



laetus in praesens

Alternative view of segmented documents via Kairos

20th February 2010 | Draft

Interweaving Thematic Threads and Learning Pathways

Noonautics, Magic carpets and Wizdomes

-- / --

Introduction

Challenge of the semantic web

Levels of thematic organization (linear)

-- Level 1: Single bullet point

-- Level 2: Set of bullet points

-- Level 3: Single thematic thread

-- Level 4: Extended thematic thread

-- Level 5: Parallel discussion threads in a menu

Levels of thematic organization (woven)

-- Level 6: Twisted-strand discussion thread

-- Level 7: Braided discussion threads

-- Level 8: Threads interwoven in a matrix weave

-- Level 9: Modern, non-linear weaves

-- Level 10: Lace and carpet weaves

-- Level 11: Three-dimensional weaves: basket weaves and fishing traps

-- Level 12: Paradoxical weaves: Mobius strip, Klein bottle, etc

Noonautics: enabling 'vehicle movement' through cognitive entanglement

Magic carpets as psychoactive system diagrams (Annex)

Cognitive globalization through wrap-around cages

Conclusion

References

An abridged version of this article appeared as *Interweaving Thematic Threads and Learning Pathways: Noonautics and Wizdomes*, *Futures*, 44, 2012, pp. 81-90 (<https://doi.org/10.1016/j.futures.2011.08.010>)

Introduction

Much is made of the ongoing explosion of communication intrinsic to sustaining a global society. Much less evident is whether this communication is in fact adequate to the challenges highlighted by Jared M. Diamond (*Collapse: how societies choose to fail or succeed*, 2005), Paul Ormerod (*Why Most Things Fail: evolution, extinction and economics*, 2005) or Thomas Homer-Dixon (*The Upside of Down: catastrophe, creativity, and the renewal of civilization*, 2006). The argument of the latter with regard to the energy needs of (imperial) society might well be extended to include the movement of information in a (global) knowledge society.

Related concerns are indicated by Nassim Nicholas Taleb (*The Black Swan: the impact of the highly improbable*, 2007) and Karen A. Cerulo (*Never Saw It Coming: cultural challenges to envisioning the worst*, 2006) with respect to the uptake of that knowledge in relation to potential crises. Other authors have expressed concerns about the capacity to take account of such issues (Charles Handy, *The Age of Unreason*, 1990; John Ralston Saul, *The Unconscious Civilization*, 1995). More problematic is the possibility that society's increasing incapacity to process information in response to governance needs signals a looming 'singularity', as might suggest the proposed adaptation of Homer-Dixon's argument (*Emerging Memetic Singularity in the Global Knowledge Society*, 2009).

The concern here is to address the challenge of how information is organized -- together with knowledge and wisdom -- especially in a web environment and beyond the declared ambitions of the *Semantic Web*. The approach takes account of the metaphors used, notably the 'bullet points' of presentations and the 'threads' of discourse on the web. Thread as a metaphor is of significance beyond the web and this informs discussion about the use of thread on the web. It is notably of significance in literature and psychotherapy in the understanding of connective 'threads of meaning' and how they may be interwoven in a semantic structure.

In a period in which humanity is much challenged by a labyrinthine 'crisis of crises', it is also appropriate to recall the legendary guiding [Thread of Ariadne](#) -- whilst asking whether it is how multiple threads are now to be employed rather than a single thread ([Uncritical Strategic Dependence on Little-known Metrics](#), 2009). The continuing importance of myth, as stressed by many authors ([Karen Armstrong](#), *A Short History of Myth*, 2005). Given the many [myths associated with weaving](#), it is appropriate to recognize the extent to which skills in weaving together threads of meaning may continue to borrow from cultural traditions and collective memory. Gandhi is noteworthy for cultivating this myth in practice.

The basic question is how disparate 'threads' themselves are organized together -- beyond the use of 'menus', however deeply they are 'nested'. Using the 'thread' metaphor, the particular concern is with how colour-coded threads might be 'woven' together -- beyond their presentation in matrix form. Using the 'weaving' metaphor, the question is whether threads may be woven into designs -- as is done with cloth, tapestry and carpets. In considering design possibilities, the concern is then with weaves that allow for nonlinear elements to the design, notably as in lace and in contemporary weaves. Networks may be understood as examples of interwoven threads. Systems diagrams might be described as planar weaves.

The above exploration opens the possibility of considering non-planar weaves -- typically essential for certain forms of clothing -- and their potential cognitive significance as protection from the 'elements'. This is notably evident in the creation of containers through basket weaving. The 'basket' metaphor has, for example, been fundamental to some intergovernmental negotiations -- as with the [Final Act of the Conference on Security and Cooperation in Europe](#) (Helsinki Accords, 1975) which revolved around four 'baskets' of issues. Basket weaves are also vital in trap construction.

The ultimate concern here is associated with the cognitive and mnemonic significance that may be attached to woven designs -- especially as is evident in the traditional designs of carpets in the Middle East. The question is how the design as a whole constitutes an enabling 'vehicle' and what kinds of 'transportation' are thereby enabled -- as with traditional allusions to a 'magic carpet'. What is the transformative 'magic' of such a carpet? This is explored in an extensive Annex on [Magic Carpets as Psychoactive System Diagrams](#).

Beyond the carpet metaphor, what other kinds of cognitive container can be constructed by appropriately weaving threads -- as do members of various species in constructing cocoons or nests (as with silk worms, spiders, and birds)? These are of particular relevance in the light of contemporary use of cocooning, nest and web as metaphors of increasing significance to individual and collective lifestyles. What might spiders or birds be said to 'know' in engaging in such behavior? To what extent do humans tend to content themselves with thread organization of lower dimensionality in their discourse -- inappropriate to the challenges of the times? This might be especially ironic given that the 'World Wide Web' could be said to be based on a weaving metaphor.

Individuals engage in an ever increasing multiplicity of thematic threads of discourse and preoccupation. In a context of information overload, the question is whether these can be more meaningfully interwoven to carry higher orders of significance. Are there implicit patterns to be detected or elicited?

The context for this exploration is partially evident from various earlier endeavours ([The Future of Comprehension: conceptual birdcages and functional basket-weaving](#), 1980; [Functional Classification in an Integrative Matrix of Human Preoccupations](#), 1982; [Spherical Configuration of Categories to Reflect Systemic Patterns of Environmental Checks and Balances](#), 1994; [From Information Highways to Songlines of the Noosphere Global: configuration of hypertext pathways as a prerequisite for meaningful collective transformation](#), 1996; [Towards a Web Framework for Synthesis in Dialogue: insight capture from the flow of conference interventions](#), 1996; [Global Self-Organization: the systemic structural challenge of the exchange of meaning](#), 1997; [Geometry of Thinking for Sustainable Global Governance](#), 2009). Other documents are mentioned below where they are specifically relevant.

Challenge of the semantic web

Threaded discussion groups, and designing an appropriate context for them, are central to preoccupations regarding the emerging [Semantic Web](#). An enabling family of meta-data specifications has been developed for the latter by the [World Wide Web Consortium](#) (W3C), namely the [Resource Description Framework](#) (RDF). This includes [SIOC](#) ([Semantically-Interlinked Online Communities](#)), designed to describe online communities and to create connections between Internet-based discussions from message boards, weblogs and mailing lists.

The concern explored here is however appropriately introduced by a [MIT Media Lab](#) description of its [Media Fabrics Experiment](#):

Human society is thoroughly immersed in a vast network of communicated information, consisting of media artifacts and procedural structures. Our technologies have become mobile, our story-making fragmentary, our impressions of meaning dynamic. How can we benefit from these changes, while navigating and engaging with these novel aspects of the modern life? Media Fabrics research focuses on a new paradigm: a semi-intelligent organism where lines of communication, **threads of meaning**, chains of causality, and streams of consciousness converge and intertwine to form a rich **tapestry** of creative story potentials, meaningful real-time dialogues, social interactions, and personal or communal art and story-making. The media **fabric** paradigm shapes how we see media construction, exchange, performance, and reflection. It is characterized by six critical attributes: it is connected, integral to our everyday lives, improvisational, mindful, synergistic, and open to self-reflection. As information manipulation becomes something more complex and more personal - as if in 'conversation with an audience' - participants dynamically transcend their roles as creators, editors, and audience, continuously weaving and navigating original paths within the media fabric. *[emphasis added]*

Gloriana Davenport, et al. ([Media Fabric: a process-oriented approach to media creation and exchange](#), *BT Technology Journal*, 2004) provide further information.

Weaving together threads of meaning -- as implicit in the challenging possibilities of the Semantic Web -- might be fruitfully informed by the possibilities relating to [hair care](#) and [hair styling](#). Hair [plaiting](#) (or [braiding](#)) may offer the most archetypal weaving patterns and is deeply imbued with meaning in many cultures. It is a primary form of social communication.

Ironically the web, especially the [blogosphere](#) and [social networking](#), is recognized as an environment in which people can 'let their hair down'. Whilst admirable, the metaphor does highlight the question of 'hair care' and 'styling' under other circumstances and for other purposes. Inspired by that metaphor and its mythical associations, might threads of meaning be 'braided', 'dyed', 'decorated', 'cut', 'styled', 'extended' or 'removed'? Would that require 'hair stylists', possibly taking the form of [intelligent agents](#) in a Semantic Web context? And what care is required for the 'roots' of a threaded discussion -- and what to do about 'frayed ends'?

Perhaps of greatest implication, given the resources devoted to hair care, is the 'styling' of interwoven threads of meaning as an expression of identity. A 'hair style' is a unit of meaning of a far higher order than that of the individual hairs that compose it. On the other hand, the extent to which 'hair' is 'let down' on the web is suggestive of increasingly 'hirsute' cybernauts. What does that imply for the threads of meaning they engender? What of cognitive 'hair loss' and the 'bald'? Are current proposals to constrain or censor the blogosphere to be understood as a form of 'depilation'? For those 'hair challenged' in any way, is 'spin' to be understood as a process of providing them with a cognitive 'hair piece' or 'wig' -- pre-imbued with meaning?

In this vein the potentials of the Semantic Web -- as explored here in terms of 'noonautics', 'magic carpets' and 'wizdomes' -- are necessarily 'hair raising'.

Levels of thematic organization (Linear)

The 'levels' which follow endeavour to distinguish the manner in which meaning is organized, is carried by threads, and may then be woven into more complex patterns:

- **Level 1: Single bullet point:** This is the simplest use of bullet points as discussed under Level 2. It is the single declarative statement which may notably take the form of a slogan (chanted or not), a bumper sticker, or a single 'Tweet' within the [Twitter](#) social networking context. It is the level at which a 'point' is made.
- **Level 2: Set of bullet points:** These are most evident in checklists and presentations as triggers for possible future action on specific topics (Dave Paradi, [How to Write Powerful Bullet Points](#), 2007). They may be interpreted together as implicitly constituting a 'thread' (at the next level). Each 'point' may imply a thread in its own right, with the point creating a 'hole' -- the entry to a tunnel as carrier of that meaning. Such (cylindrical) tunnels may also imply 'pillars' associated with specific meanings, precluding discussion, based on a set of such bullet points -- as with the pillars fundamental to many intergovernmental institutions and initiatives ([Coherent Value Frameworks: pillar-ization, polarization and polyhedral frames of reference](#), 2008). Also of interest is the emphasis that may be associated with the announcement of individual thematic points by sound (drums, etc). This may be used in rote learning. The process of 'tub thumping' is associated with this level of thematic presentation.

Anticipating the discussion which follows, there is an extensive literature on the limitations of bullet points (eg Cliff Atkinson, [Beyond Bullet Points](#), 2007; Simon Wheatley, [Great presentations - or death to bullet points](#), 2008). One aspect of the challenge they represent is indicated by the difficulty of meaningfully 'connecting the dots', namely ordering a pointilliste array of such bullet points.



- **Level 3: Single thematic thread:** The thread has achieved extensive recognition as a metaphor with reference to achieving a degree of coherence to the organization of discourse in cyberspace ([conversational threading](#)), notably through a wide variety of software applications. A thread is typically a linear sequence of messages of whatever kind. Of interest is clearly the manner in which threads are distinguished, with postings to a discourse being possibly subject to exclusion by monitors. Clearly a thread may embody a set of (bullet) points (of Level 2). It may be experienced as a tunnel of discourse and meaning.

Of interest with respect to the thread metaphor is that little is said about the 'length' of a thread, except as indicated by the number of comments or posts associated with it. Notions of the 'beginning' and 'end' of a thread tend to be associated with the first and last post into the thread.

Despite possibly vigorous, even vituperative, posts within a thread, the metaphor is typically not extended to refer to the degree of 'tension' in the thread. There is no sense of how 'tense' a thread may be -- or could usefully be to elicit higher orders of meaning. However to the extent that such tension may be implicit, the metaphor could be extended to enable comparison with the physics of a 'monochord' and the implications of 'plucking' it ([Polarities as Pluckable Tensed Strings: hypercomprehension through harmonics of value-based choice-making](#), 2006). Any post linking posts elsewhere in the thread might then be interpreted in terms of harmonics and the organization that that understanding offers.

Of related interest are various uses of the metaphor in 'threads of meaning'. For example, in a subsection under that heading, Howard Aldrich (*Organizations Evolving*, 1999) notes:

When pockets of members coalesce around alternative user-interests, variability increases. the selection pressures... can create organizations that exhibit substantial coherence, but few are truly monolithic. Multiple threads of meaning persist, nourishing alternative understandings and potentially fostering organizational flexibility. They also sustain ambiguous interpretations of organizational routines and competencies.... For new organizations, threads of meaning permeate and link the different strands of activities during their early days. The intertwined threads create an organizational culture that uniquely blends competencies, routines, member understandings, and identities... (p. 150)

- **Level 4: Extended thematic thread:** This is the exploration of a single theme where the discussion is effectively extended sequentially by new communications on the same single theme -- on the same thread. In this sense the different subjects are threaded together.
- **Level 5: Parallel discussion threads in a menu:** Many sites offer a multiplicity of themes -- threaded conversations -- within which comments may be posted in some way. Any individual is liable to follow a multiplicity of threads, typically on a range of different of sites. On any one site, these threads are typically accessible through one or more 'menus'. Such menus may be understood as holding disparate threads in parallel. On a given site the menu of threads is what provides the integrative structure relating the threads. However the presentation of threads in a menu very much resembles a checklist of bullet points -- as in Level 2 (above). The site preoccupation effectively provides the integrative theme for the individual threads -- but without any organization other than that provided by the menu.

Many approaches to thematic organization follow this pattern, including curricula and conference 'tracks'. These may use time as a way of sequencing the elements within a given thread -- although this consideration anticipates that of Level 7.

The menu structure might be used to colour-code distinctively each thematic thread -- each menu choice. The menu then offers a 'rainbow' of choices. Of more interest is the extended metaphor in which the parallel threads are recognized as parallel 'strings' -- as with the [fret board](#) of a stringed instrument. Resonance effects between strings are then possible when the strings are variously plucked. This is the challenge at to whether discourse in threaded conversations permits (hyperlinked) reference to posts in parallel threads -- which is relatively rare (and seemingly of secondary interest to those engaged by a particular thread). The possibility implies the ability to generate 'chords of meaning' -- memetic chords. With the threads understood as 'lines', this would imply the emergence of meaning 'between the lines'.

Such arguments raise the question of the nature of the discourse which links distinct threaded conversations -- and by what it is enabled. Perhaps more challenging are the associations and correspondences between elements of disparate threads, especially what makes for meaningful correspondence that is of collective significance (*Theories of Correspondences -- and potential equivalences between them in correlative thinking*, 2007). Of interest in this respect is the use of the thread metaphor by Sigmund Freud (*On Dreams*, 1901):

... the threads of association do not simply converge from the dream thoughts to the dream content; they cross and interweave with each other many times over the course of their journey.

With respect to this comment, as noted by John Haber (*Freud, Feminism, and Dora*):

Freud's work is famously hard to test scientifically, and that may be inherent in the puzzle of desire or of language. Freud's talk of pulling threads of meaning together recalls another great metaphor. Wittgenstein compared linguistic expression to multiple strands tightly entwined in a rope.

Of technical relevance is the argument of Hugh Trappes-Lomax (*Consistency and Cohesion*, 2003):

Devices of lexical cohesion... have a more subliminal effect on our perception of text unity. They do not induce us to think back in order to make complete sense of them. But the accumulation in a text of interrelated lexical items creates a patterning of meaning which overlays the grammar-created connections which are probably more salient to us. We may think of different coloured threads of meaning woven together to create an overall impression or 'texture'. (It is not surprising that the word 'text' has the same root as 'textile' -- the Latin word 'texere', meaning 'to weave'.)

Characteristic menu structure (as with the menu bar on this site)				
Theme A	Theme B	Theme C	Theme D	Theme E

Levels of thematic organization (Woven)

- **Level 6: Twisted-strand discussion thread:** In its physical form this is the simplest means of constructing a rope in order to benefit from the strength of the composite result. Clearly the merit of organizing several threaded discussions in this way could be envisaged from this perspective, and may already effectively function as such. This approach might in future be usefully distinguished from braided discussion threads as described under Level 7.
- **Level 7: Braided discussion threads:** A **braid** is a complex structure or pattern formed by intertwining three or more strands of flexible material -- and widely used to organize hair ([Braid Society](#); [Loop-Manipulation Braiding Research and Information Center](#); [Braiding Instructions](#); [A Few Medieval Braids](#)). *Wikipedia* notes that it is often used figuratively to represent interweaving or combination, such as in "*He braided many different ideas into a new whole*". This highlights its relevance as a mode of organizing threaded discourse. Rather than be treated as completely independent, as at Level 5 (and possibly Level 6), it is possible that several such threads could be intertwined (longitudinally) in the sense that there is some pattern of regular alternation between communications on each. This might imply, for example, that any one thread was periodically dominant and then secondary in the braid as a whole. Distinguishing this degree of organization from the similar version at Level 6 could be important.

One form of braiding is illustrated by the mode of dialogue promoted by [Edward de Bono](#) (*Six Thinking Hats*, 1985; *Six Action Shoes*, 1991; *Six Value Medals*, 2005). The 'hats', 'shoes' and 'medals' indicate themes (or modes) taken up alternately and understood to be complementary -- effectively to the braid as a whole. A more general case for this has been subsequently argued ([Edward de Bono](#), *Six Frames For Thinking About Information*, 2008).

Optimistically the threads so braided might be understood as contrapuntal 'voices' in a challenging 'us and them' discourse ([All Blacks of Davos vs All Greens of Porto Alegre: reframing global strategic discord through polyphony?](#) 2007).

In its physical use braiding creates a composite rope that is thicker and stronger than the non-interlaced strands. Braided ropes are preferred under many circumstances because they do not twist under load, as does an ordinary twisted-strand rope (see Level 6). Co-axial cable, as a basic physical conduit for electronic communications, is braided for reasons of strength. This suggests a strong reason for exploring possibilities of braided discussion threads -- of 'braided discourse' -- in order to benefit from their strength and coherence. In a sense this to a degree implicit in the 'braiding' together of educational themes in a curricula. It is their combination which ensures a strong education.

Of particular interest for improving the quality of threaded discussions is the existence of an extensive mathematical literature on [braid theory](#), itself related to [knot theory](#) (anticipating the possibilities of weaving threaded discussions, as discussed below). Of complementary interest are the various references to braided discourse:

Jane Montgomery Griffiths (*The Experiential Turn: Shifting Methodologies in the Study of Greek Drama, New Voices in Classical Reception Studies*, 2007) refers to:

creating a braided academic narrative, that is open to the importance of the experience, as much as to the product, of interpretation, pointing out that an awareness of the possibilities of a braided voice in academic narrative facilitates the difficult process of articulating 'intangibles'

the voices of 'personal' and 'professional' that are braided together: a weave that, by implication, practically and effectively enacts the dialectic between Identity and Difference

Griffiths notes a reference by [Roland Barthes](#) (1974) to:

The grouping of codes, as they enter into the work, into the movement of the reading, constitute a braid (*text, fabric, braid*: the same thing); each thread, each code, is a voice; these braided -- or braiding -- voices form the writing.

The metaphor has been appropriately used in the *BRidging the disciplines with Authentic Inquiry and Discourse* (BRAID) project at Michigan State University which sought to interweave course content across disciplines as a way of engaging students in a process of study that is closer to what scientists actually encounter. It has been used in a patented [three-dimensional teaching aid for use in developing story telling skills](#), composed of a braided strand having a plurality of indicia secured thereto that represent the elements of a story.

The metaphor is fundamental to 'braided learning' (*The MirandaNet Braided Learning E-Journal*). Its political implications have been explored by David Woods (*A Braided Rope: Interweaving Three Theoretical Strands for a Vision of Democracy in Everyday Life*, 2003). The metaphor has been used to describe a new style of [braided journalism](#). It is extensively used, as 'braided dialogue', in describing interpersonal relationships and especially marriage. However, as reported by Denise Y. Arnold and Juan de Dios Yapita (*The Metamorphosis of Heads: textual struggles, education, and land in the Andes*, 2006), this form of dialogue has been recognized in Andean narrative:

Other modern studies indicate the 'intertwined' nature of Aymara sentences that in critical junctures can transform into 'hidden sentences' within the weave of the text, seeds of ideas that come to fruition later on. A woven underlay patterns discourse forms and processes in its image. This might be why the basis of Andean discourse is most often a braided

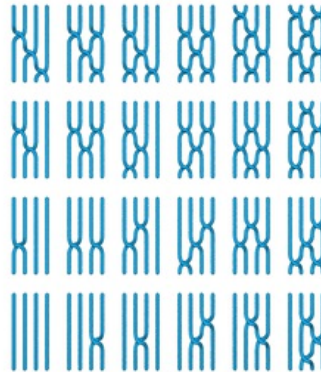
dialogue between at least two people. Just as in musical performance, one person guides and the other follows, filling in any void in oral memory. (p. 25)

Gidley also refers to the ancient Andean writing system, called the *kipu* (or *quipu*), which is made up of "a complex system of different coloured cords and knots" and is beginning to be recognized as an integrated counting and writing system.

The potential value of the metaphor is perhaps best illustrated by its use by the Pulitzer Prize winner [Douglas Hofstadter](#) (*Gödel, Escher, Bach: an Eternal Golden Braid*, 1979).

•

Possible braidings of 4 discussion threads
 Illustration from *Wikipedia* ([braid theory](#)) of the 24 elements of a [permutation group](#) on 4 elements as braids. Note that all crossings shown are of the left-over-right sort and other choices are possible. Indeed, the braid group on two or more strands is infinite.



- **Level 8: Threads interwoven in a matrix weave:** The widespread use of tabular and matrix presentations of information highlights the possibility that a post in one threaded discussion might also be made in a second -- quite distinctly oriented to the first. As mentioned above, the second may simply be along a 'thread' of time -- as with a tabular presentation of conference tracks. The original management innovation of '[matrix organization](#)' implies the possibility of threaded discussion interwoven in relation to contrasting dimensions. Of particular interest is the case when a single set of threads is understood to have an orthogonal relationship to itself -- such that posts into one thread may necessarily be of potential relevance to other threads. Although not a threaded discussion, this is the structure of an [input/output chart](#).

Matrix organization as an indication of interwoven threaded discussions										
	Climate	Refugees	Water	Relief	Jobs	Health	Resources	Culture	Roads	Education
Phase 1	X		X	X	.	.	.	.	.	.
Phase 2	X	X	X	.	X	.	.	.	.	X
Phase 3	.	.	X	.	.	X	.	.	X	X
Phase 4	.	X	.	X	X	.	.	X	X	.
Phase 5	X	.	.	X	.	X	X	.	.	X

There are seemingly few examples of such interweaving, although the use of '[tagging](#)' implies that that is what is occurring -- or might. However tagging suggests that the posted item will be encountered along at least two threads but without any effort to understand any higher order of meaning emerging from how those threads are interwoven (if they are) -- notably in the light of the threads with which they are respectively parallel. Tagging may amount to little more than associating a post with a topic (effectively as in Level 1).

Clearly, assuming the threads are colour-coded, any interweaving results in a degree of patterning. The pattern or 'weave' then carries a higher order of meaning than is evident within any one thread. An obvious visual example is the [tartan](#) -- of significance as a signifier of identity and with which collective identity may be strongly associated. This raises the question of the kinds of meanings that would emerge from interweaving threaded discussions in this way -- especially if the colour-coded threads reflected particular strategic or political preferences.



**Contrasting tartans
as an indication of interweaving of colour-coded threaded
discussions**



The weaving metaphor highlights the possibility of making metaphoric use of the rich insights into weaving techniques and patterns -- extended to those of knitting with the question as to the nature of the 'knot' at any point of intersection (see [Annex discussion of *Knitting threads of identity*](#)). The metaphor may also be explored in relation to the extensive traditional knowledge of the weaving of [reed matting](#) and the like. Of potential interest are insights from [weaving looms](#) that could be carried over into the challenge of interweaving threaded discussions. Distinguishing the two directions, the argument has been developed elsewhere (*Warp and Weft: Governance through Alternation - world governance as a Gandhian challenge for the individual*, 2002).

Of interest is the recognition that 'weaving the threads of meaning' has been identified as one of the four characteristics of children's spirituality by Brendan Hyde (*Children and Spirituality: searching for meaning and connectedness*, 2008). Anne Huffington (*Fourth Instinct: the call of the soul*, 2003) explores the many 'threads' that can help people find their way back to the still, spiritual center of their lives. She argues that religion, art, science, relationships, and even pain and loss can become 'threads of meaning' from which to weave a new life.

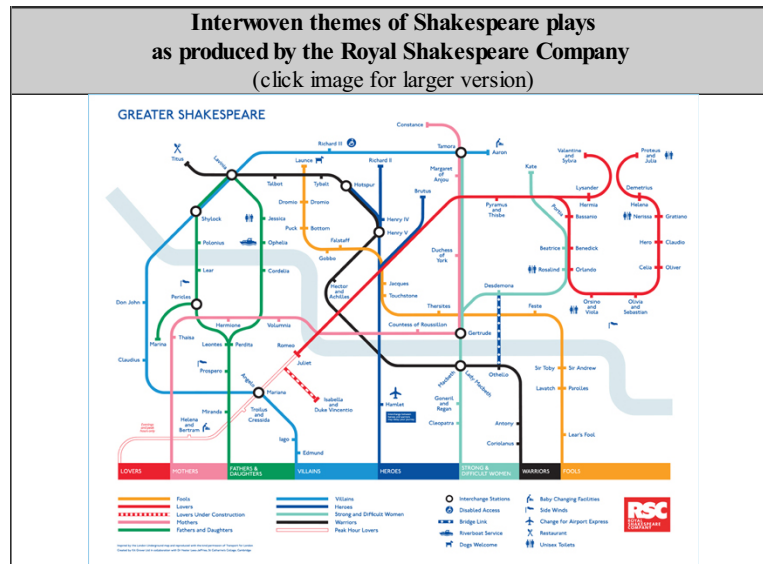
- **Level 9: Modern, non-linear weaves:** The previous level presupposes a disciplined regularity to interrelating distinct threaded discussions. More probable is the implicit non-linear relationship between threads implied by tagging. Such non-linear relationships -- diagonal or otherwise -- are a feature of many modern tapestry weaves (*Abstract and Modern Tapestries and Wall Hangings*). They are also a characteristic of a [data flow diagram](#), [system context diagram](#), [network diagram](#), [semantic network](#), [mind map](#), [concept map](#), [decision map](#), or [argument map](#), for which many software applications exist as previously described (*Complementary Knowledge Analysis / Mapping Process*, 2006).

In the presentation of information a striking example is provided by subway maps, exemplified by that of the London Underground, recognized as having inspired 'countless spin-offs' (Frank Jacobs, *Strange Maps: an atlas of cartographic curiosities*, 2009). As a metaphor this suggests how various threaded discussions might be interrelated as are the 'subway lines' represented together on the map, notably with the stations at their points of intersection (veritable topological 'knots' for those who transit between lines).

**London Underground Map
indicative of 'threaded journeys'**



The visual metaphor of the London Underground map, which has attracted extensive comment in its own right, has been used to display other patterns of information. Most notable is its use by Kit Grover (*Putting Shakespeare on the Map*, 2007) on behalf of the [Royal Shakespeare Company](#) to display relationships between dramatic themes in the set of plays it performs (see below). A complex *Musical Theatre History Tube Map* has been produced by John Howrey. Clearly such 'weaves' offers knowledge of a higher order than that associated with any individual thread.



As a map, rather than a weave, such a presentation introduces and stresses a form of learning associated with progress through a threaded discussion -- as a form of journey. The succession of posts are then markers on that journey. The non-linear interweavings of the threaded discussions in the map may reinforce a sense of **circular time** (and its associated logic) as complementary to linear time (Woorama, *Linear vs Circular Logic: conflict between indigenous and non-indigenous logic systems*, 11 June 2006). The threaded discussions become trailways offering choices enabling the traveller to switch to other trails at certain points -- within a larger pattern that may become active as a mnemonic whole.

Threaded discussions are typically closed spaces with restricted participation -- seeking little reference to other discussion spaces or any links from them. At best the interrelationship between such threads may be represented in network mapping exercises or possibly as topological structures (****). Efforts to map the blogosphere may be seen in this light and, because of the density of such a map, may be appreciated primarily for the global patterning and colouring -- an aesthetic 'wow' effect. One impressive example is the [high-resolution graphic](#) produced by Los Alamos National Laboratory scientists (*'Map Of Science' Shows Scientists' Virtual Trails Through Online Services*, *ScienceDaily*, 11 March 2009). Many attempts to map the blogosphere are available (for example, *Data Mining: Mapping The Blogosphere*). **The interweaving of threaded discussions is not however seen as in anyway forming a system diagram.**

Typically, as with the London Underground Map, the challenge may lie in the graphic design of such maps, of which those (readily available on the web) for metabolic pathways are of special interest. A recent example of strategic interest is that made on counter-insurgency operations (COIN) for the US Joint Chiefs of Staff regarding the actors and relationships in the battle for 'hearts and minds' in the Afghanistan arena (see [image](#) in [Annex](#)).

Maps, notably argument maps, relating to climate change and the traumatic UN Climate Change Conference (Copenhagen, 2009) have not aspired to be comprehensive. Is there not a case for exploring the design of meaningful weaves in that respect? As with the London Underground Map, this may itself be used as a template for other representations, such as for climate change (see [image](#)).

Given the mythical dimension of this exploration, it is somewhat ironic that the map of this kind, most readily available as a template, is of the 'underground'. This reinforces associations to [labyrinth](#) and their associated myths -- especially given the argument of [John Ralston Saul](#) (*The Unconscious Civilization*, 1995).





- **Level 10: Lace and carpet weaves:** Although there are few examples of use of this level in interrelating threaded discussions, it represents a possibility that might fruitfully be explored given the importance and sophistication of such weaves in many cultures -- and the implication of the insight of women as practitioners of these skills, in contrast with a degree of male emphasis on the linear threads of the levels above (C Grafton, *Pictorial Archive of Lace Designs: 325 Historic Examples*, 1989; P. R. J. Ford, *The Oriental Carpet: a history and guide to traditional motifs, patterns and symbols*, 2008; Michael O'Sullivan. *Woven With Threads Of Meaning*, *Washington Post*, 3 September 2004). For example, all Persian rugs feature one of three basic designs: geometrical, curvilinear or floral and pictorial -- in which as many as 19 basic designs have been recognized, each with its own variations.

The challenge it raises lies in the relation between a system diagram and any map of a threaded discussion. The question is whether this relationship, as highlighted at Level 5, can be enhanced to form images and patterns that carry their own significance. The Level 8 example of uses of the London Underground as a template are merely suggestive of the possibility since that map only forms a recognizable image because of familiarity with the pattern rather than constituting a pattern in its own right.

Lace and carpet weaves explore a large array of geometric patterns possibly related to, or framing, figurative images. Both forms of symbols may traditionally used as carriers of significance. Patterning may indeed be evident in system diagrams and may well be necessary to their comprehension, especially in order to highlight any cycles (feedback loops) and their interrelationship. However such diagrams are seldom, if ever, designed such as to form or frame images of significance -- even though a case might be made for doing so in relation to the emerging disciplines of **cognitive informatics** and of knowledge cybernetics, notably as articulated by Maurice Yolles (*Knowledge Cybernetics: a new metaphor for social collectives, Organisational Transformation and Social Change*, 2006; *Exploring Cultures Through Knowledge Cybernetics, Journal of Cross-Cultural Competence and Management*, 2007).

Such mapping exercises are, in design and communication terms, far from what is undertaken through the symbolism of traditional carpet design. In the case of large Persian carpets, for example, these may often present a small-scale plan of a part of the universe, with Heaven above and the Earth below. They may feature an eight-petaled flower, representing the Four Directions (and, by extension, the world as a whole). Other symbols in such carpets may include: Tree of Life (eternal life); Cypress Tree (mourning and immortality through death); Botah Tree (fertility); Parrot (love); Camel (wealth); Carnation (happiness); Pomegranate (abundance); Dove (peace); Lions and birds of prey (courage, victory and glory); Heron (long life); Comb (cleanliness); Sword (supreme power); Star (spirituality and good luck); Jug (purification); Paisley (flame, universe); and Zigzag pattern (water and light).

Might it be possible to represent threaded discussions such as to give mnemonic significance to their respective values and preoccupations? More provocative is the possibility that any representation be printed as are **autostereograms**, which allow people (possibly) to see 3D images by focusing on 2D patterns.

Decorative, symbolic and Gordian knots indicative of patterns of interwoven threads of discussion			
Endless knot	Celtic knot	Lindisfarne knot	Decorative knot
			

- **Level 11: Three-dimensional weaves: basket weaves and fishing traps:** The emphasis at the previous levels is on 'looking at' representations, whether systems diagrams, maps or woven carpets. Techniques of weaving do of course extend into three dimensions, if only in the knitting of portions of garments (sleeves, socks). Of potentially greater interest is the range of traditional skills devoted to basket weaving or the weaving of fish traps -- in both cases as containers. It might be said that it is with three dimensions that such weaves acquire a higher degree of functionality -- especially as carriers of significance. Of course a 2-dimensional woven cloth can be used as a 3-dimensional wrap against the elements, but it is less evident that a systems diagram can perform an analogous function!

The question is whether disparate threaded discussions could be woven into 3-dimensional configurations and what might then be the valuable emergent properties of such configurations (*The Future of Comprehension: conceptual birdcages and functional basket-weaving*, 1980). This possibility was initially explored in terms of 'wrapping' a matrix of categories (namely a Level 4 weave), whether to form a cylinder or -- by joining the ends of the resulting cylinder -- to form a torus (*Comprehension of Requisite Variety for Sustainable Psychosocial Dynamics: transforming a matrix classification onto intertwined tori*, 2006).

Another approach, inspired by the work of R. Buckminster Fuller (*Synergetics: explorations in the geometry of thinking*, 1975), was to treat threads as great circle pathways around a sphere (*Spherical Configuration of Interlocking Roundtables: internet enhancement of global self-organization through patterns of dialogue*, 1998). More generally this exploration was set in a context of progressively complexified geometry (*Engaging with Globality -- through cognitive lines, circlets, crowns or holes*, 2009). The Level 7 possibilities are then metaphorically associated with crowns and their geometry. Threaded discussions are then interwoven to form a crown, with its associations to the challenge of global governance (*Engaging with Globality through Cognitive Crowns: all-encompassing, well-rounded experience*, 2009). Of relevance are the designs of complex spherical knots for decorative and symbolic purposes.

Braided top knots?		
Traditional 'top knot'	Symbolic 'top knot'	Raytraced image of the 3D Mandelbulb



Given the uses of baskets and fish traps, of interest are the kinds of significance that might be 'contained' or 'entrapped' by interweaving, or braiding, threaded discussions in this way. Clearly 2-dimensional weaves have limited capacity in this respect. Also worth consideration is the enchanting possibility that, for discourse on sustainability to itself be sustainable and globally relevant, there may be a need for it to reflect the strengths and sophistication of the most sustainable pattern of life, namely the interwoven structure of DNA itself (*DNA Supercoiling as a Pattern for Understanding Psycho-social Twistedness*, 2004; *Climbing Elven Stairways: DNA as a macroscopic metaphor of polarized psychodynamics*, 2007).

- **Level 12: Paradoxical weaves: Mobius strip, Klein bottle, etc:** There is little traditional use for such weaves, although there are many examples of modern scarves taking the form of 'Mobius scarves'. Whereas the Level 8 weaving serves to 'enwrap' (physically or cognitively), a weave at this level constitutes a cognitive challenge. The question is what might be achieved through interweaving threaded discussions so as to serve functions beyond those of (memetic) container or trap. Topologically the Klein bottle -- lacking a distinct outside or inside -- is especially challenging in this respect. Its value in Lacanian psychoanalysis has long been explored. Might it be of analogous significance to collectivities represented by interwoven threaded discussions?

How complex is the interweaving of 'threads of meaning' required to nurture a 'chrysalis'? This is the introductory focus of E. Mary Sullivan and Harriett Goldenberg (*Cradling the Chrysalis: teaching/learning psychotherapy*, 2003) citing Rosalind Pearmain (*The Heart of Listening: attentional qualities in psychotherapy*, 2001) to the effect that:

Fundamentally the art of psychotherapy is in weaving and gathering threads of meaning from words into experiencing, from experiencing into words. The threads have to be fine and capable of unravelling or holding powerful feelings. The threads have to emerge out of inchoate ground of repetitions, stuckness, feelings and 'unthought knowns'. The threads are woven between both therapist and client. They spread from and to the world outside the room... Such threads form worlds of meaning.

It is easy to forget the ease with which current computer applications can be adapted to configure and visualize complex forms. It might even be the case, as with the psychoanalysis of individuals, that resolving the relationship between threaded discussions into paradoxical forms like the Klein bottle would prove indicative of both pathological conditions in that collectivity as well as unforeseen forms of remedial integration in response to conflict.

Aspects of these possibilities have been explored elsewhere (*Intercourse with Globality through Enacting a Klein bottle*, 2009). Of potential interest at this level is the intertwining of tori as previously mentioned (*Comprehension of Requisite Variety for Sustainable Psychosocial Dynamics: transforming a matrix classification onto intertwined tori*, 2006). The capacity to interweave threaded discussions to ensure self-reflexivity is of particular interest (*Consciously Self-reflexive Global Initiatives: Renaissance zones, complex adaptive systems, and third order organizations*, 2007).

The set of 'bullet points' above, as a Level 2 presentation, have each been partially extended into a 'thread' (Levels 3 and 4). These threads could be presented in tabular form (Level 5) or interwoven as a matrix (Level 7). Presumably the interweaving themes could be mapped (Level 8). An effort might be made to represent higher degrees of order (Levels 9-11).

It might be fruitful to reframe such a succession of 'levels' of threaded discourse(s) of increasing complexity -- reminiscent of a *Jacob's Ladder* -- with a pattern recognizing their complementarity as modes of dialogue, as presented previously (*Typology of 12 complementary dialogue modes essential to sustainable dialogue*, 1998). This points to the possibility of elaborating a **topological theory of threaded discourse from which the above levels would emerge as instances -- with many others possibly to be distinguished**. For example, the *All Fiber Arts* website provides *Information and links about the relationship between mathematical theory, patterns, design, computers, textiles and weaving*, notably linking to a number of applets.

Clearly the question is how to enable any mode, given the constraints of group processes and the problematic consequences of efforts to 'run' dialogue of any kind. In the case of braided discourse, for example, one approach (perhaps within the *Media Fabrics Experiment*) would be to use algorithms and intelligent agents to 'braid' (or 'weave') distinct threaded discourses together -- perhaps subsequently.

Of related interest is how (collective) identity might then be variously associated with the levels or modes. Recent work of Christopher Alexander also offers indications (*Harmony-Seeking Computations: a science of non-classical dynamics based on the progressive evolution of the larger whole*. *IJUC for Publication*). Such a context might prove vital for determining the appropriate 'level' at which more sustainable forms of agreement could be reached -- possibly isomorphic with the systemic organization of the content and the

communication pathways required for sustainable institutionalization (as in the case of climate change).

Noonautics: enabling 'vehicle movement' through cognitive entanglement

Most of the levels identified above are primarily concerned with description and depiction. It is only in the later levels that the possibility of a higher degree of functionality becomes evident. Since the focus of much discussion, notably in the form of threaded discussion, is on change and how to enable it, the question is what enables psychosocial 'movement'. A 'movement of opinion' might indeed be well contained in a single threaded discussion, but **the challenge is the nature of the 'traction' that a threaded discussion enables**. The argument here is that such traction minimally requires the interweaving of several distinct threaded discussions -- respecting the cybernetics of [requisite variety](#). Arguably, following [R. Buckminster Fuller](#) (*Synergetics: explorations in the geometry of thinking*, 1975), a minimum of three such threads -- interlocking as great circle pathways -- is required to constitute a sustainable system in a third dimension (*Spherical Configuration of Interlocking Roundtables: internet enhancement of global self-organization through patterns of dialogue*, 1998; *Geometry of Thinking for Sustainable Global Governance: cognitive Implication of synergetics*, 2009).

Much may indeed be achieved by 'embodiment' as argued by various authors (George Lakoff and Mark Johnson, *Philosophy in the Flesh : the embodied mind and its challenge to western thought*, 1999; Francisco Varela, F. E. Thompson, and E. Rosch, *The Embodied Mind: cognitive science and human experience*, 1991). The question is how a configuration of threaded discussions can be embodied into a 'vehicle', and how the emergent significance of such embodiment is to be understood and communicated. It might be argued that many of the 'models' for psychosocial change, as promoted by a variety of authors, are in effect proto-vehicles -- perhaps the cognitive equivalent to horse-and-cart technology and *Those Magnificent Men in their Flying Machines* (1965) -- much as they are to be admired.

More however is required for such an embodied 'cognitive vehicle' to be empowered and to engender movement. This additional factor may well be associated with the paradoxes and cognitive entanglement to which reference is made at Level 8 (above). The nature of such cognitive entanglement is discussed more extensively elsewhere with respect to the relation between lifestyle diseases of the individual and planetary ills (*Cognitive Implications of Lifestyle Diseases of Rich and Poor: transforming personal entanglement with the natural environment*, 2010). This highlights the participatory nature of cognition in the environment, as noted by a range of authors including (Henryk Skolimowski, *The Participatory Mind: a new theory of knowledge and of the universe*. 1995; Gregory Bateson, *Mind and Nature; a necessary unity*, 1979). Access to this entangled participation, it is argued, is primarily available through metaphor (*Metaphors as Transdisciplinary Vehicles of the Future*, 1991).

As previously argued (*Noonautics: Four modes of travelling and navigating the knowledge 'universe'?* 2006):

Understanding metaphors as cognitive devices offering a means of travel across the vastness of the knowledge universe stresses the different nature of the logic experienced in the moment of creating or being exposed to a metaphor. The distortion of knowledge space by such a devices has similarities to the bending of the space of astrophysicists as seen to be necessary for any form of hyperdimensional travel. Metaphor combines the technology of cognitive 'vehicle' and a 'wormhole' in a manner that justifies the term 'songline'.

The different logic of a metaphor enables 'easy travel for all' in a manner somewhat reminiscent of the London Transport advertising invitation to 'Hop on a Bus'. Curiously the travel association is echoed in the more traditional theory of 'correspondences'. This term is of considerable significance to travel between the well-mapped pathways of the Paris Metro system. It may be related to the middle eastern travel metaphor of 'magic carpets' -- in which the map of the knowledge universe is effectively woven into the carpet design. Within this metaphor the challenge of empowering the carpet is dependent on (the user) weaving the pattern appropriately to constitute a vehicle.

Magic carpets as psychoactive system diagrams

Discussed separately in an [Annex](#)

The Annex contrasts conventional system diagrams with what might be associated with 'magic carpets' and the challenging of weaving 'magic' into a carpet in order to move 'hearts and minds' -- in ways strategic plans seem unable to do. The sections of the Annex are:

- [Magic carpets as vehicles for noosphere travel](#)
- [Cultivating 'hearts and minds'](#)
- [Strategic system diagrams as carpets of primitive design](#)
- [Patterns of symmetry](#)
- [Design challenge of imbuing quality and meaning](#)
- [Psychosocial engagement in design](#)
- [Beauty-Complexity-Integrity in design](#)
- [Military uptake for 'knowledge sharing' and 'insight management'](#)
- [Memorability over time: transcending the adaptive cycle](#)
- [Knotting threads of identity](#)
- [Correspondence, connectivity and resonance](#)
- [Mystical significance of carpets](#)
- ['Prayer mat' as 'System diagram'?](#)
- [Levitating 'recursively' into higher dimensionality?](#)
- [Quest for mnemonic catalysts](#)
- [References](#)

Reference is notably made to the work on pattern language of [Christopher Alexander](#) as subsequently expressed with respect to carpets (*A Foreshadowing of 21st Century Art: the color and geometry of very early Turkish carpets*, 1993) and through the explicit incorporation of aesthetics into appreciation of order (*The Nature of Order*, 2003-4). The commitment to aesthetics is contrasted with the use of system diagrams by the military -- despite their remarkable exploitation of Alexander's methodology.

Cognitive globalization through wrap-around cages

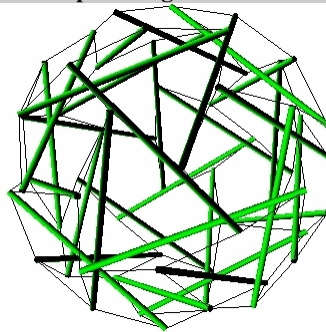
The [Annex](#) on magic carpets explores cognitive access to high dimensionality through a 2-dimensional frame of reference -- and the traces thereafter imprinted in the 'carpet' as a guide to future travel. The symmetry of such higher dimensionality is best understood as 'global' in various respects. Curiously some myths relating to any such travel concern return with a golden cage, presumably reflecting that symmetry to some degree. This provided an early inspiration for consideration of the possible cognitive implications of 'cages' and their construction (*The Future of Comprehension: conceptual birdcages and functional basket-weaving*, 1980).

The concern here is with how any such globality can be woven into tangible and virtual structures -- presumably aided by future evolution of the Semantic Web. An early example, emphasizing [mnemotechnics](#), is that of the [memory theatre](#) (or memory palace). Religious temples, notably mosques, may be constructed to serve a related purpose, as with a [planetarium](#). The latter now offer many facilities variously to 'connect the dots' such as to form identifiable constellations. at different times in the history of the solar system. An impressive new variant is the [AlloSphere](#) -- a research facility in a theatre-like pavilion in a spherical shape, of opaque material, used to project computer-generated imagery and sounds.

Following R. Buckminster Fuller, there is the possibility of constructing spherical domes, associating cognitive significance associated with its elements. Such spherical construction can also be achieved virtually with far greater flexibility, enabling a new 'polyhedral' approach to the organization of values, strategies and institutions (*Towards Polyhedral Global Governance: complexifying oversimplistic strategic metaphors*, 2008; *Polyhedral Pattern Language: software facilitation of emergence, representation and transformation of psycho-social organization*, 2008; *In Quest of a Strategic Pattern Language: a new architecture of values*, 2008). Of special relevance is the robustness of networks achieved by ensuring higher degrees of symmetry -- worthy of consideration with regard to the interweaving of threaded discourses (*Polyhedral Empowerment of Networks through Symmetry: psycho-social implications for organization and global governance*, 2008).

An effort was made to apply this approach to the configuration of the strategic issues of the [1992 Earth Summit](#) (*Configuring Strategic Dilemmas in Intersectoral Dialogue*, 1992) using tensegrity structures of the kind indicated below -- effectively a weave in three dimensions..

**Indication of threaded discussions interwoven as a
tensegrity
in a spherical configuration with tension ensured by
polarizing elements**



The configuration of such cognitive 'golden cages' of threaded discourse raises the question of how access to wisdom is to be facilitated and enhanced in a Semantic Web environment. Some possibilities were explored in *Transforming Static Websites into Mobile 'Wizdomes': enabling change through intertwining dynamic and configurative metaphors* (2007), organized into the following sections:

- [From "site" to "vehicle"](#)
- [Paradigm shift: knowledge vs wisdom?](#)
- [Paradox: closed system wisdom vs open system wisdom](#)
- ["Wizdomes" -- beyond the drop-down menu](#)
- ["Whizzing around" -- engaging with the songlines of the noosphere](#)
- [Contrasting the metaphors of "website" and "wizdome"](#)
- [Contrasting alternative metaphors: "cobweb" vs "hive"](#)
- [Comparing the metaphors of "hive" and "wizdome"](#)
- [Wizdome construction](#)
- [Threads, rings and polyhedra](#)
- ["Wising up" and "Unquenching"](#)
- [Process: "whiz power" essential to "wiz power" or vice versa?](#)
- [Alternative metaphors: varieties of relevant "dome"?](#)
- [Comparing "honey" and "wisdom": a traditional metaphor](#)
- [Embodiment of wisdom](#)

- [Implication of the dynamics of Web 2.0 and the Semantic Web](#)
- ["Unwisdom": proxies and surrogates as wisdom precursors](#)
- [Case study: transforming this website](#)
- [Future possibilities?](#)

Conclusion

What does this argument imply for "education about futures" ("futures education") and the "future of education"? Applying the structure of the argument to themes which might be variously developed about these matters, it suggests ways of exploring emergence of comprehension of that question within society, but specifically for any individual. This is especially relevant to the extent that it is recognized that society will be much constrained in the future to "deliver" education corresponding to the exploding universe of knowledge -- particularly given the constraints on attention span, memorability and the integration of a diversity of insight. This is of importance if the need is increasingly for cognitive toolkits for survival and thrival -- whether for the young, the elderly, or the planet.

The adequacy to these challenges of the simplest level of "bullet points" is readily brought into question, especially if the points reflect alternative perspectives calling for integration. It has become extraordinary the extent to which access to knowledge is now effectively ordered by playlists and nested menus.

What then is "integration" and how does it inform education, given its Latin origin in "*e-ducere*" means to "*pull out*" or "*to lead forth*"? The structure of levels offers progressively richer ways of comprehending both "what" is pulled out, "who" is doing the pulling and "by whom" this process is lead. As a process in time this implies an emerging comprehension of the meaning of "future" for the individual and the manner in which the future is engendered -- "laying down a path in walking". It is in this sense that it is the configuration of such learning pathways that maps the future thereby engendered. It is the poly-sensorial nature of the latter process which challenges the currently widespread tendency to "envision" the future solely in a uni-sensorial mode -- a challenge reflected in multimedia engagement currently "leading" education and framing the future.

*Commentary on information overload and the internet from a historical perspective,
with reference to knitting and darning*

A clear thread has to be teased from the mass of available evidence, to focus, direct and ultimately give meaning to what has been assembled for analysis. Daring to discard is as crucial as safe-guarding, for effective knowledge management and transmission today. (Lisa Jardine, *BBC News*, 6 January 2012)

References

Howard Aldrich. *Organizations Evolving*. Sage, 1999 [[extracts](#)]

Christopher Alexander:

- Notes on the Synthesis of Form. 1964 [[summary](#)]
- A Pattern Language. Oxford University Press, 1977 [[summary](#)]
- The Timeless Way of Building. Oxford University Press, 1979 [[summary](#)]
- A Foreshadowing of 21st Century Art: the color and geometry of very early Turkish carpets. Oxford University Press, 1993 [[review](#)]
- The Nature of Order: an essay on the art of building and the nature of the universe. Center for Environmental Structure, 2003-4. [[summary](#)]
- New Concepts in Complexity Theory: an overview of the four books of the Nature of Order with emphasis on the scientific problems which are raised. 2003 [[text](#)]
- Harmony-Seeking Computations: a science of non-classical dynamics based on the progressive evolution of the larger whole. *International Journal for Unconventional Computing (IJUC)*, 5, 2009 [[text](#)]

Bridget Arend. Encouraging Critical Thinking in Online Threaded Discussions. *The Journal of Educators Online*, Volume 6, Number 1, January 2009 [[text](#)]

Denise Y. Arnold and Juan de Dios Yapita. *The Metamorphosis of Heads: textual struggles, education, and land in the Andes*. University of Pittsburgh Press, 2006

Gregory Bateson. *Mind and Nature; a necessary unity*. New York, Dutton, 1979

Glorianna Davenport, B. Barry, A. Kelliher and P. Nemirovsky. Media Fabric: a process-oriented approach to media creation and exchange. *BT Technology Journal*, 22, 4, October 2004 [[text](#)]

Edward de Bono:

- Six Thinking Hats, 1985 [[summary](#)]
- Six Action Shoes, 1991
- Six Value Medals. 2005
- Six Frames For Thinking About Information. 2008

Paul F Downton. Weavers of Theory. In: *Ecopolis: Architecture and Cities for a Changing Climate*. Springer, 2009

Francine Federman, Paula San Millan Maurino, Lorraine Greenwald. Online Threaded Discussions: Purposes, Goals, and Objectives. *Journal of Educational Technology Systems*, 2007, 36(2) 129-143 [[abstract](#)]

Donghui Feng, Jihie Kim, Erin Shaw, Eduard Hovy. Towards Modeling Threaded Discussions using Induced Ontology Knowledge. 2006 [[text](#)]

Jennifer Gidley. A Macrohistorical Planetary Tapestry: the fascinating integral narratives of Steiner, Gebser and Wilber. Part 2 of The evolution of consciousness as a planetary imperative: an integration of integral views. *Integral Review: A Transdisciplinary and Transcultural Journal for New Thought, Research and Praxis*, 2007, 5, pp. 4-226 [[text](#)]

Jane Montgomery Griffiths. The Experiential Turn: Shifting Methodologies in the Study of Greek Drama. *New Voices in Classical Reception Studies*, 2, 2007 [[text](#)]

Anne Huffington. *Fourth Instinct: the call of the soul*. Simon and Schuster, 2003

Brendan Hyde. *Children and Spirituality: searching for meaning and connectedness*. Jessica Kingsley Publishers, 2008

Frank Jacobs. *Strange Maps: an atlas of cartographic curiosities*. Viking, 2009

Kevin T. Kuehlwein. Interweaving Themes and Threads of Meaning-Making. In: Hugh Rosen and Kevin T. Kuehlwein. *Constructing Realities: Meaning-Making Perspectives for Psychotherapists*. Jossey-Bass, 1996 [[contents](#)]

Chen Lin, et al. Simultaneously modeling semantics and structure of threaded discussions: a sparse coding approach and its applications. Annual ACM Conference on Research and Development in Information Retrieval archive (Proceedings of the 32nd international ACM SIGIR conference on Research and development in information retrieval), 2009, pp. 131-138 [[abstract](#)]

Paula San Millan Maurino. Looking for Critical Thinking in Online Threaded Discussions. *Journal of Instructional Science and Technology (e-JIST)*, Vol. 9 No. 2 [[text](#)]

James R. Oestreich. Tracing Threads of Meaning Through Time. *The New York Time*, 25 June 1997 [[text](#)]

Rosalind Pearmain. *The Heart of Listening: attentional qualities in psychotherapy*. Sage, 2001

Essie Sakhai. *Persian Rugs and Carpets: the fabric of life*. Antique Collectors Club, 2008

John Ralston Saul. *The Unconscious Civilization*. House of Anansi, 1995

Jennifer Scobie. *Braided Discourse*. 1994

Henryk Skolimowski. *The Participatory Mind: a new theory of knowledge and of the universe*. Arkana 1995 [[review](#)]

E. Mary Sullivan and Harriett Goldenberg. *Cradling the chrysalis: teaching/learning psychotherapy*. Continuum International Publishing Group, 2003 [[extracts](#)]

Daud Sutton. *Islamic Design: a genius for geometry*. Walker and Company, 2007

Jon Thompson. *Carpet Magic: the art of carpets from the tents, cottages, and workshops of Asia*. Barbican Art Gallery, 1983

Maurice Yolles:

- Knowledge Cybernetics: a new metaphor for social collectives. *Organisational Transformation and Social Change*, 3, 1, October 2006, pp. 19-49 [[abstract](#)]
- Exploring Cultures Through Knowledge Cybernetics. *Journal of Cross-Cultural Competence and Management*, 2007, 5, pp. 19-74 [[abstract](#)]



This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](#).

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