Introduction

Just as physicists and astronomers continue to discover new ways of understanding the physical universe and its possible multi-dimensional context, it is appropriate to seek new ways of understanding the universe of knowledge -- given its significance for the emergence of any "knowledge society" (UNESCO. Towards Knowledge Societies (World Report), 2005) as a development beyond the notion of an "information society". The origins and distinctions are variously discussed (cf Rhonda Brett, et al, Information Society or Knowledge Societies? Unesco in the Smart State, 2004; Sally Burch (The Information Society/ the Knowledge Society, 2005).

Engaging in this exploration uncovers a whole array of approaches to this challenge -- as highlighted below. Of particular relevance to any understanding of the knowledge universe is the diversity of these approaches. As with the array of religions or the array of disciplines, the status and degree of relationship of these understandings to one another is often problematic to a high degree.

The purpose of this exploration is to treat these different approaches as typical phenomena of the universe of knowledge as it might be more generally understood. This self-reflexivity must necessarily also call into question this exploration itself -- as but another phenomenon in the universe of knowledge. It is therefore not considered sufficient to opt for a single mode that understanding universe.

Alternatively, if a unimodal approach is considered appropriate, the status of any such preference calls for greater clarification.

The intention here, given the extensive literature on these matters, is to be neither systematic nor exhaustive, but to approach the exploration with a "light touch", highlighting pointers for further investigation. In fact the constraints of quantity, time, complexity, competence -- whether in the investigator or the audience -- are also factors to be considered in an understanding of the universe of knowledge.

The impetus for this exploration has been increasing frustration with the disparate elements and processes in the knowledge universe -- notably the plethora of "models" generated in the creative process of the advancement of knowledge and in expanding the frontiers of the universe of knowledge. The disparate nature of these constructs, their questionable relationship or relevance to each other, and the often chaotic psychosocial dynamics of their advocates, seemed to call for an approach which did not simply engender yet another model with claims to universal significance.

A strong distinction can be made between factual documentation of phenomena, organization and instrumental use of that information, and any cognitive engagement with what is recognized -- beyond the observer-observed duality.
Such a distinction is increasingly necessary with the emphasis now placed on "values" and "wisdom" in relation to global governance, whether "faith-based" or "evidence-based", and on elaboration of more appropriate strategies. If the sets of insights effectively functioned, or were used, as what would now be termed "global models" or "world models", then the adequacy of their predictive capacity should be distinguished from the adequacy of their descriptive/explanatory capacity -- especially given the requirements of them by their culture. The most comprehensive of these present day models of the world system face a particular challenge in that the "predictions" they offer fail to engage the individual as coherent and credible -- and therefore fail to engender political support for appropriate concerted action (cf Donnella Meadows, et al. *Limits to Growth: the 30-year update*, 2004).

These concerns also follow from an earlier exploration of the possibility of higher orders of cognitive engagement in strategic issues (*Governance through Patterning Language: creative cognitive engagement contrasted with abdication of responsibility*, 2006; *Creative Cognitive Engagement: beyond the limitations of descriptive patterning*, 2006). This was occasioned by the recognition that it is becoming increasingly clear that society is not "getting its act together":

- in the practice of governance (appropriate and timely response to emerging problems or to "due protest" about denied problems)
- in conceptualizing the possibilities (given the "failure of intelligence" and "imagination", notably on the part of "think tanks")
- in engaging with those in frustrated need (as evidenced by the major societal role of drugs, terrorism, crime, and violence)

**Thematic intersections**

This exercise is an effort to explore the intersections between a number of partially related threads treated separately in the past (see references):

- integrative organization of knowledge
- conflict between perspectives, especially integrative perspectives
- configuration of complementary / contrasting perspectives
- conceptual gated communities of discourse
- relativity of perspectives -- "mine" at the centre of the knowledge universe
- development, innovation and evolution of knowledge
- communication constraints in a complex knowledge space
- possibility of higher degrees of order
- navigation beyond information highways
- metaphor as an explanatory mode
- nature of higher order discourse (information quality, cognitive fusion)
- future possibilities, especially for governance
- metaphors as transdisciplinary vehicles
- language of futures
- aesthetics of governance
- governance of the universe (of knowledge)
- personal implications (self-reflexivity, enactivism, personal globalization, embodiment)

The context for this work has been the Union of International Associations and its various challenges to knowledge management, notably in relation to its *Encyclopedia of World Problems and Human Potential*. The UIA is a century-old initiative of Paul Otlet (*Monde -- Essai d'universalisme: connaissance du monde, sentiment du monde, action organisee et plan du monde*, 1935) now identified by historians as one of the early of the potential of the world wide web (*Union of International Associations -- Virtual Organization: Paul Otlet's 100-year hypertext conundrum?*, 2001). This concern is notably reflected in its more recent work (*Simulating a Global Brain: using networks of international organizations, world problems, strategies, and values*, 2001; *Union of Intelligible Associations: integrative design metaphors enabling strategic comprehension of the global brain*, 2005).


**Diversity of understandings of any universe of information**

These arguments are further developed in Annex 1

The approach here is well-introduced by the argument of Magoroh Maruyama (*Metaorganization of Information: information in classificational universe, relational universe, and relevational universe*, *Cybernetica*, 8, 1965, pp. 224-36):

The conceptualization of information depends on the way we organize our universe in our thinking. It depends on the principle we choose in formulating our epistemology. There are several ways of looking at the universe. The principle of the organization of the universe depends on the interpreter. There is the principle of organization on the one hand, and the details of the organization on the other hand. Usually the details of the organization are referred to as "organization". In this paper we concern ourselves with different principles of organizing our universe and their consequences on the conceptualization of information. In other words, we concern ourselves with the metaorganization of the universe and its consequences on the metaorganization of information. The metaorganization of the universe varies from culture to culture, or from person to person.

Maruyama then concludes:
Accordingly, three metaorganizations of information were discussed: classificational information, relational information, and relevantial information. Most of the information currently available is classificational information. Relational information, though more useful than the classificational information in our activities, cannot be explored unless we become able to think in terms of the relational universe. Relevantial information, most vital to the well-being of individuals, is not available in the present-day information system.

As noted above, the approaches to understanding any universe of knowledge (detailed in *Annex 1: Diversity of understandings of any universe of information*) -- however it is termed -- are considered indicative of the challenge as much as variously offering insights of different kinds of relevance. A major reason for this overview is to indicate the extent to which there is an increasing degree of formal similarity, and/or overlap, that is evident (or claimed) between the understandings in the following table.

<table>
<thead>
<tr>
<th>Clustered understandings of a &quot;universe of knowledge&quot; (tentative)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>non-integrative</strong></td>
</tr>
<tr>
<td><strong>no-consciousness</strong></td>
</tr>
<tr>
<td><strong>non self-reflexive</strong></td>
</tr>
<tr>
<td><strong>high-dimensionality</strong></td>
</tr>
<tr>
<td><strong>high-connectivity</strong></td>
</tr>
<tr>
<td><strong>relativity effects</strong></td>
</tr>
<tr>
<td><strong>entanglement</strong></td>
</tr>
<tr>
<td><strong>+</strong></td>
</tr>
<tr>
<td><strong>pattern order</strong></td>
</tr>
<tr>
<td><strong>0</strong></td>
</tr>
<tr>
<td><strong>low-dimensionality</strong></td>
</tr>
<tr>
<td><strong>low-connectivity</strong></td>
</tr>
<tr>
<td><strong>no relativity</strong></td>
</tr>
<tr>
<td><strong>no entanglement</strong></td>
</tr>
<tr>
<td><strong>-</strong></td>
</tr>
</tbody>
</table>

The shaded cells of the above table could be "collapsed" into the following table to distinguish four distinct "universes". The unshaded cells are misleading to the extent that within each is obscured the vital distinction between the conventional labels for hypothesized patterns of high-order integration in contrast with the actual integrative experience implied -- to which such labels may inadequately point. Namely no account is taken of how the significance of the labels might then be comprehended.

Especially misleading is the projection of geocentric understanding (using terms such as "global" or "world") to imply an understanding relevant to the "universe", or assumptions made regarding the scope and applicability of "universal" or "cosmic". Understanding of proximate wholistic terms is used as a "window" onto more encompassing wholes that can only be sensed "through" the more proximate. In seeking premature explanatory closure, such understandings must necessarily reinforce oversimplification of a complex dynamic of all-encompassing subtlety. It would be a mistake to deny that Such usage It is also the case that the labels may have particular connotations which would be more fruitfully associated with other cells.

<table>
<thead>
<tr>
<th>cognitively &quot;complex&quot;</th>
<th>objective and subjective (relevational universe)</th>
<th>neither objective nor subjective (enactivism)</th>
</tr>
</thead>
<tbody>
<tr>
<td>cognitively &quot;binary&quot;</td>
<td>objective (&quot;external&quot;) (classificational universe)</td>
<td>subjective (&quot;internal&quot;) (relational universe)</td>
</tr>
</tbody>
</table>

Maruyama would however argue that the very act of presenting such a table is an epistemological characteristic of what he names as the classificational universe. In later work Maruyama reframed his 3-fold metaorganization of information into a 4-fold set of "mindscapes" (*Mindscapes, social patterns and future development of scientific theory types*. Cybernetica, 1980, 23, 1, pp. 5-25). Other authors have explored this challenge of distinct epistemological modalities or ways of knowing (cf *Systems of Categories Distinguishing Cultural Biases*, 1993).

**Evocative questions**

The focus of this exploration relies to a degree on the framing of conceptual entities offered by the astronomical disciplines as a template. The deliberately self-reflexive approach is clarified by three questions:
Consider the following examples:

- **Cosmology**: If I could sense the span between the beginning at the end of the knowledge universe (my universe), as I am asked to think about that of the physical universe, how might I understand it -- encompassing as it does my life and death?

- **Astronomy**: If I could look at the knowledge universe, as I look at the physical universe, how might I see it at this moment -- or for the period of attention I am prepared to give to the matter?

- **Astrodynamics**: If I could identify myself with the knowledge universe, as an extension of my identity as a human being, through what frameworks and modes of knowing would I sense its dynamics?

Such preoccupations, as explored here, are consistent with those evoked by Joseph Campbell (The Inner Reaches of Outer Space: metaphor as myth and as religion, 1986) in a series of symposia with that theme, organized by Barbara McClintock of the C G Jung Institute of San Francisco; one platform was shared with astronaut Rusty Schweickart. There Campbell explores the space age and posits the that the newly discovered laws of outer space actually apply within as well -- and that a new mythology is implicit in that realization [quotations]. After exploring understandings of cosmology through myth, he however focuses on the use of metaphor by art as offering the seeds of the mythologies of tomorrow. The influential role of science fiction in articulating such a mythology has been explored by Sylvia Engdahl (The New Mythology of the Space Age, 1995). By contrast, the approach taken below places greater emphasis on the scientific imagination in configuring new possibilities within the constraints of astrophysics. Such an approach also follows that of authors such as Thomas J. McFarlane (Relativity: Inside and Out, 1997).

The intimate relation of observational astronomy to mythopoetic understanding was recently highlighted by Bradley E Schaefer (The Origin of the Greek Constellations, Scientific American, November 2006):

In 1922, when the International Astronomical Union officially defined 88 constellations, it drew the bulk of them from Ptolemy's *The Almagest*, which was written around A.D. 150 and described the traditions widespread among the Greeks. These traditions had been popularized in the "best-selling" poem *The Phaenomena*, by Aratus (275 B.C.) [helpfully described by Richard L Hunter, Written in the Stars: poetry and philosophy in the Phaenomena of Aratus, 1995]. The great astronomer Eudoxus's sole surviving book, *The Commentary* (147 B.C.), tells us that Aratus's poem is for the most part a copy of a work with the same name by Eudoxus (366 B.C.), which no longer survives. These books held the earliest descriptions of the Greek skies, and in them the constellations are already fully formed.

**Astrophysical metaphors**

Such dynamics, and the often very large "conceptual distances" between the many models within the knowledge universe, point to the merits of borrowing insights and frameworks from astrophysics. This discipline might be said to have been faced with formally similar challenges -- if only in terms of the degree of complexity and the developmental dynamics to which it is exposed. It has been obliged to introduce new dimensions appropriate to the complex dynamics of the situation and the perspectives from which it can be variously viewed. In comparison it might be said that approaches to ordering the universe of knowledge are relatively primitive, if not essentially rigid (as in schemes of knowledge organization and classification), whatever the sophistication of information retrieval algorithms.

It is appropriate to note the widespread explanatory use of "astronomical metaphors" (most notably in cultures of the past) and "astrophysical metaphors" in contemporary literature (as a means of articulating some psychosocial dynamics). In the latter case, for example, "advanced consumer society" is described in one of the metaphors of Jean Huédriard as simply imploding like a collapsing star, drawing into itself "all radiation from the outlying constellations of State, History, Culture, Meaning".

The suggestive use of metaphors -- like the "universe of knowledge", academic "stars", "luminaries" and "stellar" careers, "heated" debate, high "visibility", "massive" support, "weighty" argument -- points to the possible value of exploring whether astrophysics offers a coherent set of metaphors to explore the life cycles of conceptually gated communities in knowledge space. The appropriateness of the metaphor would derive from what might be termed the physics of communication amongst the "stars" of the knowledge firmament -- and the limited number of parameters by which this could be modelled: interactivity of participants (temperature?), visibility (luminosity?), membership/connectedness (mass?), insight/inspiration/curiosity (hydrogen?), weight of facts/tradition/confirmation (gravity?).

There have been strange metaphorical borrowings, as noted elsewhere (Paradigm Leaps: intrinsic determination of conceptual patterning, 1997), to enable people (both individually and collectively) to communicate insights which are often vital to their life strategy. Consider the following examples:

- **Weight**: What has weight in a person's life? What is a weighty argument?

- **Force**: Much is made of strong and weak social forces. A presentation may be forceful, as can the presenter. Again an argument can also be forceful.

- **Attractor**: The biological sciences make much of attractants. Some people are attracted to each other. But what is an attractor -- and an emergent attractor? How to understand the way in which people are attracted to belief systems or charismatic personalities?

- **Falling in love**: How to comprehend the experiences of falling in love? What is moving and in what direction? What is being attracted to what?

- **Coming home**: How is one's own place or home sensed? What is associated with this special sense of being in the right place -- of being in one's own place? What draws people home?
• Orbit: Some people orbit around others, and may have others who orbit around them. Children may orbit around parents like in a binary star system. Leaders and guru-figures have people in orbit around them. What is involved in being in orbit? What are the constraining forces that make this movement stable?

• Escaping from orbit: People can also escape from an orbit. Children escape from the family environment. Pupils escape from the influence of their teachers. Disciples escape from their masters. A special degree of some kind of energy is required to achieve this. Some make the attempt but are drawn back. Some escape from one orbit to be drawn into another.

• Light of comprehension: Why the many comparisons between light and comprehension? As with light, there is a concern with speed of comprehension. Some things may take a person many years to understand. Does speed of comprehension have some fundamental status like the speed of light? Are some people and groups in society usefully understood as light years of comprehension apart?

• Mass and weight: People speak of a massive body of knowledge. Massive significance? What impinges on awareness? Does such a body of significance distort the perceptual environment in special ways -- through forces equivalent to gravity? If one cannot maintain some detachment, approaching and leaving it tangentially (or going into orbit), is one irreversibly attracted into it? Is there an "escape velocity" associated with every mass of significance?

• Event horizon: Comprehension is drawn towards any mass of significance. If this significance lies beyond a critical mass, is it possible to escape from it? Is one drawn in, as into a blackhole? Does it effectively create an event horizon? Not only is it invisible from a distance, but any perception from within it would then be unable to detect anything outside it. The more extreme groups and belief systems would seem to evoke behaviour of this kind.

• Movement: How do people "move" within social systems and within bodies of knowledge and belief? What is a voyage of discovery? What is a psychological journey? What is the context or framework within which people move? What is a shift of awareness?

• Relativity: For people and groups following particular trajectories, how are they to understand their relationship to those on other trajectories? Is speed of comprehension a major constraint to any meaningful communication? Is much of what is perceptible as new knowledge from any perspective the product of initiatives long superseded by those who engendered them?

Beyond the problem of understanding the nature of the knowledge universe is indeed the challenge of navigating it -- especially given the capacities offered by the web and envisaged for the future through development of the semantic web (Tim Berners-Lee, with Mark Fischetti. (1999) Weaving the Web: The Original Design and Ultimate Destiny of the World Wide Web by Its Inventor. HarperSanFrancisco, San Francisco **). Hence the subtitle -- from astronauts to noonauts, as tentatively explored previously (Entering Alternative Realities -- Astronautics vs Noonautics: isomorphism between launching aerospace vehicles and launching vehicles of awareness, 2002).

Physical universe as a mnemonic device -- a "memory palace"

So-called "memory palaces" were a classical aid to memory up to the Middle Ages as part of the ars memoria -- the technique of building architectural data bases within the mind (cf Frances Yates, The Art of Memory, 1966) . More generally known as the "method of loci" or place-making, elements of that which was to be remembered were individually associated with physical locations (known as loci) -- typically in a familiar large public building or ornamental garden. A pattern of memories could therefore be refreshed by walking through the building in the order in which it was required to recall (as for a speech) the sequence of memories. [more more more]

Such memory palaces could not only be based on known physical buildings but also on imagined ones -- or a combination of both, infusing physical buildings with imaginary (even impossible) properties. Erik Davis (TechGnosis: myth, magic and mysticism in the age of information, 1998) describes this as a pragmatic intellectual tool:

... a technē that transforms the imagination into a psychic file cabinet as functional as any desktop metaphor... For Cicero, these "images," or simulacra, functioned similarly to the icons of today's Web -- compressed graphics that open up a store of data and that supplement, without replacing, the more abstract inscriptions of text... Medieval theologians employed the art to "remember heaven and hell", lodging the Church's innumerable array of vices and virtues within Byzantine psychic architectures, probably not unlike Dante's poetic maps of the underworld... modern thinkers stopped using such loosely associational networks in order to organize fields of knowledge -- part and parcel of their wholesale rejection of the productions of the imagination.

A particular merit of this method is the ability to enter the memory structure at any point in order to recall the images from that point, possibly even in a reverse order. The art of memory was understood as an art of composition, not simply as an aid to rote memorization from which it was notably distinguished. The loci could be managed in ways that might now be compared to the management (editing, deletion, reordering) of browser bookmarks (cf Mary Carruthers and Jan Ziolkowski, The Medieval Craft of Memory, 2002).

Donlyn Lyndon and Charles W. Moore (Chambers for a Memory Palace, 1996) have explored the technique as a means of showing how the world may be viewed and made. The memory palace metaphor has been used, through their i-Palace facility, by the School of Library and Information Science (SLIS) at Indiana University to offer a shared resource of online documents for faculty and students as
part of their Collaborative Information Universe. It is described as follows:

The iPalace world aims to support efficient and intuitive information access and management and consists of semantically organized online documents laid out in a 3-D space. Its users can collaboratively examine, discuss, and modify (add/delete resources, annotate) documents, thereby converting this document space into an ever-evolving repository of the user community's collective knowledge that members can access, learn from, contribute to, and build upon. The space becomes a shared 'Memory Palace' representing a common understanding of different theories by the community. The iGarden - officially 'Mirror Garden' - world visualizes user interaction data such as navigation, manipulation, chatting, and Web access activity. It is created based on mined web logs that have been collected in the Memory Palace. It can be used to evaluate the effectiveness and usability, to optimize design properties, or to examine the evolving user community of a world.

Key palaces in some cultures, notably in China, are understood to have been designed to represent an understanding of the order of the universe. Hence the understanding with which Matteo Ricci's communication was received in China in 1596 (Jonathan D Spence, The Memory Palace of Matteo Ricci, 1984). The question is whether the universe, as understood by astrophysics, can be used as a "memory palace" and what its features, and especially its dynamics, can be used to order.

Frances Yates (The Art of Memory, 1966) notes how the magical and mystical potentials of these premodern psychic architectures were exploited by Renaissance hermeticists. Erik Davis (TechGnosis: myth, magic and mysticism in the age of information, 1998) indicates:

For Renaissance intellectuals like Giulio Camillo, Giordano Bruno and the later Robert Fludd, the implications were clear: The magus must build himself a divine and encyclopedic memory. As the historian Peter French [John Dee, 1972] explains, "by inscribing a representation of the universe within his own mens [higher mind], man can ascend and unite with God"... When it came to spatially organizing [their] welter of material along the lines of an ars memoria, the Renaissance mages turned to the heavens themselves, or more specifically the astrological high-rise of Neoplatonic and medieval cosmology. This cosmic map became the macrocosmic "palace" that housed the microcosmic encyclopedia of the world, organized by various hieroglyphic icons that ruled different facets of human knowledge. Though hardly a rigorous taxonomy, this system of symbolic correspondences did possess a certain economy.

The application of this neoplatonic methodology by Marsilio Ficino has been reviewed by Thomas Moore (The Planets Within: The Astrological Psychology of Marsilio Ficino, 1990). In the case of Giordano Bruno, Davis (1998) comments that:

Believing that the astral forces that govern the outer world also operate within, and can be reproduced there to operate a "magico-mechanical memory", Bruno created data-dense memory charts based on a complex Egyptian iconography of star-beings. These fantastic daemons, who should not be confused with Christian demons, were not only "active" and "striking" mnemonic icons, but also living spiritual entities -- the intelligent agents of Bruno’s universe of knowledge.... So while the technical specs and blueprints of the ars memoria dimply anticipate the possible architectures of cyberspace, they even more profoundly reflect the desire we share with the Renaissance Hermeticists: to know the world and its information by capturing it in a virtual representation we can manipulate. The Renaissance might even be defined as a revolution in point of view...

General systems and holonomy

The interest in the potential of borrowing insights from astrophysics derives in part from the author's early involvement in general systems theory (with its focus on isomorphism between systems of different scale) and in subsequent involvement in the fundamental cognitive role of metaphor.

A far more fundamental justification could of course be sought in the work of Isaac Newton (De Gravitatione et Aequipondio Fluidorum, 1670) -- frequently named as one of the greatest scientific minds. Subsequent to his pioneering work on what became astrophysics, notably with respect to gravity, Newton extended his explorations into subtleties of understanding that he claimed had been the key to his comprehension of "celestial mechanics". The status of such work can of course be questioned as an aberration of his later years -- and this has been the case. Such a judgement would then raise the question of the perspective, and quality of understanding, from which it was made. These too are factors which an astrophysics of the knowledge universe could fruitfully take into account.

The following paragraphs are adapted from and earlier paper (Complexification of Integration: Part 7 of Development through Alternation, 1983).

The most deliberate effort to clarify the nature and possibilities of integration has been made through general systems research (84, 85). This has of necessity involved the perspectives of many disciplines. Efforts, such as those of J G Miller (86), have brought a very extensive range of phenomena within the same framework. General systems has not however been very successful in bringing its insights to bear upon the world problematic, despite deliberate efforts to do so (87, 88). Part of the problem seems to lie in the essentially left-hemisphere approach to describing, explaining, and classifying systems. This has not met the needs of those participating in systems, however valuable it has been to those observing such systems.

Humanistic psychology: It is therefore interesting to note the effort by J S Stamps to "marry" the insights of general systems research with those of humanistic psychology, as an "integration of conscious systems with concrete systems", in which mind and system are perceived as complementary (89). Stamps interrelates general systems taxonomies of recent decades to provide a "multi-dimensional elaboration of the fundamental principles of complementary process and level structure" which indicates the "limits of integration and
Stamps makes a deliberate attempt to move beyond Cartesian dualism, especially in the light of research on the bicameral mind. The limitation of this approach, as discussed elsewhere (26) lies in his implication that a heuristic taxonomy does not contain inherent limitations in a society which is increasingly resistant to such hierarchical orderings, whether conceptual or otherwise. Some of these limitations emerge in the work of Rescher, discussed in the next section ***, where such orderings are contrasted with a "network" organization of knowledge. Ironically, Stamps subsequently co-authored a book on "networking" for practitioners, which emphasizes this other perspective (1).

**Human explanatory capacity:** As noted in an earlier paper (Paradigm Leaps: intrinsic determination of conceptual patterning, 1997), it is assumed that people are completely free to articulate new conceptual frameworks. The only constraint on this freedom is any sensitivity they may have to their understanding of reality and the weight they attach to associated facts. This understanding will of course necessarily be constrained by cultural and educational background. But this does not affect that basic assumption.

It is worth questioning this assumption. Supposing that the human mind is only capable of conceiving of, and understanding, patterns that are intrinsic to the organization of natural phenomena. Any new paradigmatic discoveries and frameworks would then need to be understood as comprehension of structures and processes already prefigured in the organization of matter and, as such, patterned into the human psyche. This would apply as much to understanding from nuclear physics as from cosmology and galaxy formation. Conceptual "breakthroughs" would then be breakthroughs into understanding patterns that are already effectively encoded and embedded in some way in bodily processes and behaviours. Truly a case of "knowing thyself".

As noted in an earlier paper (Personal Globalization, 2001), science has made tremendous advances in exploring the extremes of the universe (back to its origins), microbiology, and the makeup of the atom. But, as with the human-scale environment, there is a sense in which it is human explanatory capacity, and criteria for a satisfactory explanation, that are determining the patterns that insight emerge. It might be asked to what degree human cognitive capacity influences the nature of the explanations sought and found in the domains that are beyond direct human ken. General systems theory has identified organizational parallels at all these levels -- perhaps because these are the patterns humans find meaningful.

**Constrained comprehension of phenomena:** In the light of the earlier argument, the case might also be made that humans project subtle dimensions of their own thinking onto the seemingly unimaginable phenomena at the beginning of the universe or in nuclear physics -- or the life of the cell. Seemingly highly unusual -- even paradoxical -- patterns are discovered that do not appear to conform to normal human logic. The styles of explanation are not those which apply in human-scale phenomena. Science has made a discipline out of such explorations. No equivalent discipline exists for the explorations of the human subjective cognitive capacity -- except in those of some eastern meditation traditions outside the western mainstream.

In this way humans may well be using such inhuman scales onto which to project aspects of human cognition that cannot be adequately expressed on human-scale media. There is then merit in exploring the nature of these explanations about the universe, and about the cell or atom, to discover to what degree they have been developed "unknowingly" by scientists to hold insights into human cognition whose reality they otherwise choose to avoid.

The argument would then be that the millions of years of cosmic and biological evolution have established and reinforced certain patterns -- most of which may as yet be unknown to the conscious mind. It is through this meme pool of patterns that conceptualization presently occurs. Only when this meme pool is exhausted, whatever that might mean, would new pattern formation be possible. Explanation of new phenomena would always tend to default to extant patterns.

Some might argue that any such relationship is ridiculous. However, given that humans are a product of the evolution of the universe and of the cell, and that they continue to have an intimate (moment-by-moment) relationship to the dynamics of atoms and cells by which they are constituted, is it not highly probable that organizing principles at these other levels have a very strong influence on the kinds of patterns that humans can perceive and find meaningful? They are the patterns with which we have evolved. In this sense science is an exercise in human self-discovery.

In practice this would then mean that conceptualization by relevant disciplines with regard to "distant" phenomena, such as galaxy formation or nuclear physics, can be "mined" for patterns which may apply in other arenas. It should not be forgotten that a succession of patterns has been "applied" to such phenomena in endeavouring to understand them. Although held to be incorrect, the earlier and simpler patterns continue to be used in communicating some understanding of the atom, for example, as part of successive stages in any
educational process. Atoms continue to be explained using "solar system" models with electrons as "planets". For astronomers, the sun still "rises" over the horizon. Natural phenomena are viewed "through" such patterns. The history of science is one of introducing more complex patterns which seem to be increasingly unrelated to obvious sensations -- the material of a table being made up of largely "empty" space, for example.

**Patterns of organization:** There is therefore a case for reviewing the insights about the design of the "universe", or the "cell", or the "atom", to detect how human self-organization is written there in unusual languages -- which we choose to define as totally impersonal and irrelevant to understanding of our individual selves.

To what extent is there a strange resemblance between the origins of the universe, or the fertilized cell, and the development of human understanding? Do these early dynamics provide templates through which we can understand our own cognitive origins? Are there exciting possibilities of recognizing in such dynamics the processes of conceptual creativity that we experience on a daily basis? Is the birth of some new idea and its subsequent articulation, similar in many ways to the birth of a universe, a galaxy, or a solar system? What might the pattern equivalents of "black holes", "quasars", "stellar evolution", and "super novae" be within our own psyches? How is our moment-by-moment thinking paralleled by the dynamics of the cell -- what is a "stem cell", "cellular division" or a "cancer"? Is it possible that cancer might be more accessible to understanding in terms of certain forms of "cancerous" thinking?

Taking account of this assumption means that it is then possible to use patterns "discovered", articulated and given form through testing against natural phenomena. It raises the question, given the ability to conceive of an astronomical blackhole, for example, to what other phenomena might this pattern be usefully applied.

In the case of a blackhole, it can only be imagined and described (according to this argument) because it is inherent in our experience. As to why it seems so improbable and beyond anyone's immediate experience, this would then be more a question relating to the normal, or recognized, focus of attention in daily life. This focus concentrates on immediately tangible "external" phenomena. Almost everything on which people choose to focus in everyday life can be perceived through patterns that are considered more accessible and tangible -- and strongly reinforced by the mechanics and biology of living. It is only when people are challenged by, often unwelcome, circumstances that the inadequacy of such ordinary patterns becomes apparent. It is then that other patterns acquire credibility and meaning. In effect the patterns common to daily life necessarily relate to local phenomena, but are less capable of containing phenomena which imply non-local structures and processes.

**Self-reflexivity vs. a deprivation of cultural heritage:** In this light humanity is in the strange condition of having been cut off from the cultural heritage through which it has access to rich patterns of explanation for the human condition -- and from understandings of who we are as individuals and how we function. These explanatory tools and insights have been directed elsewhere -- with great success -- but the most important fruit of this enterprise has not been embodied back into our own thinking to assist in our evolution. As with certain animals, we respond to the environment as to a mirror in which we fail to recognize our own reflection. It is this lost connection which may be fundamental to personal globalization. It is a connection that is of deep concern to many indigenous peoples as recently documented in a UNEP publication (see Darrell A. Posey (Ed.). *Cultural and Spiritual Values of Biodiversity*, 1999).

It is somewhat ironic that explanations and understandings relating to daily life are seemingly trapped in mechanistic and "unimaginative" patterns of a relatively simple nature. In contrast those patterns accepted by the relevant disciplines relating to the atoms of which people are constituted, and the galactic context which they inhabit, are highly unusual, if not totally fantastic. Science even prides itself on the need for ever more fantastic explanations to encompass the complexity they encounter. Their credibility derives from long chains of complex reasoning and research which are often extremely difficult (and costly) to replicate. By strange contrast, there is extremely strong resistance to application of unusual patterns of understanding to the challenges of daily living -- however inadequate the conventional explanations are experienced to be. Efforts by people to break away from "scientific" explanations of their daily lives, through use of "non-scientific" insights, are deplored by the sciences.

There is a curious irony to the fact that one of the principal academic indicators of self-awareness and introspection is the ability of individuals to recognize themselves in a mirror -- usually achieved in humans between 18 and 24 months. A major breakthrough in 2001 has been the demonstration that dolphins also have mirror recognition ability. It might be wondered whether extraterrestrials have analogous indicators of self-awareness based on ability of a species to recognize itself as mirrored in its environment. Modern civilization's failure of this test may have resulted in humanity's classification as a pre-intelligent species, just as humans have classified animals as lacking in the kind of self-awareness by which humanity characterizes itself.

**Comprehension**

This examples suggest that it is worthwhile exploring insights hidden in concepts that have seemingly been articulated for other purposes -- and which may be the treasured monopoly of particular disciplines.

Through their support for the assumption noted above, disciplines have effectively legitimated a "copyright" on insights for their own exclusive use. As with corporate patenting, this proprietary approach to concepts has become a means to inhibit free use of insights which are the shared heritage of humankind. Disciplines require a form of license fee, implying involvement of one of their qualified practitioners, before the concepts can be used -- a pattern articulated by priesthoods before them.

The challenge is discovering how to mine the product of disciplined thought, present and past, for insights intrinsic to our pattern of behaviour (cf Susantha Goonatilake, *Toward a Global Science: mining civilization's knowledge*, 1999).

Claes are perhaps to be found in ways of understanding through simple versus complex models. The simplest patterns of thought tend to reflect the inorganic structure of atoms, molecules and particles. The simplest non-linear, "organic" structures reflect properties of amoeba and other single celled organisms. The range of species then constitute a veritable library of patterns of behaviour and
environmental response.

**Simplicity:** The question then is how cognitive objects and events, relevant to lifestyles and governance, are variously comprehended. A distinction can be usefully made between the need for *simple* and readily communicated explanations and those that are more *complex*. The former are necessary to protect communities from the inexplicable and its terrors. The emphasis is then on stories "that work" -- as in the most isolated indigenous tribes focused on themselves as "the People", and on their environment as the "Earth", and on the various phenomena that sustain that relationship. This was of course extended to early understandings of "our world" at the centre of "our universe" -- understandings that were sustained until and beyond the scientific revolution. However it is worth noting that even astronomers continue to describe the sun as "rising".

The evolution of such a pattern is evident within the communities of the knowledge universe, described elsewhere as "dynamically gated" ([Dynamically Gated Conceptual Communities: emergent patterns of isolation within knowledge society, 2004](#)). Where it is feasible, "our community" or "our belief system" is naturally at the centre of the knowledge universe. There may be secondary belief systems in a "lunar" orbit around it -- and any stellar (solar) source of inspiration may also be assumed by some to be in such an orbit.

The situation becomes more complex when it is felt to be necessary to recognize that several quite distinct belief systems share that same central source of inspiration and have their respective of orbits around -- however distant or eccentric from that focal point. This is evident in many disciplines that have fragmented into a variety of schools of thought. It would be interesting to explore a description of psychoanalysis in these terms -- perhaps with Freud and Jung as a binary stellar system -- subsequently complicated by the emergence of other schools of thought as planets and the multiplicity of smaller groups (asteroids, etc?).

Any such coherent belief systems must necessarily recognize the existence of other features of the knowledge universe -- the visible stars that can be interpreted, mistakenly, to circle around them. As with astronomy, there is a need to adjust perspective and recognize that a preferred perspective is not the centre of the universe or even of the local (stellar) knowledge system with which any cyclic dynamics are associated. This is of course an absolutely major adjustment -- a major paradigm shift -- as indicated by the 400 year delay of the Catholic Church in responding to the recognition of Galileo Galilei on this matter. It is to be assumed that many perspectives within knowledge systems are characterized by this challenge. As was once stated by Ashby -- disciplines ***

Especially challenging are aperiodic phenomena, whether in the form of eclipses, meteors, or supernova. These call for more complex explanatory frameworks when coherence is expected. In the knowledge universe these discontinuities are framed as "scientific revolutions", "collapse" of theories or belief systems, "paradigm shifts", or "innovative discoveries" ([cf T Kuhn, The Structure of Scientific Revolutions, 1962, and the subsequent debates] -- conceptual objects in their own right.

**Cognitive "magnification":** The question within a knowledge universe is what cognitive devices are used to detect phenomena beyond the normal range of the senses. What are the equivalent of telescopes and microscopes? That current explanations are not adequate to encompass the dynamics observed. By rejecting some observations as anomalies, the relative simplicity of the existing system is not challenged. Such rejection may be enabled by processes such as "groupthink" ([cf Groupthink: the Search for Archaeoraptor as a Metaphoric Tale, 2002](#)) or patterns of denial associated with "positive thinking" ([cf Being Positive and Avoiding Negativity: Management challenge of positive vs negative, 2005](#)).

Ross Ashby's well-known *Law of Requisite Variety* in cybernetics to the effect that: The larger the variety of actions available to a control system, the larger the variety of perturbations it is able to compensate. But clearly the need for more complex knowledge frameworks is only felt if it is assumed that current explanations are not adequate to encompass the dynamics observed. By a possible generalization to the conceptual domain of the so-called *Peter Principle* to the effect that: in evolution systems tend to develop up to the limit of their adaptive competence. In this case an "inconvenient" pattern of explanation for specific (local) purposes is generalized to a wider set of circumstances, or to the knowledge system as a whole -- thereby reducing even further any capacity to challenge it.

**Metaphor:** In order to render comprehensible locally those phenomena that are of a dimension beyond the scope of the senses, one of the cognitive devices of choice is metaphor and analogy. Systems of relationship that are accepted as familiar are used as a template or pattern onto which to distribute any of the following:

- **size:**
  - very large (and/or distant) phenomena, namely calling for the equivalent of a telescope or even several to provide a very long baselines
  - very small phenomena, namely calling for the equivalent of a microscope or even an electron microscope
- **time-scale:**
  - very long-term phenomena
  - very short-term phenomena
- detectability, namely calling for the equivalent of a radio-telescope or X-ray telescope, for entities only evident beyond the visible electromagnetic spectrum

* sgsr **

The capacity of metaphor may be required to give credibility and weight to counter-intuitive patterns, as was notably the case with the first Club of Rome report (*Limits to Growth*, 1972)

**Basic challenge**

**Entities**: The knowledge universe is composed of a wide range of conceptual entities -- of which this document is one. As “objects” these may be usefully understood in the computer programming paradigm of object-oriented programming. An object is then a basic building block of programs. Such objects act on each other and are capable of receiving and processing information, and sending information to other objects.

Any such definition runs the considerable risk of failing to recognize the extent to which the object is more appropriately unerstood as a dynamic -- a process as explored through work on process reality (**Whitehead**). In a real sense “observing” such a process is better understood through the methods of "action research" in which the interactivity is associated with learning and reframing -- a form of conceptual dance.

**Distance**: Entities detected in the knowledge universe can be extremely far apart in that considerable (attention) time may be required to communicate information from one entity to another meaningfully. As a consequence they may appear relatively, if not completely, unrelated to one another. Such distance is associated with phenomena of:

- **Resolution**: Because of the distance and time factors, it may be very difficult to detect or distinguish one distant entity from another "across" the knowledge universe, notably to determine its boundaries. *** Distinctions / Indications / Closure

- **Attenuation**: Distant entities in the knowledge universe may be detectable if the limited information received from them is accumulated through successive observations over a (long) period of time so that a meaningful pattern can be recognized. In practice, if the attention span is too low (and such observation cannot be sustained), distant entities may not then be detectable. If information is communicated in text form, the "linear distance" between the objects may be indicated by the amount of "linear" text required to explain the nature of the distant object. *** discursive / extenso / time / length

- **Baseline**: ***

**Order**: As information is accumulated, an effort is made to derive a sense of order -- through pattern recognition -- if only to minimize the need for giving further attention to its details. Ordering considerations may include a sense of relevance (opportunity / threat).

- **Degree**: The capacity to resolve the entity as a recognizable pattern within the attention span is dependent on the degree to which is is ordered:
  - More highly ordered patterns are more readily recognized than those at an equivalent distance which are of lesser order. If information can be suitably "packed" the object may be more easily resolved -- a pattern may be recognizable that obviates the need for more detailed (lengthy) observation. Thus in the case of "linear" text, if it is ordered into sections and subsections or if special links are provided between its component parts, then this effectively reduces the tendency to attenuation.
  - Order may be (tentatively) imposed on the information received in terms of a sense of configuration, symmetry or elegance (an aesthetic). It may adjusted to give a higher sense of order by effectively tuning the pattern. The pattern may emerge in relation to an attractor of higher dimensionality

- **(In)coherence**: Failure to distinguish entities whose existence is suspected readily results in their being held to be unreal and without significance -- meaningless. The judgement may be depend on failure to detect them within a preferred measuring process such that they can only be considered incommensurable with respect to entities with which they are compared.

**Mass**: As with physical matter, an important distinction can be made between the "mass" of a conceptual entity and its "weight", although they may (within a particular context) be treated as synonymous:

- **Mass**: A conceptual entity may be recognized through the accumulation, or amassing, of factual information and observations that are ordered to form a coherent object. As with physical matter, the mass of the entity is therefore an intrinsic property of the (cognitive) matter of which it is composed.

- **Weight**: The weight of a conceptual entity is typically understood in terms of the force that it exerts on other conceptual entities - as implied by such phrases as "a weighty matter", or "the argument carries no weight". Variants include "giving (less) weight" to a matter. In physical terms this force is termed gravity -- which has its origins in association with the gravitas of a person or occasion.

**Attraction**: The mass of a conceptual entity typically exerts an attractive force on other conceptual entities:

- **Gravity**: The proximity of an entity in knowledge space may result in greater significance or "weight" being associated with it -- a "value" is attached to it. Such significance may function as an attractor, analogous to the effect of gravity. In effect entities may be understood as being each at the focus of a conceptual "gravity well". This is exemplified by the "gravity modelling" vital to any understanding of the "centre of gravity" of a market catchment areas. When the significance is greater relative to other attractants, this typically results in ("obsessive") attraction towards that entity. This may have a number of consequences.

- **Mutual attraction**:
  - **Insignificant**: The attraction between conceptual entities may be so slight relative to other attractants that it does not significantly affect their movement in relation to each other.
Astronomers continue to play with theories concerning the origin and manner of the birth of the universe. For some this moment can be of significance (in terms of "weight"), the excitement associated with it may render it "visible" across knowledge space. Advocates of particular conceptual objects may be highly focused on achieving greater visibility for them relative to that of other objects.

Variety of conceptual objects

From any particular perspective, a vast array of other conceptual entities may be visible -- as with the stars in the sky. The movement of any of them in relation to one another may not be detectable. This would typically be the perspective of one discipline of other distant disciplines and preoccupations -- especially if the period of observation is short. Celebrities, as "stars", of disciplines or the media, may be similarly experienced.

The following items may then also be fruitfully explored as conceptual entities in their own right. In the case of astrophysics it has proven to be appropriate to recognize a range of astronomical objects -- which can therefore be explored here as templates for the diversity of generic conceptual objects in the knowledge universe. The point to be made is that if this variety of interacting astronomical objects is required to encompass understanding of the physical system then, minimally, it is to be expected that the variety of conceptual objects (and their associated dynamics, discussed below) might at least be of this order (see checklist of astronomical objects **):

It is of course the case that many of these objects have been used in the past in complex ways to hold and represent fundamental values (memetic constructs) and their relationships -- as deities.

Dynamics and singularities in the knowledge universe

These arguments are further developed in Annex 2

Cognitive engagement

It is one thing to use the objects and processes of astrophysics, as above, as conceptual "coat-hangers" to carry the range of entities of the knowledge universe. It is quite another matter to understand these "objects" as extensions of subjective experience with which one is intimately engaged. Such possibilities of "cognitive engagement" have been explored in the case of the challenges of this planet -- "my planet" -- in earlier exercises (Governance through Patterning Language: creative cognitive engagement contrasted with abdication of responsibility, 2006; Creative Cognitive Engagement: beyond the limitations of descriptive patterning, 2006). This approach has also been explored, as follows, with respect to the universe (Being the Universe -- a Metaphoric Frontier: co-existent immanence of evolutionary phases 1999).

Cosmology: But what about the origin of the universe -- "Big Bang" or otherwise? Astronomers have carefully distanced people from this process of aeons ago. But is there not at least a sense in which one's own identity emerged through a process that is patterned in a somewhat similar way -- and, given the constraints on our understanding, perhaps necessarily so? After all, to the extent that there is any consciousness associated with a fertilized human egg, there is a certain parallelism -- at least as a pattern of subdivision of an initially undivided whole (a theme explored in many traditional cultures).

However all the above would seem to be just a speculative play on ideas. More intriguing therefore is the possibility that all these processes may continue to have a reality in the direct experience of the present moment. In the case of the "Big Bang" for example, anyone who has had a really striking idea has experienced a creative moment which has dimensions that might well be patterned in the manner of the birth of the universe. For some this moment can reframe and transform their perceptions for minutes, hours or days. It may affect and order the rest of their lives.

Astronomers continue to play with theories concerning the origin of the universe. In our ignorance of astronomy we can patiently wait...
for their conclusions. But we can also explore the intriguing patterns they put forward and relate them to the experience of our own creativity. At an even simpler level, we can compare their patterns with our own experience on emerging from a deep sleep, or from unconsciousness (after general anaesthesia or an epileptic fit). For with great rapidity in these transitory moments, we reform and organize our universe. As the astronomers stress, it all happens in the first few seconds!

In this sense we can in fact gain significant insight into how our universe -- and our solar system -- is formed on a daily basis. Remember astronomers are still debating whether it is a case of Big Bang or continuous creation. Nevertheless we are free to use their insights to experience the way our universe expands after our awakening, and the way it contracts and collapses when we go to sleep. (The contraction theme is explored in many works by Colin Wilson).

**Stellar evolution:** Then there are other intriguing patterns from astrophysics. How does the array of relatively simple reactions sustain the complexity of a sun? Can consciousness be understood in terms of the patterns of solar reactions through which light and heat are generated for mundane life? What then is to be understood by hydrogen and helium?

Can the conscious life then be usefully understood in terms of the [Hertzsprung-Russell diagram](https://en.wikipedia.org/wiki/Hertzsprung-Russell_diagram) (showing the luminosities of the stars plotted against their surface temperatures) and its significance for the process of stellar evolution?

Is the initial phase of conscious evolution a contraction of the preconscious (the protostar) from the collective unconscious (the interstellar gas)? In the case of stellar evolution, this stage typically lasts millions of years. Half the gravitational potential energy released by the collapsing protostar is radiated away; half goes into increasing the temperature of the forming star. This might echo insights from the Tibetan *Book of the Dead*. Can temperature be understood as degree of self-awareness? Eventually the temperature becomes high enough for the fusion of hydrogen to form helium. The star then enters its longest period in stellar evolution, known as the main sequence in the context of the Hertzsprung -Russell diagram. As the star's helium content builds up, the core contracts and releases gravitational energy, which heats up the core and increases the rate of hydrogen consumption. The increased reaction rates cause the stellar envelope to expand and cool, and the star becomes a red giant. Eventually, the contracting stellar core will reach temperatures in excess of 100 million degrees. Helium burning then sets in, and the star starts shrinking in size. In the further course of evolution, the star may become unstable, possibly ejecting some of its mass and becoming an exploding nova or supernova or a pulsating variable star. The end phase of a star depends on its mass. A low-mass star may become a white dwarf; an intermediate-mass star may become a neutron star; and a high-mass star may undergo complete gravitational collapse and become a black hole. Are some of these patterns not reminiscent of the possible final stages of life of media personalities -- especially movie "stars", but also the geniuses of our era?

**Conceptual evolution in the "space-time" of knowledge space:** Elsewhere ([Present Moment Research: exploration of nowness, 2001](https://www.amazon.com/Present-Moment-Research-Exploration-Nowness/dp/0948015766)) the case was considered for combining the processes implicit in metaphors explored above into what amounts to an understanding of conceptual evolution in the "space-time" of knowledge space? This might be mapped by some equivalent to the astrophysicist's [Hertzsprung-Russell diagram](https://en.wikipedia.org/wiki/Hertzsprung-Russell_diagram) -- which indicates the evolutionary pathway of stars in terms of changing mass and luminosity. What is required is a sense of the evolution of conceptual attractors in knowledge space in terms of the attraction they exert and their visibility.

With respect to fascination with the origin of the physical universe, it is especially intriguing in this context to consider how analogues to its first "3 seconds" may be a characteristic of the subjective sense of the present moment.

From this perspective there are cognitive processes in the first fractions of a second of attention that continually form the universe that is then open to subsequent experience as fully made. How does "the future" relate to the space-time of cognitive space? The seemingly esoteric debates about whether the universe started with a Big Bang may be explored for their systemic significance as patterns to moment-by-moment creativity, as well as to cell division. The process of concept formation at the moment of creativity, or of cell division after conception, have structural similarities to insights into universe formation.

There may be a way in which the coherence of the moment may be experienced as a kind of standing wave phenomenon. Analogues to the formation of "heavy atoms" may be detected as the creative process meshes with reality -- suggesting a kind of periodic table of creative insight. This would help to explain the ability of traditional cultures to generate cosmologies through which their reality is structured. In particular it clarifies the perspective from which, as noted by Diana James, Australian Aboriginal cultures are able to live in a continuous present that is intimately associated with a mythical Dreamtime.

There are some amusing socio-structural parallels to the behaviour of Nobel-fanatic gurus of fundamental physics and cosymology compared with those of the meditating gurus of enlightenment -- including drum-playing! Fritjof Capra (1991) and others have endeavoured to bridge the gap between them -- imperilling their careers. To the ordinary person, preoccupation with the origins of the universe and rare fundamental particles might legitimately be seen as being as credible as preoccupation with gods and spirits -- accessible under equally rare and problematic circumstances in which the standards of proof and replication are curiously reframed. It is curious that very high levels of funding are required to undertake such research in the fundamental sciences -- when one requisite of research into the present moment, as practiced by some gurus, is the complete absence of material resources.

One line of investigation is that of grammar as it responds to past, present and future -- and provides or precludes various space-time conditions according to the language.

<table>
<thead>
<tr>
<th>Grammatical clues to cognitive engagement with time?</th>
<th>Past</th>
<th>Present</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past</td>
<td>Pasting the past</td>
<td>Pasting the present</td>
<td>Pasting the future</td>
</tr>
<tr>
<td>Present</td>
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<td>Presenting the present</td>
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</tr>
<tr>
<td>Future</td>
<td>Futuring the past</td>
<td>Futuring the present</td>
<td>Futuring the future</td>
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</table>

Periodic table of present/presence (grammar) -- to highlight the subtle variants (potential)
Astrophysics: Framed in this way we are then free to look in new ways at the awesome astronomical photographs of distant galaxies and endeavour to discover how we potentially hold equivalent patterns within our own awareness. Rather than simply being intrigued by descriptions of mysterious stellar objects (eg quasars, dwarf stars, red giants, black holes, supernova) we can use these patterns to identify and order analogous experiences within ourselves. It is indeed possible that unless such patterns were also a possible subjective reality (as meaningful to the human awareness), astronomers would not be able to formulate them as credible hypotheses for external phenomena.

The point being made is that in both cases we are dealing with patterns. Astronomers have invested years of creativity in defining intriguing patterns to handle phenomena they experience at great distance through instruments. We are free to make use of those patterns to order subjective experiences with which we may have intimate knowledge, but whose nature does not otherwise lend itself to communication. Who has had any direct experience of black holes as astronomers understand them -- including astronomers? But who has not had experience that might be usefully patterned by the complex properties now associated with black holes -- event horizons, immense distorsion by gravitational forces, etc. How, for example, are we to deal with obsessive ego manias, or our own moments of personal obsession? "Black hole" is even a common description for the experience of certain kinds of depression. We may know even more about black holes than astrophysicists, but not have the language to articulate our insights.

And what about the "white holes" as explored by Peter Russell in *The White Hole in Time: our future evolution and the meaning of now?*

**Governance and spin**

These arguments are further developed in Annex 3

- Sustainability and spin
- Spinning an alternative
- Reality, relativity and relativism

**Noonautics: four modes of travelling and navigating the "universe"?**

These arguments are further developed in Annex 4

- Four modes of travel?
  - "Vehicles"
  - "Globe"... "planets"... "celestial sphere"?
  - "Global" as integrative
  - Travel where / when / why?
  - Constraints and possibilities
  - Travelling "songlines" to engender the knowledge universe
  - Songlines as "elven pathways" through the knowledge universe?
  - Embodying a universe of "stargates"?

See also *TechGnosis -- Gnostic Escape in a Knowledge Universe embodied in a re-grounding and re-Earthing process (Annex 5)*

**Conclusion**

Imaginative possibilities evoked at the extremes of astrophysics and SF, aided and abetted by aesthetic explorations, are framing the reality that people can choose to inhabit -- or imagine inhabiting. These boundary stretching exercises encourage the emergence of ways of thinking about the knowledge universe and occupying it. Just as the cultural riches of the past may facilitate the use of particular metaphors through which to organize the present and the future, as argued by Susantha Goonatilake (*Toward a Global Science: mining civilizational knowledge*, 1999), so too with the metaphors generated by advances in the sciences and technology (cf Kathleen Woodward (Ed), *The Myths of Information: Technology and Postindustrial Culture*, 1980; Robert Romanyshyn, *Technology as Symptom and Dream*, 1989).

A comprehensive *Theory of Everything* would necessarily include the many different understandings of the universe of knowledge considered here

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