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Annex 4 of *Towards an Astrophysics of the Knowledge Universe: from astronautics to noonautics?* (2007)

Introduction

Following from the arguments of the main paper, four distinct "universes" can notably be distinguished, as in the following table:

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This distribution benefits from the case made by Kinhide Mushakoji (*Global Issues and Interparadigmatic Dialogue: essays on multipolar politics*, 1988) for a quadrilemma (A, not-A, A and not-A, neither A nor not-A) as well as from the distinction, noted earlier, by Magoroh Maruyama regarding the different kinds of information universe (classificational, relational, and relevantial):

- **Objective**: With respect to an "objective" understanding of the knowledge universe, the main approach to its organization and navigation has been widely addressed through conventional knowledge organization and information systems and the possibilities of the world wide web.

- **Objective and subjective**: Beyond what might be caricatured as the management of conceptual "pigeon holes" and the conceptual "tunnels" between them, there is the potential for a more meaningful integrative approach, necessarily dependent on a subjective dimension and appeals to "values". Features of this are emerging in the conceptual dimensions of Web 2.0 and may be significant in the future of the semantic web. Some possibilities were explored in an earlier paper (*From Information Highways to Songlines of the Noosphere: global configuration of hypertext pathways as a prerequisite for meaningful collective transformation*, 1996). One suggestive direction for such configuration was noted with respect to the subjective implications of the symmetries of sacred geometry (*Sacralization of Hyperlink Geometry*, 1997). The challenge to governance might be understood in terms of an "information barrier" (*Coherent Policy-making Beyond the Information Barrier*, 1999).

- **Subjective**: In the light of any "subjective" approach, consistent with the "cognitive engagement" discussed above, "travelling the noosphere" could be understood otherwise (*Entering Alternative Realities -- Astronautics vs Noonautics: isomorphism between launching aerospace vehicles and launching vehicles of awareness*, 2002). This explored the degree of isomorphism between the
launching of vehicles into planetary orbit and the "launching" of "vehicles" of awareness into alternative realities -- based on the arguments in an earlier paper (Navigating Alternative Conceptual Realities: clues to the dynamics of enacting new paradigms through movement, 2002).

- **Neither objective nor subjective**: This modality has been described elsewhere (Walking Elven Pathways: enactivating the pattern that connects, 2006). Erik Davis (TechGnosis: myth, magic and mysticism in the age of information, 1998/2004) notably explores it with reference to the characteristics of Hermes as being the godform of classical Greece most relevant to the emerging knowledge society:

  This excluded middle is where the postmodern Hermes is born: a sacred ironist or a visionary skeptic, dancing between logic and archaic perception, myth and modernity, reason and its own hallucinatory excess. And it is precisely this tension, and not some abdication of critical intelligence, that now leads so many intelligent and curious minds to conspiracies, alternative histories, paranormal phenomena, and pop science fiction.

Typically how the knowledge universe is organized and navigated is a matter of personal choice subject, and perhaps predominantly so, to cultural and other constraints. The initial objective of astronautics and noonautics is to acquire "escape velocity" and get into some form of orbit -- reframing the constraints to the mundane world.

The term "noonaut" is used here as being more general than cybernaut, infonaut, psychonaut or ideonaut:

- **Cybernaut**: This term is used to describe a person (an "electronic astronaut") who makes extensive use of the internet, specifically in terms of the exploration of cyberspace (cf Bruce Esiner, How a Psychonaut Became a Cybernaut, 2005)

- **Infonaut**: This was introduced by Howard Rheingold (Tools for Thought: the history and future of mind-expanding technology, 1985): "The ones I call the "infonauts" are the older brothers and sisters of the adolescent hackers you read about in the papers. Most of them are in their twenties and thirty. They work for themselves or for some research institution or software house, and represent the first members of the McLuhan generation to use the technology invented by the von Neumann generation as tools to extend their imagination. From the science of designing what they call the "user interface"--where mind meets machine -- to the art of building educational microworlds, the infonauts have been using their new medium to create the mass-media version we will use fifteen years from now". Erik Davis (TechGnosis...) has an extensive discussion of the "gnostic infonaut"

- **Psychonaut**: Psychonaut is used to describe one who uses trance technologies and, more specifically mind-altering substances, more for their ability to act as entheogens than for their inebriating (or social) effect. In effect, they are used as a means to achieve states of mind in which different perceptions, unhindered by everyday mental filters and processes, can arise. As such, psychonauts believe that when used with this intent, the mind altering substance's effects can be life altering and are not considered by their proponents to be mere hallucinations. An alternate description is that while some aspects of the experience may be hallucinatory, the realizations caused by those hallucinations and the mental, emotional and long term impact of the experience is real, usually positive, and enduring.

- **Ideonaut**: By implication this term might be applied to those who explore online spaces (such as ideonaut.net initiated in 2005) for the organization and management of potentially complicated, non-linear networks of thought, namely a forum for the visual manifestation and discovery of the shared experience of inter-related ideas, memories, thoughts, and conclusions. It contrasts with the normative funnelling of the rambling, interconnected nature of cognition into linear expositions of speech and language.

Such terms may be variously understood in their relationship to noosphere, cyberspace, infosphere and ideosphere:

- **Noosphere**: Understood as the "sphere of human thought", noosphere is also sometimes used to refer to a transhuman consciousness emerging from the interactions of human minds, as proposed by the theologian Pierre Teilhard de Chardin, who added that the noosphere is evolving towards an ever greater integration.

- **Cyberspace**: Although the world of the internet cannot be understood as a space, according to Erik Davis (TechGnosis...) "spatial metaphors have emerged that lend the medium an imaginary dimension that paradoxically make it more real". It is understood to consist of transactions, relationships, and thought itself, arrayed like a standing wave in the web of our communications (cf John Perry Barlow, A Declaration of the Independence of Cyberspace***

- **Infosphere**: Coined by Luciano Floridi on the basis of biosphere. It denotes the whole informational environment constituted by all informational entities (thus including informational agents as well), their properties, interactions, processes and mutual relations. It is an environment comparable to, but different from cyberspace (which is only one of its sub-regions, as it were), since it also includes off-line and analogue spaces of information.

- **Ideosphere**: much like the noosphere, the ideosphere this is the realm of memetic evolution by comparison with the biosphere as the realm of biological evolution. It is the "place" where thoughts, theories and ideas are thought to be created, evaluated and evolved. The health of an ideosphere can be measured by its memetic diversity. It is considered to be "inside the minds" of all the humans in the world.

- **Cognosphere**: In proposing this term, Thomas Whalen (Navigation through Knowledge Spaces) argues: "We have created, for ourselves, a knowledge sphere. Maybe, for aesthetic purposes, we should call it the cognosphere. The creation of the
cognosphere did not start with the development of the World Wide Web. It started millions of years ago when people first passed information from one person on to a third party; that is, it started with the invention of the spoken word. Since then, the cognosphere has grown with every innovation in communications. 'The Web just happens to be the latest in a long series of innovations that have increased the richness of the cognosphere and have improved our ability to navigate through it.'

- **Culturesphere**: This term is variously used.

Use of "noonaut" and "noonautics" have the advantage of their association with "noosphere" in emphasizing exploration of more integrative dimensions -- in contrast with "lateral" movement to parallel fields of knowledge, or "drilling down" to more specific domains. However the focus on the navigational metaphor of "nautics" obscures other understandings of integrative exploration and "travel" (in "broadening the mind"), including forms of philosophy and cultural development (cf Integrative Knowledge and Transdisciplinarity Project).

### Four modes of travel?

- **Travelling the "objective" knowledge universe**: This is typically the preoccupation of the information sciences. Where possible, it emphasizes the use of hierarchies (through "menus") that permit specializing ("drilling down") or generalizing to more abstract categories from which other specialized choices may be made. There is a sense of well-defined (and appropriately authorized) pathways and the possible extreme dangers of travelling "hors piste". As a form of exception to hierarchical organization, a certain degree of relational linkage is admitted, usually as an aid to comprehending hierarchical structure, but especially as a consequence of hyperlink preferences. In terms of any astronautical metaphor, it might be said that acquiring "escape velocity" is here associated with the capacity to generalize (up a hierarchy of objective knowledge) rather than be bound to a particular system of categories -- a particular orbit, or set of orbits (in the form of an array of menus).

- **Travelling the "objective-subjective" knowledge universe**: In this case much more emphasis is placed on subjective attribution of significance to what may or may not be universally considered objective. This is typical of cases where much greater significance is associated with the symbolic status of any element of knowledge and the values attributed to it. Again, in terms of any astronomical metaphor, it might be said that acquiring "escape velocity" is here associated with the capacity to dissociate from a particular system of symbols with which there is a degree of subjective involvement -- but here bound up more intimately with a belief system by which one is entrained. These symbols may be a pattern of preferences (web surfing "favourites", bookmarks, web rings, news groups, etc).

- **Travelling the "subjective" knowledge universe**: In this case the preoccupation is with an experiential organization of a universe, even a fantasy universe, with little content that can be rendered into a form that can be readily shared with others. The process of exploring one's universe may however be shared, as with entertainment, collective meditation or consumption of narcotic substances.

- **Travelling the "neither-nor" knowledge universe**: In this case the subjective-objective distinction is reframed or accepted in the moment, perhaps most strongly influenced by intentionality -- perhaps primarily through aesthetic engagement, as perceiver and creator. Objectivity is then a mode of allowing objective constraint, possibly to be reframed through a creative act. This is extensively explored by enactivism or radical constructivism (including second order cybernetics).

### "Vehicles"

**Types**: Clearly different types of "vehicle" are envisaged and used -- and are required by understanding of the nature of the knowledge universe. In the first two cases conventional information systems create a vehicle through which the user interacts with that universe. In the case of the second two understandings of the knowledge universe, Buddhism, for example, recognizes five vehicles to cater to the different capacities and capabilities of sentient beings. "Vehicle" is then understood as a conveyance of deliverance for sentient beings. Thus, when one cultivates according to the teachings of these vehicles, one is conveyed or ferried from one shore to the other. That is, from the present shore where there is an abundance of affliction and suffering of birth and death, to the shore where there is bliss and enlightenment. Particular emphasis is placed on three vehicles:

- **Hinayana or Theravada Buddhism ("Small Vehicle")**: The doctrines for those who cultivate for the sake of personal liberation and aspiration for personal salvation. The highest level of attainment for cultivators of Hinayana Buddhism is the Arhat.
- **Pratyeka-Buddha Buddhism ("Middle Vehicle")**: Like those of the Small Vehicle Buddhism, practitioners of the Middle Vehicle Buddhism are not concerned about the salvation of other sentient beings.
- **Mahayana Buddhism ("Greater Vehicle")**: While the Small Vehicle is like a motorcycle or a bicycle which carries one or two persons at a time, the Greater Vehicle is likened to a train or a ship which can ferry many passengers on a single trip. Thus, the doctrines of the Greater Vehicle are for personal salvation as well as for the salvation of other sentient beings. Practitioners of the Greater Vehicle Buddhism aspire to ferrying both self and others to the shore of enlightenment.

These understandings of "vehicle" acquire particular significance when they reflect a distinction between the environmental scope of what is "drawn in" to constitute the vehicle of awareness in question. Thus in the case of the Greater Vehicle this necessarily draws in and encompasses the full range of conceptual entities. These are consequently "transported" as indicated -- through the implicit cognitive transformation.

**"Driver awareness"**: For noonauts, there is also a challenge in recognizing what it is that justifies the extraordinary condition in which...
their "vehicle of awareness" operates once successfully launched into orbit. As a Zen proverb paradoxically puts it: "Before enlightenment, chop wood, draw water -- After enlightenment, chop wood, draw water". A case may be made for exploring the extraordinary communication and observation opportunities reportedly associated with that condition -- enhanced analogues to sight and hearing. But traditionally such siddhis -- and their advocates -- are viewed as distracting side-effects of that condition [more] -- although, controversially, one group of aspiring noonauts devotes considerable resources to promoting the ability to teach levitation. Some noonauts, notably shamans, report the ability to then travel widely to other parts of the solar or galactic system. Of course much has been made of the symbolism associated with the holiness of the condition -- notably by any religious system whose doctrines and disciplines have supported the enterprise. ** Buddhism

"Vehicle control": Perhaps more interesting in the case of a spacecraft, are the problems of control needed for orbit and "attitude" correction. Appropriately positioned jets can be selectively fired to correct tendencies to roll, pitch, tumble or yaw -- maintaining its stability. The noonauts in vehicles of awareness are faced with similar challenges. Controlling and correcting "attitude" is a process described in great detail in many spiritual disciplines -- most obviously through the control dynamics associated with checklists of "vices" and their compensating "virtues" (as discussed in the previous paper). Also of interest are the health problems for astronauts associated with extended time in orbit, including bone deterioration and muscle wasting. This may perhaps be seen as echoed in the "wasted " condition of many practitioners of certain spiritual disciplines -- most notably certain yogis.

"Orbital colonies": For a knowledge universe, as previously argued, these may be compared with conceptual communities (cf. Dynamically Gated Conceptual Communities, 2004). Much speculation, notably by science fiction writers, surrounds the psycho-social dynamics of orbital colonies and long-distance space travel. Despite significant inability to address the unresolved problems of such intentional communities on the surface of the planet, it is widely and enthusiastically assumed that they will be amenable to resolution by reasonable people in space environments. Such attitudes are paralleled in idealistic noonaut communities imbued with belief in the power of "virtues" and peaceful reconciliation. Indeed a religious congregation may be seen as a form of "vehicle" already launched into an alternative reality -- in which the temple functions like a spacecraft, or an orbital colony.

However, as with spacecraft, it is relatively rare to find long-term, residential communities in which challenging problems can emerge and have to be faced. Participation in a religious celebration is usually briefer than modern space flights by astronauts. Even "extended retreats" of weeks only resemble the extended occupancy of an orbiting spacecraft. It is here that lifelong experience in monasteries, convents and asrams -- or other kinds of intentional community -- may be considered to be dealing with dynamics and feedback loops as yet beyond the ken of those concerned with astronautics. Curiously, the most stable spiritual communities (of noonauts) are unrealistic in their avoidance of relationship between the sexes -- and its consequences. The problems for a celibate priesthood have recently proven only too evident. The question has been considered irrelevant in the case of astronauts, as for example:

"People who are professionally very motivated and goal-oriented do not need sex as an emotional release. A person who might experience such problem in flight will most likely be a passenger on a spacecraft -- a journalist, a politician or just a tourist." [more]

This lack of realism has also been evident in past and foreseen expeditions in spacecraft [more; more; more; more; more] -- except as envisaged by science fiction writers. No experiments have been done on this, as exemplified in the case of Columbia University's Biosphere 2 enterprise.

"Vehicle collision": Another concern for vehicles in orbit is the danger of impact with other orbiting objects. The number of such objects has now reached a level that special efforts have to be made to detect them to avoid the possibility of such collision. Noonauts "in orbit" also face this risk of collision with other vehicles of awareness following different pathways. The violence of these encounters can endanger both -- as encounters between leaders of different spiritual traditions, or "high-flyers" of any kind, have illustrated. It should not be forgotten that vehicles in orbit, of either kind, may eject material -- waste matter -- that can endanger others subsequently. The challenge in both cases is to develop more sophisticated techniques of recycling waste products.

"Re-entry from orbit": An obvious next step for orbiting vehicles is re-entry to return to the surface (perhaps of another planet) -- a concern much explored with respect to aerospace, if only because of the limited supplies of food and oxygen whilst in orbit. Re-entry can be exceptionally dangerous because of over-heating as the descent is made through the atmosphere. The problem of re-entry in the case of psychonauts is best illustrated by the recovery of individuals from a drug trip -- as they reorient to the mundane world. In the case of noonauts, this is more evident in the readjustment required after lengthy meditations or following extended retreats for the "spaced out".

"Globe"... "planets"... "celestial sphere"?

Astronauts are faced first with the challenge of getting from the Earth's gravity-well into orbit -- from which all the continents of the globe become equally visible -- when they are not "in shadow" or "under cloud". Subsequently there would be issues relating to achieving orbits around other planets, or escaping from planetary orbit around the Sun. Planets may be used to give gravitational assists -- in slingshot manoeuvres -- to reach other bodies in the solar system. But in all these cases the body around which the spacecraft may orbit is abundantly clear -- as are the properties of that orbit. This is liable to be less so in those realms of space subject to the influence of black holes.

For noonauts the "globe" from which they need to escape -- and around which they at first need to orbit -- is much less clear. This is what makes the identification of "up" so challenging in this case. For astronauts it is the gravity-well associated with the material world. For noonauts, the process has something to do with escaping from "materialism" as the fundamental attractor in daily life -- even if this is only to be understood as a habitual pattern of activity.
Tentatively it might be assumed that this attractor is defined by chaos offered in various spiritual disciplines, or psychotherapy, regarding the different psychological functions by which one may be entrapped -- physicality, emotions, thoughts and intuitions, according to Jung. For Jung the individuation process, through which these individual functions are integrated together may suggest the path of "escape" for the maturing individual. Whatever one's point of origin on the psychic "globe", in this process one is obliged to come to terms with the "other side" of which one is normally unaware -- the "shadow side". Subsequently the noonaut may be influenced by the attractive force of the "planets" -- Marsilio Ficino's "planets within" [more]. More generally, human values may themselves become the "strange attractors" by which the noonaut chooses to be drawn [more].

"Global" as integrative

There is another sense of "global" which suggests another, less subjective, variety of noonautics. The fashionable use of "global" focuses on the spatially curved geographical dimension -- the planet as a whole which astronauts must start by orbiting. This emphasis is the culmination of a century of successful effort towards international understanding -- of "thinking globally and acting locally", of "global villages", of "global action plans", of "global ethics", of "global consciousness" and of "globalization".

What has been largely lost in this process is the other sense of global, namely some kind of comprehensible, integrative whole -- of which a geographically bounded planet is but one particular instance. "Global" is too readily taken to mean planet-wide and no more -- a recognition by certain regions that there are others on the planet. This conceptually integrated whole is implied by terms such as "interdisciplinarity", "transdisciplinarity" and "integrative" -- although these have themselves evolved into holistic buzz words because of the essential failure of the initiatives they represented in responding to the accelerating fragmentation of knowledge. "Holistic" could even be considered as content-free. "Global understanding" in this integrative sense has become almost a myth in pursuit of which some heroes occasionally continue to quest.

Perhaps it is only in mathematics that the clearest, and most general, distinction is maintained between "global" and "local". Unfortunately that discipline is incapable of taking into account the essential psychological distinction between the two that is associated with broader (rather than narrower) processes of comprehension, communication and learning. It is possibly only using Q-analysis that powerful mathematical clarification is given to the relationship between degrees of comprehension (Atkin, 1981 [review]). Just as one can travel around the globe without being able to see it as a whole from any one perspective, so one may perhaps be able to "circumnavigate" a cognitive whole without being able to "grasp" it. It is even possible that the understanding which tends to "grasp" cannot be fruitfully termed "global" -- or what can be so grasped is not fruitfully understood as a whole of larger significance, or of requisite variety (cf. Ashby's Law). In terms of the challenges of global governance, the ability of a particular discipline to grasp the challenges of society cannot in this sense be understood as "global". It is necessarily sub-global, namely local in some way which honours the particular, "local" insights of that discipline.

A new sense of "global" may therefore emerge as a result of new approaches to integration of purely conceptual knowledge -- in contrast to psychological integration of the incommensurable functions that are the preoccupation of spiritual directors and psychotherapists. This may be one of the most significant features of the future development of artificial intelligence into a "global brain" [more] -- not only as an extension of the semantic web of interconnected computers and human interaction with them. How noonauts navigate the resulting knowledge spaces is a matter for the future -- possibly in metaphorical vehicles [more]. What is beyond "global" in this sense remains to be discovered.

Travel where / when / why?

Where? Astronauts are then faced with a need to define tasks to justify their unusual situation, and the resources allocated to it. The main tasks have been scientific experiment and placing "communication" satellites in orbit -- with unknown proportions of this effort being for military and surveillance purposes. This has been extended to constructing and repairing spacecraft, possibly as a base for excursions to other parts of the solar system. Much has been made of the symbolism of the collaborative, multi-national nature of such endeavours.

Space travel enthusiasts and science fiction writers have proposed a multitude of images of the possible goals of space travel -- within the solar system, to the nearest stars, within the galaxy, to other galaxies, or even to parallel universes. They have been relatively weak in clarifying what it is that travels -- bodies, minds, genetic or memetic patterns -- or the purpose of such travel. The purpose has tended to be simplistic and a reflection of current motivations for travel around the globe: curiosity, adventure, trade, knowledge, proselytizing, colonization, etc. One concern has been to escape the rapidly accumulating problems on this planet. Most of the energy has gone into devising propulsion systems that will make it all happen sooner -- to satisfy a profound sense of yearning experienced by some.

In the case of noonautics, a prime concern has been to escape the suffering associated with daily life -- spurred on by the belief that a far more desirable condition is possible elsewhere. Its achievement may also be framed as a lifelong yearning. Noonautics has devoted far more attention to the purpose of such travel, the significance of the destination, and its definition as a journey. This has tended to be expressed in religious terminology -- "union with God", moving off the "Wheel of Life", avoiding reincarnation, etc.

When? The nature of ekewhen and the journey to it becomes far more interesting when conceptual closure is avoided in both astronautics and noonautics. For example, the notion of "union with divinity" is not especially helpful when the ways in which divinity is commonly defined tend to deny the results of years of effort by some noonauts in endeavouring to understand its meaning and the challenge of communicating any such understanding to others. This challenge is usefully defined by the complexity of the multidimensional nature of reality -- whose psychological significance would seem to be inaccessible to most, including the mathematicians and physicists studying it, who can only express it through formalisms that may well be characterized by the elegance of simple symmetries reminiscent of those associated with mandalas as memo-technical devices.
It is at this point that the widespread current interest in the physics of consciousness [more; more] becomes relevant to the possible future "direction" of "travel" of both astronauts and noonauts (as discussed in the previous paper). It might indeed prove to be the case that the heightened union with reality, and its embodiment by noonauts of high degree, is in some way associated with speculations of astrophysicists considering navigation of multidimensional reality -- at least in so far as the latter involves the transportation of some form of conscious human awareness. For example, in reflecting on space flight in the light of the possible reality of phenomenon associated with the UFO controversy, Jacques Vallee argues that it might be based on understanding beyond that of contemporary science. For him it might reflect a level of consciousness as yet unrecognized, and which is able to manipulate dimensions beyond time and space as currently understood.

In this sense it is interesting to explore the stages identified by some spiritual disciplines beyond the "material" -- as in the case of Buddhist "immaterial" jhanas (see previous paper) -- to the extent that these bear some resemblance to the possible nature of quantum reality, as it might be experienced by an appropriately trained noonaut. Astronautics and noonautics may then have more in common than is currently imagined. Transportation to "distant galaxies" may become possible earlier through more insightful understanding of consciousness and the manner in which complex realities may be embodied and navigated.

Constraints and possibilities

The above pointers imply that we can choose to perceive the knowledge universe through astrophysical metaphors, as previously explored (Being the Universe -- a Metaphoric Frontier: co-existent immmanence of evolutionary phases, 1999). We can choose also to navigate this reality like astronauts -- but necessarily constrained by disciplined metaphors from astronautics. The pattern of a conceptual or behavioural "gravity well" evokes the need to develop some form of "escape velocity" if we are to detach from that sink and get into "orbit", possibly as a basis for travelling elsewhere.

This process of "detachment" is reminiscent of the preoccupations of Buddhist meditation. All the challenges of astronautics contain lessons for this process. And rather than thinking enviously about the opportunities of future generations to travel the planets and the stars, the challenges and thrills are in some measure readily accessible at this moment. But a distinction needs to be made between thinking figuratively of such possibilities and actually engaging in them by exploring the metaphorical constraints to the fullest.

As argued elsewhere (Hyperaction through Hypercomprehension and Hyperdrive: necessary complement to hypertext proliferation in hypersociety, 2006), in this sense faster-than-light (hyperspace) inter-galactic travel (via wormholes and the like) may indeed be theoretically possible, but it may also call for a degree of cognitive discipline that few will care to develop. Again special relativity theory seems irrelevant to daily experience. But this pattern may be immediately relevant when comparing two people (or groups) who have followed quite different learning trajectories. How are they to communicate meaning -- even when they are face-to-face? The learning rate on some trajectories is such that it exceeds the ability to communicate outside that frame back to one's point of departure. Relativity theory may be extremely useful in explaining some communication problems between disciplines or even between children and parents. Some learning can be so rapid that when subsequently confronted with people one was with prior to the learning, they seem to be from a pre-historic world!

The associated "gravitational" effects in communication, due to incommunicability, are usefully explained through the mathematical analysis of Ron Atkin (cf Ron Atkin: Multidimensional Man; can man live in 3-dimensional space?) (reviewe).

Travelling "songlines" to engender the knowledge universe

Can the capacity to travel the universe of knowledge be fruitfully reframed in the light of the imaginative creativity of travelling "songlines"? These might be understood as any of the following:

- patterns of metaphoric associations, as celebrated in a person "of culture" or a person "for all seasons"
- as the configuration of hyperlink pathways in their current primitive form and as they may emerge through the facilities of the semantic web (perhaps as a dynamic form of "favourites") -- the "cathedrals" in which the emergence of the future is celebrated
- as the enactive pathways explored by Varela *** and their resonance with the present moment engagement in the Dreamtime of the Australian Aborigines

Both the real-world implications and their problematic aspects are evident in:

- the increasing emphasis on faith-based governance -- and its dissociation from evidence-based reality
- the associated emphasis on "being positive" and "eliminating negativity"

In both cases these could be seen as crudely dangerous intuitive understandings of cognitive technologies of the future by which to power vehicles travelling through knowledge spaces engendered in the moment. In particular it is how "negativity" is understood to be "eliminated" (in the light of the laws of thermodynamics) that is the essence of most innovation in propulsion systems -- whatever the medium through which the vehicle travels.

The "songlines" can indeed be seen as having been set up (in the past) -- whether as metaphorical associations as hyperlink pathways (variously tracked as a pattern for advertising or security purposes). The emphasis may be very much on potential possibilities and the "goodness of fit" of any recognized pattern. Or they may be understood as being set up in the moment through some kind of intuitively creative act. In either case they can be imaginatively understood as "wormholes" through the "hyperdimensionality" knowledge space. The transportation and reframing achieved through use of a metaphor indeed has fruitful resonances with travelling songlines and the cognitive aesthetics of what has been imagined for astronauts travelling through wormholes.

Any creative act may be associated with such a cognitive experience. It typically involves the pulling together or juxtaposition of otherwise disparate elements, possibly of lower dimensionality. The pulling together configures the elements as a higher dimensional
construct -- just as suitably configuring poles, mud and thatch can create a hut. A melody or a theory involves such a pulling together or concentration of elements -- associated with their transformation into a larger whole. The prime characteristic of this whole is the "ease" with which one can travel between cognitive elements or entities that were otherwise conceptually distant. The construct offers a pattern of songlines.

Such a construct may also be understood through a different metaphor as a crystal. Indeed the emergence of a a complex whole is often described in terms of the process of "crystalization". This metaphor may be extended to that of polishing a precious stone into a jewel by appropriately identifying the planes of symmetry within the crystal. It is interesting that "facet" is a term common to this process and to the technicalities of information classification (cf Patterning Archetypal Templates of Emergent Order: implications of diamond faceting for enlightening dialogue, 2002). The architectural process of configuring elements to be constructed also offers insights. The powerful aggregation of significance in knowledge space in its most problematic sense can be imaginatively related to the construction of a "Death Star" portrayed in Star Wars.

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 Dus": 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.

There is a way in which any such pattern of travel engenders and dimensions a knowledge universe. It gives coherent and comprehensible form to knowledge space through engaging with complexity.

More intriguing is the sense in which, by establishing such a pattern of relationships, their configuration may imply an unsuspected point of focus of higher dimensionality. In the case of a jewel, light is reflected and refracted so as to amplify the incident light -- in terms of an implicit focal point for the jewel's action as a lens. For astronomers, in seeking to resolve a very distant object, emphasis is placed on the need for a very long baseline provided by an array of telescopes. This suggests that diversity of elements configured into a pattern of relationships, as a consequence of travel across the knowledge universe, may constitute such an array from which an otherwise unrecognizable focal point may become evident. The irony is that this difficult-to-resolve focal point is the viewpoint of the participant-observer of the pattern of experience of that travel. It is from this viewpoint that any coherence to the pattern of travel is evident.

- analogy -- isomorphism >>> continuum
- double/triple -- self-reflexive metaphors
- Council of the Whys

Songlines as "elven pathways" through the knowledge universe?

As discussed separately (Walking Elven Pathways: enactivating the pattern that connects, 2006), some of the characteristics of "elven pathways" might include (in no particular order):

- **aesthetic associations**: these are the core of design (interior decoration, clothing design, landscape design, building design, etc); they are also evident in other arts (poetic associations, musical associations, dramatic associations, etc). Such associations are based on principles of harmony, proportion and surprise that have long been studied. They enable understanding to travel pathways between seemingly unrelated contexts -- possibly set in opposition as complementaries. These aesthetic associations constitute the pathways across the abyss of difference. Those engaged in this way have a sense that they are engendering the future through innovative design.

- **lateral thinking associations**: these are now well-recognized as essential to breaking "out-of-the-box", to thinking creatively, notably in strategic situations to bring about a desired future

- **humorous associations**: however understood, these tend to offer unforeseen (even mischievous) links between contrasting domains. Humour "works" through providing a degree of credibility to such associations. Their subtlety for the humourless is recognized in the challenge of "getting the joke".

- **creativity**: whether associated with aesthetics, invention or strategic thinking, creativity depends on making probable and possible the improbable and the impossible -- through giving form to unforeseen patterns. The emergence of the worldwide web exemplifies the manner in which new thinking pathways have totally transformed global communications -- as well as the understanding of globalization and the emerging knowledge society.

- **intuition**: however inexplicable, this is a well-recognized factor in creativity of all kinds. Through intuition unusual associations may be acknowledged as meaningful -- and emerging patterns may first be sensed

- **appropriateness**: this may be understood as a design criterion, expressed as the "goodness of fit", but may possibly be as subtle as a particular well-timed gesture -- prompted by intuition

- **resonance**: this may be understood in terms of sensed "vibrations" (eg "good vibes") amongst people or groups between which such a "connection" could not have been predicted. Between individuals it may be profoundly significant, as with encounters described as "love at first sight" -- or some other form of recognition. Any such mutual recognition may be the basis for building more tangible relationships

- **symbol and myth**: the nature of several of the intangible associations above may be intrameld in the patterns of associations in...
symbol or myth that may well be fundamental to the sense of identity of an individual or a group. Reference to such devices may reinforce the credibility of aesthetic associations and any sense of appropriateness.

- **nature and wilderness**: these of course exemplify subtle relationships and the varying extents to which they are recognized, by the most modest gardener or the deepest ecologist.

Curiously a fruitful way of understanding the experience of the pattern of songlines is the exposure to interweaving birdsong in a forest creating a soundscape pattern of associations.

**Embodying a universe of "stargates"?**

It is one thing to argue that humans can "be their own world" to sustain its "patterns that connect", but how meaningful is this in relation to extraterrestrials, from whom some expect a visit anytime? (cf current setting of "The Paradigm Clock"). Should they be expected to share our "vision"? How are they to be designed into one's script? How to understand the "pattern that connects" the stars? Curiously, as developed by Tolkien, the High Elves were known as the People of the Stars. Ironic if the aliens were to exhibit elven qualities -- being recognizably "fey" and enamoured of riddles!

Suppose that a holistic organization of the universe were to be taken seriously. What might this mean? It could mean that every distant physical body was in some way fractally "represented" on this planet. How might this work? Suppose this "representation" was not so much physical as psycho-physical -- namely involving non-physical dimensions. Modern physics is very free with its need to have up to 11 dimensions to explain matters beyond the three-dimensional.

Within some such broader framework, each person, through their psycho-physical makeup (how they perceived and dimensioned their universe), might then carry a unique patterning "keyed" in some way to distant stellar bodies. The point that merits reflection in relation to "keyed" lies in the experience of how one encounters another individual. One can gain a sense of a quite unique configuration of forces or energies that constitutes that individual's universe. One can, to some extent, look into that person's universe. This process may be tantamount to using the person as a "stargate".

If each of us is effectively bonded to a distant stellar body, then much of our individual daily experience on this planet is interpreted through the configuration of forces conditioned by the "stellar" bond particular to each of us. We may be psychically as close to such apparently distant parts as being a "hair's breadth away"; we may have much of our being elsewhere. We may each of us be seeing and experiencing this world as "aliens". When we encounter another person, do we meet "as stargates" -- each pulling or distorting the significance of the encounter in terms of the psycho-physics of distant parts of the universe?

People may therefore already be able to travel the universe in a most important sense, and many may be engaged in doing so -- whilst physicists reinforce an expectation that we are all dependent on their ability to develop faster than light travel sometime in the future.

Within you, or in collaboration with others, you may have a more powerful manipulator of psycho-physical space than all the particle accelerators and cyclo-synchrotrons put together. You may be being deprived of that awareness by the emphasis of the scientific establishment on the cost and dangers of such gadgetry and the sophistication required to operate them safely! Note the embarrassment relating to cold fusion -- maybe we can all do surprising things "at room temperature"!

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