Introduction

This exploration is concerned with the nature of an appropriate mnemonic coding system capable of indicating, and sustaining, a pattern of significance in support of responses to complexity. Of particular concern is holding both "objective" and "subjective" dimensions, as well as any emergent blending between them through which the "external" is (partially) embodied by the "internal" -- and how those distinctions are themselves chosen as meaningful.

The argument focuses on the simplest binary and ternary coding systems. It makes use of the classical approaches of the binary I Ching and the ternary T'ai Hsüan Ching coding and points to the possibility of a common framework. One of the major merits of these classical texts is that they directly address the challenge of rendering subtly complex processes comprehensible -- recognizing that this remains a lifelong challenge for everyone.

The texts themselves are all written as poetry -- even though intended for strategic decision-making at the highest and most ordinary levels. As such they make very extensive use of explanatory metaphor. These expository considerations are totally absent from the articulation of modern governance, both amongst the governors, in their relation to the governed, and in terms of how the latter are empowered to respond to a complex environment faced with such directives.

Related issues have been explored in earlier papers (A Singable Earth Charter, EU Constitution or Global Ethic? 2006; Structuring Mnemonic Encoding of Development Plans and Ethical Charters using Musical Leitmotivs, 2001; Poetry-making and Policy-making: arranging a marriage between Beauty and the Beast 1993).

Representing conditions

The following table arose from the recognition that it would be useful to distinguish (and represent) three conditions of cognition:

- objective, external, extrovert, instrumental -- understood as typical of science and management
- subjective, internal, introvert, intuitive -- understood as central to emotional intelligence
- embodied awareness, involving a degree of emergent identification of the subjective with the objective

In addition it would be useful to distinguish whether each of these conditions was in one of the following two generic modes:

- dominant, preponderant, active, explicit, determining,
- recessive, passive, implicit, open

"Intensive": The three conditions may then be represented by three parallel lines, one on top of the other. Whether each is in an active
or passive mode, may be indicated by using unbroken lines for the first and broken for the second -- a basic binary "on" or "off" indicator. This is the coding system long used for the trigrams of the I Ching. This gives a set of 8 possible conditions.

This set of 8 conditions can notably be considered to encompass the moment-by-moment shifts in awareness, emphasizing or de-emphasizing objective, subjective or any mix thereof.

"Extensive": More intriguing is the possibility of also representing conditions where such a three-level pattern is not considered meaningful, possibly because:

- "subjectivity" is considered meaningless
- "objectivity is considered secondary in comparison with "subjective" factors
- "embodied awareness" is considered meaningless

In such cases the 3-level possibility is effectively "collapsed" to a 2-level system (for example, objectivity and subjectivity, but not any embodiment form of cognition), or to a "flat" 1-level (for example, focused solely on external objectivity with no subjectivity). In the latter case the variety perceived in the external world is typically in terms of a different (and more obvious) set of status "levels", namely:

- winners, namely those who emerge as dominant in any transactional process
- losers
- combinations of winning/losing, namely ambiguous outcomes

System levels

1-level system: In the table below, it is the first row (1-level system) that notably emphasizes this "extensive" dimension:

- **Cell A1** has just two conditions corresponding to the binary logic ("you are either with us or against us"; "winners" or "losers"; "faithful" or unfaithful!). The world is therefore seen as made up of "winners and losers" -- both being necessary to the viability of the system.
- **Cell B1** enriches the possibilities of A1. The extreme binary conditions are indicated by the digrams with no unbroken lines and with both lines broken. However there are now also two subtler mixes, possibly representing situations where there is a strong dominant party and a weak subordinate party, but also one in which there is a strong subordinate party and a weaker dominant party (as with a Pyrrhic victory). Cell B1 encompasses 1-level systems typical of many 4-fold (quaternary) classifications.
- **Cell C1** takes these distinctions further and has been admirably articulated for the relationships between controller and controllee in any system. In the case of an ecosystem, it provides for 8 co-existing conditions, of which 4 correspond to those of B1 (xxx) and a further 4 represent subtler conditions (Edward Haskell, *Generalization of the structure of Mendeleev's periodic table*, 1972) In the context of the I Ching, these 8 conditions are those of the 8 trigrams (associated directly with its systems of 8 "houses").

The comments in the green shaded part of the cells in this row give more detail. The information in the ochre shaded portion are discussed later. Again it should be emphasized that within whichever "cell" of this 1-level system is considered applicable, cognition may shift constantly between any of the conditions identified -- for example between the sense of being a "winner" or a "loser".

<table>
<thead>
<tr>
<th>Cognitive complexity (line position indicative of intensive &quot;depth&quot;)</th>
<th>Emergence of extensive variety within system of choice (line position indicative of game outcomes -- win, lose, etc -- at same level)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choice amongst: + external (objective) + internal (subjective) + mix (embodiment)</td>
<td>[2^1] possibilities per N-level system A</td>
</tr>
<tr>
<td>1-level system</td>
<td>Any 1</td>
</tr>
<tr>
<td><strong>A1a</strong> 2 conditions [2^1]^1 (all illustrated)</td>
<td><strong>B1a</strong> 4 conditions [2^2]^1 (all illustrated)</td>
</tr>
<tr>
<td><strong>A1b</strong> 3 conditions [3^1]^1 (not shown)</td>
<td><strong>B1b</strong> 9 conditions [3^2]^1 (not shown)</td>
</tr>
<tr>
<td>2-level system</td>
<td>Any 2</td>
</tr>
<tr>
<td><strong>A2a</strong> 4 conditions [2^1]^2 (all illustrated)</td>
<td><strong>B2a</strong> 16 conditions [2^2]^2 (only 4 illustrated)</td>
</tr>
<tr>
<td><strong>A2b</strong> 9 conditions [3^1]^2 (not shown)</td>
<td><strong>B2b</strong> 81 conditions [3^2]^2 (not shown)</td>
</tr>
</tbody>
</table>
2-level system: As explained above, emphasis for the "extensive" 1-level system was placed on objective reality. Hence the excellent ecological example. However a 1-level system might also apply to subjective reality, or to a condition in which subjective and objective were not to be clearly distinguished. This latter mode of cognition has been hypothesized for early humans. Such confusion can readily be experienced under the influence of alcohol or other drugs. It may be typical of early childhood, recovering consciousness (after an accident, sleep, etc.).

In a 2-level system however, two modes of awareness co-exist. It is not possible to be locked into only one of the two active modes (whether "objectivity", "subjectivity" or some mixture). However, although they co-exist, they are separate and incommensurable without any conventional way of relating them -- as illustrated by the structure of the illustrations for this row. They work like two separate languages raising the question of how significance in one is to be translated such as to be meaningful in the other. The illustrations in the table, in the second row, for A2, B2 and C2, stress this separation.

- **Cell A2** (like Cell A1) has just two conditions corresponding to the binary logic ("you are either with us or against us"; "winners" or "losers"; "faithful" or unfaithful), but these may now exist at either one or both levels (for example, "objective" and "subjective"). This gives rise to four possibilities. The (claimed) sense of being a "winner" in the objective world may then be accompanied by a sense of being a "loser" from a "subjective" perspective -- or the reverse may be the case. As noted earlier, there may be a continuing shift between these 4 conditions.

- **Cell B2** (like Cell B1) enriches the possibilities of A2. The extreme binary conditions are now accompanied by two other more ambiguous conditions. But now any of the 4 conditions (of B1) may apply "objectively", and (simultaneously) any of them may also apply "subjectively", for example. One of the best known 16-fold classifications exemplifying these possibilities is that of the Myers-Briggs Type Indicator.

- **Cell C2** (like Cell C1) takes these distinctions further. By combining any of the trigrams of C1 with any other trigrams of C1, a total of 64 conditions is obtained. This is the array of conditions of the I Ching. But note that here the focus is on the interpretation through two separate parts or levels -- signifying an "external" and an "internal", for example. Conventionally, the external (or dominant) is indicated as the superior part of the resultant hexagram, with the internal (or subordinate) as the lower trigram in the hexagram.

Again it should be emphasized that within whichever "cell" of this 2-level system is considered applicable, cognition may shift constantly between any of the conditions identified -- for example, classically, between any of the 64 conditions of the I Ching (hence its alternative name the Book of Changes). To which condition the transformation takes place is not a feature of the above table (although conventionally it is implicit in the logic of that system).

3-level system: It has been emphasized that in the 2-level system, two modes of awareness co-exist, although they are separate and incommensurable without any conventional way of relating them. In the case of a 3-level system, three modes co-exist such that the two effectivly engender a third. As shown by the illustrations for the third row (A3, B3, C3), this emergent form is represented by an overlap between what was (in a 2-level system) indicative of "objective" and "subjective", for example. This mixing may be variously understood:

- in terms of the logic of a Venn diagram
- as a form of embodiment (cf George Lakoff and Mark Johnson, Philosophy in the Flesh: the embodied mind and its challenge to western thought, 1999; Francisco Varela, Evan Thompson, and Eleanor Rosch, The Embodied Mind, 1991)
- symbolically as traditionally associated with the vesica piscis

From this perspective the cells may be understood as indicative of the following modes of understanding:

- **Cell A3** resembles Cell A2, except that the digrams of Cell A2 have engendered an intermediary line. As such these trigrams now correspond to those of Cell C1. However, whereas the trigrams of Cell C1 were only indicative of 8 conditions on a single level, here the 8 conditions each integrate three distinct levels of understanding -- but in different ways in each case. Commentary on the I Ching with respect to the significance of these distinct trigrams readily combines, blends and confuses the interpretations relevant to Cell A3 with those of Cell C3. Metaphors may suggest interpretations that imply both. As noted earlier, there may be a continuing shift between these 8 conditions. An indicative, detailed discussion is provided by C. J. Lofling (Initial Eight Categories: the properties and methods of personal and social identification, 2002-2003)

- **Cell B3** enriches the possibilities of Cell A3. The latter used only a single representation for the cognition of each level (as with the binary style of Cell A1) with its associated limitations -- a simplification only mitigated by the depth of perspective from the 3-level integration of Cell A3. In Cell B3, the possibilities at each level are now enriched to the 4 conditions characteristic of Cell B1 and Cell A2. This gives rise to the full range of 64 conditions characteristic of the I Ching. However it is important to recognize that these are now interpreted not as in the 2-level system of Cell C2, made up of two (separate) trigrams. Here it is a case of 3 (integrated) digrams.

- **Cell C3** is best understood in the light of the following discussion.
Again it should be emphasized that within whichever "cell" of this 3-level system is considered applicable, cognition may shift constantly between any of the conditions identified.

**Complementary approach to "emergent" cognition**

As stressed earlier, this exploration is strongly driven by the possibility of representing distinctions in a mnemonically helpful manner. The hexagram coding of the *I Ching* shares this emphasis to a degree, but in a deliberately abstract form allowing for a variety of metaphorical projections onto that coding. Of particular interest is the manner in which any "emergent" third is fairly hidden (if not obscured) in the *I Ching* schema -- although definitely present, whether as the line "in the middle" of a trigram or as the digrams "in the middle" of a hexagram.

Highlighting this third dimension was a justification, and a purported advantage, of a coding scheme in the *T'ai Hsüan Ching* of Yang Hsüan (Yang Xiang) -- considered a complement to the *I Ching*. In that system, instead of the classical binary code, a ternary code was used. Thus instead of representing the binary conditions by an unbroken and a broken line (as in Cell A1), the ternary pattern was represented using 3 types of line: unbroken, broken once, and broken twice. Whereas the *I Ching* is composed of 64 hexagrams, as discussed above, the *T'ai Hsüan Ching* is composed of 81 tetragrams (or quadgrams) -- each made up of four lines of the kind just indicated.

The status of the relationship of the *T'ai Hsüan Ching* (also known as *Tai Xuan Jing* / *Canon of Supreme Mystery* / *The Great Dark Mystery*) to the *I Ching* (also transliterated as *Yi Jing* and *Yi Ching*) is discussed separately (9-fold Magic Square Pattern of Tao Te Ching Insights experimentally associated with the 81 insights of the *T'ai Hsüan Ching*, 2006) -- notably in relation to the views of commentators, translators and reviewers (cf Michael Nylan and Nathan Sivin, The First Neo-Confucianism: an introduction to Yang Hsüan's "Canon Of Supreme Mystery", 1995; Derek Walters, The *T'ai Hsüan Ching*: the hidden classic -- a lost companion of the *I Ching*, 1983, subsequently titled *The Alternative I Ching*, 1987).

With respect to the emphasis of the current exploration on representation of "emergent/embodied" cognition, the "controversy" is well illustrated by two contrasting quotes (included in the 2006 document):

- For Walters: "the *T'ai Hsüan Ching* holds that there are three forces at work in nature; two of these Yin and Yang, represent the positive and negative fluxes of electro-magnetism; but there is also a third force which accounts for the creation of the truly novel. With Yin and Yang [alone] there is nothing new under the Sun. While everything can be classified as belonging to Yin and Yang, the dual philosophy can only account for what exists already; no matter what resultant products or ideas are spawned by the action of Yin and Yang, there is no entirely new element created... But new ideas, and new species, only arise from the third creative force... The third force, according to the *T'ai Hsüan Ching*, is the Jen (Mankind) force... the philosophy of the triad is totally at variance with the duality of the *I Ching*, and yet, paradoxically as though it might seem the *T'ai Hsüan Ching* is a work of tremendous originality" (pp 8-9).

- For Richard Hunn, as a reviewer of Nylan's translation: "Like Walters, Nylan claims special advantages for the 'tri-partite' division of the *Tai Hsuan Ching*. Walters had argued that the *T'ai Hsuan Ching* accorded a more complete, active role to 'man' -- as against the *Yi-Chings* allegedly 'fixed' dualistic system. All of this shows a poor grasp of what the *Yi Ching* (and *Tai Hsuan Ching*) actually teach. The *Tso chuan* section of the *Yi-Ching* stresses that 'Heaven, Earth and Man' are what comprise the Tao. Every trigram (and hexagram) in the *Yi Ching* reflects this threefold unity ('the three powers' or 'san-tai') - and the *Yi-Ching* makes this clear on every count. Human 'agency' is therefore vital to the *Yi-Ching*. It was not a 'new' idea with the *Tai Hsuan Ching*. The antiquity of this intuition is evident in the formation of the Chinese script, the old Ku-wen forms, giving the character for 'king' or 'kingship' as a representation of the san-tai or 'three powers' -- linked by a vertical stroke, anciently, the kingly-priest in whom the san-tai were united or focused. It is a basically a 'trigram' -- crossed by a vertical line. Like Walters, Nylan makes some rather bold claims for the *Tai Hsuan Ching*. But trying to place it in 'competition' against the *Yi-Ching* is naive". [more]

**Limitations of ternary representation of "emergent" condition**

In the table above, the emphasis is on the binary representation of the lines used in the illustrations. The green shaded commentary associated with each cell corresponds to that approach. However, precisely by the manner in which 3-level systems are introduced, a ternary emphasis becomes apparent -- deliberately so.

It is clear that, corresponding to each cell, is the possibility of a ternary coding. Thus Cell A1 would have three conditions -- as emphasized in arguments (above) for the *T'ai Hsüan Ching*. No illustrations of this are provided in the table -- but for each cell the ochre shaded commentary reflects this development. Note that both green and ochre shaded cell commentaries also include the formula by which the total number of conditions is generated.

The point to be emphasized is that in the ternary coding system the emergent third is explicitly present at each system level -- possibly controversially so, as the commentary above indicates. From the perspective of this exploration, the emergent nature of the third might be considered banalized or "flattened" in its (early) appearance at the 1-level system -- where the choice is to focus on one only of "external", "internal" or "mixed" cognition. It has the quality of current discussion of the emergent effects of human activity on climate -- leading to climate change. There is no cognitive "depth" -- or cognitive embodiment -- as sought by deliberately introducing a 3-level system through which such emergence occurs -- as the intermediary between "Heaven" and "Earth" in the terms of the *I Ching*.

A relevant contrast might be made, in the ternary case, of a 9-fold enneagram between:

- Cell B1b, where any cognitive depth is avoided -- as is typical of many approaches to type coding
- Cell A2b, where the 9-fold pattern provides for both an "objective" and a "subjective" (for example) character of each such
An interesting comparison can also be made between Cell B2:

- in the binary case (B2a) it forms the 16 conditions typical of the Myers-Briggs typing system
- in the ternary case (B2b) it engenders the 81 conditions of the T'ai Hsüan Ching.

However the application of the ternary system is of little interest when then applied to the 3-level binary system, since that dimension has already been incorporated. It is for this reason that the cells of the 3-level system have the relevant commentaries shaded in magenta. The same applies to Cell C1b and to Cell C2b.

Particularly irrelevant to this exploration, but included to complete the explanation, is the case of Cell C3. The illustrations here explore the application of the ternary case as an extension of the numeric logic of the table as a whole. This engenders a large number of conditions in each case.

### Explicit ternary representation

The above argument, in seeking to highlight the mnemonic function offered by the I Ching on a ternary perspective, obscures to some degree the advantages in that respect of the T'ai Hsüan Ching. Whereas the I Ching trigram/hexagram naturally offers the advantage of an explicitly threefold structure (despite a binary line coding), the T'ai Hsüan Ching digram/tetragram apparently does not (despite a ternary line coding). It is almost as though any "complementarity" between the two systems requires that the tetragram be "turned on its side" to perform its mnemonic function.

The situation is quite different however with respect to the commentaries associated with the lines of each hexagram or tetragram. In the case of the I Ching, only those which are "moving" are to be considered relevant at a particular time. In the case of the T'ai Hsüan Ching, the time determines which set of three should be read. And, in terms of this exploration, whichever set of three (of the three possible sets of 9 line commentaries) is applicable, these take the following form (adapted from a presentation by Nylan):

<table>
<thead>
<tr>
<th>Table 2: Ternary representations</th>
<th>Commentaries / Appraisals</th>
<th>Timespan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thought (reflection prior to action)</td>
<td>interior (1)</td>
<td>middle (2)</td>
</tr>
<tr>
<td>Fortune (period of fruitful activity)</td>
<td>small (4)</td>
<td>medium (5)</td>
</tr>
<tr>
<td>Potential calamity (risk from inappropriate action)</td>
<td>nascent (7)</td>
<td>median (8)</td>
</tr>
</tbody>
</table>

An applicable set of three commentaries consists of one (in the table row) for "thought" (short-term), one for "fortune" (medium-term), and one for "calamity" (long-term). However these three are each taken from a different commentary column of the table.

In terms of highlighting an emergent third dimension (as argued in relation to Table 1), Table 2 suggests how various approaches might be taken to identifying the two from which the third emerges. It highlights what might be recognized (for a 3-level system of Table 1) as:

- the "external" or "objective" outcome in the form of potential "calamity"
- the embodiment in action in the form of "fortune"
- the "interior" or "subjective" dimension in the form of "thought"

Classical reflection on the manner of use of both the I Ching and the T'ai Hsüan Ching (as with that on the Tao Te Ching which inspired them both) is subtle. It reflects the challenge of how an appropriate decision is made in response to the challenge of the moment -- and how appropriate guidance is obtained to inform that decision.

Curiously in a modern world of increasingly faith-based governance, the relevance of divinity is clearly more prominent and explicit, notably in political discourse (cf Future Challenge of Faith-based Governance, 2003). Ironically, a standard reservation about the I Ching and the T'ai Hsüan Ching is the divinatory process through which consonance with divine will is achieved. Increasingly it is becoming appropriate to ask how praying for divine inspiration is to be compared with the processes recommended to ensure appropriate compatibility with the divine will through divination. Nylan comments on the methodology of divination as follows:

> If the divination procedure is to "succeed" (ie establish communication with the cosmic Tao), the individual must demonstrate a genuine will to approach the Mystery and dedicate the self to embody its attributes. The inquirer’s mind must always be correctly oriented (chen) to the Right. Essentially, the would-be sage achieves identity with the cosmic Way by single-minded concentration on virtue -- a discipline as much spiritual as intellectual...However, the sacred efficacy of the divination tool is easily impaired if the user’s mind lacks moral integrity (ch’eng), since integrity is the single quality that unites the individual with the cosmic order.

### Five-fold and Seven-fold encoding?

Especially intriguing in the consideration of the Chinese binary and ternary coding schemes above is their relation to the five-fold pattern which has been so fundamental to that culture for centuries. Although repeatedly mentioned in the commentaries on those two schemes, the five-fold is not integrated into them -- especially given the numeric patterns in each case. Curiously although western science is based on the decimal system, a five-fold scheme appears less credible. Just as the western 5-fold categorization of classical elements (earth, air, fire, water, aether) is considered quaintly outdated except for symbolic purposes, so also with the 5-fold Chinese equivalent Wu Xing (water, wood, metal, fire, earth), and the 5-fold variants of Hinduism and Buddhism.
It is therefore very interesting to note the review of Antonio T. de Nicolas (The Biocultural Paradigm: the neural connection between science and mysticism, Experimental Gerontology, 33, 1997, 1/2) of the work of Maria Colavito regarding the dependence of humans on five neural modules or "brains":

We humans have acquired five brains, not one, as Descartes, in error taught...: the reptilian, limbic, the right and the left hemispheres of the neocortex, and the "interpreter modul" [Maria M. Colavito, The Heresy of Oedipus and the Mind/Mind Split: a study of the biocultural origins of civilization, 1995]. These brains did not appear simultaneously in humans but evolved according to need or exercise, building themselves as neural paths in the brains and as external realities or cultures for the humans who used them.

Thus we know of ancient cultures as being...

- maia types, since the brain serving as the "pilot" was primarily the reptilian, as in the child after birth; or
- mythos types, since they primarily developed the limbic brain, as in children between the ages of one to eleven; or
- right brain mimetic, since they acted on the language of images of the right hemisphere of the neocortex, as in children between the age of four and fifteen (magicians, leaders, the demiurge); or
- left brain mimetic (theoreticians, ideologues, theologians, social scientists), since they acted primarily from the left hemisphere of the neocortex, as in children from the age of seven on; or
- logos types, those whose experiences are imageless, experts in the creation of substitution systems, not able to deal with any of the other forms of knowledge of the right brain hemisphere.

These biocultural types are invariant in the sense that they represent individual and social possibilities of human realities and development, but unless these brains are exercised they do not develop in full... or if one is socially sanctioned over the others, then cultural imperialism and individual loss may follow. Thus, we might find ourselves as individuals or cultures to be using one brain only, say the left brain mimetic one, and thereby giving to that brain the powers of a dictator or the arbitrariness of an emperor-king.

The question to be asked is what kind of mnemonic coding system would facilitate comprehension of the interplay of these modules under changing circumstances. For clearly there are many combinations of conditions in which one or other is active and others less so. Such an inquiry could usefully take account the epistemological insights of Magoroh Maruyama who has variously considered four-fold and five-fold schemas (Mindscapes, social patterns and future development of scientific theory types, Cybernetica, 1980; Heterogenistics: an epistemological restructuring of biological and social sciences, Acta Biotheoretica, 1977).

Of similar interest is relation to a more general exploration are 7-fold schemas, such as that of W T Jones, and the 8- or 9-fold schemas of multiple intelligences of Howard Gardner and others, as discussed elsewhere (Systems of Categories Distinguishing Cultural Biases, 1993; Patterns of Conceptual Integration, 1984).

"Getting it" and "Grasping it" -- "It" as the box out of which it may be vital to get

An exploration of this kind, irrespective of its technical defects, needs to be challenged in the following terms:

- self-reference: how does the exposition of this approach take account of the role of the author
- denaturing potential: how does the form of exposition inhibit appropriate comprehension of that to which it purportedly intends to point

Such issues can be caricatured in terms of the challenge of "getting it" -- according to the colloquial expression. As noted above, the Chinese classics cited, and those who comment on them, are above all concerned with the challenge of rendering subtly complex processes comprehensible -- recognizing that this remains a lifelong challenge for everyone. The texts themselves are all written as poetry -- even though intended for strategic decision-making at the highest and most ordinary levels. As such they make very extensive use of explanatory metaphor.

The above exposition does violence to that subtlety to the point of obscuring any real insight into its coherence as a memetic construct. Hence the "self-referential" need to "embody" such external reification in some fruitful way.

One metaphor through which the challenge can be explored is a recognition of complex reality as a wild animal in the wilderness. Such an animal may evoke the need to "hunt" it with the prospect of "capturing" or "killing it" -- a trophy to be triumphantly displayed in a "zoo" or on a wall, as an indicator of the greatness of the hunter. A variant is to achieve this graphically for display in a gallery. Contrasting understandings have been admirably expressed in:

- movies regarding wild horses and sensitivity as to whether they should captured and tamed ("broken in") -- or released (The Man from Snowy River). The nature of the relationship has been highlighted in The Horse Whisperer, where it is for the animal to respond to a possibility rather than constraining it to respond
- movies exploring the challenge of relating to dangerous predators (eg Dances with Wolves)
- a Sufi tale regarding the construction of a perfect doorless golden cage -- into which a magic bird may (or may not) choose to project itself -- sometime (and perhaps only briefly)
Another metaphor is to use recent insights into how sexual harassment is perceived by the victim, on the assumption that reality may to some degree feel harassed by human efforts to "grasp it" (cf Beyond Harassment of Reality and Grasping Future Possibilities: learnings from sexual harassment as a metaphor, 1996). Related insights come from the debate on invasive social science research, most notably in the case of invasive anthropology, with all the academic kudos to be obtained from reporting on, and explaining, a previously unknown isolated tribe -- rationalized as the advancement of human knowledge.

To what extent is the dynamic reality of the last members of an endangered wild species or tribe understood and honoured by its conversion into specimens, photographs and videos in the drawers of a museum?

Yet another useful metaphor is that of a trap. For a pioneer in the policy sciences, "A trap is a function of the nature of the trapped" (Geoffrey Vickers. Freedom in a Rocking Boat: changing values in an unstable society, 1972). As with the hunter, the approach to reality may effectively be an effort to "trap the world in a set of categories". Presentations like Table 1 might then be understood like a barred cage -- or cells in a prison.

Vickers phrase might however be modified to give: "A trap is a function of the nature of the trapper, the nature of the desire to trap -- and the understanding of what is to be trapped." This highlights the issue in relation to a complex reality of:

- who is the trapper?
- why is the trapper seeking to get "it" -- what is the associated satisfaction?
- what is the "it" that the trapper is seeking to trap?

The trap metaphor can be usefully related to that of the search for closure as extensively explored by Hilary Lawson (Closure: a story of everything, 2001). Lawson stresses the value of not taking the world as a "thing" to be grasped or understood. Instead, the world is to be thought of as the "openness", which is the site or space of possibilities that occur in the absence of our attempts at comprehension.

In relation to a complex and subtle reality, this highlights the dysfunctionality of premature closure, exemplified by groupthink (Groupthink: the Search for Archaeoraptor as a Metaphoric Tale missing the link between "freedom fighters" and "terrorists", 2002). To what extent does the rush to closure constitute a kind of "mousetrap" mindset -- focused on the "cheese" and not on the longer-term consequences of getting "it".

History may be bemused at the dependence of an emergent knowledge society on a world wide "web" -- complete with "spiders" at the service of search engines. To what extent is reality encompassed by such a web -- and who feeds on what is entrapped by it and killed for that purpose?

A contrasting mode of understanding is admirably articulated by David Abram (The Spell of the Sensuous: perception and language in a more-than-human world, 1997). Another is presented more speculatively in terms of the cult understanding of "grokking" (Authentic Grokking: emergence of Homo conjugens, 2003).

Radical choice

Reflection on the above questions of why, what, who, which, how, when and where -- the classical "WH-questions" -- sharpens understanding of the radical nature of choice at any moment. As noted elsewhere (Cognitive Feel for Cognitive Catastrophes: Question Conformality, 2006), a different approach to formalization of WH-questions might be usefully based on Heisenberg's Uncertainty Principle (cf Dominic Woolf, To be or not to be? In: The Möbius Trip, 2004). An "answer" to any such question, when given, could then be understood as collapsing a probability function representing the range of possible answers to a "question" of a particular form (as with the classic example of Schrödinger's cat).

With respect to the standard quantum theory, Mac-Wan Ho (How Not to Collapse the Wave Function, 2004) comments that a quantum system is in a "superposition of states" or in quantum entanglement which is invariably destroyed by measurement or observation. This is the reduction or "collapse of the wave function" -- of the probability amplitudes defining the system, so the system ends up in one definite state and no other. "Superposition" refers here to a system existing simultaneously in multiple states -- "even states that, common sense tells us, are mutually exclusive". A number of collapse theories have been developed, as summarized by Giancarlo Ghirardi (Collapse Theories, Stanford Encyclopedia of Philosophy, 2002). Optical analogues may offer insight (cf K. D. Moll et al. Self-Similar Optical Wave Collapse Physical Review Letters, 2003)

Such indications suggest that a trapper of reality may choose to design a trap for an assumed understanding of the dimensionality and nature of what is to be trapped. In terms of Table 1, a 1-level system may be chosen -- and a binary framework within it (Cell A1). This choice collapses the potential of the other possibilities of the table. Such a choice may enable certain forms of communication ("you are either with us or against us"), excluding others. The same is however also true of more complex modes. Nylan notes a typical classical comment on the complex 81-condition framework of the T'ai Hsüan Ching:

To one who is incapable of examining it, it seems as if it contains nothing.
To one who is capable of examining it, there is nothing that it does not contain.

Of course this might be appropriately considered as the design for a perfect trap!

REM -- from Rapid I Movement to Rapid Identity Movement?

Eye movements when awake are very important for visual perception, and any failure to make them correctly can lead to serious visual disabilities. The attractiveness of a face or figure is recognized through a form of scanning movement, leading to an emotional "aesthetic response", potentially as a prelude to sexual arousal. The fundamental means of conveying emotion (mainly sexual attraction, love, shame
and sorrow) through gaze is the amount of time spent looking at an interaction partner and the direction to which the eyes are thereafter averted [more].

**Rapid Eye Movement** (REM) is the term for a normal phase of sleep characterized, as might be expected, by rapid movements of the eyes. During that phase, the summed activity of the brain's neurons is quite similar to that during waking hours; for this reason, it is also called paradoxical sleep. This means that there are no dominating brain waves during REM sleep. Various theories have been advanced to justify the value of this process:

- consolidation of certain memories, notably procedural and spatial memories
- recovery of full sensitivity of certain brain receptors
- formation of more mature neural connections for proper nervous system development in the developing brain

Whilst this process can be usefully explored in relation to the five-fold modular organization of brain function discussed above, it is highly suggestive as a metaphor of a process that might be termed **Rapid I Movement**. This would describe the process in which attention is constantly shifted from one mode to another, in each of which the "I", or sense of identity, is differently expressed. It might also be described as **Rapid Identity Movement**. This would be consistent with the recognition in some forms of psychoanalysis of a set of **subpersonalities** -- each of which is a "a complex of thoughts, feelings and even body sensations which is capable of acting as a complete person for shorter or longer periods of time" (cf John Rowan, *Subpersonalities: the people inside us*, 1990).

The truth underlying this play on "Eyes", "I" and "Identity" might be said to be recognized in different cultures in the variations of the proverb "The Eyes are the Window on the Soul" or "Mirrors of the Soul". Matthew (6:22-23): "The light of the body is the eye: if therefore thine eye be single, thy whole body shall be full of light". Cicero: "Ut imago est animi voltus sic indices oculi" (The face is a picture of the mind as the eyes are its interpreter).

It is the pathology of such Rapid Identity Movement -- a form of attention deficiency hyperactivity disorder -- which is addressed by many meditation techniques. The purpose here is not to consider how such a process might be "stopped" and given a singular focus. Rather the purpose is to understand what occasions the movement and how better to identify with it. It is not a question of stopping the dance but rather of increasing the richness of the dance to ensure that it expresses a higher order of comprehensible harmony -- then to be understood as the invariant essence of identity.

In this sense Table 1 points to various kinds of identity dance. Those of the 1-level system offer an increasingly varied number of dance positions (from left to right). Those in column A offer forms of dance implying an increasing degree of cognitive engagement, depth or significance.

At this point it is appropriate to note the very extensive study by Chris Lofting (*The Language of the Vague*, 2004-2007) that explores the coding system of the *I Ching* taking account of data from the cognitive and neurosciences. This is in effect the introduction to a range of themes (C. J. Lofting, *Integration, Differentiation, and Meaning (IDM): the properties and methods of personal and social identification*, 2002-2004).

Without immediately distinguishing further between the 8-fold dance implied by Cell A3 and Cell C1, it is convenient to consider these as arrayed in a circle -- as is often done with the trigrams forming the *BaGua*. Traditionally these may be in two distinct orders ("Earlier Heaven" and "Later Heaven").

Lofting argues that:

A cognitive analysis of the trigrams of the *I Ching* shows they are isomorphic to the generic representations derived from our brain oscillating as it differentiates (yang) and integrates (yin). We can represent this oscillation as self-referencing of the 0/1 dichotomy such that after three loops we have:

| 111 | wholeness through differentiating (heaven) |
| 110 | static relationships (share space with another) through differentiating (lake) |
| 101 | partness through differentiating (fire) |
| 100 | dynamic relationships (share time with another) through differentiating (thunder) |
| 011 | dynamic relationships (share time with another) through integrating (wind) |
| 010 | partness through integrating (water) |
| 001 | static relationships (share space with another) through integrating (mountain) |
| 000 | wholeness through integrating (earth) |

Lofting simplifies these into terms representing types of mixing of two elements:

- Wholeness - BLENDing
- Partness - BOUNDing
- Static Relatedness (share space) - BONDing
- Dynamic relatedness (share time) - BINDing

Thus issues of BONDing are covered in hexagrams containing lake/mountain trigrams as are issues of BOUNDing (a boundary and so distinction, part, etc) covered in hexagrams containing water/fire trigrams. BINDing is covered by hexagrams containing Wind/Thunder, and issues of BLENDing (becoming whole, un-whole etc) is covered in hexagrams containing earth/heaven trigrams.
His study offers much supportive detail. The concern here however is with the process of movement -- the dance -- between different conditions across or around the BaGua circle of 8 conditions. Fundamental to this process are:

- repulsion from the current condition as its constraints become evident (framing "negatively" it as a "problem")
- attraction to another particular condition (framing it "positively" as a "value"), in preference to other conditions
- how a particular condition becomes a preferred attractor, possibly in the light of:
  - how long since it was last activated (namely greater novelty) or
  - because it fits into some sequence of steps (namely it is reinforcing a larger pattern which is effectively the attractor)
- what is engendered by this process, probably to be understood as a form of energy (ch'i), vitality or sense of "happening" and excitement
- what is the pace or rhythm of the dance, namely the time spent in each condition and whether:
  - this varies from condition to condition
  - is characteristic of the pattern
  - is associated with some physiological rhythm (heart, respiration, brain wave, etc)

Rather than a dance, other metaphors help understand experience of this process:

- as a form of "motor" through which energy is generated as a consequence of movement; relevant associations are the polarized nature of a magnet and its movement in relation to coils
- the problem of "quenching" in fusion reactors in which attachment to any particular boundary condition collapses the whole process; namely the BaGua functions like a toroidal chamber where the art is to ensure that the interplay of other conditions prevents attachment to any particular condition (otherwise recognized by the Sanskrit adage Neti Neti -- not this, not that). Effectively, towards whichever condition identity is pulled, the others will pull it back.
- each condition may be understood as a form of cognitive "vitamin" essential to nourishment, the art being to ensure the appropriate amount of each for a balanced, sustainable diet -- note the remarkable degree to which the 64 hexagrams are related to the genetic code and specifically highlight the vitamins (Martin Schonberger. *I Ching and the Genetic Code*, 1992; Katya Walter, *Tao of Chaos -- DNA and the I Ching: unlocking the code of the universe, 1996)
- as a play, each condition may be understood as a different "role" (a change of identity) in an internal psychodrama; this is especially interesting to the extent that any combination of repulsion and attraction may be associated with a form of enantiodromia in which an identity framed in one way is transformed into its opposite through the process (*Psychosocial Energy from Polarization within a Cyclic Pattern of Enantiodromia, 2007*)

With respect to identity, rather than being simply associated distinctly with each particular condition (in the Rapid Identity Movement), it is important to emphasize that it may be associated with the pattern of any dance. Issues for consideration are then:

- whether it is a single pattern, or a shifting, evolving pattern -- increasing and decreasing in complexity; interesting examples are provided by Chladni patterns
- whether the pattern is associated with particular frequencies and periodicities; an interesting metaphor in this respect is provided by the integration of the various cycle frequencies associated with features of the Mandelbrot set (*Psycho-social Significance of the Mandelbrot Set: a sustainable boundary between chaos and order, 2005*)
- how feasible it is to identify with any cyclic pattern rather than to be effectively subjected to an uncontrollable cycle as in certain pathological conditions (cf *Emergence of Cyclical Psycho-social Identity Sustainability as "psychically" defined, 2007 *)
- how a subtle pattern is qualitatively sensed or "grokked", namely poesis as a precursor to the autopoesis it enables; possibly to be described with such aesthetic/design terms as "it works" or "it fits" (cf *El-Attractor -- Timeless Complex Dynamic, 2007*)

The emphasis here is with respect to a circle of conditions like the BaGua. This might be described within a motoring metaphor as the "V-8 engine" of vitality generation. However, as indicated by Table 1, the dance might be between a circle of 4 conditions or a polarized 2-step, or possibly 16, or even 64. Emphasis on transcending duality and polarization might seek to stop the dance in celebration of the "now". Issues in these cases include:

- whether the singular emphasis on "now" is a form of singular cognitive "overtone" emerging from a more complex pattern
- whether the qualitative richness of any understanding of "now" increases with the richness and complexity of the pattern in which it is implicitly emergent
- how a pattern may be understood as shifting from less complex to more complex, namely whether certain derives facilitate this (as with doubling or halving the frequency); a transmission gear metaphor is helpful in this respect, offering a sense of how a gear needs to be changed in response to different circumstances -- with the aid of a "clutch", ironically.

**Dancing -- between "bloodless categories"

The previous section emphasizes again the challenge of moving beyond any description of a coding schema. It points to the need to call into question the method used in any engagement with reality. In the case of the "writing" implicit in "description", points made by Michael Schiltz (*Form and Medium: a mathematical reconstruction, Image [&] Narrative, 6, 2003*) offer an appropriate caution with regard to assumptions associated with the surface on which such description takes place.

As a methodological device, these assumptions can also be challenged through questioning prefix preferences and the possibility that others may also be insightful (cf *New Paradigms via a Renewed Set of Prefixes? Dependence of international policy-making on an array of operational terms, 2003*):

- description, ascription, inscription, prescription, conscription?
- inform, deform, reform, perform, conform?
These suggest ways that a "writer" might "move on" into alternative, complementary, modes of expression.

Of interest in this respect, and in relation to a BaGua style representation, is the schema of William Huff (Homonym, Homonym and Homonym, and Other Word Pairs. Symmetry: Culture and Science, 1992) who made creative use of the 8 trigrams to distinguish 8 types of word pair (such as "peace" and "piece") according to meaning, pronunciation and spelling [more ]. Just as rhyme and rhythm provide a degree of coherence through a form of closure, so prefixes and Huff's 8-fold set provide transformational devices out of a particular box.

Systems of categories, however mnemonic, offer conceptual pigeon-holes (for "conceptual bureaucrats"). But once pigeon-holed, how is the engagement with reality to be expressed dynamically? As suggested by Table 1, reality may indeed be clustered into 2, 4, 8 or 64 categories, but how can the dance across the pigeon-holes be enabled? How meaningful are the poetic and other transformational associations between pigeon-holes? Are there transformational "rules" to get from one category to another?

Any set of categories can be imagined as presented as an array such as with hopscotch or as a mandala. Then, as in hopscotch, or a Scottish sword dance, the art is to shift appropriately around the array in response to particular challenges. As with a horoscope, or a Myers-Briggs psychological profile, the dancer starts from a particular "pose" in the pattern of potential moves -- or maybe remains frozen into one! To move, the dancer must activate and deactivate specific attitudinal controls -- compensating for destabilizing tendencies.

As in the children's game of hopscotch, an individual might skip from one cell to another -- with each cell being associated with a different perspective, insight or mode of awareness. And with each cell offering different kinds of connectivity to other cells. As discussed elsewhere (Hyperspace Clues to the Psychology of the Pattern that Connects -- in the light of the 81 Tao Te Ching insights, 2003), the challenge in that exploration is to find more powerfully integrative ways of ordering such an array -- hence the exploration of magic squares, and the possible relevance of mathematical objects of higher dimensionality, such as hypercubes. The emphasis however is on how any such order is to be comprehended.

There are three profoundly challenging features to any such array:

- however a category set is conceived -- as a method, an epistemological mode, an aesthetic style, etc -- it is subject to reframing as a metaphor offering access to an equivalent set, itself subject to metaphorical transformation. This enables a form of mnemonic "flicker" across the array -- and raises the challenge of how the whole is to be "re-membered" (to facilitate "getting it), especially if each position is questionable through the adage Neti Neti.

- an array might appear more credible if it could be defined as having only 4, 8, 64 (or some other number) of categories. This would offer a sense of coherence -- seemingly because they offer vertical and horizontal correspondences, notably of mnemonic significance. Most conceptual models through which the world is managed and ordered pretend to coherence through such a device -- especially those that have been patented as intellectual property by management consultants! The questionable nature of such assumptions is evident in the case of one of the most profound systems of order, namely the periodic table of chemical elements, now available in a variety of interactive versions [1 2]. Its "tabular" nature is undermined and enriched in many ways -- reflecting a complex process of progressive complexification which many have endeavoured to portray in a wide variety of alternative presentations (Periodic Table Formulations). And yet each of these, whether tabular or not, does indeed lend itself to the distinction of 8 groups, analogous to the BaGua set of trigrams and the 8 "houses" of the I Ching.

Why is it so readily assumed that any psychosocial periodic table should be more regular and less complex than that of the chemical elements of which people are composed -- especially since it so skillfully integrates binary (proton and electron) and ternary (phs neutron) constituents? Such a table does point to ways in which some groups are "special" and might be excluded from the basic set to make 7 or 6. It also shows how the number might be extended to 10. Fixation on a particular number (or base) is therefore problematic in ordering the array of possibilities -- as with musical tuning systems. Nylan, for example, suggests that the Tai Hsüan Ching is organized on a base of 18 -- incidentally a significant part of the periodic table pattern.

- although a category might indeed be appropriately understood in many cases as hygienically detached from the user thereof, alternatively:
  - it might call into question the relation between knower and known, as Table 1 suggests. The eight categories of the BaGua might each be challenging questions of that type.
  - the categories might be forms of "cognitive catastrophe". The relation between WH-questions and generic catastrophes has been explored elsewhere (Conformality of 7 WH-questions to 7 Elementary Catastrophes: an exploration of potential psychosocial implications, 2006)
  - through an electrical metaphor of some kind (cf Electrical Systems as a Guiding Metaphor for Stages of Group Dialogue, 2001), each element of a set of electrical components (or of electronic components) might be understood as enabling different (but complementary) modes of transformation of a signal essential to the coherence of the whole "circuit". In terms of information theory, this metaphor offers a relatively close relation to transfer of semantic content on the one hand and to the movement of "vitality" (ch'i) on the other. It is interesting that in the case of electronic components a fundamental distinction is made between "passive" components (that do not have gain or directionality) and "active" components (that have either gain or directionality) -- a potentially interesting understanding of the yin and yung polar distinctions underlying the BaGua trigrams.
  - given the subtle cognitive effects of aesthetic framing, each trigram might be understood as a way of seeing, or a mode of knowing (as stressed above). A remarkable, interactive Periodic Table of Visualization Methods, produced by Ralph Lengler and Martin J Eppler, offers a striking indication of what an analogous table would achieve for epistemology (or
**Future potential?**

Table 1 may be considered a very crude review of simpler possibilities. It may be understood as a simple subset of a richer periodic table of patterns of which the Mendeleev period table provides a fruitful metaphor. As noted above, an effort has been made by Edward Haskell (1972) to generalize the pattern and significance of that periodic table to include psychosocial systems. Clearly there is a case for hypothesizing the emergence of more complex patterns, effectively corresponding to the elements (and their isotopes) in that table. This suggests ways of grouping psychosocial and epistemological patterns -- indicating the possibility of those of far greater complexity whilst relating them to those of the simplest kind. Even more challenging possibilities for coding of psychosocial relevance include:

- efforts to map protein structures from an evolutionary perspective (Robert Sanders, *Periodic Table of proteins helps make sense of structure*, 2003), following recognition of the simplistic assumptions of the genome mapping project
- efforts to produce a periodic table of molecules. Whereas on the original table each element has a location in a specific row and column (allowing for representation in two dimensions), for two-atom molecules, four dimensions are required -- for which some interesting computer projections can be made to visualize it (*Periodic Tables of Diatomic Molecules*, 1997).

In addition to the metaphors used to illustrate the challenge of comprehension, of particular interest is the association of musical tones with the tetragrams of the *Tai Hsian Ching*. Nylan briefly comments on this association in relation to the Chinese legend of the Yellow Bell (cf Fred Fisher, *The Yellow Bell of China and the Endless Search*, *Music Educators Journal*, 59, 8, 1973). As noted by Richard Brookens (*Yellow Bell Legend From China*):

> The legend of The Yellow Bell begins in the third century B.C.E.. The Emperor of China, Huang-Ti, sent his mathematician Ling-Lun to the western mountains near India and instructed him to cut bamboo pipes from which the fundamentals of music could be derived. The bamboo tube upon which all other pitches and measurements were based was called the Yellow Bell.

Such tuned pipes were associated with the origins of music notation. Music clearly offers a quite different way of understanding, distinguishing and identifying with the patterns discussed above. Such possibilities have been extensively explored by Ernest G. McLain (*The Pythagorean Plato: prelude to the song itself*, 1978; *The Myth of Invariance: the origins of the gods, mathematics and music from the Rg Veda to Plato*, 1978). The epistemological implications of a language semantically based on tone have been extensively explored by Antonio de Nicola (*Meditations through the Rg Veda*, 1978).

The Yellow Bell legend points to a potential convergence of understanding, combining mathematics, music, aesthetics and governance -- considered fundamental to the sustainable order of Imperial China. These dimensions can all be fruitfully treated as metaphors (as they probably were) of the challenge for the times to come:

- an array of categories, to be considered as a spectrum of musical tones (or instruments) requiring tuning in order to highlight correspondences to enable them to be harmoniously played (whether wind, wood, brass, etc);
- such an array to be considered as extending beyond those indicated by the BaGua categories, in order to encompass an orchestral array of the variety indicated by a periodic table -- an "organ" fundamental to future psychosocial "organization";
- an array of "categories" that might be better understood as being thereby brought into a form of "synaesthetic resonance" -- beyond the constraints of particular senses as currently metaphorically used in the articulation and communication of politics and strategy: "vision", "sound", "taste", "smell", and "touch" (*Metaphor and the Language of Futures*, 1992);
- rather than ordering the "Empire" of yore, the challenge is to recognize how such resonance can sustain, enhance and develop the semantic feedback loops vital to the functioning of any "organized" community, whether at the global level, regionally, nationally or locally -- or, by extension, to the "art" of self-governance by the individual within an extended family (*cf* *Aesthetics of Governance in the Year 2490*, 1990).

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