully be applied to other forms of change in value, especially those involving a degree of risk. The critics of Taleb's thesis -- as one of the few who warned of the financial crisis -- should be compared with the perspective of others who did not, as an indication of that dynamic with respect to more intangible values (Jared Woodard, *Why Taleb is wrong about markets and uncertainty*, *Condor Options*, 26 November 2012).

## Unsustained awareness implied by gamma inversion

Curiously, what is effectively an inverted gamma, is widely used in so-called "**awareness ribbons**" worn on the lapel -- possibly as a symbol of protest.



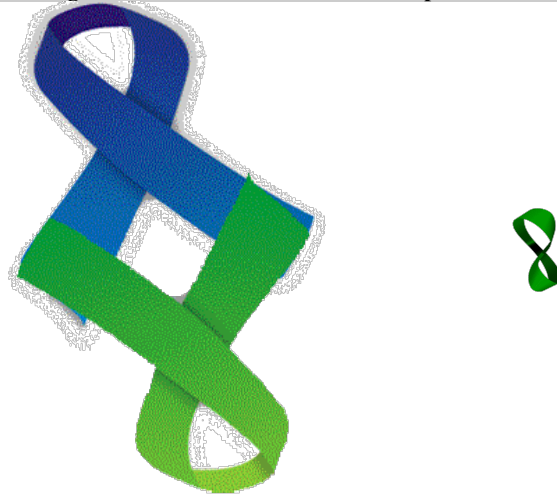
These include, with variants in different countries and on different occasions:

- **Blue ribbon** (numerous causes)
- **Red ribbon** (notably solidarity with HIV/AIDS victims, prevention of drunk driving)
- **White ribbon** (notably violence against women)
- **Pink ribbon** (**breast cancer awareness**)
- **Yellow ribbon** (various causes)
- **Green ribbon** (notably various illnesses)
- **Orange ribbon** (notably self-harm)
- **Purple ribbon** (multiple health-related causes)
- **Brown ribbon** (notably for anti-tobacco, colon cancer)

Aside from its inversion as gamma, of particular relevance to the argument above is the extent to which the form of these ribbons implies a another dimension through the overlap. This might be considered as recognition of a topological form of the simplest kind -- possibly the beginning of a knot, or a half-knot. It is appropriate to note how the more aesthetic depictions of gamma as a lower case letter (see below) offer a similar sense of curving overlap, implying a degree of encirclement of an incipient hole.

The result can be fruitfully interpreted as an uncompleted Möbius strip -- with all that may imply in terms of the paradoxical engagement required by the psychosocial causes for which a ribbon may be used. These have been otherwise explored by [Steven M. Rosen](#) (*Science, Paradox and the Moebius Principle: the evolution of the transcultural approach to wholeness*, 1994). The awareness in question might be considered as implying potential completion or enablement by a "complementary focus" of awareness in the form of another ribbon. This is suggested by the image on the left. This could be understood as in progress of transformation into the paradoxical form on the right -- the completed Möbius strip.

#### Relating awareness ribbons to a Möbius strip



Further to the argument above regarding symbols, there is a case for recognizing the significance associated with their elaboration -- as the mind follows the lines and curves of the form, and their twists and inversions. This is most evident in the case of [calligraphy](#) considered as a spiritual discipline. Sanskrit calligraphy is considered to be a direct way of invoking energies and realities, as with those Arabic script or Chinese characters. The process is an invocation of a certain form, concept, idea or energy. Also of interest is the relevance of "gamma" as an accepted symbol in the disparate variety of contexts evident from the array of examples cited above. Consistent with the configuration of the awareness ribbons, curiously the calligraphic construction of gamma (below) suggests a degree of three-dimensional twist.

As concluded by [Robert W. Gunn](#) (*Intimacy, Psyche and Spirit in the Experience of Chinese and Japanese Calligraphy, Journal of Religion and Health*, 40, 2001), calligraphy is a mode of self-discovery and self-development that opens people to a substantial dialogue between cultures and the paths of inner conversation.

For Wong Ping Ho (*The Chinese Approach to Learning: the paradigmatic case of Chinese calligraphy*, 2005):

The case of Chinese calligraphy is representative, for "the tracing of characters is often described as if it were the definitive act of Chinese learning"... We would therefore take a look at the learning of Chinese calligraphy, see how its seemingly mechanical learning methods are in fact necessary for the achievement of the states alluded to by *qi* and *shen*, and how it provides a paradigm for interpreting the point of learning in Chinese culture, at least as understood by the sages (p. 159)

Potential implications in forming letters with this perspective, most notably in the light of their significance in politics and religion, include movement to the "left", or to the "right", and movement "up", or "down" -- as well as their associations to "positive" or "negative"..

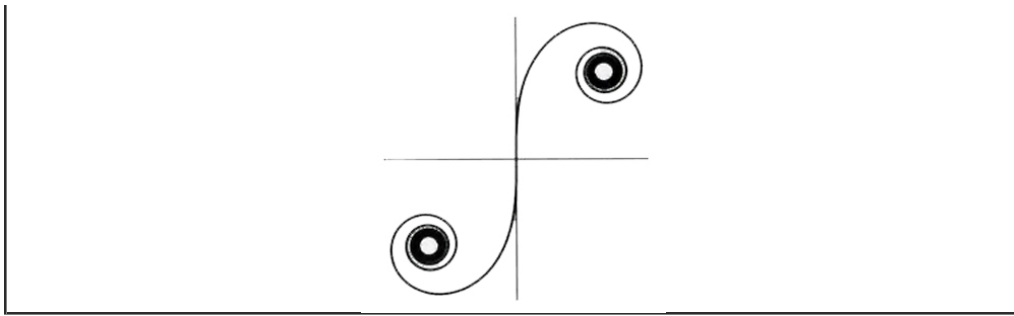
The question posed here is the cognitive implication of "gamma" as a traceable form, given the pattern of mnemonic associations above.

The argument may be taken further by considering a very concrete form of tracing and travelling a form, as is exemplified in complex road junctions. The elegance of the forms these may take follows from the mathematics governing so-called [Euler spirals](#) (also known as spiro, clothoids or Cornu spirals). These are curves whose curvature changes linearly with the curve length (the curvature of a circular curve is equal to the reciprocal of the radius).

The spiral is fundamental to [transition curve design](#) in railroad and highway engineering for connecting and transiting the geometry between a tangent and a circular curve, on which there is a very extensive literature. The governing equation is related to the so-called [Gamma function](#), the Gauss error function, and is a special case of the confluent hypergeometric function (Raph Levien, *The Euler Spiral: a mathematical history*. 2008). The question is then how this might apply to any "transition curve" between strategic models based on "linear thinking" and those dependent on a sense of "curvature", as discussed separately (*Clothoid as a psychosocial transition curve: from linear to circular*, 2012). Is there a corresponding literature on "transition curve design" with respect to governance?

#### Euler's spiral or Clothoid

(See also screen shots from an [interactive representation](#)  
The spiral converges to the centre of the holes in the image  
as the length of the spiral (measured from the origin) tends to positive or negative infinity.



It is of course the suggestive visual similarity of the above curve to a portion of the lower-case gamma depiction which is of interest here, together with the "transiting" curvature in the lower half of its aesthetic representations. As used in the Gamma function, it is however the upper-case variant of gamma that is used.

In the context of the above argument, the associated [Euler equation](#) offers a key to understanding the transformation between linear and circular cognitive modes. It has been suggested that Euler's formula describes two equivalent ways to move in a circle (Kalid Azad, *Intuitive Understanding of Euler's Formula*, 2010). This is potentially vital to engaging with psychosocial dynamics constrained by different forms of "linear thinking" and requiring a degree of reconciling "curvature"

As a mathematical device for converting between [polar coordinates](#) and [rectangular coordinates](#) on the [complex plane](#), its wider significance merits continuing exploration, as discussed separately (*¿ Embodying a Way Round Pointlessness ?* 2012). This included consideration of *Enabling a reconciliation between one and nothing: p and the mysterious Euler identity* and *Spiralling around "nothingness" and "pointlessness": the implication of phi*.

Appropriate to this argument, one early exploration of transition curve design argues that, from a driver-perspective, there is little to distinguish between one based on an Euler spiral and one based on a [lemniscate](#) (A. J. Tyson, *Highway Transition Curve Design, Survey Review*, 10, 1950). The [lemniscate of Bernoulli](#) is commonly used in roadwork where it is required to have the curve transitional throughout, and without any intermediate circular curve. Lemniscate refers to a variety of figure-of-eight curves. As a three-dimensional dynamic system, the [Lorenz attractor](#) exhibits a lemniscate shape. It may of course be compared with the Möbius strip. Curiously (with respect to the awareness ribbons above) the etymology derives from a sense of being "decorated with ribbons", associated with the the ancient Greek island of [Lemnos](#) where ribbons were worn as decorations.

## Relational insight dynamics in terms of a "gamma" perspective

The question here is whether the form of the letter gamma can be used as a mnemonic device to offer insights into the relation between the quadrants (above) -- in order to transcend their limitations. It is assumed here that it is the "social caste" of Gammas, in Huxley's terms, who are most likely to both evidence frustration and to act upon it. It is they who have become increasingly cynical regarding the discourse for which the Alphas are primarily responsible -- exacerbated by their evident self-satisfaction and unmet promises. It is they who tend to be well represented in democratic protest.

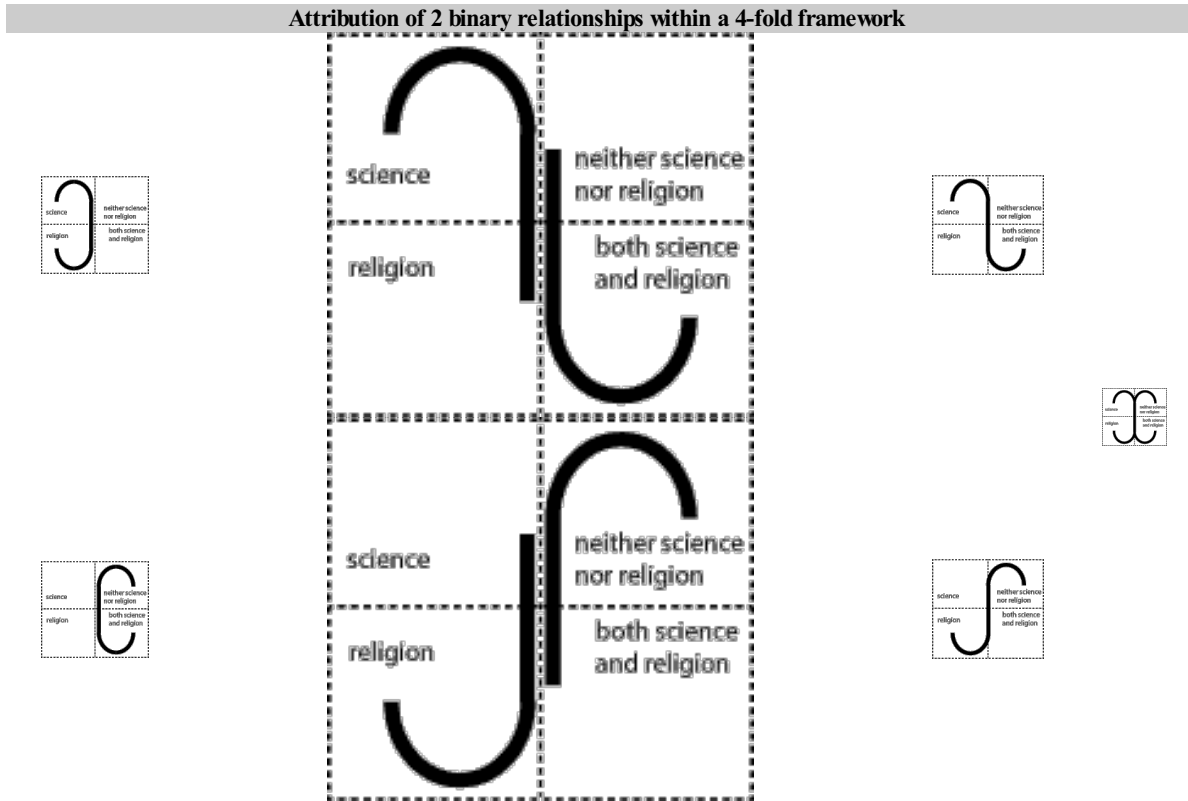
Exploiting the aesthetic licence, other symbols are used in the argument below, in the light of the visual similarity indicated above.

Depiction of Gamma and visually similar symbols		
Aries (Zodiac)	Gamma (lower case Greek letter)	Euler, Clothoid, Cornu spiral (reflection of portion of half)

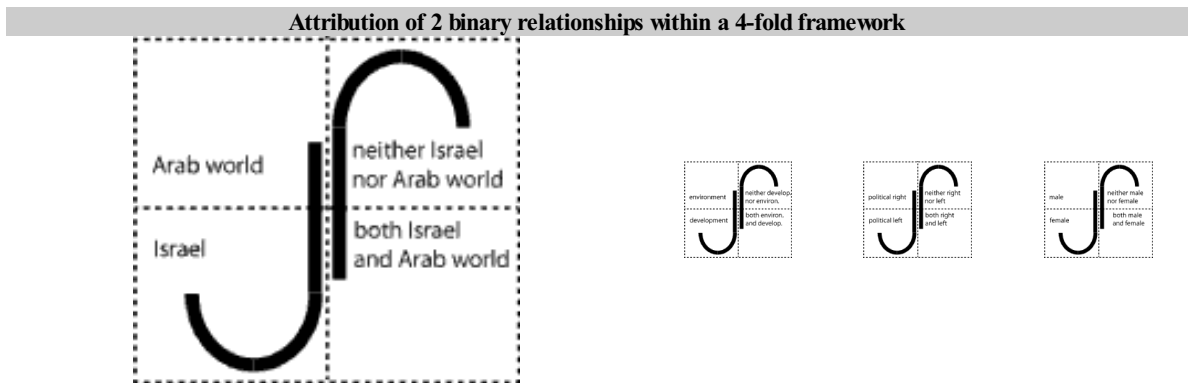
Attributing one "binary theme" to the fourfold framework (introduced above), potential relations such as the following might be explored in the light of the manner in which portions of gamma may be traced, inverted or combined. Here "science-religion" is used, although clearly attributions might be reversed in a "religion-science" pattern.

Attribution of a binary relationship within a 4-fold framework			

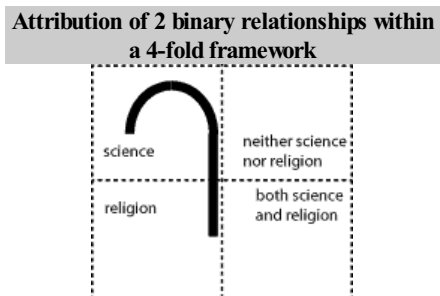
The above set may be further extended as follows.



Examples are given here of further problematic binary themes, but with only one set of relations.



A complete set of relations for the science-religion case can be presented in a single animation as follows.



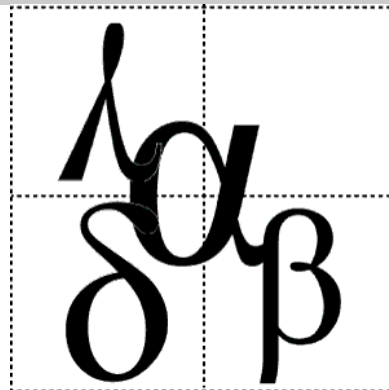
## Extending the alphabet and its representation?

In the exploratory mode here, it should be emphasized that the quest is for an argument which is "neither scientific nor representational", rather it reflects design issues potentially vital for comprehension and memorability in the practice of psychosocial relations. This approach is consistent with the argument of Johan Galtung (*Forms of Presentation: a forgotten aspect of social science epistemology*, 1978) within the project on *Goals, Processes and Indicators of Development* (GPID) of the United Nations University -- offering possibilities previously discussed (*Forms of Presentation and the Future of Comprehension*, 1984).

It is in this spirit that Huxley's "Greeks" are portrayed in the following experiment -- borrowing the financial usage of "Greeks", since here

too it is a matter relational risk management. Of interest is the manner in which this constitutes the elements of a "story" whose "threads" could be far better "connected" as a psychosocial "plot" -- many of the frames suggesting controversial sociopolitical associations. Others could be imagined -- and far better presented interactively through a [Java applet](#) to enable users to design and explore story lines (perhaps with the use of [morphing techniques](#) and [moiré patterns](#)).

**Experimental animation of the relation between the "Greeks" of *Brave New World***



The story -- through the [ligatures](#) used between letters in some frames -- is also reminiscent of the connectivity suggested by the map of metabolic pathways above. Ligatures are of course vital to the construction of words in a script. What are the "words" implied by these images? Since the "Greeks" may be considered as psychosocial types, it is appropriate that such relationships are understood as "typographical ligatures". If such ligatures were a major feature of the calligraphy of "holy books", then why not of multi-media "wholy books"?

In animation, the experiment is reminiscent of the steps in a traditional [sword dance](#) (with crossed swords). The cognitive implications of such movement recall the arguments of [Mark Johnson](#) (*The Meaning of the Body: aesthetics of human understanding*, 2008) and [Maxine Sheets-Johnstone](#) (*The Primacy of Movement*, 2011) -- especially with respect to the movement with partners in a dance (*Sustainability through Magically Dancing Patterns*, 2008; *Patterns Essential to Individual and Global Health?* 2010). Hence the sense of "epimemetics" (as a dance of meaning) and the need for weaving together the threads of discourse in new ways, as separately discussed (*Interweaving Thematic Threads and Learning Pathways*, 2010). The many dance animation web resources are suggestive of patterns to be explored.

As noted above, suggestions have been made for "extending" the genetic alphabet in the light of recent research. Of relevance to any possible memetic alphabet, there is a case for considering other ways in which it might be extended. Attention to the Chinese approach would seem to be appropriate. Rather than a fourfold approach, the Chinese use a more elaborate eightfold approach, reminiscent of the various "eightfold ways" mentioned above. This lends itself to configuration in a 3x3 table (rather than 2x2, as used above), leaving the central space empty. This central space is then especially valuable as implying a locus for any kind of transcendent perspective.

Pattern of trigrams (Chinese <i>Ba Gua</i> -- Earlier Heaven arrangement)		

Using this framework, the constitution of codon triplets (by combining two such trigrams) results from either straight lines of different lengths or L-shaped forms reminiscent of upper-case gamma. As with the gammadion (cited above), the patterns then lend themselves to animation experiments in terms of "Knight's moves" in chess -- also to be represented in a dynamic variant of the swastika (*Swastika as Dynamic Pattern Underlying Psychosocial Power Processes: implicate order of Knight's move game-playing sustaining creativity, exploitation and impunity*, 2012)

Also of interest is the assumption that any genetic code is best presented in flat tabular form or configured in a way reminiscent of the psychoactive advantages of a mandala, but still in two dimensions. Consideration can be given to the representation of a memetic code within a three dimensional framework, one in which the lines and curves forming the letters would themselves be in three dimensions -- potentially more resonant with any cognitive engagement. Remarkable progress in this direction, using light, has been with respect to one alphabet -- although citation is not appropriate, given the pathetic preoccupation of the innovator with intellectual copyright (perhaps necessarily, and symbolically, reminiscent of the preoccupations of [Gollum](#) with the [One Ring](#), as depicted in *Lord of the Rings*, as a dramatic requirement of that tale).



## Conclusion

The argument has endeavoured to explore a way of transcending problematic psychosocial dynamics in which all are necessarily embroiled -- especially those seeking to reduce their complexity to some conventional paradox-free model.

Inspired by acceptance of the complexity of genetics, the approach has engaged playfully with the challenges of memorability and representation -- in the light of arguments of biomimetics. However, given the recognized limitations to the explanatory power of the genetic code, the argument has also considered the need for an analogue to the dynamics of epigenetics, in the form of epimemetics. To that end consideration has been given to the potential mnemonic associations to "gamma". These include the sociopolitical dimensions highlighted by the novel of Aldous Huxley.

Given the fundamental processing of "energy" within the metabolic pathways, in which the bases of genetics play such an intrinsic role, this highlights the question of the nature of the "energy" associated with psychosocial processes (whether problematic or not), as separately discussed (*Reframing Sustainable Sources of Energy for the Future: the vital role of psychosocial variants*, 2006; *Massive Elicitation of Psychosocial Energy Requisite technology for collective enlightenment*, 2011).

The challenge of the argument, arising from its self-reflexive dimension, is readily to be seen in the framing of "neither A, nor not-A" and how this is to be comprehended. The problematic binary "science-religion" debate has been used as an appropriately fundamental example which defies conventional thinking. Even though both appeal variously to paradox, uncertainty and the challenge to comprehension, such "confusion" has not enlightened the discourse between them, as previously discussed (*Eliciting wholth through associating mathematics and theology*, 2013). Curiously both face challenges of confidence and belief in appealing to wider audiences -- including Huxley's Gammas.

In that respect, it could be argued that the methods of science and religion would seem to be inadequate to the cognitive challenges of a global civilization. Both face considerable difficulty in communicating their most fundamental insights -- whether to each other or to wider audiences. Both appeal to authoritative insights, but are variously challenged to ensure their comprehension. In the case of science, the requirement is that the most fundamental insights be taken on faith -- since extremely costly experiments are required to confirm or deny the "evidence" from which they derive. In a complex social system with many dubious agendas, there is little to prevent those with the power to do so to frame and adjust their conclusions selectively in ways which cannot be readily questioned. Religion is faced with analogous difficulties. Both are defensive in relation to any challenge. Both frame their insights as forms of intellectual property to which access is variously controlled.

It would seem that a new modality may well emerge -- more clearly focused on comprehension, confidence and operacy with respect to practical challenges faced by individuals in the moment. It may be perceived as supereeding "science", as the latter has claimed to supercede "religion". It may also be perceived as complementary in its focus on reframing possibilities for action in the moment. Both science and religion, with their respective "insight delivery" problems, are then to be seen as inadequate in practice to the challenge of those in need. In a world characterised by "spin", this new modality may be seen as engaging "conscience", through transcending the frameworks of mathematics and theology, as separately discussed (*Mathematical Theology: Future Science of Confidence in Belief: self-reflexive global reframing to enable faith-based governance*, 2011; *Towards Conscientific Research and Development*, 2002)

The argument has endeavoured to indicate the manner in which dynamics, and their memorable representation, are the key to this modality -- rather than the conventional focus on essentially static categories. It has been suggested that the dynamics with which "gamma" is variously associated are suggestive of forms of resonance which may constitute a sustainable "meta-pattern that connects".

Whether as suggested by Aldous Huxley, or by financial traders, the "Greeks" offer a language for the embodiment of changing values -- consistent with their original cultivation by the inventors of democracy. If "learning the alphabet" is considered so important to "literacy", how is the alphabet of "functional literacy" with regard to psychosocial systems to be understood, and what kind of learning is then required?

---

## References

- Emily Anthes. *Frankenstein's Cat: cuddling up to biotech's Brave New Beasts*. Scientific American, 2013
- C. C. Barfoot. *Aldous Huxley: between East and West*. Rodopi, 2001
- Roland Barthes. *Empire of Signs*. Hill and Wang, 1983
- Harold Baum. *Biochemists' Song Book*. Taylor and Francis, 1995
- Jane Bennett (Ed.). *In the Nature of Things: Language, Politics, and the Environment*. University of Minnesota Press, 1993
- Noam Chomsky. *Occupy*. Penguin, 2012 [[summary](#)]
- Luc de Brabandère:
- *The Forgotten Half of Change: achieving greater creativity through changes in perception*. Kaplan Publishing, 2005
  - *Pensée Magique, Pensée Logique: petite philosophie de la créativité*. Le Pommier, 2008.
  - *Le Latéroscope: systèmes et créativité*. La Renaissance du Livre, 1990.
- Luc de Brabandère and Alan Iny. *Thinking in New Boxes: a new paradigm for business creativity*, Random House, 2013
- Joël de Rosnay. *The Macroscopic*. Harper and Row, 1979 [[summary](#)]

David Diringer. *The Alphabet: a key to the history of mankind*. Kessinger Publishing, 2007

Susantha Goonatilake. *Toward a Global Science: mining civilizational knowledge*. Indiana University Press, 1999

Edward S. Herman and Noam Chomsky. *Manufacturing Consent: the political economy of the mass media*. Pantheon, 1988 [[summary](#)]

June Deery. *Aldous Huxley and the Mysticism of Science*. Macmillan Press, 1996

Jonathan Haidt. *The Righteous Mind: why good people are divided by politics and religion*. Vintage, 2012

Mark Halstead. *How Metaphors Structure our Spiritual Understanding*, pp. 137-153

Valerie Hartouni:

- *Brave New World in the Discourses of Reproductive and Genetic Technologies*. In: Jane Bennett (Ed.), *In the Nature of Things: Language, Politics, and the Environment*, 1993, pp. 85-102
- *Cultural Conceptions: on reproductive technologies and the remaking of life*. University of Minnesota Press, 1997
- *Visualizing Atrocity: Arendt, Evil, and the Optics of Thoughtlessness*. New York University Press, 2012

Stéphane Hessel. *Time for Outrage!* Charles Glass Books, 2011 [[text](#)]

Wong Ping Ho. *The Chinese Approach to Learning: the paradigmatic case of Chinese calligraphy*. In: Cathy Ota (Ed.), *Spiritual Education: Literary, Empirical, And Pedagogical Approaches*, 2005, pp. 154-170

Douglas Hofstadter:

- *Gödel, Escher, Bach: an Eternal Golden Braid*. Basic Books, 1979 [[summary](#)]
- *Metamagical Themas*. Basic Books, 1985 [[summary](#)]
- *I Am a Strange Loop*. Basic Books, 2007 [[summary](#)]
- *What Is It Like to Be a Strange Loop*. In: Uriah Kriegel and Kenneth Williford (Eds). *Self-Representational Approaches to Consciousness*. MIT Press, 2006, pp. 465-516

Mason Holmes. *Aldous Huxley and the way to reality*. Indiana University Press, 1970

James Hull. *Aldous Huxley: representative man*. LIT Verlag Münster, 2004

Aldous Huxley:

- *Brave New World*. 1931 [[summary](#)]
- *Brave New World Revisited*. 1958 [[summary](#)]
- *Island*. 1962 [[summary](#)]

David Garrett Izzo and Kim Kirkpatrick (Eds.). *Huxley's Brave New World: Essays*. McFarland, 2008

Mark Johnson:

- *The Body in the Mind: the bodily basis of meaning, imagination, and reason*. University of Chicago Press, 1987
- *The Meaning of the Body: aesthetics of human understanding*. University of Chicago Press, 2008

Carl Gustav Jung and Marie-Louise von Franz. *Man and His Symbols*. Doubleday, 1964 [[summary](#)]

Hannah Matus. *Reflections on Terror from Aldous Huxley to Margaret Atwood: dystopic fiction as politically symbolic*. Ohio State University. 2009 [[abstract](#)]

Sallie McFague:

- *Metaphorical Theology: models of God in religious language*. Fortress Press, 1982
- *Models of God: theology for an ecological, nuclear age*. Fortress Press, 1987

Jerome Meckier, Peter Edgerly Firchow and Bernfried Nügel. *Aldous Huxley: modern satirical novelist of ideas*. LIT Verlag Münster, 2006

Gareth Morgan. *Images of Organization*. Sage, 2007 [[summary](#)]

Kinhide Mushakoji. *Global Issues and Interparadigmatic Dialogue; essays on multipolar politics*. Albert Meynier, 1988.

Cathy Ota (Ed.), *Spiritual Education: Literary, Empirical, And Pedagogical Approaches*. Sussex Academic Press, 2005

Steven M. Rosen. *Science, Paradox and the Möbius Principle: the evolution of the transcultural approach to wholeness*. State University of New York Press, 1994

Maxine Sheets-Johnstone. *The Primacy of Movement*. John Benjamins, 2011

Ronald T. Sion. *Aldous Huxley and the Search for Meaning: a study of the eleven novels*. McFarland, 2010

Nassim Nicholas Taleb:

- *Antifragile: how to live in a world we don't understand*. Allen Lane, 2012 [[summary](#)]
- *The Black Swan: the impact of the highly improbable*. Allen Lane, 2007) [[summary](#)]

John R. Van Eenwyk. *Archetypes and Strange Attractors: the chaotic world of symbols*. Inner City Books, 1997



This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/).

For further updates on this site, [subscribe here](#)