



# laetus in praesens

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15 June 2014 | Draft

## Comprehension of Numbers Challenging Global Civilization

### Number games people play for survival

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## Introduction

It could seem strange to use "numbers" to frame the challenge of global civilization. The obvious arguments for doing so may no longer have adequate traction. Little can be said about the consequences of increasing population numbers that has not already been said, or is effectively unable to be said (*Overpopulation Debate as a Psychosocial Hazard*, 2009). Much the same could be said for most of the quantitative criteria of the [UN Millennium Development Goals](#). Such numbers, however seemingly critical to the survival of many, no longer carry real meaning on a global scale. This is becoming increasingly apparent with respect to resource use, emissions, environmental degradation, and waste disposal. Curiously the evident incapacity for remedial action is not a focus of attention, despite habitual optimism and a problematic track record (*Recognizing the Psychosocial Boundaries of Remedial Action*, 2009).

More subtle is the metaphorical use of numbers with respect to critical descriptions of major initiatives, namely when "the numbers no longer add up". Clearly the financial markets may be understood and described as a "numbers game" -- with that description extended into the many forms of gambling. Individuals in any competitive environment may be highly focused on "getting their numbers right" with a view to promotion -- with that perception extended to the quest for credits in an academic environment. Despite the lack of audience, analysis predicting impending crisis may be focused on the numbers -- as with any criticism of such forecasts. More readily questionable is a widespread focus on auspicious or inauspicious numbers -- in some cultures and sub-cultures.

The peculiar role of numbers is perhaps most evident in the seriously taken quest to become "number one" -- especially nationally and globally. This can be seen with respect to global leadership, economic productivity in general, with respect to particular sectors, and in the competition between corporate entities. It is evident in rankings of educational institutions, in various measures of performance, and notably in gang cultures. It is curiously evident in the efforts to be recognized as the richest, the most beautiful, the fastest (in sport), the most intelligent, the most influential, and the like.

At the time of writing this quest for superiority is exemplified by the focus on the outcome of the [FIFA World Cup](#) for football -- a notable preoccupation for gambling on a global scale, eliciting greater popular interest and engagement than the United Nations, if only in budgetary terms. Curiously the World Cup is also a focus for numerological speculation. More curious is the manner in which the opening of the World Cup has been accompanied by a major challenge to the pattern of order so painfully enabled in Iraq under the "number one" superpower -- thereby highlighting the surprising extent to which unexpected numbers of people seek to establish their own hegemony based on other principles.

A more curious role is evident through tangible representation of "number one", as in the architectural mega-projects to construct the tallest skyscrapers. Strangely complementary is the role of [zero](#) -- with its own mysterious history ([John D. Barrow](#), *The Book of Nothing*, 2001; [Robert Kaplan](#), *The Nothing That Is: A Natural History of Zero*, 2000; [Charles Seife](#), *Zero: The Biography of a Dangerous Idea*, 2000). In the current period, with increasing popular anxiety regarding the prospect of a future of "nothing", this plays

out through the function of a target, a goal, and associated sexual symbolism. With respect to current disruption to the pattern of law and order in Iraq, the strategic response discussed is the annihilation of those seeking to establish an alternative order.

The symbol of the World Cup offers one conflation of these elements -- provocatively blending in sexual connotations. Aside from recognition of skyscrapers as collective penis surrogates, this conflation currently extends to controversies regarding the design of a football stadium of global relevance (Tomas Jivanda, *The Accidental Vagina Stadium: design for Qatar's first 2022 World Cup purpose-built stadium released*, *The Independent*, 18 November 2013; Holly Baxter, *Qatar's accidental vagina stadium is most gratifying*, *The Guardian*, 18 November 2013).

Such phenomena are matters of deep-seated controversy, evoking unresolved emphases on objectivity or subjectivity, about which little can be effectively said. The argument here therefore focuses on numbers "beyond one" with respect to their implication for psychosocial organization. Without indulging in number symbolism, the concern is to identify domains in which such implications have been variously appreciated. These include: work team size, sports team size, model factors/dimensions, project articulation, board/card games, and the cognitive constraints which appear to determine them.

## Enabling disaster through basic mathematical operations

The following exploration was partly inspired by previous recognition of the manner in which the risks to civilization were exacerbated by the habitual comprehension and use of basic mathematical operations (*Risk-enhancing Cognitive Implications of the Basic Mathematical Operations: ADD, MULTIPLY, DIVIDE and SUBTRACT*, 2013).

This focused on the following operations:

- *ADD as a disaster enabling process*: notably with respect to problematic forms of growth
- *MULTIPLY as a disaster enabling process*: notably with respect to increasing population;
- *DIVIDE as a disaster enabling process*: notably with respect to tendencies to divisiveness;
- *SUBTRACT as a disaster enabling process*: notably with respect to ensuring less than the whole truth

In a concluding section, focused on *Incomprehension of advanced mathematical operations increasing vulnerability to collapse*, it was noted that:

Mathematics, in collusion with a variety of disciplines, is cultivating ever more complex ways of comprehending society, economics, finance, environmental processes and astrophysical processes. There is a case for recognizing that the comprehension of the offered frameworks is restricted to the few -- who may well be challenged by the application of these insights in other domains in which they are involved.

This discussed the implications in terms of explanation, differentiation, modelling complexity, integration and dynamics. As noted below, in a world of information overload, the capacity to elicit insight regarding remedial action, especially in response to disaster, is unexpectedly constrained -- despite the available technology (*Enabling Collective Intelligence in Response to Emergencies*, 2010; *Strategic Implications of 12 Unasked Questions in Response to Disaster*, 2013)

## Numbers in play in psychosocial organization

**Work team size:** This topic is usefully summarized in a *Wikipedia* entry on [team size](#) and in a Wharton knowledge base (*Is Your Team Too Big? Too Small? What's the Right Number? Knowledge@Wharton*, 14 June 2006). As succinctly stated by Susan Heathfield (*What Team Size Is Optimum for Performance? About.com*):

The team size that is optimum for team performance is a topic much researched and debated. The problem is that you need to consider a number of factors when determining optimum team size.... If you seek effective input, the optimal team size ranges from more than 2 up to 18-20 members, but these individuals are not expected to form a cohesive, highly interconnected team. It is much more likely that teams of a large size form sub-teams and working groups to accomplish the actual work of a project.

With respect to the "cultural message" conveyed as the size increases, according to the arguments of [Meredith Belbin](#) (*Size matters: how many make the ideal team? Belbin*, 24 November 2011) cited by Heathfield:

- **Four:** *We're well-balanced in our team and good at achieving agreement.*
- **Five:** *One of us tends to be the odd one out.*
- **Six:** *It takes longer to reach agreement, but we get there in the end.*
- **Seven:** *Rather too many random contributions float about.*
- **Eight:** *People speak freely but no one listens.*
- **Nine:** *We could do with someone taking control.*
- **Ten:** *We now have a leader, but their ideas are the only ones with a chance of acceptance.*

Such issues are clearly fundamental to team building ([Jon R. Katzenbach](#) and Douglas K. Smith, *The Wisdom of Teams: creating the high-performance organization*, 2006). The many studies on team performance -- as a function of team size -- tend to conclude that optimum team size is between seven and eleven people. The lower constraint is due to unproductive limitations on diversity and expertise, whilst the higher constraint is due to reduction in open communication and fruitful participation.

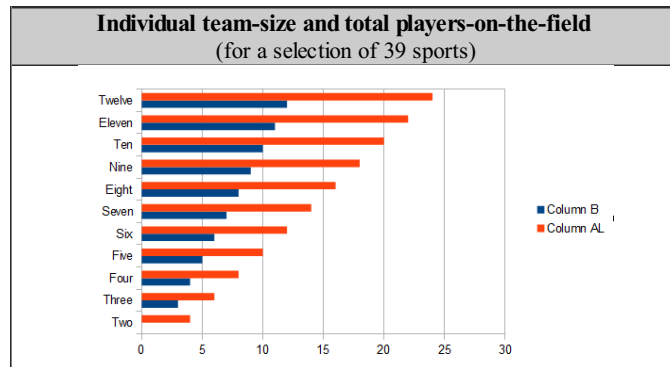
The implications have necessarily been long explored with respect to the size of military units (platoon, legion), music groups, drama

groups, and dance troupes. In each case there is a sense of what works and what does not at any particular size.

**Sports team size and players on the field:** It would seem to be both obvious and extraordinary to note the numbers typically chosen for sports teams and the manner by which they are constrained. The complexity in the case of football is indicated by the identified variants distinguished in *Wikipedia* (*Present day codes and families*):

- [Association football and descendants](#)
- [Rugby school football and descendants](#)
- [Irish and Australian varieties](#)
- [Surviving medieval ball games](#)
- [Surviving UK school games](#)
- [Recent inventions and hybrid games](#)
- [Tabletop games and other recreations](#)

The pattern is *partially* summarized in the following graphic, with the inclusion of other sports. This adds an indication of the players "on the field" from the opposing teams, but without any indication of those in reserve ("on the bench"). The dynamic of a competition between a set of teams (as in football) is designed to reduce the complexity of the numbers of many teams to a final game governed by the same constraints. Games with "hundreds of participants per side" are however characteristic of parliamentary debate.



It is somewhat strange to recognize the problematic mix of assumptions governing the organizations of sports:

- **Gender:** Typically there are few "mixed sports", tennis being the most notable exception. The [mixed sports at the Olympics](#) also include: badminton, ice dancing, and pair dancing. The assumption is that competition of male against female would be unfair, because men are better equipped in some way -- an argument which feminists have been happy to challenge over past decades. The subtext is that males in some cultures could not tolerate the possibility of being out-manoeuvred by females. The matter is further complicated in some sports through declarations of controversial gender orientation. Barely recognized by global media is the existence of the [FIFA Women's World Cup](#) -- a situation perhaps appropriately to be described in the terms of [Elise Boulding](#) (*The Underside of History: a view of women through time, 1976*)
- **Size:** In the light of the gender assumption, it is also strange to recognize the sports (male or female) in which size is specifically taken into account to ensure equality of chance. This is most obvious in the case of some contact sports, such as boxing (lightweight, heavyweight, etc). Rather than weight, this consideration is not however taken into account where height may constitute an unfair advantage, as in basketball. The very short are effectively excluded from sports intended to inspire the whole population
- **Age:** Despite the handling of gender and size, significant consideration is given to age, in defining "junior" sports (as in ball sports, for example) for reasons which are obvious. Analogous exceptions are less evident in the case of "senior" sports -- although some account of age may be taken with respect to marathon records, for example. Curiously, skilled players in regulated sports may be expected to "retire" at an early age because of the disadvantage they experience in relation to "younger" players. No distinct provision is made for their further participation in competitive sport.
- **Skill:** Sports tend to be organized such as to marginalize the unskilled and unrecognized. Especially embarrassing have been the cases of ski jumper [Eddie "The Eagle" Edwards](#), the swimmers [Eric Moussambani](#) and [Paula Barila Bolopa](#), and the [Jamaican national bobsleigh team](#) -- all competing with little skill on behalf of unrepresented countries in specific Olympic sports. They evoked a level of public (media) interest and sympathy which was intolerable to those more skilled and to the organizers. On the other hand some sports make explicit provision for a "handicap", most notably golf.
- **Disability:** A further assumption is the special distinction with respect to the "handicapped" for which [Paralympic Game](#) provisions are made. Whilst this is comprehensible, it is strange to note that some with disability have been allowed to compete against the non-handicapped, most notably in the case of the "blade runner", the double amputee [Oscar Pistorius](#). This logic does not appear to have been accepted in the case of those "handicapped" by gender. On the other hand, whether framed as a "handicap" or not, considerable unresolved controversy is created by potential transgender participation, as in the case of [Caster Semenya](#).

Individual sports are highly regulated. There is further regulation governing any acceptance of the sport as an Olympic sport. The rate of innovation (as indicated by introduction of new sports and variations) is remarkably slow, with the possible exception of winter sports employing new technologies (snow board, etc). Of particular relevance to this argument is that **there is no experimentation with more**

than two teams playing against each other, or together, on the same field, with one or more balls, perhaps playing across each other to different sets of goals, possibly with players of varying skills and attributes. By contrast, there is considerable experimentation with board games and online gaming. What cognitive patterns are reinforced by team sizes and playing patterns in the total set of Olympian sports?

**Team sport competition is universally framed to be between two opposing teams -- despite what this might be considered to reinforce in undermining what is upheld as the spirit and higher purpose of sport.** The pattern is somewhat modified by use of a succession of two-sided games to engender a single "winner" from the resulting pool of "losers". There is a curious consequential conflation of "winning" with "positive" and "losing" with a "negativity" to be deprecated. This consequence has been usefully reviewed by [Barbara Ehrenreich](#) (Bright-sided: how the relentless promotion of positive thinking has undermined America, 2009; *Smile Or Die: how positive thinking fooled America and the world*, 2010) and separately discussed from a cybernetic perspective (*Being Positive Avoiding Negativity Management challenge of positive vs negative*, 2005).

This process naturally has implications for engagement with "others" and "alternatives" in other contexts. The commitment is then to winning, through becoming "number one", associated with the commitment to ensuring that the other is "annihilated" -- transformed into a nullity (a zero). In the absence of experimentation with other formats, **conventional sport reinforces a pattern which does not correspond to the complexity of society and its disparate challenges.**

**Card and casino games:** Given the importance of these as a focus for psychosocial energy -- and in terms of the money gambled on them -- they merit similar analysis to that of sports. What patterns of thinking and interaction are reinforced and how are they constrained by "numbers"? How many players, size of deck, etc? Of particular interest is the role of chance and (ignorance) non-transparency regarding the strength of the opponent.

**Board games:** A similar quest for pattern reinforcement could be made in the case of board games. Size of board, number of pieces, etc? Especially relevant to this argument are the strategic skills traditionally associated with those such as chess. The latter makes apparent the ambiguity associated with so-called [Knight's move thinking](#). This is framed as a highly creative possibility in chess but is considered symptomatic of thought disorder by the medical world (*Stratagems and ploys characteristic of Knight's move thinking*, 2012).

This comparison can be used to make the point even more strongly in that conventional chess moves could be compared to the simplest of moves required of parading soldiers from whom "lockstep" is typically desirable. The Knight's move in chess could however be compared to one of the simpler dance steps, suggestive of the many more complex variants widely appreciated but excluded from "sports". As might be imagined, comparisons between the steps of the waltz and the Knight's move have long been made (but presumably not by psychoanalysts). The "Lockstep" could be usefully compared to "groupthink" in a period when failure of imagination is deplored as increasing vulnerability to civilizational collapse ([Thomas Homer-Dixon](#), *The Ingenuity Gap*, 2000).

**Online gaming:** The virtual arenas offer the widest scope to experimentation and rapid innovation. With respect to multi-teams operating in the same arena, the possible organization into a number of "guilds" contrasts with the practice in conventional sports. This relates more closely to real-world dynamics in which shifting strategic alliances are of considerable significance. Also of significance is the degree of anonymity in participation avoiding the need to distinguish gender, handicap, or the like. Typically differences in skill can be handled through forms of "handicap" designed into the game -- "levels", etc. Again this variety merits careful analysis. Number of guilds? Participants per guild, etc?

## Conceptual clustering and cognitive constraints

**Concept clustering in models:** It is striking to note the limited number of factors or dimensions favoured in conceptual models of various kinds. Such patterns have been explored previously (*Patterns of N-foldness: comparison of integrated multi-set concept schemes as forms of presentation*, 1980). This followed an earlier study of constraints on cognitive engagement with information (*Representation, Comprehension and Communication of Sets: the role of number*, 1978).

As with team size, the numbers of factors, parameters or dimensions is limited -- typically presented as a tabular matrix (2x2, 3x3, 3x4, etc) with occurrence of those of more factors increasing in improbability. This is the case both for those articulated according to some academic discipline as well as for those formulated by consultants (and then variously constrained by intellectual property and licensing considerations). The arguments for such a constrained pattern are especially evident in the much-cited work of [Edward de Bono](#) (*Six Thinking Hats*, 1985; *Six Frames For Thinking About Information*, 2008).

**Cognitive constraints:** With respect to all the above cases, it is clearly relevant to ask why such (constraining) patterns become evident in the face of the challenges of real-world complexity. Some responses are provided by the arguments of [George Lakoff](#) and [Rafael Nuñez](#) (*Where Mathematics Comes From: how the embodied mind brings mathematics into being*, 2001) and of [Marie-Louise von Franz](#) (*Number and Time: reflections leading toward a unification of depth psychology and physics*, 1974) -- recently figuring in a compilation by [Alex Bellos](#) (*Alex Through the Looking Glass: how life reflects numbers and numbers reflect life*, 2014; *'Seven' triumphs in poll to discover world's favourite number*, *The Guardian*, 8 April 2014; see [details of web survey](#)).

Other arguments emerge from assessments of problematic-strategic complexity, as with the [Situational Complexity Index](#) (SCI) of the [Institute for 21st Century Agoras](#). Key constraints include:

- "Miller number" ( $7 \pm 2$ ): the much cited constraint reported by [George Miller](#) (*The Magical Number Seven, Plus or Minus Two: some limits on our capacity for processing information*, *Psychological Review*. 1956). In the light of new research, further indications are offered by [Bradley Ford](#) (*The "Magic Number" in Human Memory Capacity*, *Advanced Solutions Blog*, 11 July 2017).

- "Spreadthink number": as identified by John N. Warfield (*Spreadthink: Explaining ineffective groups*, 1995). This reflects the fact the inability of groups to reach agreement on complex issue. In the SCI, this is assumed to be 5.
- "Dunbar's number": as formulated by Robin Dunbar, This is a suggested cognitive limit to the number of people with whom one can maintain stable social relationships The commonly used value is 150.
- Span of control: The number of subordinates a leader can efficiently control or manage, currently understood as ranging up to 10.

Recognition in biology of the Hayflick limit, namely the number of times a normal human cell population will divide until cell division stops, merits consideration that there may well be a cognitive analogue of systemic significance. In more general terms, potential consequences are explored by David Robson (*Has humanity reached 'peak intelligence'?* BBC, 10 July 2019; *The Intelligence Trap: why smart people make dumb mistakes*, 2020).

**Project articulation:** The conceptual models indicated above may well be adapted to articulate projects, sets of principles, and even their implementation within a set of organizational subdivisions. Especially interesting is the degree of preference for 12-fold organization, as previously noted (*Checklist of 12-fold Principles, Plans, Symbols and Concepts*, 2011).

This may have implications for recognition of strategic inadequacy (*Map of Systemic Interdependencies None Dares Name: 12-fold challenge of global life and death*, 2011; *Strategic Implications of 12 Unasked Questions in Response to Disaster*, 2013). As argued there, put succinctly, any cluster significantly less than 12 may seem to lack adequate diversity -- namely the requisite variety in a cybernetic sense of relevance to viable governance (or jury-based justice). As noted below, more than 12 clusters rapidly constitutes a challenge to comprehension, especially with respect to any sense of the pattern of relationships between the functions of which the clusters are indicative.

**Concept scheme factors:** The constraints above can be explored more systematically through analysis of a disparate variety of concept schemes (*Patterns of N-foldness: comparison of integrated multi-set concept schemes as forms of presentation*, 1980). The latter gave rise to the following summary table, discussed there in more detail. The table provides links to the examples cited.

In the table the columns indicate the prime number factors of the sets characteristic of the concept scheme indicated in the rows.

Concept set prime number factors (and powers) tentative										
Cells of table contain range of factor powers: N - M (e.g. from 3N to 3M)										
Parentheses Indicate less significant factors/powers in the concept scheme										
Factors	2	3	5	7	11	13	17	Other primes	Max. set	Annex name
Annexe #	.	.	.	.	.	.	.	.	.	.
0	0-3	0-1	0-1	.	.	.	.	.	30	UNU/GPID
1	0-2	0-1	0	0-1	.	.	.	.	12	Geometry
2	0-(6)	0-(3)	0-(1)	0-(2)	.	.	.	.	103	I Ching
3	0-(4)	0-1	0-1	0-1	0-1	.	.	.	16	Catastrophe
4	0-6	0-3	0-2	0-2	0-1	0-1	0-(1)	51 111	111	Buddhism
5	0-5	0-1	0-1	.	.	.	.	.	64	Genetic
6	0-4	0-2	0-2	0-1	.	.	.	23	102	Communist terminology
7	0-9	0-6	0-4	0-1	0-1	0-1	.	29	103	Rg Veda tones
8	0-3	0-3	0-1	0-1	.	.	.	.	360	Dance
9	0-2	0-3	0-1	0-1	.	.	.	.	9	Chinese strategy
10	0-2	0-1	0-1	0-1	.	.	.	.	12	Colour
11	0-3	0-3	0-1	0-1	.	.	.	.	360	Islamic cosmology
12	.	.	.	.	.	.	.	.	102	Language
13	0-2	0-1	0	0-1	.	.	.	.	7	Thermodynamics
14	0-1	0-1	0-1	0-1	.	.	.	.	102	Periodic classification
15	0-3	0-2	0-1	0-1	0-1	.	.	.	(96)	Systematics
16	0-3	0-2	.	.	.	.	.	.	9	Coaction
17	0-4	0-2	0-2	0-1	0-(2)	0-1	0-(1)	31 47	720	Synergetics
18	0-4	0-1	0-2	0-1	0-1	0-2	.	19 23 31	92	Polyhedra
19	0-6	0-2	0-2	0-1	0-1	0-1	.	19 23 29 37 41	64	Topological features
20	0-3	0-1	.	.	.	.	.	.	.	Chladni figures
21	0-3	0-1	.	.	.	.	.	.	.	Declarations of principles

The powers of the factors required are indicated in the body of the table in each case. Presenting the information in this way raises

several interesting possibilities:

1. It is probable that concept schemes with similar prime number factors and powers will be more obviously comparable (equivalent, isomorphic), than those without. It is not surprising therefore that a number of authors have explored the relationship between the *Chinese Book of Changes* ([Annex 2](#) and the genetic code ([Annex 5](#)), for example (6).
2. Concept schemes with few prime number factors will tend to differ significantly from those with more. Thus those whose sets are primarily defined by 2 appear to group their elements at a very "general" or abstract level. Those including 5 as a factor introduce more specific notions (as indicated earlier). Higher primes may well encompass even more concrete, "real-world" aspects of phenomena.
3. Whilst there may be some value in viewing the concept schemes with prime factors as "richer", more "mature" and more "comprehensive", it may be even more useful to consider concept schemes based on different patterns as performing different functions in the psycho- social system. What sorts of concepts tend to be carried by what patterns?
4. The previous point raises the question of what the full range of patterns is through which concepts could be usefully presented - what is the criterion for "pattern stability", or "viability"?
5. Within the framework of the previous possibilities it is then useful to consider the problems of "developing" a concept scheme from a simpler pattern to a more complex one - by introducing sets based on a larger prime as a factor.
6. In the light of the previous point, special attention should perhaps be given to the sets of a concept scheme based on higher primes - because, since they are necessarily less memorable and less comprehensible, it is these that are most vulnerable to "erosion" when the set is communicated through simplifying channels, particularly those which emphasize "communicability" in its popular sense.

## Pattern memorability between symbolic mystification and "stretching"

The above points highlight the issue of what gives rise to memorability and meaningfulness. This was discussed previously with respect to the degree of integration associated with any set of concepts (*Integrative Dimensions of Concept Sets: transformations with minimal distortion between implicitness and explicitness of set representation according to constraints on communicability*, 1981).

**Contrasting modalities of comprehension:** The core challenge would seem to lie in forms of comprehension and memorability distinguished by:

- logical, scientific understanding -- whatever the degree of "stretching" required to encompass larger quantities
- aesthetic, integrative understanding -- whatever the degree of mystification required to enable a degree of engagement

The distinction has been widely associated with [lateralization of the brain function](#) -- now deprecated by research. -- although remaining convenient for communication purposes. Of relevance here, with respect to pattern connectivity, is the contrast between bias to:

- analytical comprehension of elements of a pattern
- synthesis and integration offering a degree of comprehension of the pattern as a whole

Especially relevant are the inadequacies of each, as perceived from the perspective of the other bias. The first highlights the credibility of detail and treats understanding of the whole as supposition, irrespective of whether claims are made for a "systemic" perspective. The second is preoccupied with comprehension of the whole, irrespective of the quality of the facts which may be presented in support of that understanding.

With respect to the pattern of numbers and sets of concepts, the two approaches result in the following:

- an analytical ability to "handle" very large numbers (molecules, stars, cells, dimensions, factors, citizens, etc), most notably with computer support. The comprehensibility of such large sets, as a whole, is of limited concern -- especially with respect to whether any insights are widely communicable.
- a form of wholistic, integrative engagement with the smallest numbers (nothing, unity, an other, a challenging triangle, a team, etc), most notably with some form of experiential, subjective involvement

Any "wholistic" approach is readily deprecated as "mystification" of some kind. However, in order to deal with larger numbers, the analytical approach has to make use of various artifices which could be deprecated as "stretching" cognitive capacities -- as is obvious when the numbers involve thousands, millions or trillions. Ironically humans relate primarily with integrative awe to millions of stars at night -- a form of "mystification" -- and presumably engage in another form of "mystification" in relating to the trillions of cells in the human body.

**Contrasting biases of modality:** As a distinction between quantitative and qualitative experience, clearly each perspective may be biased against the other to the point of deprecation of its validity. The concern here is however with how this may play out with respect to numbers and their comprehension, especially in a global civilization.

Clearly the analytical perspective is capable of offering vast quantities of information and of managing it with the greatest efficacy. The recently revealed supercomputer resources of the [National Security Agency](#) (and its counterparts in other countries) are an exemplification of this. On the other hand, the qualitative bias is clearly capable of framing integrative understandings of "global civilization" -- "ecosystem", "humanity", "international community", "human being", and the like -- widely acceptable for communication purposes, irrespective of variant understandings of detail.

The challenge of the times is the conflict between these two modalities, or rather their inability to compensate adequately for their respective defects. In the case of the NSA, despite the (unimaginable) resources, the pattern recognition capacity is vulnerable to "surprise" -- as instanced at the time of writing by the unexpected flare up of violent unrest in the Middle East. The issue of such surprise

has been the subject of fruitful commentary in terms of *Black Swan theory*, by Nassim Taleb (*The Black Swan: the impact of the highly improbable*, 2007; *Antifragile: Things That Gain from Disorder*, 2012; *Fooled by Randomness: The Hidden Role of Chance in Life and in the Markets*, 2001).

In the case of the qualitative modality, the constant stream of appeals for unity, harmony, peace, tolerance and mutual understanding, clearly fails to elicit widespread engagement, despite acknowledgement of their significance. The inadequacy is especially evident with respect to conflict situations and the inability to derive coherence and consensus from research, such as that on climate change or on the degrading environment. Thus, although there is recognition of large scale patterns in the whole, this does not translate into ability to engage with detail -- except through token and palliative measures. The challenge to singular principles, due to the pressure from very large number of economic refugees and asylum seekers, makes the point otherwise.

**Comprehension of numbers:** The argument here is that the relation between these two modalities in a global civilization may be fruitfully explored in terms of comprehension of numbers and the manner of engagement with them. The point is usefully made in the case of current disruption in the Middle East in that in its strategic thinking the USA (with various others) is obliged to frame clusters of the most limited size -- "Sunni", "Shiite", "Taleban", "Al Qaida" -- as being problematic, but with little sophistication in that regard.

Use can also be made of surveillance resources to track the numberless in order to enable pinpoint attacks with drones. The challenge of "nation building" with the underlying numbers has clearly proven to be beyond current competence. Similarly, amongst those variously motivated against a simplistic framework of "law and order", equally limited framings are used -- as evident in Sunni/Shiite, Ukrainian/Russian, Spain/Catalonia. In all cases, the binary framing of "us and them", or the singular framing of "enemy" or "terrorist", is most readily used.

Strangely the pattern plays out otherwise in the case of the FIFA World Cup where binary conflict is contained, despite the fact that the vast majority will necessarily prove to be "losers" as a consequence of the process. The acceptance of being a "loser" in a democratic process clearly remains a matter of deep dissatisfaction -- as evident by current European elections -- with the anticipation of various degrees of social unrest.

**Nature of a "cognitive bridge":** The concern here is how a "cognitive bridge" can be created between sets of limited size (typical of recognition of ideological groups, or major political issues) and those characteristic of the numberless and their perceptions of the multitude of issues in their respective localities. The challenge can indeed be usefully framed in terms of comprehension and memorability

Again there is a degree of recognition of the possibility of data mining to enable sophisticated simulation of "social mood" -- but primarily as a means of predicting social unrest and using facilities to counteract it, namely through drones or non-physical analogues (structural violence, cultural violence, etc). Missing is how a "cognitive bridge" might be designed and built between primary categories and the numberless -- and rendered comprehensible to enable movement across it..

The key to such design would appear to be closely associated with:

- symmetry as a device which encompasses a high level of detail in patterns of relative simplicity -- namely comprehensible, memorable and communicable.
- correspondences between disparate patterns, namely between recognition of similarities through symmetry -- to facilitate comprehension, memorability and communicability. Essentially this is a matter of mnemonic aids.

The traps to be avoided in any such enterprise would appear to include:

- oversimplification under conditions in which the patterns may need to embody a paradoxical quality
- exclusion of the dynamics of challenge deriving from differences of perspective
- premature closure under conditions in which any such "bridge" is essentially a learning process, necessarily open to future insight (as is evident from the history of bridge design)
- sterility, namely the elaboration of a "bridge" which is experienced as "boring" in contrast to embodying "interestingness" -- as a central preoccupation of advertising

The possibility of retaining memorability and comprehension is illustrated by mathematical properties highlighting numbers such as squares, cubes, etc. This enables larger sets, such as 64 or 144 to hold a degree of meaning. Further possibility is evident through combining this with periodicity, as through the *periodic table of chemical elements* and analogues (*Tuning a Periodic Table of Religions, Epistemologies and Spirituality -- including the sciences and other belief systems*, 2007; *Towards a Periodic Table of Ways of Knowing - in the light of metaphors of mathematics*, 2009).

**Contrasting beliefs:** Given the extraordinary implication of contrasting beliefs in current conflicts (Sunni/Shiite, Islam/Judaism, Christianity/Islam, etc), there is a strong case to be made for reconciling the credibility of ordering of religious principles with those of mathematics -- especially given the inspiration of religion for mathematical icons of the past (*Mathematical Theology: Future Science of Confidence in Belief -- self-reflexive global reframing to enable faith-based governance*, 2011). This could be seen as an exercise in "reconciling" the qualitative with the quantitative with a "cognitive bridge" across the abyss between their contrasting approaches.

The last sentence makes the point that "reconciling" does not respect the degree of cognitive "discontinuity" which is the challenge of the bridge. This point featured in an effort to frame the quality of discontinuity and paradox between elements of sets of different sizes. The exercise explored this in sets ranging from 1 to 20 elements (*Distinguishing Levels of Declarations of Principles*, 1980).

Curiously, but appropriately, the challenges are most evident in relation to zero (nothing), one (unity), two (dissent, and the challenge of the other). The challenge to the globality of civilization is especially evident in this case, as exemplified by:

- nothingness, with which many are faced in their daily life, and what is on offer for their future

- one, with every effort to become "number one", and to handle the relation to those claiming to be so
- two, with dissenting viewpoints, faiths, disciplines and ideologies -- and the violent conflicts to which they give rise

## Imaginative depiction of the cognitive challenge

There is a curious mirroring, potentially of great significance, between the worldwide (popular) fascination with football and the dramatic global challenges of the future with which the world is believed (by an elite minority) to be faced. This is evident in the tragic complementarity between:

- the engagement worldwide with football -- evocative of belief in the "spirit of the game" -- as having a unique coherence that is collectively significant and might be said to transcend and encompass ordinary modes of cognition as well as national and cultural boundaries (Nick Green, *The Spirit of Football in an Image and a Poem, 100 Percent Soccer*, 18 March 2009)
- the focus on globality and globalization which might well be described in terms of "kicking the globe around", with relatively little concern for its condition and with only an (often token) aspiration to global coherence and engagement; topics of global significance might be fruitfully understood as "kicked around" like a football -- typically with respect to a polarized arena over which two competing factions compete.

To these might be added the consideration of integrative globality in religious terms.


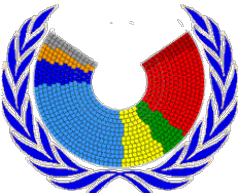

**Symbolic cups:** There is a potentially fruitful relationship to be explored in visual terms, namely that between the **symbolic role of a cup** in different traditions, its transformation into the **goal of sporting endeavour**, and its form in relation to the **symbolism of global collective endeavour**. Visually the cup can also be understood as holding, or signifying, both a relation between one and zero, and that suggested by its fundamental sexual connotations. Global public interest in the FIFA World Cup could be readily described as an orgasm of enthusiasm and consensus which world religions and global governance can only envy.

It would seem that many religions attach particular significance to a sacred cup: Christianity (**Chalice**) Judaism (**Kiddush cup**), Islam (Islamic cup). 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 (Sean Robsville (*Cauldron, Chalice and Grail Symbolism in Buddhism and Celtic Wicca*, 22 November 2009). Relevant to this argument is the manner in which its significance may be inadequately understood, as separately argued (*Subunderstanding of the nature of the "Chalice"*, 2011).

The question to be asked is how a diversity of sacred "cups", honoured within a diversity of religions, was somehow displaced to such a degree, on a global scale, by various "world cups" -- most notably that of the FIFA World Cup. The latter, as a secular cup of "football as a religion", could be said to echo suspiciously elements of those of the religions. It could be assumed that a cup held sacred in this way acquires that memorable significance through holding and symbolising the relationship between various levels of subtlety and complexity of which the pattern of numbers is itself indicative.

**Laurel wreaths:** A complementary dimension is introduced into the following visual experiment by recalling the manner in which laurel wreaths (or olive branches) have been used to honour those variously victorious -- in the Greek tradition of the Olympic Games and in the Roman Empire. A related appreciation of values has been incorporated into the recent symbolism of the United Nations institutions. The latter use is indicated in the image below (left).

The leaf branches can however also be employed to frame the common depiction of a plenary assembly with the political "colours" of those participating (centre image below). The approach can be taken further to frame the target of such global plenary endeavours -- typical of resolutions regarding global plans, as with the Millennium goals, as suggested by the image on the right (below)..

Global schematics using olive leaf branch framing of UN institutional emblems		
The globe	A plenary assembly	A target
		

**Composite for the future?** In the light of the association between sacred cups and those now rendered "sacred" as the target of global sporting endeavour, visual complementarity can be taken further through juxtaposing the sacred and sporting cups -- as below -- but separated by a schematic composite (centre below). The latter is designed to hold a pattern of emergent significance, namely of the intangible nature traditionally associated both with any sacred cup and that to which reference is made in the case of the "spirit" of global football (as represented by the FIFA Cup).

Complementary symbols?		
Sacred cup - chalice	Composite schematic?	FIFA World Cup



**Ball movement as a focus of attention:** Using available visualization techniques, the composite above is designed to suggest that the significance emerges through a dynamic, namely the pattern of football movement within the set of games of the World Cup -- the totality of passing patterns. As configured in the central image above, the totality of these passes engenders an intangible global form -- implied by the emergent central circle. This is suggestive of a globe in three dimensions -- as with the cups on each side -- but subtly contained within the cup of crossed branches. The process of emergence is indicated in the animation in the subsequent set of images (below).

It is appropriate to note that the attention of spectators worldwide is focused on the movement of the ball -- drawn onwards by it -- in part because of what it implies, namely what it promises and to which it may lead. The pattern of movement is indicative of the existence of a subtle global attractor to which spectators are sensitively attentive. There is a sense in which following the set of games is effectively following the emergence of a global form whose "emptiness" is appropriate and consistent with what is associated with the sacred.

It is curious that current capacity to track the movement of the ball between players in any game is developing to the point at which complete maps of passing movement can be maintained in real time and for exploration thereafter (Hugo Sarmiento, et al., *Match Analysis in Football: a systematic review*, *Journal of Sports Sciences*, 2014; Carl Bialik, *The People Tracking Every Touch, Pass And Tackle in the World Cup*, 10 June 2014; Christopher Carling, et al., *Handbook of Soccer Match Analysis: a systematic approach to improving performance*, 2007). In a typical game, as many as 2,500 actions are coded, synchronized with video clips and entered into a database, available to broadcasters and coaches for their analysis.

How such maps from the totality of games might be fruitfully combined is a design issue rather than a technical issue. Cynically the suggestion could even be made that the evolution of computer-enhanced satellite surveillance by intelligence agencies could readily be adapted to a useful purpose by tracking ball movement in the totality of World Cup games (*From ECHELON to NOLEHCE: enabling a strategic conversion to a faith-based global brain*, 2007).

**Animation of pattern of ball movement:** The following set of images derives from an experimental animation (left-hand image below). The development of the pattern, as described above, is indicated by screen shots of later stages in the animation (in the centre and right below). These are provided for the convenience of those viewing this document in hardcopy form. The version above (centre) is in fact from a much later iteration, not included in the animation below.

The point to be stressed is that the emphasis is on a dynamic from which anticipation significance progressively emerges -- a significance anticipated by spectators through being attentively drawn by ball movement in the games. To whatever degree it may be implied, this dimension is absent from static images framed by laurel branches -- proposed as being indicative of attractive globality.

Animation of progressive emergence from ball-passing movement (in composite schematic above)		
Animation (initial stage)	Screen shot (mid-animation)	Screen shot (final stage)

**Technical comment:** The above simple animation, although crude in technical terms, constitutes a degree of proof of concept. The animation was produced using Adobe Illustrator (potentially enabling use of [scalable vector graphics](#)). It could easily be improved by employing additional interactive design features and options (a more indicative range of colours, attention to contrasting passing patterns, shift in control of ball between teams, etc). It could be readily transformed into a smartphone app -- possibly with real time updating. Limitations such as the jerkiness of the above animations could be exploited to suggest a degree of liveliness.

Curiously, in any effort to render the design more reflective of the dynamics of the World Cup, it is appropriate to note that some obvious figures appear to be lacking -- despite the quantity and quality of statistics on players and games. The focus is on performance for training purposes and the probability of winning in the light of the profitability through gambling and otherwise. With respect to the total number of ball movements -- as passes -- there is seemingly no sense of the number of passes for the totality of games. Some figures suggest a figure of approximately 450 passes per game per team, some 75% of which may be successful.

**Application to global plenary debate:** The focus on the movement of the ball between players could also be adapted to focus on the movement of debating points between the "players" in any plenary assembly (or set of assemblies) -- as suggested by the earlier image and the extensive work on [passing patterns](#) (Mark Weston, *Passing Patterns*, 2006; Athalie Redwood-Brown, *Passing patterns before and after goal scoring in FA Premier League Soccer*, *International Journal of Performance Analysis in Sport*, 2008; Association for Soccer Education and Teaching, *Passing Patterns and Small Sided Games*, 2008; Alan Reifman, *Network Analysis of Basketball Passing Patterns II*, 2006).

Perhaps of greater relevance is why the evolution of football movement and mapping are further advanced than that with respect to debate points -- despite the tools elaborated for [discourse analysis](#). In a web context, this has only recently become a preoccupation (*Implementing the Argument Web*, October 2013; *Laying the foundations for a World Wide Argument Web*; *Constructing Knowledge through Argument: Wikipedia and Worldwide Argument Web*, 3 December 2010; *Infrastructure for the Argument Web released*). This focused has been preceded by the work of [Debategraph](#) within the [Global Sensemaking](#) network.

Such developments highlight the future possibility of focusing on the question as to "**who tracks global debate**", namely the patterns through which "the ball" moves as points are made in plenary assemblies. If it is done for football, why is it not done for debate -- especially since debates are recorded, transcribed and subject to electronic surveillance? How do strategic debating points get "made" and points "scored"? How many are made in parliamentary debate? What happens when the "ball" is moved into the "other court"? (John F. Abel, *Rock In The Box: the art of getting the ball into the other court*, 1970).

It is appropriate to note the widespread use of "scoring" as a metaphor with regard to the manner in which debating points are made "against" the opposing side. This could be understood more generally as the manner in which one side "teaches a lesson" to the other -- another metaphor employed. This is extended in relation to the process of "learning" from the other -- as a consequence of such scoring.

More intriguing in comparing the sacred and secular cups, what is the elusive globality that is engendered and elicited (in principle at least) by plenary debate? Is this intangible quality to be compared to connectivity and consensus -- with the central "emptiness" contained by the configuration of debate being the as yet unrecognized key to global governance, as may be variously discussed (*In Quest of Sustainability as Holy Grail of Global Governance*, 2011; *Interrelating Cognitive Catastrophes in a Grail-chalice Proto-model: implications of WH-questions for self-reflexivity and dialogue*, 2006).

Of relevance is the argument of [Gregory Bateson](#) for recognition of a meta-pattern:

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. (*Mind and Nature: a necessary unity*, 1979)

And it is from this perspective that Bateson warns: *Break the pattern which connects the items of learning and you necessarily destroy all quality* (1979, pp. 8-11).

In exploring a design correspondence to the sacred and secular cups, a base has been provided for the composite schematic (above). The design of the base associates the rich symbolism of the [vesica piscis](#) with the cup form. Potentially relevant implications of that symbolism have been speculatively discussed separately (*The-O Ring and The Bull Ring as Spectacular Archetypes*, 2014). Incorporating a "base" in this way offers a reminder of the extent to which the laurel wreath configuration, as favoured by the United Nations, is fundamentally "ungrounded". This contrasts with the unquestionable groundedness of cups -- as sacred to the believers of religions, or as "sacred" within the "religion" of football.

## Requisite complexification of imagery to embody greater significance

The composite imagery inspired by the FIFA World Cup was tentatively explored as a means of identifying what might be framed as an "imaginative gap" in the ability of global governance to represent itself its own action meaningfully such as to constitute an inspiring global attractor for the peoples of the world. In a multi-media world, the capacity of conventional static symbols to carry imaginative meaning is as challenged as the governance with which they are associated.

The World Cup process highlights the extent to which there are dimensions missing from the representation of governance. These include:

- **visually comprehensible rendering** of how debating points made in a process of argumentation engender a globally significant outcome
- the manner in which **attractive significance** is implied in a converging dynamic without being definitively contained by those embodying it or by the tangible outcome
- a sense of **embodiment of emergent meaning** through the dynamics between the players interacting around a shifting point of focus
- a sense of a **process readily emulated** by all with lesser skill -- even by children in the most underprivileged conditions
- problematic **dynamics between male and female**, unresolved by conventional frames -- exemplified by the global neglect accorded the FIFA Women's World Cup

In this light, the challenge for the future of governance might be usefully framed in terms of the fundamental lack of:

- **imagination**, as embodied in skillful interaction with the ball, by individuals, within teams, and between teams (as appreciated by the phrase "a good game"). No governing body would care to identify the elements of "imaginative thinking" which gave meaning to its endeavours.

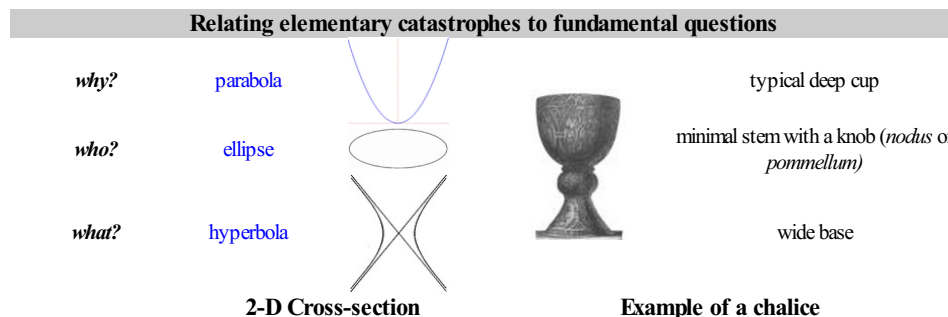
- **playfulness**, as is so evident by the joyful emulation of the process by people of all ages. Whilst play may be evident in the deprecation of one governing party by another -- typically as skillful mockery -- there is little evidence that the processes of governance benefit from being carried forward playfully. It is little wonder that the process is alienating to many.
- **framing**, as evident in the adherence to rigid game patterns, indicative of the manner in which the "game of democracy" (with its opposing teams) is seemingly set in stone. The challenge of including or excluding women exemplifies this -- as with the emerging transgender issues. Curiously this lack of imaginative research is a primary factor in preventing effective consideration of the manner in which population numbers are uncontrollably engendered.

These factors "play out" in terms of :

- **numbers and size**: whether understood as the challenge of encompassing "all the numbers", "all the sizes", or "all the interactions", rather than introducing essentially arbitrary pattern limitations upheld by tradition. This is evident in terms of team size, electoral domains\*\*\*;
- **ignorance**: whether with respect to extant phenomena and the comprehension of any explanation of them, uncertainty, or the perspective of other cultures or times (past or future). Zero serves as a useful marker in all cases, indicative of both the unknown and the (as yet) unknowable
- **otherness**: as typical of other perspectives and challenging alternatives, but clearly exemplified in the challenging relationships between male and female -- embodied in the implicit sexuality of the two FIFA cups and the currently inconceivable possibility of "marrying them" -- despite intense debate regarding sexual equality
- **possession**: whether with respect to physical territory or intellectual property -- exemplified with respect to "possession of the ball" in football, occupation of the territory of an opposing team, or intellectual property rights regarding imagery associated with the game
- **purpose**: understood as the outcome of governance of which the *Life, Liberty and the Pursuit of Happiness* is a particular formulation -- in all probability to be called into question by the future, as suggested by the variously attributed quotation: *Happiness is for pigs.*
- **intangibility**: whether highlighted by the mistaken focus on the tangibility of sacred cups, highlighted by various grail myths, or by the idolisation of the **golden calf**. Ironically the golden FIFA World Cup might well be perceived as a "golden calf" through confusion of "winning" it with the "spirit" it is held to imply
- **embodiment**: through which intangibility, comprehension and purpose are somehow exemplified, most strikingly through movement of the body, as highlighted by various authors (Mark Johnson, *The Body in the Mind: the bodily basis of meaning, imagination, and reason*, 1987; George Lakoff and Mark Johnson, *Philosophy In The Flesh: the embodied mind and its challenge to western thought*, 1999)
- **interestingness**: namely the challenge of engendering attractors and sustaining attractiveness, as highlighted by Oliver Burkeman (*This column will change your life: interestingness v truth*, *The Guardian*, 5 April 2014).

**Catastrophe theory**: One speculative exploration of this is through correlating the generic form of such a cup with the insights of **catastrophe theory**. Given the transformative significance of the cup as variously understood in different traditions, it is appropriate to note the specific concerns with "transformation" articulated by René Thom (*Structural Stability and Morphogenesis: an outline of a general theory of models*, 1994; Peeter Müürsepp, *Structural Stability as the Core of René Thom's Philosophy: from Aristotle to contemporary science*, 2010), as discussed separately in relation to the so-called **elementary catastrophes** (*In-forming the Chalice as an Integrative Cognitive Dynamic: sustaining the Holy Grail of global governance*, 2011). The latter suggests a relationship depicted as follows

The challenge of governing sustainably might be fruitfully explored in terms of the set of catastrophes identified. This is suggestive of how different catastrophes, to which an integrative form is potentially vulnerable, may be "contained" by the form of the Chalice itself. This was a focus of a separate exploration (*Interrelating Cognitive Catastrophes in a Grail-chalice Proto-model*, 2006) which included the following presentation:



The potential of such exploration is discussed separately (*Embodiment of Identity in Conscious Creativity*, 2011).

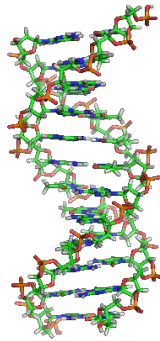
**Quest for cognitively relevant design elements**: The argument above regarding the cognitive gap -- as embodied into both cup imagery and the United Nations symbolism of global governance -- can be taken further. The question is what connotations it is useful to attempt to build into the design of a "cup". How to complexify the existing imagery of the globe (in the UN case), the ball (in the FIFA cup case), or the emptiness (of any sacred cup). It is that emptiness which implies the potential of emergent significance, as in the traditional **Buddhist parable regarding the empty cup**. The punch line regarding the process of acquiring knowledge of Zen might be adapted to "global governance". Perhaps: *Like this cup, the world is full of particular opinions and speculations. How can global*

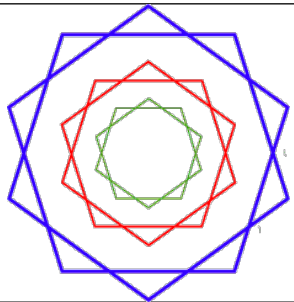
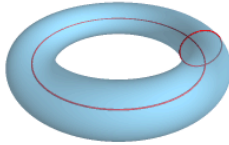
governance be comprehended without first emptying the cup?

The images below suggest ways in which the cup might be filled and emptied. The animation on the left offers a variety of centro-symmetric symbols and schematics suggesting facets of insight. The central image embeds the football -- as the acknowledged global focus transcending politically opinion -- within a matrix of receptive attention. The third image uses the geometrical design of the football ball to present a framing of emptiness, without filling it -- emphasizing (through an animation) the dynamic, so valued in potential movement of the ball.

It might be considered a supreme irony that the ball, kicked with such pleasure around the globe, derives from a design which is of considerable potential significance to global governance, as argued separately (*Metaphorical Geometry in Quest of Globality -- in response to global governance challenges*, 2009; *Towards Polyhedral Global Governance: complexifying oversimplistic strategic metaphors*, 2008). The standard football pattern is that of a **truncated icosahedron** (presented dynamically below with the aid of *Stella Polyhedron Navigator*).

Possible clues to schematic "stemmed cup" design elements understood dynamically (distinguishing cup, stem and base alternatives)		
Symbol animation	Football implication	Animation framing emptiness
		



	
Simplified schematic axial view of DNA (see <a href="#">schematic articulation</a> and <a href="#">complex variant</a> )	Transition between a toroidal base and rising ball (from <i>Wikipedia</i> )
Alternative base design possibilities to cup stem above (an animation of <a href="#">DNA segment</a> from <i>Wikipedia</i> )	

The design of the FIFA Cup (reproduced [above](#)) incorporates a spiral swirl in the lower portion -- as does that of the [FIFA Women's World Cup](#). A more significant complex form for the stem might reflect the spiral structure of DNA enabling life on the globe (as above), possibly understood as incorporating the 2D *vesica piscis* used in the earlier composite schematic above (*DNA Supercoiling as a Pattern for Understanding Psycho-social Twistedness*, 2004).

The DNA pattern could also figure in the base design (as above left). The more complex renderings, on which the schematic is based, reveal patterning reminiscent of that to be found in the tracery on the base of sacred cups (see images of DNA axial view). Together these design elements would stress the point that, presented symbolically as cut, the leafy branches above require connection to a living base to be sustainable -- and to represent viability. The metaphor can be developed with respect to the use of cut flowers in plenary gatherings (*Flowering of Civilization -- Deflowering of Culture: flow as a complex experiential dynamic*, 2014).

For the base, the animation alternating between the toroidal and spherical forms is also suggestive (above right). Through what form of "uterine peristalsis" do strategic outcomes get engendered from a global matrix, as may be speculatively explored (*Complexification of Globalization and Toroidal Transformation: topological implications of invagination and gastrulation in embryogenesis*, 2010)? Some recognition is offered by the sense in which significance is perceived to "bubble up" when peering appropriately into a cup, as suggested

to some degree by another speculative animation (*Dynamic Exploration of Value Configurations: interrelating traditional cultural symbols through animation*, 2008).

## Creative pretence dissociating numbers from sexuality

**Performance:** With respect to the crises of global governance and the needs of many, it is extraordinary to note the emphasis placed on "performance" and "growth" interpreted economically. In the case of football, the focus is on "performance" -- especially given its economic implications for those involved and for the extensive associated gambling.

In the case of religion, much is made of subtler notions of "growth". However the latter has particularly tangible implications through explicit encouragement of growth in population numbers, as noted above (*Root Irresponsibility for Major World Problems: the unexamined role of Abrahamic faiths in sustaining unrestrained population growth*, 2007).

**Deprecation of sexuality:** There is a strong case for exploring the manner in which "sex", and the engendering capacity, are only implicit in the sacredness of any religious cup, in that of football, and in the governance processes of plenary debate. Least controversial is the common use of "power" -- if not its absence, as recognized by "impotence". Curiously enthusiasts of all three, whether together or separately, would tend to deny or deprecate any consideration of sexuality, however much it is a factor "on the side", "under the table", or "after the show is over" -- even to the display of prowess being the point of the "show". In all cases it is a theme of widely-publicized scandals.

It could be considered that, despite sexual scandals at the highest level, this dimension does not figure explicitly in discussion of governance. As noted above, sexual symbolism does figure relatively explicitly in architectural projections of relative power -- with "Freudian slip" being notably used in commentary on the proposed "vaginal" football stadium architecture of Qatar (as mentioned above). Most questionable is the incapacity to discuss sexuality in scientific fora devoted to future strategy with respect to world "population numbers" on a resource-challenged planet, as argued separately in a critical review (*Scientific Gerrymandering of Boundaries of Overpopulation Debate*, 2012) -- in a section on *Formally ignoring a fundamental systemic process: the economy vs. the fucking?* This reticence contrasts curiously with extensive international debate on [genital mutilation of women](#).

In the case of football, the manner in which males disport competitively recalls the earliest traditions of dance through which a sexual partner is attracted. This figures implicitly in the exploitation of the World Cup heroes for advertising -- not renowned as a profession for its reticence regarding sexiness or its economic implications.

**Psychoanalytic perspective?** Seemingly curiously absent is any extensive body of psychoanalysis regarding the sexual implications of the World Cup and of football in general. Playfully a video has been produced (*Psychoanalysis and Soccer Comic World Cup Song featuring Sigmund Freud, Carl Jung, Jimmy Greaves and the England team*, 2006; *FIFA World Cup Psychoanalysis and Soccer with Subtitles*, 2009... Fast-paced comic song about Sigmund Freud performed by Carl Jung). Such humour was partly engendered to compensate for the despair of nationals of losing countries (*Dr Steve Peters interview: England's 'Freud of football'*, *The Big Issue*, 10 June 2014). Psychoanalytical insights regarding sexuality are not sought by religion, sport or governance.

A brief commentary on the possible framing of the 2014 World Cup by psychotherapists is offered by Geoff Boutle (*Sigmund Freud, Jules Rimet and Therapy*, *Counselling Directory*, 3 June 2014). This is valuable in indicating that the discipline is itself at odds with respect to sexuality and its symbols -- recalling the criticism of James Hillman and Michael Ventura (*We've Had a Hundred Years of Psychotherapy -- And the World's Getting Worse*, 1993).

One valuable summary from a psychoanalytical perspective unfortunately avoids any extensive consideration of the implications of sexual symbolism (Stephan Hau and J. Näslund, *Inter-group Play and Symbols of a Mass Event at the World Cup in Football 2006*. 2008). Potentially more "suggestive" of that significance is an example cited by Giles Amadao in a contribution to the International Society for the Psychoanalytic Study of Organizations ("*Potential Space*": *the threatened source of individual and collective creativity*, 2009):

Here is a societal example which deals with football and politics. Iran, whose football team had not qualified for the World Cup since 1978, won its qualification for the 1998 World Cup after her victory in Australia in the fall of 1997. "Hysterical" reactions of happiness took place in the streets of Tehran, especially from thousands of young women who gathered in front of the Azadi Stadium, some of them taking off their veils. After short negotiations and under the control of the police, they were allowed for the first time to come into the stadium to celebrate the event. A first and deep breach had been made in the power of the conservative system, a system that Mohammed Khatami, the moderate recent President of Iran wanted to change. As Harold Bridger would say, the Iran victory and the invasion of the stadium by the women was the "right accident". Even more powerful than predicted if we remember that, for the World Cup itself, Iran was drawn to play against United States, considered to be "the" enemy by conservatives, especially since the hostage crisis of April 1980. (p. 271)

**Dispassionate frameworks?** In the contrast with the strange prudish bashfulness of the international community and the psychoanalytic community, it is appropriate to note the tradition of "dispassionate passion" (or "passionate dispassion") of Eastern religions, most notably Hinduism. The two opposite forces of nature -- the male and female -- are widely and openly depicted by the *Lingam* (the male symbol) and *Yoni* (the female symbol). This depiction of *Shiva Shakti* by the *Lingam-Yoni* -- often alongside each other -- is a popular religious practice in Hindu socio-religious culture. It is presumably of some significance that any such association is only possible implicitly in Western cultures and within the international community it dominates.

Strangely by contrast, the relationship between the numbers one (1) and zero (0) has been explored by Western mathematicians in broad terms which include a degree of recognition of their role in engendering the pattern of numbers. Such explorations may be inspired by theological preoccupations (Sarah Voss, *What Number Is God?: Metaphors, metaphysics, metamathematics, and the nature of things*,

1995) and may be embodied into humorously illustrative [animations](#) (Norton Juster, *The Dot and the Line: a romance in lower mathematics*, 1963).

**Cup-and-Ball metaphor:** Visually and symbolically relevant to this argument is the widespread existence of a traditional child's toy -- the simple [cup-and-ball](#) (or ball-in-a-cup), notably still common in Spanish-speaking countries (known as *boliche*, or *bilboqu e*). As noted by the *Wikipedia* description, this has been a game of kings in Europe -- consisting, as implied by the image below, of catching the ball in the cup. This could be understood as the challenge common in various ways to that of religion, football and governance. According to *Wikipedia*, reference is variously made to its significance by [Jean-Jacques Rousseau](#).



The game with the toy offers an extraordinarily simple metaphor of the challenges of religion, football and governance as framed in sexual terms. All are faced with the skills required to catch some form of globality in a suitable container. Ironically scoring in the game depends on the number of times in succession that the ball can be caught -- any failure reducing the score back to zero. Such failure can be usefully understood as a form of "miscarriage" -- to which all are prone. The game has the additional advantage of being applicable to the cognitive challenges of the individual in seeking variously to "score" -- even in a meditative process. Is emergent integrative cognition associated with the "ball", the "cup", or the "game"? ([James P. Carse](#), *Finite and Infinite Games: a vision of life as play and possibility*, 1986).

**Consummation:** More provocatively controversial, with respect to religion, football and governance, are the processes of excitation and consummation of which sexual intercourse offers an array of creative metaphors. These would seem to merit consideration if the numbers associated with a global civilization are to be fruitfully encompassed. Conflation of the quest for globality by governance (imposing "law and order"), religion (eliciting universal belief), and sport (in scoring goals) can all be associated with "winning" the other -- as framed metaphorically by flirtation, courtship and their possible outcome.

Yet more controversial are the dynamics in metaphorical terms between ovum (representative of globality), requisite tumescence, and appropriate dissemination. Arguably the architectural examples noted above as sexual surrogates offer static implications of these dynamics -- but as such inadequate to the cognitive reality which merits consideration.

## Significance of "encompassing" the numbers required for meaningful governance

**Disillusionment of the numberless:** As made evident by recent European elections, there is increasing recognition of public apathy, democratic deficit, and the ever increasing lack of credibility of leadership. The "numberless" no longer believe in the promises and strategies of the *Nomenklatura*. It is in this context that the worldwide "belief" in the FIFA World Cup merits consideration, as with that aroused by the [Eurovision Song Contest](#). Beyond their "interestingness" however, lies the question of how to derive insights of relevance to governance (*Investing Attention Essential to Viable Growth*, 2014).

The challenge is highlighted by the manner in which efforts at nation building in Iraq and Afghanistan have been shown to be more than problematic -- echoing the long pattern of strategic inadequacies in developing countries. There is a real challenge of the numberless being "left behind" -- effectively "remaindered", whether passively or not (*Reintegration of a Remaindered World: cognitive recycling of objects of systemic neglect*, 2011).

**Anticipation by the numberless:** Curiously the pattern of leaves framing UN system emblems could be understood as visually recalling the numberless -- *We the Peoples of the United Nations*. It also recalls the audience arrayed physically in a FIFA World Cup stadium -- and, by implication, in any stadium of cyberspace. Strangely symbolic is the manner in which those on the field are typically numbered, named and well-identified for media commentary. Those in the stands may well be in numbered seats, with numbered tickets, but are essentially nameless and otherwise unidentified -- except possibly for security purposes. Typically those on the field are male whereas the audience includes a significant proportion of females.

The attentive expectancy and anticipation of the audience is necessarily focused on what may be recognized as the essence of male tumescence disporting itself for possession of a symbolic ball through which scoring can be achieved -- possibly associated with "scoring" off the field, if on-field scoring is notably successful. Curiously, as indicated above, there is a strange form of role reversal on the occasion of the [FIFA Women's World Cup](#) -- frequently won by a country which has never won the male variant.

**Ordering globality otherwise:** The challenge implied by events in a stadium is how to ensure a higher order of involvement of the numberless of relevance to governance, namely how to "translate" that focus into one that engages with and addresses issues of governance. This challenge was evident in use of the [amphitheatres](#) of the Roman Empire, most notably the [Colosseum](#).

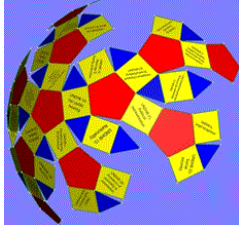
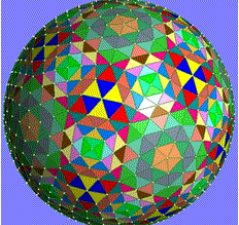
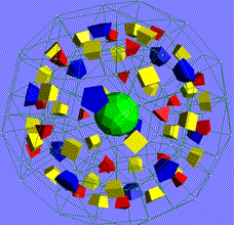
The challenge is reframed in an information society based on the internet. Whilst every user may indeed be specifically numbered for technical reasons (IP address, etc), the question is how to order meaningfully those so numbered, together with their preoccupations, and to relate emergent patterns to the challenges of governance.

**Eliciting engagement through comprehension:** The obvious preoccupation is constraints on attention time and cognitive capacity to order and process such quantities of information in a meaningful manner. Whilst this can be done "technically" through constantly developed technology, the issue is how to frame the challenge to comprehension and memory.

An important possibility would appear to lie in the use of symmetry to elicit complex patterns and to render them comprehensible. This can be framed as a question of ordering the numbers associated with emergent pattern formation, notably taking geometrical form -- or possibly in the form of sound, through techniques of sonification.

The possibilities are most strikingly illustrated through fractal patterns, as discussed and illustrated separately (*Psycho-social Significance of the Mandelbrot Set: a sustainable boundary between chaos and order*, 2005). Even more striking are the implications of group symmetry, the fundamental discoveries in that respect, and visual renderings of patterns which honour the elegance of globality (*Polyhedral Empowerment of Networks through Symmetry: psycho-social implications for organization and global governance*, 2008; *Potential Psychosocial Significance of Monstrous Moonshine: an exceptional form of symmetry as a Rosetta stone for cognitive frameworks*, 2007).

The concern with respect to such possibilities relates most specifically to the challenges and meaning of comprehension, especially in so far as it is fundamental to collective consensus (*Dynamics of Symmetry Group Theorizing: comprehension of psycho-social implication*, 2008). It is this concern which suggests the need to focus on mnemonic aid, specifically as highlighted by "correspondences" (*In Quest of Mnemonic Catalysts -- for comprehension of complex psychosocial dynamics*, 2007; *Theories of Correspondences -- and potential equivalences between them in correlative thinking*, 2007).

Global configuration of values fundamental to civilization (examples based on articles from the <i>Universal Declaration of Human Rights</i> reproduced from <i>Dynamic Exploration of Value Configurations Polyhedral: animation of conventional value frameworks</i> , 2008)		
Partially folded pattern	Faceting diagram	Simulated "4-dimensional" view
		
Images produced with the aid of Stella Polyhedron Navigator		

## Boundary pushing by sport, religion and governance

It could be readily argued that governance, sport and religion share a primary concern with boundaries:

- the nature of a boundary -- and the manner whereby it excludes challenging otherness
- how to extend the boundary -- against the resistance of otherness
- how to encompass everything in an unbounded framework -- subsuming potential alternative frameworks

Such issues have been dramatically highlighted at the time of writing through militarily-supported action in Ukraine (Crimea), Turkey (Kurdistan), Iraq (Sunni/Shiite). Afghanistan (Taliban). Extensive media coverage has been given to the challenge of migrants to European borders (Hannah Roberts, *600,000 migrants are lined up along North African coast and ready to enter Europe this summer warns Italy*. *Mail Online*, 4 April 2014).

In systemic and symbolic terms these preoccupations are also central to sexual relationships -- as with the manner whereby points are made within the bounded context, potentially characterized by emptiness and pointlessness (*Way Round Cognitive Ground Zero and Pointlessness? Embodying the geometry of fundamental cognitive dynamics*, 2012).

Boundaries of a more tangible nature are of course defined by numbers and the geometry to which they give rise. Intangible boundaries, recognized through patterns, are also defined by numbers. The fundamental challenge -- for a much-challenged civilization, faced with collapsing patterns of connectivity -- is how to rethink the nature of boundaries.

A specific concern is how to transcend the binary manner by which boundaries are currently characterized -- the sense of inside/outside, internal/external, and "us and them", as separately discussed (*Transcending Simplistic Binary Contractual Relationships*, 2012; *Radical Cognitive Mirroring of Globalization: dynamically inning the unquestioningly outed*, 2014; *Us and Them: Relating to Challenging Others*, 2009).

In a discussion of *What Keeps Boundaries Fixed and Formidable* (David L. Dotlich, et al., *Head, Heart and Guts: how the world's best companies develop complete leaders*, 2010), the authors note that: *it is more than human nature that prevents otherwise smart, savvy people from reframing boundaries. While we are all resistant to change to a certain extent, boundary change comes with its own additional set of hurdles*. They distinguish (pp. 70-72):

- *Incentive system hurdle:* Most organizational incentive systems reward behaviors that have proven successful in the past... Part of the problem is that the ability to see boundaries in new ways is difficult to measure... In addition, even if leadership endorses boundary-reframing behaviors, a lag time exists between this endorsement and the restructuring of an incentive system.
- *Corporate culture hurdle:* Some cultures have norms and values that mitigate against boundary reframing... Sometimes the influence of culture is not as overt as in the previous instance, operating instead at a subconscious level...

- *Arrogance hurdle*: Some organizations have such a superior attitude that they don't believe new relationships vertically, horizontally, or any which way will benefit them.... Enron is perhaps the recent example of an arrogant culture that could not deal with its own flaws and ignored the warning signs from the environment.
- *The Overwhelmed Hurdle*: The leader is under so much pressure to perform that he is unwilling to do anything new or different that might detract from that performance.

## Reframing boundaries to engage with patterns of collapse

With respect to reframing boundaries, it is appropriate to note the series of books of that title *Reframing the Boundaries: Thinking the Political*, edited by Alison Assiter and Evert van der Zwerde. Of interest are the domains in which interest in "reframing the boundaries" has (and has not) engendered documents on the web. Themes with respect to which the possibility has been evoked appear to include sex, dating, punishment, justice, governance:

With respect to "rethinking", the focus in the case of territorial boundaries has tended to be on notions of "redrawing" boundaries. This recalls the [gerrymandering](#) typical of traditional politics.

The above argument points towards thinking of boundaries in a quite different manner -- for which the insights of topology in its somewhat more sophisticated forms are relevant. In the documents cited above, the implications of the [Möbius strip](#) and the [Klein bottle](#) are discussed. The question is how such thinking would apply to the vexatious dynamics currently associated with Palestine, Kurdistan, Kashmir, Catalonia, Scotland, and the like. Possibilities have been discussed separately (*And When the Bombing Stops? Territorial conflict as a challenge to mathematicians*, 2000; *Middle East Peace Potential through Dynamics in Spherical Geometry*, 2012).

However, in considering any such possibilities, of much greater interest is how they might be rendered more comprehensible to enable wider commentary. As an exercise in numbers, the most evident opportunity lies in the use of interactive simulation techniques, now highly developed and readily rendered accessible in a web context.

Potentially more interesting is then the question as to why the opportunities of simulation are not explored. This question is most evident with respect to democratic processes in general, but specifically:

- **electronic voting** to facilitate voting by those unable or disinclined to go to a polling booth -- despite the manner in which the numberless are urged to have confidence in the security of financial transactions via the web, and to benefit from the security features implemented to prevent fraud
- **feedback processes**, increasingly solicited by government websites and media facilities in general as a means of claiming to "listen" to the numberless -- despite the obvious constraints in processing the numbers of such messages that might be engendered
- **democratic oversight** facilities, about whose efficacy (with regard to safety, invasions of privacy, and abuse) assurances are constantly provided -- despite the obvious constraints on the processing capacity of members of any oversight committee (and the obvious conflict of interest in claiming competence)
- **alternatives to "democracy"** which might be variously proposed or considered (possibly based on unusual and unforeseen coalitions and configurations) -- despite the vested interests in maintaining a system which the future may well see as having been "unfit for purpose"
- **alternatives to binary choices**, as proposed with respect to referenda on secession -- despite the implications of any outcome in which a significant percentage of the numberless are liable to be dissatisfied

It is with respect to such possibilities that it becomes very apparent that **conventional competition (in sport and otherwise) -- aims to isolate a single winner from numberless losers -- is clearly grooming people to tolerate inadequacy**. Claims to the contrary are of course vigorously made -- with competition framed as "healthy". The pattern recalls the preoccupation of the [Occupy Movement](#) with the manner in which the "one percent" is currently engendered and sustained -- to the disadvantage of the "99 percent".

Although obviously echoing the outcome for a single [spermatozoon](#) in competitive quest for conjunction with an [ovum](#), no thought is given to the remaining spermatozoa -- thereby "remaindered" as "losers". The single spermatozoon may emerge as the superpower in a global configuration, but the reality may be more akin to "winning the battle" and "losing the war", as the current global superpower so repeatedly demonstrates. At the time of writing, the disastrous aftermath is clearly evident in Iraq.

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