Introduction

Bullfighting (or tauromachy) is considered by many to be a flagrant example of glorified indulgence in abhorrent human cruelty to animals and a highly problematic reflection on those who appreciate it. It is also considered by some to exemplify some of the highest values of humanity, notably courage, skill and elegance in the face of the immediate possibility of personal fatality. A bull is seen as the epitome of animal strength and courage, and much to be admired.

What follows is an exploration of how the challenges of global governance might be fruitfully represented through visual symbols and geometric metaphors through the lens of bullfighting, articulated in the main paper (Viable Global Governance through Bullfighting: challenge of transcendence). A valuable context for any such exploration is to be found in the cultural, even archetypal, significance of the bull over millennia. Bull mythology was widespread in the ancient world where it had been the subject of various cultural and religious incarnations -- now partly reflected in some neopagan cultures. Bullfighting traces its roots to prehistoric bull worship and sacrifice.

The visual experiments here follow from earlier exercises in relating fundamental symbol systems (Dynamic Exploration of Value Configurations: interrelating traditional cultural symbols through animation, 2008; Dynamic Interrelationship of Symbols of Coherent Experiential Representation of Nonduality, 2008; In Quest of a Strategic Pattern Language: a new architecture of values, 2008)

Metaphorical geometry

The relevance of a metaphorical approach to geometrical representation has been explored separately (Metaphorical Geometry in Quest of Globality: in response to global governance challenges, 2009).

Relevant to the approach taken there is the account of formal mathematics of Edmund Husserl as summarized by Kenny Easwaran (Husserl’s Conceptions of Formal Mathematics, 2004) in relation to the thinking of Kurt Gödel:

Edmund Husserl’s conception of mathematics was a unique blend of Platonist and formalist ideas. He believed that mathematics had reached a mixed state combining Platonic and formal elements and that both were important for the pursuit of the sciences, as well as for each other. However, he seemed to believe that only the Platonic aspects had significance for his science of phenomenology.

Citing Husserl, he notes

“If analogy can be any guide to method, it will act most powerfully if we restrict ourselves to material mathematical disciplines like, for example, geometry and accordingly ask more specifically whether a phenomenology must be, or can be, constituted as a [material] “geometry” of mental processes.” This usage of the word “geometry” implies that it is still being used to describe the science of physical space. The metaphorical ‘geometry of mental processes’ would similarly be a science of existing objects that
we can access directly through intuition (Wesensschafter), and not formally through reasoning and axioms.

Storylines

Given the role of geometric forms in indicating a number of the above processes and distinctions, there is a case for the elaboration of a sequence of phases illustrated by bullfighting in an effort to relate this more succinctly to the challenge of global governance. In the light of the focus of cybernetics on generic understanding of control systems, there is the possibility that such a geometric articulation may interrelate a number of threads.

In the three "storyboard" experiments that follow, the effort is to weave together various threads highlighted by the commentary on the significance of bullfighting to an understanding of appropriate governance. The concern is to provide a succinct pattern of mnemonic cues, as previously argued (In Quest of Mnemonic Catalysts -- for comprehension of complex psychosocial dynamics, 2007). As an experimental format, the storyboard is partly inspired by the classic Zen Buddhist Ten Ox Herding Pictures and by the comparable, but less significant, exercise of Pablo Picasso (Picasso's Bulls, 1945).

The threads can be understood as different languages describing the same generic pattern -- to the extent that the particular language lends itself to description of parts of the any connecting story. The concern is to seek ways of combining logical and systemic relationships with geometrical and aesthetic correspondences. The issue of course is whether the connectivity is appropriate.

The threads variously woven into the story include:

- bullring as circlet (womb/matrix): feminine principle engenders the man-bull dance
- a degree of geometric development (more evident in Storyboard B and Storyboard C):
  - playing to some degree on the traditions of sacred geometry
  - including the topological challenges of the Möbius strip
  - including implications of representation in three dimensions
- symbolism, including associations to:
  - Greek and Egyptian cultures
  - continuing value-related significance of "pillars" for governance
  - continuing masonic reference to Egyptian symbolism
  - use of the laurel leaf as emblematic of global governance in various institutional logos (discussed in main paper)
- the systemic contrasts, from a general systems perspective, of:
  - micro-level: dynamics of biological cell division, considered as a system in which traits from different genetic stock are combined ** cell mitosis
  - macro-level: the challenges of global management and globalization
- cognitive approaches to system dynamics through:
  - the Chinese concept of the 8-fold Ba Gua encoding of change processes (Animation of Classical BaGua Arrangements, 2008)
  - the implications of reflexivity and the manner in which positions are mirrored and transformed into their opposites (Psychosocial Energy from Polarization within a Cyclic Pattern of Enantiodromia, 2007)
  - symbolic implications of labyrinthine complexity and the "endless knot"
  - implications of embodied cognition
  - the alchemical symbolism of individuation
- dynamics of complex systems in the light of:
  - the complex plane and the Mandelbrot set (Psycho-social Significance of the Mandelbrot Set: a sustainable boundary between chaos and order, 2005)
- implications for decision-making options and blockages
  - problematique, etc. ***
  - execution
  - strategic dilemmas (Sustainability through the Dynamics of Strategic Dilemmas -- in the light of the coherence and visual form of the Mandelbrot set, 2005)

It should be stressed that these "storyboards" are purely exercises. The question is whether they are fruitfully suggestive of a succession of important challenges and opportunities. Each might have had more panels and the contents of any of the panels could be improved or replaced -- as with the commentaries. Notably with respect to the first, rows of panels could be removed to simplify the story.

The sequences of the storyboards are not independent. They tell the same story. Storyboard C is a highly schematic geometric version of portions of Storyboard A. Storyboard B reinforces the multidimensionality of what is represented in two dimensions by drawing attention to the possibility of seeing the other images in three dimensions (where any circle is understood as a sphere) or from a plan perspective.

Storyboard A

The three following panels create the arena for those that follow. It is within this arena that the matador confronts the bull, as with any confrontation with otherness or between polar opposites (right/wrong, positive/negative, female/male, etc). Contrasting colours are used to indicate such incommensurable differences. *** alchemy
The apparent simplicity of the laurel leaf theme above is presented in the three following panels as having a hidden degree of complexity characteristic of lived reality. Each of the two laurel branches might be understood as ordered in its own terms, but an order incommensurable (or chaotic) with respect to the other. The images derive from zooming in on the fractal boundary between order and chaos evident in the visual rendering of the Mandelbrot set, displayed ***below (selection from Image gallery of a zoom sequence in Wikipedia). In terms of the symbolic theme of the ***labyrinth (as the realm of the Minotaur), it is in this complexity that it is easily possible to be lost. The infinite range of such "attractive" images therefore constitutes a form of barrier.

Seeing through and beyond the labyrinthine complexity above, calls for an understanding of the underlying dynamics. The images also evoke a relationship to genetic reproduction through cell division. ** alchemical analogues

A degree of ordered response to the complex dynamics of the challenging relationship between matador and bull is evident in the sequence of passes controlled by the matador’s cape. The above rendering of minimal orbits within that set alludes aesthetically to how the set of cape movements might be displayed statically.

This image and the following highlight stages in what is described as cross-fertilization, notably between disciplines. Models of this are to be found in the process of meiosis replication in biological cells. A form of "cognitive meiosis" has been described, now reframed in terms of memetics. This implies a form of "inter-species learning" in which fundamental opposites (such as matador and bull) acquire insights from their dance (with one partner killing the other after that transfer, as in some species)

The following panels highlight an emergent (principled) order through mirroring, reflection and inversion -- a process of enantiodromia, perhaps to be understood as linking local and global, specific and general, or mundane and transcendent. Such emergence may also be understood as a distillation according to the alchemical metaphor -- from the lower "vessel" to the upper. The mirroring is however to a degree illusory as indicated by the use of the single-sided Möbius strip to relate the inversion between the two levels (Psychosocial Energy from Polarization within a Cyclic Pattern of Enantiodromia, 2007). Visually, the Möbius theme may also be understood as introducing the implications of 8-fold organization -- fundamental to the Ba Gua concept of Chinese symbolism. These panels frame the challenge of executive decision through which possibility is understood as excluded, neglected or transcended -- an imposition of binary logic (A and not-A), excluding the challenge of other possibilities (A and not-A and neither-A-nor-not-A) of the quadrilemma characteristic of many real-world choices. *** defines complex plane
Frames the relationship in Greek symbolism between Europa (in the upper half) who "rode off on the back of Zeus" in the form of a bull (with the lower half representing the realm of that bull).

Frames the relationship in Greek symbolism with the labrys (double-headed axe) notably used in the sacrifice of bulls -- through cutting the spinal chord. It is associated with thunder deities, a form of Zeus. The illusory complex cross-over of the Möbius strip may be understood as a knot -- the Gordian knot (tethering a 2-wheeled "ox cart"). Both symbols anticipate the sacrificial cut.

An indication of the sacrifice resulting from killing the bull, and symbolically cutting off the relationship (or influence) of that realm or transcending it. It is indicative of the nature of any simplifying "executive" decision in response to complexity and an attitude of detachment. Examples might include focusing on positive (vs negative), conscious (vs unconscious), rational (vs arational), male (vs female).

As a result of a simplifying "executive" decision, the emergent order on its own (the remaining "upper half"), readily lends itself to the simplistic representation of the following panels -- with a consequent difficulty in encompassing the "excised" complexity implicit in the representation.

The challenge of any "other" (epitomized by the bull) having been overcome, the victor (the matador) now "rests on the laurels" -- emblematic of that victory. Differences have been eliminated, or can be ignored, as a result of that achievement -- or so it may be assumed. Harmony is implied.

From a global perspective, the laurel branches now frame an understanding of globality and integrity. Global differences are assumed to have been indistinguishably harmonized in an ordered world of higher values. Underlying discordant dynamics can be ignored -- having been cut out as a disassociation from the Dionysian -- identifying Zeus with Apollonian values.

Reverts to explicit colouring of the laurel branches indicative of the reality of the dynamics between unresolved fundamental differences and associated strategic dilemmas. Global order is not adequately or sustainably "held". The "voices" of the "higher values" (of the image on the left) readily resemble those of castrati -- lacking the "base" which emerges as "bull" within that supposedly transcendent arena (now a context for renewed "bullfighting").

The following panels clarify the kind of continuing illusory oscillation or alternation between the "upper" and "lower" focus of attention following the sacrifice of the lower half.

Focus on "higher" values and dynamics; ignoring "lower" values and dynamics
Focus on "lower" values and dynamics; ignoring "upper" values and dynamics
Focus on "higher" values and dynamics; ignoring "lower" values and dynamics

The following panels highlight the dynamic nature of the ordered complexity encompassing that which is recognized and accepted for consideration (as "known") together with that which is otherwise ignored, unpredictable or
incomprehensible (the "unknown"). The "lower" half of the earlier 8-fold pattern (fundamental to the Ba Gua understanding of decision-taking in complex situations of change) is now specifically re-integrated into the frame (cf *Animation of Classical BaGua Arrangements: a dynamic representation of Neti Neti*).

Static representation of the two classic Endless knot (or eternal knot) of Tibet Ba Gua arrangements ("earlier heaven" below, and "later heaven" above). The classic dynamic is implicit. Dynamic representation of the two classic Ba Gua arrangements [note if the SWF format animations do not display automatically, they may do so more readily in Internet Explorer]

Whereas the conventional laurel-leaved symbolism implies a form of closure -- a successful encompassing of the world, despite its complex dynamics -- the following panels explore the implications of "openness", effectively "releasing" reality from the grasp of cognitive closure (a possibility implied by initiatives towards "open governance"). The "realm of the bull" is then potentially reintegrated into the representation.

The ends of the laurel branches are opened to "release" global understanding in both its planetary and integrative senses. It can now be understood as finite but unbounded rather than constrained by a grid. As such it is now associated symbolically with a range of Sun god symbolism. "Winged" in this way, this resonates with the symbolism of the Egyptian deity Horus and the Eye of Horus.

It is the opening "above" that enables appropriate reconnection to the previously ignored "lower values". This is the challenge for governance of reconnecting with the real world of the masses and relating to the environment.

It is through the reconnection that the grounded, physical world can be appropriately managed as a "greener" future -- dependent on a form of cognitive "recycling" between "upper" and "lower" values (implied by the 8-fold representations of earlier images)

The following panels juxtapose various forms of culminating overview of the developmental process implicit in those above. The central image is a rendering of the Mandelbrot set (*Psycho-social Significance of the Mandelbrot Set: a sustainable boundary between chaos and order*)
Storyboard B

This reinforces the multidimensionality of what is represented above in two dimensions by drawing attention to the possibility of seeing the other images there in three dimensions (eg where any circle is understood as a sphere). The following panels relate parabola, ellipse and hyperbola, together juxtaposed with a classical chalice. This image offers another way of summarizing succinctly the above story especially in that it suggests a view from above into the chalice. Such a plan view (from the top) is an orthographic projection of the chalice representation as a 3-dimensional object through it from above. This possibility is of interest because of the nature of the three curves constituting it. These would not be readily distinguishable. All would be effectively set within a circle -- usefully suggesting the complexity implicitly embedded within the circle as a culminating image in the story above.

Also of interest is the implication that the functionality of the chalice is not complete without a hand to grasp its lower portion. It is this engagement which reflects that of the lower portion of the images above -- the grounded "realm of the bull". Rather than a simplistic understanding of detachment, it thereby emphasizes concerns with embodied cognition as discussed by various authors (George Lakoff and Mark Johnson, Philosophy In The Flesh: the embodied mind and its challenge to western thought, 1999; Francisco J. Varela, Evan T. Thompson, and Eleanor Rosch, The Embodied Mind: cognitive science and human experience, 1992). The cognitive response to a chalice considered sacred might therefore fruitfully be extended to what is implied by the hand that grasps it by the stem, as suggested by Mudras: an embodied pattern language for sustainability? (in Handed Over Handy: metaphors for the communication of intent, 2006).

The three curves are also interesting in terms of their significance with regard to the dynamics of the three more complex forms of the seven elementary catastrophes of catastrophe theory -- of which the simpler forms are even more closely related to cape movements. The implications of catastrophe theory for new understanding of human dialogue have been explored separately using the chalice (Interrelating Cognitive Catastrophes in a Grail-chalice Proto-model: implications of WH-questions for self-reflexivity and dialogue, 2006).

parabola

elliptic umbilic catastrophe

typical deep cup

minimal stem with a knob (nodus or pommellum)

hyperbola

wide base

(hyperbolic umbilic catastrophe)

2-D Cross-section

Example of a chalice

Storyboard C

The following is a highly schematic geometric version of portions of Storyboard A.
<table>
<thead>
<tr>
<th>Empty arena</th>
<th>Confrontation between matador and bull (buyer/seller)</th>
<th>Dancing relationship between matador and bull enabled by passes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergence of transcendent principles (Taurus)</td>
<td>Sacrifice of the bull</td>
<td>Laurel wreath of victory (castrati)</td>
</tr>
<tr>
<td>Typical wreath-enclosed globe of international logos (with illusory separation from &quot;real economy&quot;)</td>
<td>Wreath branches 'open'</td>
<td>Reintegration of bull</td>
</tr>
<tr>
<td>Hathor</td>
<td></td>
<td>Mandelbrot set</td>
</tr>
</tbody>
</table>

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