



# laetus in praesens

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## In-forming the Chalice as an Integrative Cognitive Dynamic Sustaining the Holy Grail of Global Governance

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## Introduction

This develops an earlier argument identifying the surprisingly widespread usage of "Holy Grail" with respect to issues of governance (*In Quest of Sustainability as Holy Grail of Global Governance*, 2011). The documents identified were clustered under the headings *Trust: Holy Grail of Governance?* and *Confidence: Holy Grail of Finance?*. The related challenge of greed and the acknowledged "poisoning of the Chalice" were then addressed (*Greed: the Chalice and the Trough*). The widespread mystification was then reviewed under the heading *Holy Blood, Holy Grail: cultivating a murky world of illusion*.

The argument was introduced by the statement of the Secretary-General of the United Nations, Ban Ki-moon:

In these difficult times, the biggest challenge facing governments is not a deficit of resources; it is a deficit of trust. People are losing faith in leaders and public institutions to do the right thing. The forthcoming G-20 meeting in Cannes takes place against this dramatic backdrop. (*The Clock Is Ticking*, *International Herald Tribune*, 31 October 2011)

The exploration of "belief", "confidence" and "trust" is undertaken in the light of an earlier reframing of "theology" as offering insights into worldwide tendencies towards **faith-based governance**, however that is understood or appreciated (*International Institute of Advanced Studies in Mathematical Theology*, 2011). It is within that context that the **nature of any "container" for confidence becomes of fundamental importance**. As variously understood, the "Chalice" might then be said to be intimately related to the quest for the "Holy Grail of Governance" -- perhaps usefully to be understood as a container capable of holding the confidence of all.

In extending "theology" to the consideration of whatever individuals consider "divine" or worthy of belief -- above all else -- the question explored here is the "form" of that belief. This is of significance both objectively and subjectively, and with respect to individual and collective engagement. In the case of the challenge of governance, the issue is what is the "form" of sustainability -- both "mathematically" and as "something to believe in"? Mathematically this might be understood in terms of "conformality". The question then is the nature of the cognitive implications -- of "cognitive conformality" with a "supernal" form with which confidence can be associated

## Tangible and intangible varieties of "Chalice" and "Grail"

It is to be expected that any "description" under this heading would be problematic. There are, for example, numerous references to the "Holy Grail" of mathematics. One such, proof of the [Riemann hypothesis](#), was recently described as follows by Tim Radford (*Maths*

*holy grail could bring disaster for internet*, *The Guardian*, 7 September 2004):

The hypothesis formulated by Georg Friedrich Bernhard Riemann in 1859, according to [Marcus du Sautoy](#) of Oxford University, is the holy grail of mathematics. *Most mathematicians would trade their soul with Mephistopheles for a proof*, he said. The Riemann hypothesis would explain the apparently random pattern of prime numbers - numbers such as 3, 17 and 31, for instance, are all prime numbers: they are divisible only by themselves and one. Prime numbers are the atoms of arithmetic. They are also the key to internet cryptography: in effect they keep banks safe and credit cards secure.

[Fermat's Last Theorem](#) has been labelled in that way (David Perlman, *Searching for Math's Holy Grail: the misadventures of those who tackled -- and finally solved -- Fermat's Enigma*, 7 December 1997). Another presented in this way is the proof of Glimpi's conjecture, held to be the Holy Grail of numeric set lassitude mathematics (*Mathematicians celebrate baffling new proof*, *Daily Week*, 10 July 2009). However many consider the Holy Grail of mathematics to be the same as that of physics, namely a [Theory of Everything](#), a unified theory that explains all physical reality.

Such references are placed in context by a commentary labelling "Holy Grail" as one of [5 Atrocious Science Clichés to Throw Down a Black Hole](#) (*Wired Magazine*, 17 July 2009) noting:

To me, this is the mother of all bad science clichés, the worst offender. And I recently learned I have back up on this opinion from the venerable journal *Nature* which has literally banned scientists from putting holy grails in their papers. But outside of *Nature*, grails are running rampant through science writing. A Google search for "holy grail" + science OR scientists OR researchers yields 2.6 million hits. Among those hits, the holy grail of: physics, climate change, biofuels, cancer research, crystallography, bodybuilding, pain relief, plant biology, nanoscience, cardiology, optical computing, catalyst design and human gait analysis.



Whilst "Holy Grail" and "Chalice" are indeed used as metaphors in many instances, especially in relation to finance, the relevant question is why those particular metaphors are valued to that degree. What elusive qualities do they carry and imply -- despite the myths with which they are associated, so readily deprecated in a cynical secular society (of which the financial community is characteristic)? The sense of variety may be better explored (in the table below) by considering the **intangible** qualities with which Grail and Chalice are associated -- in contrast with the ways those qualities are considered manifest in the **tangible**. The exercise is necessarily only tentative and indicative (with [explanatory notes](#) following the table).

Figure 1: Tangibles versus Intangibles		
	Tangibles ("graspable" substantives) Metaphors and surrogates	Intangibles ("elusive" dynamics) Experiential engagement
"Re-cognition" of achievement	Awards, sports cups, records, copyright (a)	Disassociation from tangibles ("walk away") (b)
Unifying integration	Mega-explanation of complexity (c)	Simplification of insight ("it is together") (d)
Health / Wealth	Remedial action (e)	Disease as part of the meta-pattern / process (f)
Eternal life / Energy / Time	"Sustainability" / "Immortality" (g)	"Withdrawal into the stones" (h)
Mysticism	Mystification ( <i>Holy Blood, Holy Grail</i> ) (i)	Out-of-the-box / Otherwise / Subtlety (j)
Secret (place)	Hidden "somewhere else" (k)	"Hidden" a "hair's breadth away" (l)
Quest	Journeying elsewhere ( <i>Indiana Jones</i> ) (m)	Journeying rather than arriving (n)
Remembrance	Celebrating identity in tradition (o)	"Re-membering" the God to Come (p)
Catalyst (morphic resonance)	Symbolism (mimetic) / Image (q)	Morphogenesis / Entrainment (r)
Meditation	Rehearsal (mnemonic / memetic) (s)	Engagement / Entanglement (t)
Design / Aesthetic	Perspectival harmony (u)	Recreation / Template (v)
Undefinable / Elusive	Unsayings / Apophasis (w)	<i>Neti Neti</i> (x)

**Explanatory notes:**

- There are numerous references to the "Holy Grail" in relation to sport, physical prowess and competitive achievement
- Characteristic of some of those awarded medals of valour or achievement who see them as totally unrelated to the nature of their experience -- allowing them to "walk away" from conventional awards and recognition (René Daumal, *Mount Analogue: a novel of symbolically authentic non-Euclidean adventures in mountain climbing*, 1959)
- As with many fundamental theoretical exploits of science, presaging a [Theory of Everything](#).

- d. As on the cover of the *Last Whole Earth Catalog* (1975): "There is no need to put it together, it already is together"
- e. The Chalice is commonly associated with the possibility of healing. For some, circumventing ageing and disease may indeed be understood as the Holy Grail of science. The focus on "health" is however readily conflated with that on "wealth", especially with respect to the "health" of collective initiatives and their assessment in financial terms. Each serves as a metaphor for the other (*Remedies to Global Crisis: "Allopathic" or "Homeopathic"? Metaphorical complementarity of "conventional" and "alternative" models*, 2009).
- f. Both disease and poverty have been reframed as dynamics in a larger pattern, if not essential to it -- as with [vows of poverty](#) and commitment to [voluntary simplicity](#)
- g. The Grail legend has traditionally promoted aspirations to [immortality](#) and eternal life through being able to "drink" the "elixir" contained in the Chalice. The quest of science for an unending source of energy has been framed in those terms (*The 'Holy Grail' of science: the artificial leaf researchers claim will turn every home into its own power station*, Daily Mail Reporter, 28 March 2011). The underlying characteristic is a degree of resilient "mastery" of time -- even an embodiment of the challenges of its cycles (cf [business cycles](#), the [adaptive cycle](#))
- h. An Irish Celtic myth recalls the story of an elder race (the [Tuatha Dé Danaan](#)) who, through their wisdom, were eventually able to "withdraw into the stones" -- into the "fabric of reality" (*The Isdom of the Wisdom Society: embodying time as the heartland of humanity*, 2003)
  - i. Complex forms of mystification are cited above -- notably obscuring the mystical associations valued by the spiritually engaged
  - j. Access to higher dimensional subtlety, hyperdimensionality or other universes, possibly through cognitive "wormholes". More readily recognizable as the ability to live "between worlds" (*Living as an Imaginal Bridge between Worlds: global implications of "betwixt and between" and liminality*, 2011; *Hyperspace Clues to the Psychology of the Pattern that Connects*, 2005)
  - k. The focus of quests for clues to the location of secret places and their "treasure" -- as widely promoted in the *Da Vinci Code* (2003) and *The Lost Symbol* (2009), or their imitators, possibly understood as a key to controlling the world
    - l. Traditional references to ultimate wisdom being but a "hair's breadth away" -- a "phase shift" in perspective through "removal of the point from which one views"
- m. Implication that any quest, including the legendary *Grail Quest*, involves adventuring "elsewhere" -- a sense of linear progress
- n. Implication that requisite insight may derive from the journey itself rather than from arrival at any destination -- a sense of cyclic progress articulated by the poet [T. S. Eliot](#) (*Little Gidding*, 1942) to the effect that: *We shall not cease from exploration / And the end of all our exploring / Will be to arrive where we started / And know it for the first time.*
- o. Celebration characteristic of religious and other ceremonies in which a ritual is practiced and upheld as an invocation -- a focus for belief and inspiration with which people can identify (Colbert S. Cartwright, *Chalice Worship*, 1997)
- p. Potentially to be understood as a (magical) "work" -- namely magic that "works" -- as claimed in the practice of ritual (Antonio T. De Nicolas, *Remembering the God to Come*, 1988)
- q. The widespread appeal of the cup and chalice as symbols of special significance (cf [Chalice Christian Symbol](#)) -- and notably in non-Christian cultures. Appropriate to one function of the Chalice, in [set theory](#) the [union](#) (denoted by a cup symbol ?) of a collection of sets is the set of all distinct elements in the collection
- r. Transformation associated with exposure to the Chalice, emphasized within Christianity by the sacrament of the [Eucharist](#) and associated healing
- s. The Chalice as a common focus for meditation and meditation groups -- notably in relation to the Eucharist.
- t. The processes of cognitive entanglement and embodiment experienced as significant to transformative meditation
- u. The design of the Chalice as valued for the insights it embodies, especially in relation to harmony (Richard Talbot, *Design and Perspective Construction: why is the Chalice the shape it is?* *Nexus Network Journal of Architecture and Mathematics*, 2006; Christopher Alexander, *Harmony-Seeking Computations: a science of non-classical dynamics based on the progressive evolution of the larger whole*. *International Journal for Unconventional Computing (IJUC)*, 5, 2009 ).
- v. Design may be understood as a cognitive template for more integrative patterns, as argued by [Gui Bonsiepe](#) (*Design as Tool for Cognitive Metabolism*, 2000)
- w. The liminal qualities of Chalice and Grail may fruitfully preclude premature and inappropriate closure on their nature
- x. As with the Sanskrit adage, *Neti Neti*, no attribution of any particular quality may be appropriate

Presented as a table, the interdependence of the qualities and insights associated with the Grail and Chalice remains necessarily elusive. The implicit pattern they together constitute is of course what holds that significance to a degree. This connectivity has been best suggested in the words of Gregory Bateson (*Mind and Nature: a necessary unity*, 1979):

The pattern which connects is a meta-pattern. It is a pattern of patterns. It is that meta-pattern which defines the vast generalization that, indeed, it is patterns which connect.

With this he associated the cautionary comment: *Break the pattern which connects the items of learning and you necessarily destroy all quality*. As noted above, many tangible preoccupations with surrogates of the Grail do just that, as otherwise argued (*Varieties of Confidence Essential to Sustainability: surrogates and tokens obscuring the existential "gold standard"*, 2010).

The presentation as a 2-column table focusing on "tangible" and "intangible" may be variously associated to a degree with understandings of the entanglement of "objectification" and "subjectification", exteriorisation and interiorisation, explicit and implicit (*¿ Defining the objective ∞ Refining the subjective ?!: Explaining reality ∞ Embodying realization*, 2011).

## The Chalice as an "elephant"

In any claim to "grasp" the nature of the Chalice of the Grail legend, there is a case for combining that legend with the Eastern parable of

the [blind men and the elephant](#), a parable that has crossed between many religious traditions and is part of Jain, Buddhist, Sufi and Hindu lore. It is also well known in Europe. Variants specify either six or seven blind men.

As argued separately ([Eliciting a 12-fold Pattern of Generic Operational Insights](#), 2011), there is then a case for "playing" with 12 characteristics of the Grail from the table above in order to present them as a 6-fold or 7-fold challenge to perception by "blind men" -- allowing the assumption that each "blind man" can agree in some of his "assertions" with various others. This situation could then be presented in the following manner.

Figure 2: Playfully interrelating 12 characteristics of the Grail				
	Blind-4	Blind-5	Blind-6	Blind-7
Blind-1	"Re-cognition" of achievement	Eternal life / Energy / Time	Quest	Meditation
Blind-2	Unifying integration	Mysticism	Remembrance	Design / Aesthetic
Blind-3	Health / Wealth	Secret (place)	Catalyst (morphic resonance)	Undefinable / Elusive

The elements from the earlier table (Figure 1) have been distributed arbitrarily into this table (Figure 2). They could be variously repositioned according to the degree to which they lend themselves to perception through the different "blinkered" modes typical of specialized insight. Such iterative repositioning was illustrated in a separate document ([Map of Systemic Interdependencies None Dares Name](#), 2011).

One merit of relating the two widespread tales is that the challenge of understanding the Grail can be associated with current references to the inability to perceive the ["elephant in the living room"](#). This is an English metaphorical idiom for an obvious truth that is being ignored or goes unaddressed (cf [Climate Change and the Elephant in the Living Room: in quest of an endangered species](#), 2008). The "blindness" in the Eastern tale can be fruitfully associated with current strategic reliance on the "vision" metaphor ([Strategic Challenge of Polysensorial Knowledge: bringing the "elephant" into "focus"](#), 2008). It can also be related to feminist arguments regarding those matters to which "men" -- as the currently dominant policy-makers -- are typically "insensitive" or "blind".

In another "mapping" exercise ([Mind Map of Global Civilizational Collapse: why nothing is happening in response to global challenges](#), 2011), the question was raised whether the "black hole" of our global civilization is to be understood like the proverbial "elephant in the living room". Like a massive black hole, does it distort the way strategic information is "bent" around it ([Lipoproblems -- Developing a Strategy Omitting a Key Problem: the systemic challenge of climate change and resource issues](#), 2009)? The device has been notably explored with respect to progressive governance by [George Lakoff](#) ([Don't Think of an Elephant! Know Your Values and Frame the Debate](#), 2004). With respect to the Chalice as an archetypal container, it is of course Lakoff, with [Mark Johnson](#), who provided valuable insights into the widespread use of the ["container metaphor"](#) ([Metaphors We Live By](#), 1980).

The problematic nature of cognitive "grasping" in relation to both the challenge of the "elephant" and of the Grail can also be fruitfully compared with that of catching and holding a ball. It is virtually impossible with a one-fingered hand and clearly is much more practical with a five-fingered hand. Nature demands multiple senses for survival. Comprehending the nature of the Grail may similarly demand a polysensorial capacity -- if not a form of [synaesthesia](#). This would then suggest that the columns and rows of the table are associated with distinct cognitive modalities and that it is only at their "intersection" that particular characteristics of the Grail can be appropriately "re-cognized" -- with their coordination required in order to "catch the ball".

As with synaesthesia however, the implication is that the requisite relationship between the "senses" is not simply to be understood as a matter of their "coordination". Indeed there is a sense in which the quest for "con-sensus" about the ineffable nature of the Chalice is a form of delusion, as separately argued ([The Consensus Delusion: mysterious attractor undermining global civilization as currently imagined](#), 2011). This generalized from the argument of [Richard Dawkins](#) ([The God Delusion](#), 2006). This is consistent with the ineffable quality attributed in Grail lore.

The following efforts to render the elephant tales into poetic form offer a contrast between the objective and subjective reality of the Grail. That focused on bereavement offers a sense of the ambiguity of the "presence of absence" and the "absence of presence" -- and the collective reluctance to acknowledge what may be very close. The associated poignancy offers an association to the sense of despair possibly related to the effective dissociation from the significance of the Grail, in its various forms, in modern society ([Implication of Personal Despair in Planetary Despair](#), 2010).

Figure 3: Contrasting poetic quests for the elephant		
<i>The Blind Men and the Elephant</i> by John Godfrey Saxe (1816-1887).	T'was six men of Indostan To learning much inclined, Who went to see the Elephant (Though all of them were blind), That each by observation Might satisfy his mind.	<i>The Elephant In The Room</i> by Terry Kettering  (widely reproduced and adapted as a poem for bereavement)
The <i>First</i> approached the Elephant, And happening to fall Against his broad and sturdy side, At once began to bawl: "God bless me!-but the Elephant Is very like a wall!"  The <i>Second</i> , feeling of the tusk, Cried:"Ho!-what have we here So very round and smooth and sharp? To me 't is mighty clear	The <i>Fourth</i> reached out his eager hand, And felt about the knee. "What most this wondrous beast is like Is mighty plain," quoth he; "'Tis clear enough the Elephant Is very like a tree!"  The <i>Fifth</i> , who chanced to touch the ear, Said: "E'en the blindest man Can tell what this resembles most; Deny the fact who can,	There's an elephant in the room. It is large and squatting so it is hard to get around it.  Yet we squeeze by with "How are you?" and "I'm fine... And a thousand other forms of trivial chatter.  We talk about the weather. We talk about work. We talk about everything else...

<p>This wonder of an Elephant Is very like a spear!"</p> <p>The <i>Third</i> approached the animal, And happening to take The squirming trunk within his hands, Thus boldly up and spake: "I see," quoth he, "the Elephant Is very like a snake!"</p>	<p>This marvel of an Elephant Is very like a fan!"</p> <p>The <i>Sixth</i> no sooner had begun About the beast to grope, Than, seizing on the swinging tail That fell within his scope, "I see," quoth he, "the Elephant Is very like a rope!"</p>	<p>Except the elephant in the room.</p> <p>We all know it is there. We are thinking about the elephant as we talk together.</p> <p>It is constantly on our minds. For, you see, it is a very big elephant. It has hurt us all. But we do not talk about the elephant in the room.</p>
<p>And so these men of Indostan Disputed loud and long Each in his own opinion Exceeding stiff and strong, Though each was partly in the right, And all were in the wrong!</p>	<p>So, oft in theologic wars The disputants, I ween, Rail on in utter ignorance Of what each other mean, <i>And prate about an Elephant Not one of them has seen!</i></p>	<p>Oh, please, say her name. Oh, please, say "Barbara" again. Oh, please, let's talk about the elephant in the room. For if we talk about her death, Perhaps we can talk about her life. Can I say "Barbara" to you and not have you look away: For if I cannot, then you are leaving me alone... in a room... with an elephant</p>

## Subunderstanding of the nature of the "Chalice"

The dramatic issue illustrated by the blind men is explored in detail by the philosopher [Nicholas Rescher](#) (*The Strife of Systems: an essay on the grounds and implications of philosophical diversity*, 1985) who concludes:

For centuries, most philosophers who have reflected on the matter have been intimidated by the strife of systems. But the time has come to put this behind us -- not the strife, that is, which is ineliminable, but the felt need to somehow end it rather than simply accept it and take it in stride.

More specifically, the same might be said with respect to the range of conflicting religions as documented by [Stephen Prothero](#) (*God Is Not One: the eight rival religions that run the world, and why their differences matter*, 2010). Is each to be understood as endeavouring to "grasp" God under epistemological conditions incompatible with "grasping" the nature of the Rosetta Stone which relates them? This would be consistent with some theological preoccupation with the [ineffable](#) nature of that Rosetta Stone, namely with [apophysis](#), [paralipsis](#), and "unsaying" -- the avoidance of naming "Barbara" in the second poem (*Being What You Want: problematic kataphatic identity vs. potential of apophatic identity?* 2008).

Exploiting the vision metaphor and the "blind men", it might be assumed that each of the twelve cognitive or systemic modalities (emerging in the table above) could be understood as an "eye", as argued previously (*Eliciting a 12-fold Pattern of Generic Operational Insights*, 2011). The question is then the possibility of "twelve-fold stereoscopic vision" -- extending the argument of [Magoroh Maruyama](#) (*Polyocular Vision or Subunderstanding? Organization Studies*, 2004), celebrated for his work on "mindscapes" (Michael Caley, *Mindscapes: the epistemology of Magoroh Maruyama*, 1994). If appropriate comprehension of the "Chalice" calls for such a multiplicity of views, some assumptions regarding the "Chalice" could be challenged:

- **Static?** The Chalice of legend is typically understood in static terms -- as an object to be found. It is the object which engenders the belief in the mysterious power "hidden" within it. This objectification is also characteristic of much understanding of other qualities with which it is associated -- as indicated in the table above. It is even evident in reference to the Chalice in governance and finance, whether through the term "poisoned Chalice" or in its effective framing as a "trough". The objectification is also to be found in reference to it as a "well" -- a cornucopia from which benefit may be derived, as in relation to the ["Chalice Well"](#).
- **Containment?** Such objectification implies that "belief" is focused on (or through) the object with which "confidence" and "trust" are then associated. This raises the question as to how the "Chalice" constitutes an adequate container for confidence over time -- a preoccupation of governance with respect to any initiative envisaged as sustainable. How is confidence "lost"? How does it drain away? This is an issue of great relevance to the current financial crisis.

Such objectification avoids recognition of the extent to which belief and confidence are subjective and experiential. A container as conventionally conceived may be quite inadequate to "holding" belief -- possibly "hidden" within the believer. The question is then how such a "Chalice" might be otherwise understood and what clues may facilitate this.

- **Graspable?** In addition to highlighting its elusive nature, the legend emphasizes its resistance to being possessively "grasped" (however successfully this may appear possible in relation to its tangible surrogates). This suggests that it may be insubstantial in some special sense. Of course its insubstantial nature is recognized in its metaphorical use -- as by the financial community and by other references to the "Holy Grail" noted above.

The process of "grasping" is however only too evident in the manner in which a legend, purportedly of significance to all humanity, has been appropriated by Christianity to the point of becoming a Christian "possession" -- effectively part of Christian "intellectual property" to be used as a weapon against those with other spiritual insights. Curiously (using internet terminology) "subscription" to Christianity is seen as a prerequisite (by Christians) for any meaningful "access" to the Grail. In this unfortunate sense, Christianity very much its own metaphor.

As is typical of such dynamics, it obscures exploration and appreciation of analogues in the legends of other cultures, notably the symbolism of the cupbearer in Islam or the symbolism of the cup in other religions. For example:

- a survey of the Holy Grail stories, adding a Torah perspective for novel and relevant application of the Grail Quest, has been provided by Yitzhak Hayut-Man (*The Holy-Grail Games: from Troyes to Jerusalem, Global-Report*, October 2011).
- the descriptions and images offered by Sean Robsville (*Cauldron, Chalice and Grail Symbolism in Buddhism and Celtic Wicca*, 22 November 2009)
- the *kapala* as a chalice-like vessel, associated with transformation, was traditionally made from a human skull and used as a ritual implement in both Hindu Tantra and Buddhist Tantra (Vajrayana). Of potential relevance is Hindu use of "chalice" (*Striving to defang the poisoned chalice, The Hindu*, 26 September 2011; *Reject the poisoned chalice, The Hindu*, 12 December 2002)

Unfortunately what is "grasped" in this way by an exclusive perspective is not the Grail -- a point elegantly made in the *Tao Te Ching* with regard to the essential nameless nature of the *Tao*. Worse still, what is "grasped" within cultures inspired by Christianity encourages transformation of the "Chalice" into a "Trough" -- even "poisoning" it, as is evident from the citations above. This echoes the associated depredation of the environment.

Mathematics offers a valuable formalization of the challenge of the seven blind men in theories of "secret sharing", namely the process of recovering a secret from a set of shares, each containing partial information about the secret. Especially relevant, notably in cryptography, is the *Chinese remainder theorem* (CRT) -- as discussed in the *Wikipedia* entry *secret sharing using the Chinese Remainder Theorem*. In the case of *Shamir's secret sharing*, a secret is divided into parts, giving each participant its own unique part, where some of the parts or all of them are needed in order to reconstruct the secret.

Ironically, arguing that the internet has grown to be a veritable elephant, the comparison with the fable of the blind men has been specifically developed in relation to internet security by Martin Burkhart (*Enabling Collaborative Network Security with Privacy-Preserving Data Aggregation*, ETH Zurich, 2011). In an argument of wider implications, he points out that even if the men inspecting the internet elephant are not blind, they refuse to exchange their observations from fear of privacy breaches. Burkhart endeavours to devise methods that enable cross-organizational collaboration even on sensitive network data in the light of two paradigms: anonymization and secure multiparty computation. His discussion of the latter focuses on Shamir's secret sharing model.

## Questionable confidence of whom?

With respect to perceptions of confidence trickery, notably in relation to finance and governance, there is a case for seeing prominent reference to the Holy Grail as a sophisticated form of the proverbial "carrot" of governance or the lure of any financial ploy -- both relating to promise of benefit "tomorrow" (*Table of Confidence Ploys*, 1995). Its social role might then be seen in terms of a massive *Ponzi Scheme* -- from which it is so difficult to distinguish current global economic and development policies. It might also be recognized as a conceptual variant of the *Peter Principle* -- then understood as the promotion of a core human value to the level at which it can no longer be effectively comprehended or function in society.

**Disintegration?** An associated legend of alchemy highlights the challenge of finding a container for the "universal solvent" (*alkahest*) -- the solvent which can dissolve any container (of confident belief) as conventionally conceived. The "Chalice" could usefully be understood as having such a containment capacity, especially in the case of the implication that it needs to be able to contain a diversity of beliefs which might otherwise result in its disintegration.

An intriguing way of thinking of this is in terms of the standard set of "WH-questions" by any of which any proposed integrative framework tends to be undermined. As an exercise these might be presented as in the following table.

Figure 4: Questions of confidence to which deficient integrity is vulnerable				
	where?	when?	which?	why?
who?	accredited where? "unrecognized" institution?	accredited when? too new? too old?	which school of thought? a deprecated perspective?	usual suspects? other agendas?
how?	impractical there? facilities? know-how?	premature? too little, too late?	how to decide? how to reconcile alternatives?	why that way? how to know why?
what?	appropriate there? where to do what?	appropriate then? when to do what?	which is appropriate? what is best?	why that? what for?

These may be considered variants of the fundamental concern at this time: **why should we have confidence, in what, and as proposed by whom?**

Such questions can also be usefully seen as associated with "cognitive catastrophes" -- otherwise capable of damaging any container of confidence. In that sense they can be explored from the perspective of catastrophe theory (*Conformality of 7 WH-questions to 7 Elementary Catastrophes: an exploration of potential psychosocial implications*, 2006; *Cognitive Feel for Cognitive Catastrophes: Question Conformality*, 2006).

The capacity to "contain" potential catastrophe is of course vital to any sustainable container -- potentially subject to a variety of stresses. There is then a possibility of relating the 12 points of cognitive intersection with the 12 "complex" archetypal interaction morphologies identified by *Rene Thom* (*Structural Stability and Morphogenesis: an outline of a general theory of models*, 1975, p. 307): capturing, sending, crossing, "almost", fastening, giving, rejecting, failing, taking, stirring, emitting, cutting?

One fruitful metaphor is to consider any "12-fold stereoscopic" comprehension of the Chalice as a prism -- through which integrative insight is split up into the seven "colours" of the "spectrum" of WH-questions. The legendary challenge is of course to travel to the "end of the rainbow" where "gold" is to be found.

**Observer?** Implicit in the ability to ask such potentially "disintegrative" (destructive) questions is an assumption regarding an "observer". For the container of belief to "work" and retain its integrity, it would have to embody the observer in some way.

This capacity is suggested by the Zen process of the *koan* which implicates the observer "subjectively" in the question-answer dynamic. The question is typically mirrored back to the questioner -- eliciting self-reflexivity and calling into question the nature and locus of the observer, namely the point from which the container is observed. The objectivity encouraging the question is transformed -- as with the framing of a meaningful answer. This suggests that the "Chalice" should have some such quality.

### The Elephant's Child

I Keep six honest serving-men  
(They taught me all I knew);  
Their names are *What* and *Why* and *When*  
And *How* and *Where* and *Who*.  
I send them over land and sea,  
I send them east and west;  
But after they have worked for me,  
I give them all a rest.

(first verse in a closing poem by  
Rudyard Kipling, *Just So Stories*)

**Censorship?** It is of course a standard feature of any belief system to constrain or prevent the asking of questions potentially disruptive of its integrity. This is most evident in the institutionalization in the *Index Librorum Prohibitorum* -- the list of publications prohibited by the Catholic Church. An interesting approach to the matter is the isolation of portions of such 12-fold framework of questions to highlight perspectives from which questions might be appropriately asked from those that need to be avoided. The consequences of "breaking the connective pattern" are explored separately (*Engaging with the symmetry of "bloodless categories"*, 2011). An effort can be made to map out the implications (*Map of Systemic Interdependencies None Dares Name*, 2011).

This suggests the possibility that the most sophisticated forms of censorship are undetectable to the extent that **it is the potentially transformative connectivity between the elements of knowledge that is systematically censored -- not the details on which attention is typically focused**. This raises the question of modes of *self-censorship* (*Map of Systemic Interdependencies None Dares Name*, 2011).

## Containing appropriate belief: a dynamic "Chalice"?

From such perspectives the "Chalice" may be better understood as:

- **"insubstantial"**: Rather than a conventional state of matter (solid, liquid, gas), it is useful to consider the extent to which it may be better understood in terms of the qualities of *plasma*, an ionized form of gas, now so fundamental to the energy potential of nuclear fusion.
- **"dynamic"**: Rather than a conventional static form, or its formal equivalents (organizational structures, schemas, etc), it may be inherently dynamic. Its form may be better understood as a flow form or a standing wave characteristic of a *process reality* and a *sense of flow* (Mihaly Csikszentmihalyi, *Finding Flow: the psychology of engagement with everyday life*, 1998; *Flow: the psychology of optimal experience*, 1990). The "Chalice" may well be better understood as a "verb" rather than a "substantive" (Maxine Sheets-Johnstone, *The Primacy of Movement*, 1999) just as ability to engage with it may depend on the identity of the observer being reframed in cyclic terms (*Emergence of Cyclical Psycho-social Identity: sustainability as "psychically" defined*, 2007). This is consistent with the case for conceiving of fundamental values as "verbs" (*Freedom, Democracy, Justice: Isolated Nouns or Interwoven Verbs? Illusory quest for qualities and principles dynamically disguised*, 2011)
- **"intangible"**: Rather than its contents being in contact with the container (as conventionally understood), the container may ensure that such contact does not occur. This is best understood in terms of the walls of a tokamak nuclear fusion reactor designed to prevent the "quenching" of the contained plasma as a consequence of such contact. With respect to the containment of confidence, the quenching may be conceived as a form of (questionable) objectification, *reification* or misplaced concreteness.
- **"embodiment"**: Rather than the observation of the "Chalice" being possible from some external perspective occupied by an "observer", the experience of the "Chalice" may require a form of cognitive embodiment (George Lakoff and Mark Johnson, *Philosophy in the Flesh: the embodied mind and its challenge to Western thought*, 1999; ; Mark Johnson, *The Meaning of the Body: aesthetics of human understanding*, 2007). In that sense understanding could only be possible through identifying with it.
- **"attractor"**: Clearly, if only in the light of the references cited above, the Chalice and the Grail are powerful attractors. Whilst the attraction is readily concretized into the potential of wealth ("gold"), the attraction is potentially much more significant in relation to fundamental values (*Human Values as Strange Attractors*, 1993). As implied in that exploration, the question is the "form" of an attractor that engages and entrains human understanding and initiatives. What ensures its sustained credibility over time?

- **"mirror"**: If only in its reflecting surface as typically designed, the Chalice offers a mirror to any observer who approaches it. As such it recalls the mirror symbolism of many cultures. Chalice tales may emphasize the manner in which the reflection offers awareness of the inadequacies (the "shadow-side") of the unwary, overly anxious to "grasp" it for questionable purposes. Mirror symbolism can be used to emphasize the cognitive limitations of the subject-object relationship with which the Chalice may be approached -- thereby calling for their transcendence (*Stepping into, or through, the Mirror: embodying alternative scenario patterns*, 2008). In anticipation of the 2012 (Rio+20) *United Nations Conference on Sustainable Development* -- given the sense in which sustainability is the Holy Grail of global governance -- there is a case for seeing it in terms of a mirror (*My Reflecting Mirror World: making my World Summit on Sustainable Development (Johannesburg, 2002) worthwhile*, 2002).
- **"liminality"**: As noted above, the sense in which the Chalice is neither one thing nor another, is consistent with the increasing reality to which many are exposed, namely the development of the capacity to live "between worlds" (*Living as an Imaginal Bridge between Worlds: global implications of "betwixt and between" and liminality*, 2011). Curiously this "aesthetic obligation" can be understood as a fundamental bridge between incommensurable polarities, most notably between "positive" and "negative" or between "us" and "them" (*Us and Them: Relating to Challenging Others*, 2009). This implies a cognitive function of identifying with the "meta-pattern" of the above-mentioned "pattern which connects" -- effectively completing the circuit across dilemmas, and enabling flow and "work" (within the believer).

## Complementary visual metaphors of "Chalice"

In order to take the argument further, there is a need to identify clues consistent with the subtler characteristics which can be imputed to cognitive engagement with the "dynamics" of the Chalice and the Holy Grail, as previously argued (*In Quest of Mnemonic Catalysts -- for comprehension of complex psychosocial dynamics*, 2007).

With respect to the theme of this argument, those dynamics may best be understood in terms of the "flow" of confidence and belief. This then emphasizes the sense in which neither is "static" -- whether or not they can be perceived as a [standing wave](#) or like a [Chladni pattern](#).

The approach taken here benefits from the recent legitimization of the fields of [biomimetics](#) and the technical equivalent as discussed separately (*Technomimicry as analogous to biomimicry*, 2011):

Expressed differently, societal learning can be inspired and catalyzed by technological innovation. The process might be described as "technomimicry" -- a neologism whose interpretation and scope are currently under discussion. Use is already made of "[technomimetics](#)" in molecular nanotechnology to refer to molecular systems that can be made to mimic man-made devices as the essential components of molecular machines. **The issue here is whether cognitive systems can be usefully devised to mimic -- in systemic terms -- the structures and processes of certain technologies...** It is appropriate to note the implications of biomimicry and technomimicry, as understood here, for "[memetics](#)".

As might be expected, there are already traces of a related recognition of [mnemonics](#), as memory aids, in the form of "biomnemonics" and "technomnemonics" -- aids to remembering. The terms mimetics, memetics and mnemonics are then natural complements with respect to the following argument. The issue here, however, is **can a pattern of organization, recognized in existing technology, be applied to psychosocial organization in some way, just as organization in nature is applied to the development of a product ?**

The argument can then be taken further by considering the imaginative clues -- to a form which engenders confidence -- as provided by the following:

**1. Vortex:** A simple [vortex](#) in air or water bears a degree of resemblance to the form of a Chalice. Its "insubstantial" form is defined by the characteristic circular "dynamic". It is curiously "intangible" in that any effort to "grasp" the vortex may result in its disintegration (or other catastrophes). Danger may be associated with being "sucked in". There are many unexpected insights to be derived from vortex motion, as most notably explored by [Viktor Schauberger](#) (*Nature As Teacher*, 1998). Their significance is discussed separately (*Enabling Governance through the Dynamics of Nature: exemplified by cognitive implication of vortices and helicoidal flow*, 2010).

Of relevance to this argument is the extent to which the financial crisis is considered comparable to a "hurricane" by commentators, entraining confidence and belief into a powerful dynamic destructive of psychosocial systems (*Financial Hurricane Warning: How to Protect Yourself from the Global Financial Fallout Now Underway*, 16 September 2008; *Financial Hurricane Batters World Capitalism*, 19 October 2008; *Europe's 'Financial Hurricane About to Hit'?* 16 July 2011; *Japanese Earthquake Unleashes Financial Hurricane*, 16 March 2011).

Curiously, while metaphorical references are indeed made to "weather", to the "climate of opinion", to the "business climate", to the "movement of opinion", and to the "winds of change", as noted separately, there is little attempt to explore these from a "meteorological" perspective in terms of "climate dynamics" (*Systemic Crises as Keys to Systemic Remedies*, 2008; *Climate Change as a Metaphor of Social Change*, 2008). In such terms there is every possibility that the incidence of such "hurricanes", as well as "rising tides of opinion", may call for a whole new interpretation of "global warming".

The process is curiously exacerbated and accelerated by the widespread dependence on "[spin](#)" in public relations, the handling of news, and in the formal declarations of those most implicated. Ironically this is exemplified by use of "[spinning](#)" as the practice of an investment bank in offering under-priced shares of a company's initial public offerings to the senior executives of a third party company in exchange for future business. Reinforcement of the dynamic is further ensured by explicitly placing a "positive spin" on communications (*Being*

*Positive and Avoiding Negativity*, 2005; *Credibility Crunch engendered by Hope-mongering*, 2008; Barbara Ehrenreich, *Smile Or Die: how positive thinking fooled America and the world*, 2010). As with "cyclones" and "anti-cyclones", similar consequences are to be expected from the "negative spin" associated with the current [politics of fear](#).

**2. Well:** As noted above, the Chalice is intimately related to the symbolism of a well with which confidence has been associated from time immemorial. This offers the powerful sense of source and "upwelling". The relationship to "health" is emphasized, although this may be questionably conflated with "wealth" and the possibilities of "poisoning" it..

**3. Black hole / White hole:** The recognizable dynamics of a vortex can be extended to those associated with the powerful image of an astrophysical [black hole](#) and its challenging implications for human cognition, if only in terms of an [event horizon](#). An intriguing development of this image is offered by John M. Smart (*The Transcension Hypothesis: sufficiently advanced civilizations invariably leave our Universe, and implications for METI and SETI*, *Acta Astronautica*, 2011)

There is also the corresponding image of a [white hole](#) and its psychosocial implications developed by Peter Russell (*White Hole in Time: our future evolution and the meaning of now*, 1993). According to [general relativity](#), this is a hypothetical region of spacetime which cannot be entered from the outside, but from which matter and light may escape. In this sense it is the reverse of a black hole, which can be entered from the outside, but from which nothing, including light, may escape. As the ultimate attractor, what can be learned from the dynamics of any encounter with a black hole with respect to the "operation" of the Chalice?

**4. Torus:** Vortical motion is readily associated with toroidal forms. The [torus](#) has been explored as an appropriate form in terms of which the information may be organized, as discussed separately (*Comprehension of Requisite Variety for Sustainable Psychosocial Dynamics: transforming a matrix classification onto intertwined tori*, 2006; *Complexification of Globalization and Toroidal Transformation*, 2010; *Implication of Toroidal Transformation of the Crown of Thorns: design challenge to enable integrative comprehension of global dynamics*, 2011).

It is interesting that toroidal forms, notably as a bejewelled torc or crown, are variously used for symbolic personal decoration and associated practice -- and a focus for confidence (*Engaging with Globality through Cognitive Circlets*, 2009; *Designing Cultural Rosaries and Meaning Malas to Sustain Associations within the Pattern that Connects*, 2000).

Given the fundamental importance of music to a sense of confidence and belief, as noted separately (*Musical facilitation of integrative comprehension*, 2011), the relationships between the keys, representative of Western music, is now understood to create a geometric pattern in the form of a torus (see Petr Janata, *Music Mapped to the Torus*, 2005, and [torus dynamics](#) movies). The piece of music moves around on the surface of the torus offering a means of determining the pure representation of the underlying musical structure in the brain. The work clarified the mapping of melodies in the brain, as it varied from one occasion to another suggesting that the map is maintained as a changing or dynamic topography.

Of relevance are questions regarding the possibility that the universe is of [toroidal form](#) (Paul Halpern, *Is the universe a doughnut?* *Cosmos*, 6 September 2007) -- or perhaps this should be recognized as the manner in which humans are currently best capable of comprehending it.

**5. Nuclear fusion reactor:** As a prime example of human capacity to respond to the technical complexity required to derive energy from [nuclear fusion](#), the toroidal design (named a [tokamak](#)) considered necessary for such a reactor merits consideration. The design is basic to [ITER](#) as a major international project. As argued separately, with respect to "cognitive fusion", the design considerations recall the elusive processes associated with the Chalice (*Enactivating a Cognitive Fusion Reactor: Imaginal Transformation of Energy Resourcing (ITER-8)*, 2006). As mentioned there, it is intriguing that problematic operations of a fusion reactor are associated with "snake-like" instabilities -- and are labelled with that metaphor in the literature. This is all the more intriguing in that the financial system also recognizes [snake-like instabilities](#), again so named

**6. Chalice cup design:** As noted previously, the form of the Chalice has been the subject of intense reflection (Richard Talbot, *Design and Perspective Construction: why is the Chalice the shape it is?* *Nexus Network Journal of Architecture and Mathematics*, 2006). The emphasis there is on the perspective from which it is seen and represented. Notions of "perspective" can be explored further in terms of what they imply as assumptions about the locus of the observer -- seeking variously to "grasp" the nature of the Chalice (as in the ["target acquisition"](#) of military jargon). This evokes questions about assumed subject-object relations which quantum mechanics has been obliged to address -- with implications for philosophy and epistemology.

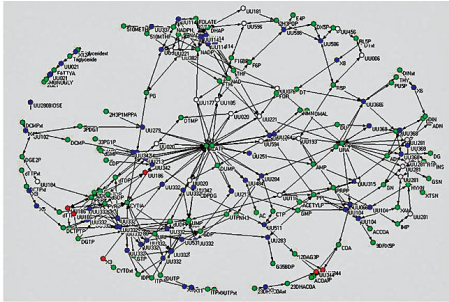
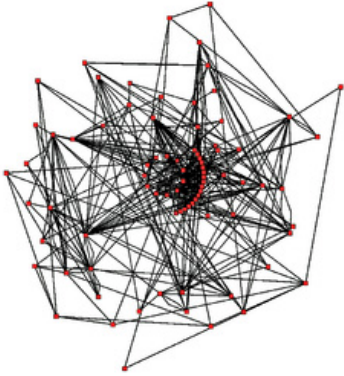
Of particular interest is the degree to which the design of the Chalice may be seen as the "inverse" of the toroidal fusion reactor -- with the latter form effectively wrapped around the former, the space of one defining the space of the other. The aesthetic concept of [negative space](#) is then relevant. This is the space around and between the image -- especially when there is value to the ambiguity as to which is "real". Appropriate to this argument, the *Wikipedia* entry illustrates this with the image of a chalice-like vase. The value of this space is recognized through the Japanese term "[ma](#)".

**7. Drilled toroid:** A clue to the actual confidence dynamics associated with the Chalice as a container for belief is provided by mapping the the comprehensive set of 64 "changes" traditionally identified in the Chinese *Book of Changes (I Ching)* onto a drilled truncated cube. This polyhedral form, with a degree of spherical symmetry, is virtually unique in having 64 edges to hold and configure those changes. This then gives a sense of how confidence and belief are "managed" coherently in relation to the continuing dynamics of decision-making. The form is valuable in that it offers an explicit sense of "out-of-the-box" and the manner in which the central cubic "box" is subsumed by a more complex space.

**Drilled truncated cube -- a polyhedron approximating a torus, with 64 edges**  
with which *I Ching* conditions of change have been arbitrarily associated



processes that determine the physiological and biochemical properties of a cell. These networks comprise the chemical reactions of metabolism as well as the regulatory interactions that guide these reactions. [Metabolic network modelling](#) allows for in depth insight into the molecular mechanisms of a particular organism.

Examples of metabolic network modelling	
<p>An integrated model for cellular analysis [click for <a href="#">enlarged original</a>]</p>	<p>showing interactions between enzymes and metabolites in the <i>Arabidopsis thaliana</i> citric acid cycle. [reproduced from <a href="#">Wikipedia</a>]</p>
	

If the interlocking of the cognitive cycles effectively forms the Chalice, this would suggest exploration of the "cognitive metabolism" sustaining confidence in life and self-confidence -- as antidotes to widespread emergence of despair (*Implication of Personal Despair in Planetary Despair*, 2010). The integrative cyclic interlocking effectively constitutes the dynamic framework for a healthy "vehicle" for identity, as variously discussed (*Emergence of Cyclical Psycho-social Identity: sustainability as "psychically" defined*, 2007; *Eliciting a 12-fold Pattern of Generic Operational Insights*, 2011).

The manner in which design plays a catalytic role in the process of "cognitive metabolism" has been explored by [Gui Bonsiepe](#) (*Design as Tool for Cognitive Metabolism: from knowledge production to knowledge presentation*, 2000), arguing for recognition of:

... the relation between design and cognition, and the role of the still to be invented rhetoric of audiovisualistics -- the combined use of resources from different domains: sound, music, voice, type movement (animation), and images. The question is addressed of how design can help to reduce cognitive complexity and make transparent complex "Sachverhalte". The claim is made that a research policy should not exclusively aim at knowledge production, but take into account also the process of knowledge distribution and knowledge assimilation.

This surely reinforces the case for "cognitive metabolic network modelling" as effectively foreseen with the data sets of the online *Encyclopedia of World Problems and Human Potential* (*Vicious cycles and loops*, 1995; *Computer Mapping: Network Maps*, 1992; *System Dynamics, Hypercycles and Psychosocial Self-organization*, 2010; *Simulating a Global Brain -- using networks of international organizations, world problems, strategies, and values*, 2001; *Mapping Songlines of the Noosphere: use of hypergraphs in presentation of the I Ching and the Tao te Ching*, 2006)

It might well be said that, notably as [experimentally depicted](#), the Chinese *I Ching* is an early example of "cognitive metabolic network modelling" (*Transformation Metaphors -- derived experimentally from the Chinese Book of Changes (I Ching) for sustainable dialogue, vision, conferencing, policy, network, community and lifestyle*, 1997). In that connection, it is appropriate to note the suggested correlation between the coding pattern of the 64 hexagrams of the *I Ching* and the nucleotide sequence and amino acid bases in the RNA/DNA molecule essential to life (Martin Schönberger, *The I Ching and the Genetic Code*, 1979; [Tony Smith](#), *I Ching (Ho Tu and Lo Shu)*, *Genetic Code, Tai Hsuan Ching, and the D4-D5-E6-E7 Model*; Katya Walter, *Tao of Chaos: merging East and West*, 1996; Johnson F. Yan, *DNA and the I Ching: the Tao of life*, 1993). The implications have been discussed separately (*Archetypal otherness -- "DNA vs. I Ching"*, 2007).

**11. Diamond:** The Chalice is typically given a focus -- as it relates to light as a visual metaphor of insight -- similar to that given to the most precious of jewels, namely the diamond. The highest value is implied -- even of nobility -- even if it is only in material terms or aesthetically. Like the Chalice, the diamond attracts and invites "grasping" and exclusive possession. Great significance is attached to appropriate facetting to enhance the experience of light.

The cognitive implications of the diamond might well be associated with the quality of confidence so desperately sought -- as with [Diamond Way Buddhism](#). Ironically the diamond industry is notably concerned with consumer confidence in buying diamonds -- an apt parallel to suspicion of so much in which people are now exhorted to have confidence.

The facetting of diamonds merits exploration in relation to the facetting of Chalice design (as noted by Richard Talbot, 2006). Gemstone facetting potentially gives precision to the dynamics of coherence with which confidence is associated (*Gemstones as an accessible metaphoric exemplar of the dynamics of coherence*, 2002). They offer a catalytic template through which the nature of the Chalice may be understood (*Patterning Archetypal Templates of Emergent Order: implications of diamond facetting for enlightening dialogue*, 2002).

**12. Klein bottle:** Challenging oversimplistic understanding of the Chalice as the form of a potential container for global confidence may perhaps best be accomplished by comparing it with a [Klein bottle](#). Cognitively this is a paradoxical form derived from the torus but comprehensible only in four dimensions. To the extent that one of these is understood as time, this "locates" the Chalice in ways

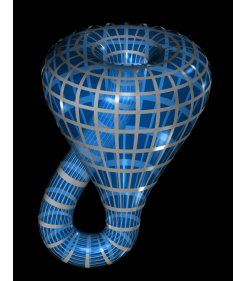
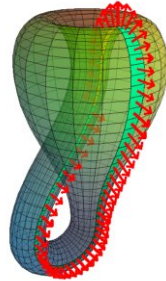
consistent with some of the qualities suggested above. The possibility of engaging meaningfully with the globality -- as the preoccupation of governance -- has been discussed separately (*Intercourse with Globality through Enacting a Klein bottle: cognitive implication in a polysensorial "lens"*, 2009). Somewhat ironically, but potentially of significance (if only mnemonically) is the degree of resemblance of the Klein bottle to a beer glass (cf *Drinking Mug Klein Bottles - for the Thirsty Topologist*).

### Representations of the Klein bottle

(see also video of formation of Klein bottle developed by University of Hannover  
(available with others on YouTube)

Konrad Polthier (*Imaging Maths: inside the Klein bottle*,  
+*Plus Magazine*, September 2003;  
View Polthier's [animated version](#) (997K) or explore his [java applet](#)

Screenshot from representation by M. Steven Rosen



## Embodying the paradoxical dynamics of polarization

As an exceptionally fruitful clue, this has been explored separately (*Strategic Complexity 8 Attracting Consensus: Klein is beautiful 8 Sustaining identity in time*, 2011). This notably focuses on the insights regarding the Klein bottle offered from the perspective of phenomenological philosophy by Steven M. Rosen (*Topologies of the Flesh: a multidimensional exploration of the lifeworld*, 2006; *Bridging the "Two Cultures": Merleau-Ponty and the Crisis in Modern Physics*, 2008).

**Comprehension:** The citations there regarding the Klein bottle (reproduced below) merit attention in the light of the cognitive issues identified above with regard to comprehension of the Chalice. For Rosen (*emphasis added*):

- *Topologies of the Flesh: a multidimensional exploration of the lifeworld* (2006 p. 47-48): What I propose here is that proprioception -- broadly understood as a mode of "self-taking" inclusive of cognition -- is the appropriate way to work with the Klein bottle, and that such a meditation is what the self-containing Klein bottle requires and invites. In thinking this Kleinian text, we must think proprioceptively, think our own thinking.

Note that, when I speak of "meditation", I am surely not referring to the *classical* kind. Whereas classical meditation generally aims at transcending the body, the self-reversal of thinking I have in mind would seek to move back into it. **The goal would be re-embodiment, reconnection with the lifeworld.** But would this not require a *disengagement* from thought and a return to the bodily senses?

What we learn from Merleau-Ponty is that thinking in fact does not entail sheer abstraction but possesses its own bodily grounding. For Merleau-Ponty, the dimension of language and thought operates as a "second flesh", a second order of embodiment: *It is as though the visibility that animates the sensible world were to emigrate, not outside of every body, but into another less heavy, more transparent body, as though it were to change flesh, abandoning the flesh of the [sensible] body for that of language.* (1968, p. 153)

- *The Self-evolving Cosmos: a phenomenological approach to nature's unity-in-diversity* (2008, p. 246): Proceeding in the manner of Trigant Burrow, I, the psychophysical analyst, aim to enter my body through my head to obtain a bodily sense of the head that is directing this analysis. Since the proprioception thereby enacted is no act of "pure meditation" that leaves thinking and language behind, it seems the process must include the appropriate mode of signification if the maximum effect is to be achieved. **In the semiosis required, neither words nor conventional mathematical symbols will suffice.**

**What is needed is that unique topological signifier that refers concretely to the "fourth dimension"** -- the dimension of depth incorporating my subjectivity -- by referring to *itself*. I am speaking, of course, of the Klein bottle. Assuming the Klein bottle is not just taken as a signified topological object or as an arbitrarily devised, conventionally agreed upon signifier (as are most mathematical symbols), it is this body of paradox that constitutes the semiotic content of the proprioceived brain.

In the proprioception of the brain that is at once a phenomenological meditation upon the Klein bottle, the analyst surpasses the brain of the particular individual to gain a glimpse of the dimensional organism's "generic brain", the "braneworld" in which the thinking function is centered. The brain thus proprioceived is no mere object of scientific scrutiny but is the sub-objectively *lived* brain (Drew Leder, *The Absent Body*, 1990, p. 113); it is the brain as a concrete universal, as the "flesh of the world" (Merleau-Ponty, 1968, p. 139).

- *Dimensions of Apeiron: a topological phenomenology of space, time, and individuation* (2004, p. 207): In making the (w)holeness of Being a concrete reality, we are to read this text Proprioceptively; read our own reading; read these words about passing beyond themselves (into their prereflective roots) in such a way that the passage actually takes place. **Such a reading is**

*mediated by fleshing out this text via the dimensional amplification provided by the Klein bottle.*

Now the body of our text does not consist merely of lifeless, empty symbols, intrinsically meaningless signifiers that can only point outside themselves to disembodied meaning: our text is the Klein bottle. It is in contentively reading the (w)hole in this self-containing three-dimensional text (the "blind spot" in the field of vision) that we should pass unbrokenly into its subtext. The Klein bottle's incompleteness when read ontically is at once an incompleteness in our reflecting upon it....

Can we read the hole in the Klein bottle in such a way that we relax the compulsion to regard it as *merely* a hole, a gap in an ordinary object simply contained in space? *Can we read the hole in the Klein bottle as an opening to "another dimension"* and read that dimension as the prereflective source of our very own reading? Can we *enter* that dimension through Proprioception?

It is a matter of proceeding medi(t)atively, from "both sides at once" -- from the mediative side of the conceptual, and from the side of experiential immediacy known in meditation. The Kleinian concept brings us to the limit of the conceptual... ***It is here that we can realize the intimate harmony of outside and inside, of object and subject, of the bounded and boundless.*** That is to say: the harmony of *apeiron* can be realized in full by the Goddess herself.

In the quest for images enabling comprehension, there is a delightful irony to the fact that the accessible experience of snoring is useful in this respect (*Snoring of The Other: a politically relevant psycho-spiritual metaphor?* 2006). That discussion relates the process to both the symbol of the Tao and to the Klein bottle in the light of subjectivity and objectivity, as discussed separately (*Defining the objective ∞ Refining the subjective ?!: Explaining reality ∞ Embodying realization*, 2011). These are necessarily "entangled" with the political implications of "subjecting" and "objecting" (Max Deutscher, *Subjecting and Objecting: an essay in objectivity*, 1984)

**Dynamics:** The understanding offered by Rosen with respect to the Klein bottle is developed further below with respect to a dynamic that can then be associated with the Chalice. The argument above with regard to the Chalice as a vortex can be taken further in the light of the insights of Steven Rosen who has likened the Klein bottle as a vortex spinning around its empty centre (*Topologies of the Flesh*, 2006). He emphasizes the embodied flowing together of subject and object, which takes place when perceptions of the world are no longer ruled by the dualistic objectifications of classical thinking that drive subject and object apart.

Rosen sees an interesting resemblance between the Klein bottle and the traditional Hermetic vessel (*vas Hermeticum*) of **alchemy** as studied by Jung, notably in the light of the latter's unusual collaboration with physicist Wolfgang Pauli (Arthur I. Miller, *137: Jung, Pauli, and the pursuit of a scientific obsession*, 2010). Rosen concluded that the Klein bottle can be reasonably regarded as a modern-day mathematical counterpart of alchemy's ancient vessel:

Both structures possess the feature of curving back into themselves, penetrating themselves so as to unite inner and outer, and, symbolically, psyche and matter. In fact, both can be taken as mirroring the ancient emblem of alchemy, the self-swallowing snake or **uroboros**...If the Klein bottle does effectively model the subject-object interaction of modern physics, then physics and alchemy become linked in recognizing the bottle's alchemical underpinning.

Of greater potential relevance to understanding the cognitive dynamics of the Chalice is Rosen's recognition (with respect to the Klein bottle) that:

A mathematician named **Charles Muses** subsequently showed that, to properly describe the spinning of a subatomic particle, you actually have to go beyond *i* and employ a higher-dimensional version of it that he called **epsilon** ( $e^2 = +1$ , but  $e \neq \pm 1$ ). To clarify the meaning of this so-called "**hypernumber**," Muses translated its action in geometric terms: epsilon represents a spinning into a fourth dimension and back into the third in which left is transformed into right and right into left. In my own work, I've related the spinning of epsilon to the Klein bottle -- which, in turning itself inside-out, does change right into left and vice versa, and requires a fourth dimension to do so.

**Challenging conventional "containment":** The use above of 12 complementary images can be understood as a pattern of checks and balances. In that spirit each "clue" is to some degree a trap. Rosen (in a private communication) clarifies that trap with respect to the "containment" of plasma for nuclear fusion, with the observer/technician controlling things from outside. Tacitly presupposed in this approach is the conventional model of object-in-space-before-subject. This can be seen as the model that is sustaining current difficulties of governance. In looking to contain the object in this way, the detached subject seeks to exploit it as a commodity (through "grasping"). The difficulty for governance is that a point has been reached where the "object" -- the energy, the nuclear reaction, the Middle East crisis, etc. -- can no longer be so contained.

The Klein bottle "clue" highlights the merits of a very different kind of container: one that does not continue attempting to keep the "object" inside and the subject outside, controlling the process. In this sense a container is needed wherein subject and object "flow together" -- while paradoxically not losing their distinctiveness. In the subtlety of Kleinian containment the vessel would be sealed in the hermetic fashion of alchemy: by allowing the "physical" reaction to "spill out" in the alchemical way, it would spill back into the psyche of the observer, thereby surpassing the split between psyche and matter.

For Rosen, expressed otherwise, the kind of container required -- in order to engender confidence and be sustainable -- is a container that includes what is normally excluded from the "objective" containment process, namely the subjectivity of the one who contains:

To the extent that I am excluded from the container, it cannot engage my participation in a sustainable way. I can believe in something, be confident in something, if I am included in it in a convincing manner. But in today's world, it seems we are all outsiders; none of us are sufficiently contained. And, in our state of alienation from each other and from nature, we surrender to addictions, despoil our planet, etc. etc. So I think we need a container that draws us into it, but not in a simply constrictive way, because -- as a paradoxical Kleinian container, it also lets us out, frees us. Because the old Cartesian containment model no longer works, I don't believe that any containment designs that presuppose it will work -- whatever it is we're seeking to contain. The "genie" must be sealed into the bottle alchemically, by at the same time letting it out. My general point is this: to effectively address the critical problem of containment, I think we need to confront the topological paradox of inside and outside in a fundamental way.

## Morphic resonance hybrid of complementary metaphors

The visual images above could ideally be presented in a continuously cycled [morphing sequence](#) to highlight the formal correspondences and differences. This enables a capacity to "flicker" between cognitive associations -- in a manner reminiscent of the associations evoked between the verses of a poem, enhanced by aesthetic connectivity.

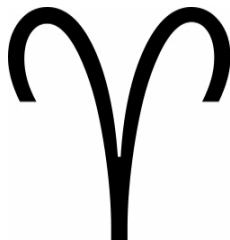
As mnemonic triggers, such possibilities could be taken further on the assumption that the complementarity of the 12-fold set of images offered cognitive clues of requisite complexity to an underlying insight of greater subtlety. This then emphasizes the sense in which none of the images "captures" that subtlety -- any more than other efforts to "grasp" and appropriate the Chalice. Clearly other images could also have been used, as tentatively explored separately (*Topological Clues to a Memorable 12-fold Systemic Pattern*, 2011). The Sanskrit adage *Neti Neti* comes to mind, as does the probabilistic degree of truth expressed through any single model. This has been articulated by the statistician V. V. Nalimov (*Realms of the Unconscious: the enchanted frontier*, 1982)

Given worldwide popular engagement with the traditional 12-fold zodiacal pattern, it would be useful to explore whether the symbols denoting those distinctions could be fruitfully related by a morphing sequence between them in order to elicit their systemic complementarity. One at least is suggestive of the conventional form of the Chalice. Surprisingly there is a degree of **collective** recognition of the **distinctive truth of each** within that pattern. Such an exploration would be justified by any assessment of the "models" which most people currently consider credible. Given the currently extreme global confidence deficit, it is questionable whether such opportunities can be ignored in the name of systemically constrained models whose "deliverables" are proving inadequate to the challenge.

### Animation experiments as a prelude to effective indication of morphic resonance

Use of 12 traditional zodiac symbols

Dynamic representation of *I Ching* hexagram codes mapped onto the Star of David

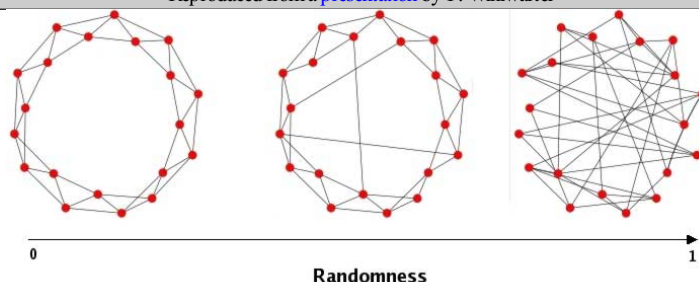


The Star of David / *I Ching* animation on the right is discussed separately, with other examples (*Animation of Classical BaGua Arrangements: a dynamic representation of Neti Neti*, 2008).

With respect to the reference above to technomimetics in relation to molecular processes, a dynamic structure of fundamental significance to organic life is the 6-fold ring structure of the [benzene molecule](#). This "unusual" structure, originally a challenge to researchers, derives its coherence from resonance -- resulting in its being termed a resonance hybrid. The structure exists as a superposition of so-called [resonance structures](#), rather than being based on any single form -- each then contributing to the coherence (and viability) of the whole. This can be understood in terms of an alternation between bonding patterns. Of great potential relevance to "sustainability" in governance is the [resonance \(or delocalization\) energy](#) needed to convert a delocalized structure into the most stable contributing structure.

### Representation of all processors linked in a complex "small world" network mappable on a multilayer perceptron network of artificial neurons

Reproduced from a [presentation](#) by P. Winiwarter



Small worlds, between perfect order and chaos; the first graph is completely ordered, the graph in the middle is a "small world" graph, the graph at the right is complete random.

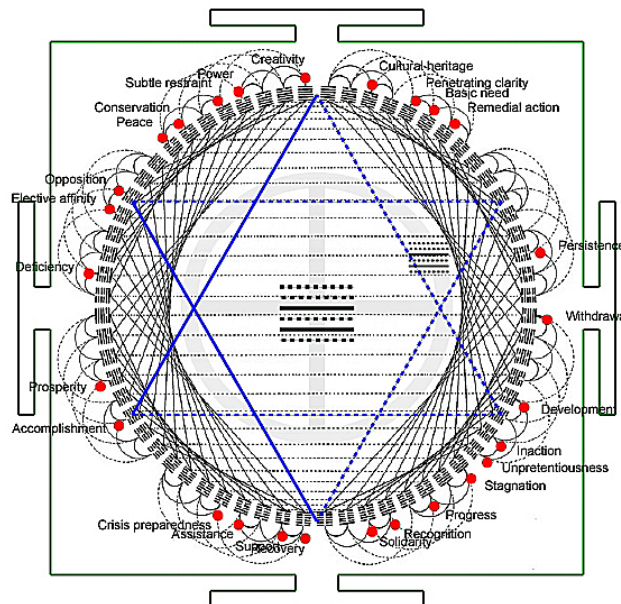
From a technomimetic perspective, as argued above, **the question is then whether the "Chalice" is most appropriately understood as a resonance structure -- whose nature is implied by a set of forms such as those presented above.** More intriguing is whether, in terms of the cognitive implications of healthy sustainability, such a resonance structure offers a memetic key to "biomemetics" -- beyond that implied by biomimetics.

Of potential relevance to the cognitive possibility of any such "12-fold resonance" are the images presented (speculatively) by Richard Merrick (*Harmonic Geometry of the Human Brain: polar Gaussian resonance distribution*, *Interference: a grand scientific musical theory*, 2010). These purportedly identify: "12-fold resonance and 5-fold damping geometries in the human brain using phi-recursive ring sets and polar reflective interference distribution models together. This is compared with a composite pentagonal cymatic pattern that may provide the basic "ground state" resonance pattern of the brain". These images are a partial revision of an earlier presentation by Merrick (*Origin of religious symbolisms in Egyptian gnostic geometry*, 2008)

The possible relevance of "resonance hybrids" to governance has been discussed separately (*Patterns of alternation: Cycles of dissonance and resonance*, 1995). There is the interesting possibility that the "Holy Grail of Governance" could then be explored in terms of the alternation between contrasting development models with which people variously identify (*Policy Alternation for Development*, 1984; *Metaphors of Alternation: an exploration of their significance for development policy-making*, 1984). Such alternation is effectively achieved to a limited degree, in an uncoordinated "spastic" mode, through "democratic" alternation in government -- to the extent that it occurs. This is essentially dysfunctional -- given the evident tendency of the proponents of each to demonize the others and to deny the relevance of their arguments.

The implication of preference for any one model or "clue" as "objective" externalities with which people variously identify calls for consideration of their connectivity. The cognitive processes of "identity" offer indications as to the nature of the "flow" between "objective" and "subjective", as argued by Rosen. This is highlighted by the various cultural symbols -- for many of which some have been ready to die. There is then a case for exploring ways of placing those more complex symbols in a more complex pattern of resonance. One such experiment is indicated below, as separately discussed (*Dynamic Exploration of Value Configurations: interrelating traditional cultural symbols through animation*, 2008). With respect to insights through technomimicry again, it can be potentially related to the design of the recent activation of the CERN Large Hadron Collider in its pursuit of the "God Particle" (*Dynamic Interrelationship of Symbols of Coherent Experiential Representation of Nonduality (DISCERN)*, 2008).

**Screen shot from a more complex animation experiment in resonance**  
Animation (with some simplification) for most browsers: [SVG/Javascript adaptation](#) or [Flash/SWF](#)  
Animation (mature experiment), but **browser dependent: SVG or WMV**



Shown halfway to completion of cycle of 64 hexagrams. Features include: labelling of completed hexagrams, the correspondence between the line-coding of the central hexagram and the star may be seen, a smaller version of the current central hexagram is visible in movement towards its final position on the circle (on the right), an emerging central symbol (a Medicine Wheel) is faintly visible

## Cognitive singularity: ensuring nothing matters

The resonant associations above indicate the possibility of a strange -- paradoxically appropriate -- "container" for confidence. Clustering several offers further possibilities for reflection. The most articulated of these clusters derives from the challenges and dynamics of a nuclear fusion reactor, as explored separately in relation to "cognitive fusion" (*Enactivating a Cognitive Fusion Reactor: Imaginal Transformation of Energy Resourcing (ITER-8)*, 2006). This is especially meaningful when the considerations with regard to "plasma" are replaced by those relating to some kind of conflation of attention and confident belief -- understood experientially and collectively with respect to (self) governance.

The challenge of nuclear fusion, as a key to ensuring humanity's future energy needs, makes it clear that achieving the conditions for a fusion reactor to work is not a trivial matter. It might be asked why it is so readily assumed by leaders that eliciting collective confidence is simply a matter of exhorting belief and "talking up" the potential of proposed initiatives. Curiously it is quite clear that "talking up" the potential of nuclear fusion is not adequate by itself. Considerable research has been required to give the possibility credibility. Perhaps ironically, despite this research and confidence in the implications of the results, the commitment to it has been variously defined in terms of confidence (*Fusion Reactor: ITER's \$12 Billion Gamble*, *Science*, 13 October 2006). Somewhat ironically, justification has already been found to combine confidence and fusion (Mel Siegel and Huadong Wu, *Confidence Fusion*, 2004 IEEE Workshop on Robotic Sensing).

A fusion reaction releases energy only if the triple product -- of density, reaction (or containment) time, and temperature -- exceeds a certain value (otherwise known as the [Lawson criterion](#)). The temperatures required are comparable to those in the Sun. As noted above, matter at these temperatures in the form of plasma (with nuclei and electrons separated) would immediately destroy any container. Is this indicative of the challenge of "containing" and "holding" collective confidence? What is the "Lawson criterion" for confidence? For the individual, the question would be immediately meaningful to some schools of meditation. Curiously it is also relevant to effective "conception" in its several senses.

The design challenge is to ensure that the plasma floats in a vacuum, held away from the container wall. [Magnetic confinement](#) is the approach of ITER with magnetic and electric fields being used to heat and squeeze the plasma within a toroidal container -- well-illustrated in a presentation by S. Prager (*Magnetic Confinement Fusion Science: status and challenges*, 2005), notably identifying key issues for fusion as:

- Maximize the plasma pressure
- Control plasma turbulence and energy transport
- Control plasma disruptions
- Develop new magnetic configurations
- Control the plasma-wall interaction
- Develop new materials
- Produce a burning plasma

The challenge has been likened to that of squeezing a balloon - the air will always attempt to "pop out" somewhere else. Turbulence in the plasma has proven to be a major problem, causing the plasma to escape the confinement area, and potentially touch the walls of the container. If this happens, a process known as "[sputtering](#)", results in lowering its temperature -- as with "quenching". The power needed to start the fusion reaction is now estimated at 70 megawatts, with the power yield from the reaction to be about 500 megawatts. To date the containment process has not yet been rendered sustainable.

Again this offers a well-articulated description of the "technical" problem of containing collective attention and confidence with a view to eliciting psychosocial energy (*Massive Elicitation of Psychosocial Energy: requisite technology for collective enlightenment*, 2011). How do such estimates translate into "confidence building" and sustaining confidence? The description merits careful comparison with that of Rosen regarding the paradoxical cognitive processes highlighted by the Klein bottle.

Especially intriguing is the potential analogue with the "vacuum" required, ensuring separation from the "materiality" of the container by "magnetic confinement" -- together with the risk of "turbulence". Such terms are readily associated with the articulation of challenges of meditation, although presented with greater precision -- highlighting the potential of "technomimicry" as mentioned earlier. The configuration and process reinforce the case for exploring the implications of both a condition of "memetic singularity" and "non-action", as previously discussed (*Emerging Memetic Singularity in the Global Knowledge Society*, 2009; *Import of Nothingness and Emptiness through Happening and Mattering*, 2008; *Where There is No Time and Nothing Matters*, 2008).

## Conclusion

The central concern of this argument has been the consequences of any simplistic framing of the Chalice and the Holy Grail -- especially as an object of desire or as a container of confidence requiring belief in Christianity.

More generally the argument has highlighted the dysfunctionality consequent on the assertive effort to "grasp" sustainability through any singular conventional model in a competitive process with other cognitive models. This is the current tendency characteristic of global governance, which effectively undermines new insight into the nature of integrative coherence and any confidence in what momentarily emerges as the dominant model marginalizing alternatives. The issues are best understood in musical terms (*All Blacks of Davos vs All Greens of Porto Alegre: reframing global strategic discord through polyphony?* 2007; *A Singable Earth Charter, EU Constitution or Global Ethic?* 2006). The "health" associated with the Chalice is then intimately related to patterns of alternation on which sustainability depends.

In such terms it would seem that, mysteriously and paradoxically, governance of sustainability calls for a degree of "holding off" and "holding back" -- readily comprehensible in [polyphony](#) and multipart singing, as discussed separately (*Enabling a 12-fold Pattern of Systemic Dialogue for Governance*, 2011). This is consistent with the [Precautionary Principle](#) and the adage: *Don't push the river. Guide the canoe*. Rather than a "fix-it" mentality, it calls for a degree of prudent non-interference allowing for the creativity of the future -- rather than "colonizing the future" and precluding its potentialities. However, as a "model", this too calls for reframing within a larger context. The potential of multipart singing and polyphony, in terms of the argument here for morphic resonance, is now becoming apparent through introduction of psychoacoustics and visualization into the process of musical analysis -- together with software enabling people to constitute multipart sound tracks.

The approach taken here to such reframing is to recognize a need for playful creativity (*Enacting Transformative Integral Thinking*

through *Playful Elegance*, 2010). Consistent with the arguments of Susantha Goonatilake (*Toward a Global Science: mining civilizational knowledge*, 1999), this is understood as necessarily engaging active myths (*Relevance of Mythopoeic Insights to Global Challenges*, 2009).

In a civilization dependent on "growth", and on media portrayal of violence of every kind, the cognitive and strategic challenge of sustainability may call for exploration of what a civilization "does" when it "does nothing" (*The Quest for the Socio-Economics of Non-Action*, 1993). What then are the processes which sustain and contain confidence and belief in the absence of engendering "happenings" (*Where There is No Time and Nothing Matters: Cognitive Challenges at the Edge of the World*, 2008).

There is a great irony to the nature of the creativity required of physicists in designing what is upheld as the key to humanity's future energy needs, namely nuclear fusion. The irony lies in the total dissociation of such explorations from the challenges of eliciting, containing and controlling psychosocial energy with which confidence is so intimately associated (if only in continuing to support such research). Such "energy" is even excluded from any energy analysis of society -- despite only too evident dependence on it in social recovery from disaster (*Reframing Sustainable Sources of Energy for the Future: the vital role of psychosocial variants*, 2006).

It is for this reason that a case was made above for learning assiduously from the sophisticated creativity of physics to elicit systemic capacity to enable the "circulation of light" as it has traditionally been termed (*Circulation of the Light: essential metaphor of global sustainability?*, 2010). This is indicative of the requisite form of the Chalice -- and the nature of the Holy Grail of sustainable global governance.

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## References

Ralph Abraham. Implications of *The Chalice and the Blade* for theories of social dynamics and history. *World Futures*, 25, 3-4, 1988, pp. 301-302 [[abstract](#)]

Gui Bonsiepe:

- Design as Tool for Cognitive Metabolism: from knowledge production to knowledge presentation. Ricerca+Design, Politecnico di Milano, 2000 (Paper prepared for the international symposium on the dimensions of industrial design research) [[text](#)]
- Design and Democracy. *Design Issues*, June 2005 (Paper for the Metropolitan University of Technology, Santiago de Chile) [[text](#)]

Michael Caley. *Mindscapes: the epistemology of Magoroh Maruyama*. Routledge, 1994

José Calvo-López and Miguel Ángel Alonso-Rodríguez. Research Perspective versus Stereotomy: From Quattrocento Polyhedral Rings to Sixteenth-Century Spanish Torus Vaults. *Nexus Network Journal*, 12, 1, pp. 75-111 [[abstract](#)]

Mihaly Csikszentmihalyi:

- Finding Flow: the psychology of engagement with everyday life. Basic Books, 1998
- Flow: the psychology of optimal experience. Harper and Row, 1990

René Daumal. *Mount Analogue: a novel of symbolically authentic non-Euclidean adventures in mountain climbing*. 1959 [[summary](#)]

Richard Dawkins. *The God Delusion*. Bantam Books, 2006

Antonio T. De Nicolas. *Remembering the God to Come*. Paragon, 1988

Max Deutscher. *Subjecting and Objecting: an essay in objectivity*. Blackwell, 1984

Barbara Ehrenreich:

- Bright-sided: how the relentless promotion of positive thinking has undermined America. Metropolitan Books, 2009
- Smile Or Die: how positive thinking fooled America and the world. Granta Books, 2010 [[summary](#)]

Riane Eisler. *The Chalice and the Blade*. Harper/Collins, 1987

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

Arianna Huffington. *Pigs at the Trough: how corporate greed and political corruption are undermining America*. Broadway, 2004

Mark Johnson:

- The Body in the Mind: the bodily basis of meaning, imagination, and reason. University of Chicago, 1987 [[summary](#)]
- The Meaning of the Body: aesthetics of human understanding. University of Chicago, 2007 [[summary](#)]

Carl G. Jung and Wolfgang Pauli. *The Interpretation of Nature and the Psyche*. Pantheon, 1955

George Lakoff. *Don't Think of an Elephant! Know Your Values and Frame the Debate*. Chelsea Green Publishing, 2004

George Lakoff and Mark Johnson:

- Philosophy in the Flesh: the embodied mind and its challenge to Western thought. Basic Books, 1999
- Metaphors We Live By. University of Chicago Press, 1980

Magoroh Maruyama:

- Polyocular Vision or Subunderstanding? *Organization Studies*, 25, 2004, pp. 467-480

- Metaorganization of Information: information in a classificational universe, relational universe, and relevantial universe. *Cybernetica*, 1965, 8(4), pp. 224-236.

Arthur I. Miller:

- 137: Jung, Pauli, and the pursuit of a scientific obsession. W. W. Norton, 2010
- Deciphering the Cosmic Number: the strange friendship of Wolfgang Pauli and Carl Jung. W. W. Norton, 2009

Peeter Mürsepp. Structural Stability as the Core of Rene Thom's Philosophy: from Aristotle to contemporary science. LAP LAMBERT Academic Publishing. 2010

V. V. Nalimov:

- In the Labyrinths of Language: a mathematician's journey. Philadelphia, ISI Press, 1981
- Realms of the Unconscious: the enchanted frontier, 1982 [[review](#)]

Brian John Piccolo. Quantum Physics and the Holy Grail. ALNILAM, 2010 [[summary](#)]

Stephen Prothero. God Is Not One: the eight rival religions that run the world, and why their differences matter. HarperOne, 2010

Melanie Claire Purcell. Imperatives for Unbiased Holistic Education: the Klein bottle, a universal structure:an archetypal image. HERDSA Annual International Conference, Melbourne, 1999 [[text](#)]

Steven M. Rosen:

- Topologies of the Flesh: a multidimensional exploration of the lifeworld. 2006 [[text](#)]
- Dimensions of Apeiron: a topological phenomenology of space, time, and individuation. Value Inquiry Book Series, 2004 [[text](#)]
- What is Radical Recursion? *SEED Journal*, 2004, 4 (1), pp. 38-57 [[text](#)]
- Science, Paradox and the Moebius Principle: the evolution of a "transcultural" approach to wholeness. State University of New York, 1994 [[summary](#)]
- Reinhabiting the Lifeworld: ecology, reversibility, and self-reversal. Presentation for the Twenty-Seventh Annual International Conference of the Merleau-Ponty Circle, 2002 [[text](#)]
- The Concept of the Infinite and the crisis in modern physics. *Speculations in Science and Technology* 6, 1983, (4), pp. 413-425 [[abstract](#)]
- Bridging the "Two Cultures": Merleau-Ponty and the crisis in modern physics. 2009 [[text](#)]
- The Self-evolving Cosmos: a phenomenological approach to nature's unity-in-diversity. World Scientific, 2008
- Pauli's Dream: Jung, Modern Physics, and Alchemy

John Ralston Saul. The Doubter's Companion: a dictionary of aggressive common sense. Penguin, 1994

Viktor Schauberger:

- Nature As Teacher: how I discovered new principles in the working of nature (Eco-Technology series, vol. 2). Gateway, 1998
- Energy Evolution: harnessing free energy from nature (Eco-Technology series, vol. 4). Gateway, 2000

Maxine Sheets-Johnstone:

- The Primacy of Movement. John Benjamins, 1999
- Kinesthetic experience: understanding movement inside and out. *Body, Movement and Dance in Psychotherapy*, 5: 2, pp. 111-127 [[text](#)]

Martin Schönberger. The I Ching and the Genetic Code. ASI Publishers, 1979

Peter A. Schultz and Richard P. Messmer:

- The nature of multiple bonds. 1. Sigma.,pi. Bonds versus bent bonds, a computational survey. *Journal of the American Chemical Society* 1993 115 (23), pp. 10925-10937
- The nature of multiple bonds. 2. Significance of the perfect-pairing approximation. *Journal of the American Chemical Society* 1993 115 (23), pp. 10938-10942
- The nature of multiple bonds. 3. Benzene, bent bonds, and resonance. *Journal of the American Chemical Society* 1993 115 (23), pp. 10943-10951 [[abstract](#)]

Richard Talbot. Design and Perspective Construction: why is the Chalice the shape it is? *Nexus VI: Architecture and Mathematics*, eds. Sylvie Duvernoy and Orietta Pedemonte,. Kim Williams Books, 2006, pp. 121-134 [[text](#)]

Rene Thom. Structural Stability and Morphogenesis: an outline of a general theory of models. Westview, 1994



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