2000

Knowledge Gardening through Music

patterns of coherence for future African management as an alternative to Project Logic

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The Challenge

This proposal responds to the evidence that strategies to deliver services and remedial measures are increasingly non-viable. Coping at every level of society, including that of national and international governance, is proving increasingly problematic.

Whilst there is indeed still a lot of mileage in conventional strategic initiatives, the concern here is with the many sectors, and inter-sectoral domains, where new approaches seem to be called for. Of special concern are intractable situations, as in Africa, where the western management approach fails to engage with local cultures. This is a situation described by an African management researcher, based at an African management institute, as like a 'drop of water running off a manioc leaf' (Henry Bourgoin, 1984).

It is unfortunate that the challenge of the Internet for Africa is expressed in terms of a combination of illiteracy and inadequate technology infrastructure in a response to the 'digital divide' (see Djamen et al, 1995; Jegede, 1995; and Obijiofor, et al, 2000). This ignores the fact that use of the Internet in western societies is increasingly spreading to the functionally illiterate (and may in fact be contributing to such illiteracy), forcing a shift to visualization techniques that is strongly reinforced by the perceived inadequacies of text information under conditions of information overload -- even for the highly literate. It also ignores the possibility that textually illiterate cultures may be highly 'literate' visually (as in the case of Australian Aborigines) or aurally -- enabling them to creatively by-pass the need for textual literacy in adapting to the Internet and in processing knowledge in ways congenial and valuable to their own culture. It also ignores the impact of satellite technologies in by-passing the need to wire local communities through central nodes. There is a tendency to state the challenge in terms which evoke the same old pattern of dependency on industrialized countries, which of course have a strong interest in the economic implications. This point has been aergued in an earlier paper with respect to use of information for policy-making in developing countries (Judge, 1999). There is a need to at least explore other ways of framing the challenge.

There is therefore a strong case for investing some effort in quite different approaches, even if they appear inherently risky and unlikely to succeed according to the Project Logic of conventional western management. The strange challenges of global governance may only be comprehensible through other means, as Niels Bohr said of understanding atoms: 'When it comes to atoms, language can be used only as in poetry. The poet, too, is not nearly so concerned with describing facts as with creating images.' With respect to what follows regarding African management, another argument of Bohr might well apply: "The question which divides us is whether it is crazy enough to have a chance of being correct." To which Freeman Dyson added: "When a great innovation appears, it will almost certainly be in a muddled, incomplete and confusing form. To the discoverer, himself, it will be only half understood; to everyone else, it will be a mystery. For any speculation which does not at first glance look crazy, there is no hope!" (Kenneth Brower, *The Starship and the Canoe*, 1979)

The following sections therefore explore the possibilities suggested by a wide range of unusual approaches to framing the cognitive challenge of organizing collective undertakings and ensuring their sustainability and coherence. They provide a context for technical arguments in a proposal by a 4-partner consortium led by the Union of International Associations to the Information Society Technologies program of the European Commission (proposal). This proposal was oriented towards the extensive web databases of the UIA on interlinked world problems, strategies, values, and institutions (see https://www.un-intelligible.org/docs/overview.php#orga]

Learning from myth

Music -- Playing to the Beast: It is regrettable that there is so little interest in relating cultural insights into the role of music to the strategic challenges of the times. It is even more regrettable in that music is one of the few preoccupations that engage multitudes of people otherwise largely apathetic to these challenges.

Music has demonstrable and proven capacities to engage the young, the intellectually challenged, the autistic, and the very old -- across cultures and levels of society (Blacking, 1995). Ian Cross (1999) explores why people continue to play whatever they appreciate as music and what role it plays in cognitive development. The case of musical file exchange, using Napster-type software, is an interesting reminder of how significant constituencies think.

There is a case for exploring the various myths involving music to determine what function it was understood to perform in crisis situations. Particularly intriguing is the case of the Beast whose otherwise uncontrolled tendencies could only be calmed by musical harmonies -- leading to the possibility of a more creative and fruitful relationship with it. It might be argued that civilization has created or evoked its own form of Beast as a challenge to governance and could well explore new ways of relating to it.

From a musical perspective, why is the Beast so dangerously out of control? What do musical harmonies bring to the Beast's condition? What synaptic pathways do they trigger to reinforce the Beast's capacity to control itself? By what condition is the Beast trapped? The obvious examples, are the cases of dancing bears and charmed snakes swaying to the music, but perhaps more interesting isf the use of music in calming some with severe mental and emotional problems.

In armies of the past it might be argued that music was a way of engaging and controlling unruly soldiers. It provided an indirect form of discipline, enhancing collective identity, by which all were engaged. It continues to be used in this way amongst populations engaged in tribal warfare, with remnants to be heard in sports stadiums. Cynically it might be argued that society uses music in this way to control a potentially unruly population. For if music became unavailable, would not many 'take to the streets'?

What experiential pathways are offered to the Beast by music?

Strangely it might be argued that in modern civilization, as in the past, it is the Beast that could be said to have appropriated music to some degree. This is well-illustrated by the names of groups and titles of records (as any web search for *Music* and *Beast* illustrates).

What can be learnt from the subtle art of musical accompaniment, notably for movies?

Magical gardens -- and the Garden of Eden: It is in such gardens that everything is purportedly in harmony. In a sense the garden is the manifestation of perfect governance, in which the plants and animals are effective performers of magical melodies -- they are in tune with their environment with which they dance.

There are libraries of books on the Garden of Eden and on utopias of various kinds. Those of greater interest explore the challenge of the Beast in its various forms to such exemplifications of harmony -- the challenge of chaos. But in portraying such gardens and their associated utopias there is usually a break with the many unpleasant features of reality -- banned necessarily from the Garden of Eden. It is rare to encounter means of traversing the interface between perfect harmony and the cacophony of the real world. Yet many would readily agree that music offers vital clues to this, indeed it exemplifies the challenge.

There have always been those who have favoured a particular musical mode as the key to harmony, rejecting other modes as inferior.

The chasm between classical and pop music has long been clear. But *avant garde* composers interested in dissonance have endeavoured to reframe this challenge. The principles of harmony, and the ranges of possible music, are far grander in scope than the particular musics pleasing to particular groups of individuals at a moment in time. In this sense the musical challenge parallels that of world governance, but is perhaps better articulated in technical terms and makes it more obvious why particular styles might be favoured by particular groups. Indeed the range of possible musical styles effectively defines the range of constituencies by which governance is challenged. Simplistic efforts to ensure the dominance of a particular musical style are as obviously inappropriate as efforts to impose a particular style of world governance.

What is the cognitive and experiential significance of a Paradise or of a Music of the Spheres? How might it engage with a world of disharmony and imperfection?

Defining the need

How can knowledge be embodied into song or music -- especially for use in situations where reference to text is impossible or an indication of inadequacy? This might be seen as a key question for sustainable community. It may be a key question for governance of any kind. Even strategic 'fire-fighters' must recognize that if they have to look at a manual in order to put out the fire then it may well be too late -- and certainly does not inspire confidence. Most leaders however are now seen to speak from scripts -- because they have no sense of the coherence of the message they need to communicate.

Given the explosion of information, how can knowledge be packaged in new and more compact ways that are readily accessible -- and effectively act as templates through which to respond to complex situations? These new modalities might be seen as the cognitive equivalent to the see-through information visors of pilot helmets onto which are dynamically projected vital navigational information.

Examples might include:

- First aid mnemonic songs or chants
- Survival songs or chants
- Negotiation songs or chants (holding options at different stages in a complex process, as articulated in *Getting to Yes*)
- Enterprise management songs or chants

There is indeed a case for repackaging most knowledge in this way as an alternative distribution mechanism to costly books or other information media. Whilst the process raises many questions, there are some valuable aspects to rote learning, especially if its aesthetic dimensions can be heightened through song (cf the case of Harold Baum's *Biochemists' Songbook* designed to facilitate memorization of biochmeical pathways; or the use of songs to develop science concepts in chi!ldren http://www.seaworld.org/Songs/songs.html). Of particular interests is the way in which knowledge can be held in learnt songs long before the significance or application becomes evident. This might be considered somewhat like the delayed release systems used to water or fertilize plants. It is the basis for monastic rote learning and chanting in Buddhist monasteries.

Sustainable songs could be designed to carry sets of concepts. Simple variants of a song could carry fundamental concepts, such as the basic 10 concepts of economics, or of electricity, or of sustainable development. The verses or song structure could be designed to be open to more complex development (possible through transposition of key, multi-part development, counter-point, overtones, etc) to carry larger, subtler patterns -- sets of 20, 50, or 100 concepts. The design could allow concepts to be nested according to need. The creative could be challenged to come up with more powerful songs to hold knowledge even more effectively -- somewhat along the lines followed by *avant garde* composers in developing musical ideas.

Qualification for participation in sustainable community, might then depend on knowledge of the songs to determine:

- at what level a person could effectively participate
- what self-discipline the person can apply

Aspects of this already operate in the processes whereby people are (self-)selected into sustainable dialogue processes, whether face-to-face or electronically mediated. Knowing the 'language' of the group may be more a question of knowing the 'song' through which resonant relationships are sustained. 'Participation' in community or democratic processes may come to have more of the significance associated with the technical and musical ability to take 'part' in a polyphonic choral group.

Cognitive functions of music

Sacred music

The function of music as an organizing template for spiritual experience has long been recognized. There is a form of isomorphism or resonance between the music favoured by a particular religion and the structure of that belief system. Music can therefore be selected to reinforce a pattern of belief. It provides scaffolding for belief and, through the coherence it offers, a comfort to those of that faith that are in distress.

From this perspective the strong views of the Catholic Church on particular music, considered anti-thetical to religious belief, are understandable. Various Pope's have expressed great distress at polyphony and the 'diabolic' nature of unacceptable chords (*diabolus in musica*). More recently other Christian groups have expressed concern at the concsequences of the abuse of music in general, but especially with regard to Christian worship, arguing that music itself is being promoted as a mysterious supernatural force that will produce glorious results (Tricia Tillin, 1997).

As an organizing template, the patterns of music may effectively hold special knowledge of unique value to a culture -- and to identity within that culture. It is for this reason that invaders have often sought to suppress musical expression by the conquered. Some religions

have gone as far as to condemn musical expression in any form. It might be said that some forms of musical expression are a direct challenge to certain articulations of knowledge -- they give organizational precision to alternatives and call attention to a larger reality.

Jacques Attali (*Noise*, 1985), former president of the European Bank for Reconstruction and Development, has gone some way towards suggesting that western managerial thinking is effectively playing out schemes of organization articulated in classical western music of the 19th century. He argues that musical organization is a precursor of social organization. Classical music thinking is clearly challenged by other styles considered more appealing by the young or by other cultures. The strength of 19th century compositions might be said to lie in their degree of organization, namely the complexity that could be integrated within them. This is not a characteristic of pop music, except in the case of some forms of polyphony.

What is not clear from this perspective is why no equivalent managerial sciences have emerged to embody the organizational principles articulated in the complexities of some classical eastern forms of music. As argued by Mohan Krishnamoorthy (1997): 'Music has always been regarded as the most philosophical of all the art forms, perhaps due to its exciting and invigorating blend of art as well as science. Indian classical music was referred to as *shastriya sangeetham* until the term 'classical' was borrowed from the West. Loosely translated, *shastriya sangeetham* means 'scientific music'. However, while the science of the music stresses conformity, discipline and acoustic accuracy, the beauty of Indian classical music is the immense freedom that it allows the performer; the freedom to improvise...' 'Improvization' has only recently become a fashionable strategic concept for management.

It would seem that the condition of Africa needs more than is offered by the cognitive framework of the continuing use of Beethoven's Ninth Symphony in moments of international solemnity. A new kind of holy music is called for -- perhaps better framed as a "wholly" music, or a music of enwholement.

'Singing the world'

Many traditional peoples have a relationship to their environment articulated in part by music and song. Priests in many early religions have engaged in rituals that involved some understanding of assisting the sun to rise through song, or ensuring the turn of the seasons. Traces of this persist in the cycle of Christian rituals. It has become a topic in relation to the expansion of hermeneutics through visualism in science (see Don Ihde, 1998). Musicians associated with the green movement have produced conservation songs. For example, Jean Hoem argues: 'More music than one realizes has been composed as a direct response to an actual experience of the composer in nature. . . . Music of this kind has tremendous possibilities for creating environmental awareness and for developing in young people attitudes of care and concern for the environment. Awareness and appreciation are the prerequisites for developing an environmental ethic, and involvement is the key to learning these skills. Such involvement in [music] can be achieved through (1) listening, (2) performing, and (3) creating.'

The Australian Aborigines have a special relationship to their lands that involves maintaining songlines across the landscape through song. The land is cared for through song. Topographical features may then be described as 'sung'. This understanding of the noosphere may be usefully compared to that based on information highways (Judge, 1996), although absent from a recent study of noopolitics (John Arquilla and David Ronfeldt, 1999).

Modern variants of this may be seen in the use of hymns or other songs in morning assembly at schools. Japanese corporations have encouraged the use of corporation songs to focus and motivate employees of all grades -- to give coherence to their collective effort. Several US businesses specialize in the composition of customized corporate songs (http://www.renegadecow.com/corporatesongs.htm; http://www.yoursforasong.com/). Declared objectives include to: motivate a sales force; help people remember key points and ideas; inspire personnel; keep clients thinking of the corporation.

This has rarely been extended into other forms of plenary assembly, with the notable exception of socialist use of the *International* and the use of national anthems, whether sung or not. Totalitarian and nazi regimes have used song to engender and enforce a perspective. A document on the web in 2000 during the US presidential electoral race, indicates Bush and Gore as 'singing from the same corporate songbook' funded by 66 corporations. It is an interesting, but perhaps naïve question, as to why the General Assembly of the United Nations never finds any reason to burst into song in seeking to care for the world. But of course this does reflect the practice in national parliaments in caring for their countries.

The more official or formal modern uses need to be distinguished from those in which the singers are engaged cognitively in the process to a higher degree -- presumably the reason for the Japanese use of such song. This raises the question of how effective is song in focusing collective endeavour when engaged in voluntarily rather than through obligation or as a facilitated process. What might be the effect of greater use of music and song in plenary assemblies of representatives? Especially in Africa?

Of special interest is the use of multi-part songs to reflect the complex interplay of different, even opposing, perspectives in a larger comprehensible whole. It is ironic that sub-Saharan peoples are often highly skilled in this and yet find it dissociated from the 'serious' western-style decision-making according to which they have been obliged to function. Why is it that they have effectively been deprived of the assistance of a natural skill supportive of cognitive complexity in dealing with complex social situations?

Musical therapy

Healing through music and song has a very long tradition of which Marsilio Ficino was a noted exponent at the time of the Renaissance. It has been extensively explored in recent years (see for example: http://www.westmusic.com/music_therapy_library.asp; http://www.gironet.nl/home/kjk97/practice.htm), even as a means of assisting the dying process.

There seem to be few examples of the use of music to 'heal' societies and to offer a form of remedial therapy to governments in disarray (for a review of these possibilities published by the European Platform for Conflict Prevention and Transformation, see Kees Epskamp. *Healing Divided Societies [through visual and performing arts]*, 1998). However the Spring 2000 issue of *Resonance* (published by the International Music Council) has as its theme 'music and peace' which is the thematic programme of IMC for the year 2000, strongly

supported by UNESCO. But although suggestions for projects are requested, it is unclear in what way they will move beyond the long-established pattern that fails to address the alternative cognitive possibilities potentially associated with music in concrete crisis situations such as Africa. Are there indeed new ways to work with music that might be meaningful to Africans?

There are undoubtedly songs that helped to focus the national spirit in times of emergency. The UK was attentive to this during the more harrowing times of World War II. Song continues to be used as a means of raising the morale of troops. Whether particular songs can be considered to have performed a healing function for a (possibly divided) country is unclear, although presumably this is one function desired of national anthems.

At present any effort at reconciliation is designed to get the separate parties to the same table and produce and sign a text in appropriate legal terminology to ensure their agreement is binding. The text is usually relatively meaningless and unmemorable to those not present.

The possibility that the focus of a reconciliatory gathering might instead be on the composition of a song (sufficiently complex to hold and honour the represented differences in a larger set of harmonies) has not been explored. It is surely worthy of modest effort -- especially as a service to tribal populations whose preferred mode might be aural rather than verbal and written. The 'conclusion' of the gathering is then a song, which should necessarily be valued by the populations whose interests are reflected in it. The closest approximation to this in the western world is the annual Eurovision Song Contest -- which serves to some degree to bind people across frontiers (although totally unrelated to policy decisions). This approach might have much to recommend it at a time when most declarations are effectively 'unsung ' and designed to be 'unsingable' -- a strange contrast to pop songs evoking the same themes, but known worldwide.

Music as a weapon

It is easy to assume that music is unrelated to organizational operations in the real world and is at best a tool of public relations. However its value in military style operations has long been recognized. Troops were accompanied into battle through music, notably with the bagpipes. Music sequences were also used for signalling purposes during battle (eg sounding the attack, or the retreat, by bugle). They psyched themselves up for battle with music, as continues to be the case in modern tribal warfare (for example by the Inkatha in the inter-ethnic conflicts accompanying the transformation of the apartheid regime in South Africa).

Music continues to be used to intimidate opposition, as exemplified by the drumming during Orange Marches in Northern Ireland. It is used in certain siege-type operations by the US military (as with the psy-ops in Grenada and Panama) extensively documented on the web. War chants have a long history of which traces are to be seen in the Haka chant performed by the All Blacks rugby team prior to a match. They were designed to terrorize the enemy and embolden the attacking forces (as continues to be the case with sports chants).

Chants have always been used, as one technique, at the community level to mock those scapegoated by the community. Their power is well understood in harassment and bullying by the institutionalized, such as in schools or prisons. Song may also be used in a community to entrain dissenters and to drown out dissent.

Questions might be usefully asked about the role of certain forms of western music in converting other peoples to western ways and away from their own patterns of behaviour and modes of thought. As such it is in instrument of cultural imperialism through which other cultural identities are effectively crushed. Religious authorities have, throughout history (notably in colonial periods), sought to prohibit songs of a culture -- to ensure susceptibility to those of the invading colonial or religious power. Shopping-mall music is an instrument deliberately designed to encourage consumerism.

The destruction of the autoimmune system of up to 25% of Africans through AIDS may prove to have been a tragic parallel to its memetic precursor, namely the destruction of the knowledge organization protecting African culture from invading cultures -- who now proceed to withhold pharmaceutical products offering some palliative effects.

For those who believe it appropriate, what form does the music or song take in the 'battle' against drugs or in support of sustainable development? Protest songs have been significant in reframing certain causes and in opposing war (as in the case of Vietnam). But it is perhaps the churches in their militant role 'against the forces of Satan' that have focused most clearly on the use of music and song as a weapon -- notably one employed by the 'forces of darkness' . But it is not clear what might be learnt from their efforts.

Music and song as organizing templates

From the above it is clear that music has performed a vital role in motivating collective initiatives and providing coherence to an enterprise. The question is whether its possibilities have been neglected in relation to contemporary challenges of reconciliation and sustainable development. Could music be designed to bridge gaps between opposing parties and embody the larger significance that they share in ways that joint declarations and legal agreements have been unable to explore? Could music provide organizing principles relevant to the operationalization of sustainable development, ensuring its coherence over time?

There are various leads that merit exploration:

> **1. Mnemonic:** Complex organization requires enhanced collective memory. In cultures with writing, or oriented towards the written mode, text serves this purpose. In a world of very significant levels of functional illiteracy, even in industrialized countries, other mnemonic techniques are necessary. Interesting examples include:
>
> - Biochemical pathways: mnemonic songs (see above)
> - Mnemonic chants: attack pattern in the classic *Dirty Dozen* movie
> - Ditties for cooking, and other procedures
>
> How is it that untrained people are able to remember hundreds of songs whereas the articles of the main legal instruments, supposedly designed to regulate civilized communities (declarations of human rights, constitutions, etc), are memorable only to

those with a legal bent? Does this not suggest a potential for holding insight relevant to sustainable development that has been extremely poorly explored?Exceptionally for such an institution, an FAO electronic conference on small farmer group associations (SFGAs) in 1998, faced with the problems of low levels of literacy amongst those involved in decision-making bodies of such groups, raised the possibility of reinforcing rules and procedures in verbal ways through developing means for 'ritualizing procedures which can be strengthened by mnemonic devices (songs, rhymes, etc)' (http://www.fao.org/WAICENT/FAOINFO/SUSTDEV/PPdirect/ppfo0007.htm)

2. Work chants: These have long been used as an accompaniment to work, whether by sailors, field workers, slaves, trainee soldiers in bootcamp, etc.Desdpite the 'two cultures', in German there is a tradition of guildsmen having other social roles as singers, as exemplified by Wagner's *Meistersinger*.

3. Jingles: The advertising industry is adept at designing memorable jingles to entice the mind in ways beyond the capacity of political slogansl. Jingles are designed to persuade people to a certain pattern of behaviour. Jingles with a political message have been widely used in Communist China, notably in street broadcasting.

4. Rhythm: It is clear that rhythm engages people in patterns of organization, especially when it reinforces natural rhythms (Ayensu and Whitfield, 1982). It is often something they are engaged by voluntarily, although a rhythm may be forced upon people notably with drums (as in marching, or slave rowing of triremes). Rhythm may therefore be used to control patterns of movement, although it is precisely the notion of 'control' that is called into question when people are enticed into the rhythm voluntarily as in dance. Monastic communities have explored its use in regulating their daily rhythm, whether using drums (Zen monasteries) or bells (Christian monasteries). The tradition of using bells continues in many schools, and has been converted into a simple noise in the case of factory hooters and whistles. The question is then what function it might have in regulating sustainable communities in general -- of which monasteries are a very particular case.

5. Enticement: How are people 'enticed into' music? There are some quite distinct lines of inquiry:

- Fairy stories: The process has been explored to some degree in many folk tales and myths.
- Incense: Religious rituals have used incense as part of a package of techniques that dispose people to the patterns of organization offered by music
- Drugs: These are a secular variant on the use of incense.

Are there learnings from this in relation to enticing people into new patterns of behaviour of a more sustainable form? Why does western legalese fail so significantly in engaging people into new patterns? Why does the United Nations continue to invest so heavily and exclusively in a mode that has such a questionable track record? What exactly is to be learnt from initiatives such as the Symphony for the United Nations, or its EU equivalents (Chamber Orchestra of Europe http://www.coeurope.org/; European Union Youth Orchestra http://euyo.oracle.com/; European Union Baroque Orchestra http://www.eubo.org.uk/) -- where the setting for the performances is designed for decorative rather than cognitive effect, and where the performances fail to respond to the multicultural challenge of musical preferences across classes and cultures? During the time of U Thant (according to Robert Muller), it was informally proposed within the United Nations that Beethoven's *Ode to Joy* should become the anthem of the UN. When asked his opinion, Pablo Cassals said that as an alternative he would write music for this purpose. The resulting lengthy peice has been rarely if ever performed -- an embarrassment at official greeting ceremonies for visiting UN dignitaries. The *Ode to Joy* has become accepted as the anthem of the EU however.

6. Identity: For some, songs may in some measure carry the identity of:

- a person:
  - my themes
  - my melodies
  - my chords / style
- a group or a community (as with a sports song, a student song, or a schools song)
- a relationship ('our song')

In a world challenged by territoriality and erosion of individual and collective identity, is it possible that music and song could be developed to carry identity in new ways? Is there some equivalent to genetic identity -- memetic identity?

7. Collective energy: How are collective energies engendered, garnered and gathered in places where hopes are low?

- Africa (charismatic churches)
- Latin America (Santeria)
- slums (gangs and music)
- bars / joints / hangouts
- young people / discos
- elderly

8. Theory of harmony: It is curious that so little effort has been made to explore implications of the theory of harmony to social harmony, as suggested elsewhere (Judge, 1981; 1993). One unexpected acknowledgement of this possibility is suggested by the following discussion of harmonization between legal systems by Esin örücü (2000):

> 'There is a place for divergence even in a scheme of convergence, as harmony of differents is more fruitful and beneficial to the world of legal learning than efforts to standardise. What is the meaning of integration? Does harmony

> mean similarity? Is there a dichotomy between harmonisation and harmony? Harmony is both an objective and an inherent characteristic of any system. Law subsumes harmonisation. The notion of harmonisation of laws in the context of comparative law is, however, obscure. Harmonisation as a concept is a process of bringing about harmony, analogous to that in music. As a method, harmonisation becomes a goal for law reform. However, harmony presupposes and preserves diversity. In the analogy to music, components retain their individuality but form a new and more complex sound. Consonance as the opposite of discord is a pleasurable combination. Harmony is a relative concept which can also include dissonance. We can achieve harmony not only by eliminating diversity but also within diversity.'

The relevance of music to comprehension and dynamic organization of complex data structures on the web has been explored elsewhere with respect to the databases of the Union of International Associations (examples)

Notation systems

Knowledge tends to be organized through notation systems of some kind. There is a long history of musical notation of which the western system used for classical and popular music is the best known (although *avant garde* composers use other forms of notation that are of great interest). Organizations in society also tend to have their structure represented by a graphic notation system, most commonly the traditional 'organization chart' in hierarchical form. There is a potentially intriguing relationship to be explored between conventional musical notation and hierarchical organization charts, even though the former might be thought of as representing a dynamic and the latter a static structure.

Consider representation of music on a grid of parallel lines (the 'staff') with a sequence of notes and chords represented -- five parallel lines are used in the modern form. The height or 'pitch' of the note is indicated by its height on that grid. Two parallel grids ('staves') are commonly used to indicate different ranges of notes, with the lower often played by the left hand and the upper by the right -- although the organ may have a third (played by the feet). Sequences of notes on a staff may be 'beamed' together by a horizontal linking bar to make them easier to read. Notes (to be played simultaneously) can be linked vertically on 'stems' as an indication of chords, at a particular position in the sequence -- played from left to right. The sequence of notes is broken into clusters by vertical 'bars' -- the length of the cluster sequence is the 'measure' determined by the meter. The meter signature indicates how many beats there will be in the bar.

Organizations tend to operate in cycles, whether quarterly, annual or 2-yearly (like UNESCO) -- with each cycle being the occasion for any reorganization and reallocation of resources. Some organizations may be better characterized by weekly (eg some factories) or daily cycles (eg some contractors). Suppose the organization chart for any one cycle was to be considered like a bar of music. The vertical organization of such a chart tends to have up to 7 levels, although this is considered a 'deep' hierarchy and 'shallower' ones are more common -- like 5, for example. The 'highest' positions on the staff (curiously the same term as in music) are displayed on the top row, with those under them on successive rows below. Each functional division of the organization is displayed from left to right across the chart.

During a particular cycle it could be argued that resources are allocated so that each function is active (or communicating) in a particular way. For example, the lower three positions on the 'staff' of the first function, the middle function of the second, and the top two of the third -- if there are only three functional divisions in the chart. This starts to resemble three notes within a bar, two of them 'chords'. The possible number of notes per bar is of the same order as the number of line functions in a hierarchical organization -- even a government.

Within a hierarchical line of an organization, vertical interaction between positions may have a resonant dynamic as in a musical chord. It might be argued that a bar of music is associated with the attention span through which the music is perceived and, although played sequentially, is experienced as a static gestalt across which are experienced horizontal resonances. Correspondingly, although there is no dynamic sequence to the line functions of an organization, there are also horizontal resonances between them that define a gestalt through which the organization is perceived within a particular cycle. Both organization chart and musical bar might be experienced like standing waves.

In this light it is now interesting to look at an organization across a succession of cycles and compare it with a sequence of bars of music. This could be done by overlaying onto a single organization chart the developments of that chart for a number of cycles. The same could be done for a sequence of bars of music, overlayed onto a single bar. These two forms, best represented on a computer graphical display, now acquire increasing resemblance, especially if the dynamics can be retained by using blinking effects as features become active or inactive. This investigation effectively 'morphs' one into the other.

But what this suggests is that cycles of organization may have strong resemblances to cycles of music. And what makes for interesting music may also make for functionally significant organization. If this could be shown to be the case, then possibly policy cycles could be constructed in the light of musical principles -- according to the cultural harmonic preferences of those for whom they are intended. It is possible that the musical preferences of some non-western cultures call for styles of organization quite different from those favoured by western industrialized society. A different rhythm may be called for to engage people appropriately. The disaffection of non-western cultures for western organization may have quite similar cognitive origins to their indifference to western styles of music.

Also of interest is the significance of parallel sequences ('staves') of notes -- played by the right and left hands, for example. In the case of organization charts, only the upper 'staff' is evident, effectively the 'top down' or overt representation of the organization. Equally relevant to organization dynamics is the pattern of 'bottom up' or covert dynamics. This might be represented on a second organization chart -- the kind articulated by consultants to reflect the undeclared communication pattern known to those who work in or interact with the organization (its 'left-hand' !). It is the interaction between the two 'staves' that constitutes the reality of the organization. This relates to the Japanese distinction between *tatemae* (overt or stated) and *honne* (underlying or unstated) in any communication, especially in

organizations. It is tempting to suggest that the interplay between governmental and **non**governmental organization in any situation could usefully be seen in terms of the upper and lower staves.

Music of the spheres

From Pythagoras to the Romantics, music was perceived in western cultures to have a role that far surpassed its modern status as 'art form' or 'entertainment'. For those 2,000 years it was no less than an embodiment of the scientific world; an expression of celestial harmony which reflected the diversity and complexity of man and the universe.This view has been held, and continues to be held, in many other cultures. The fundamental cognitive role of musical frameworks has been explored in studies such as Ernest McClain (1976). As Antonio de Nicolas (1986) argues: Music is of course organized sound. It is also structure, sound-form and geometry. Unless we teach and present these "technologies" as what they are "embodied technologies" that can change our way of looking at things, hearing, breathing etc., they will always remain cultural artifacts to be used on weekends or as an escape. These technologies built worlds and unless the subjects (our children mostly) develop them they (the children) will be swallowed by the modern digital repetitious and repeated technologies. We are what we do and what we do is possible because of our embodied technologies and of these technologies music-epistemology is the language of the primary (right) brains, not as sound but as structure.

In concluding his review of the role of music as a pattern of coherent understanding through which the world may be perceived, Jamie James (1993) argues that at present: 'There are no towering figures in the sphere of concert-hall music because that is no longer the music that focuses the deepest imaginative energies of the culture. what we call classical music has become an elite and self-serving institution, over-whelmingly dedicated to the curatorial function of preserving musical traditions of the past -- undoubtedly an important function, yet anything but vital -- and to a much lesser degree serving as handmaiden to the last wheezing, exhausted remnants of the avant-garde...The forms have been superseded; the distance between artist and audience has simply become too great....In pursuing the concept of the musical universe from the first notes of Western music to the latest electronic screech, we have traced its gradual passage from vitality to sterility, from substance to form.'. As such, in the light of Attali's analysis, it is very much a reflection of the ability of western Project Logic to provide a coherent response to the challenge of the times.

Attitudes to the modern international conference, at which the future of humanity is purportedly planned, resemble James description of audiences in concert halls: 'Plush, upholstered temples were constructed, where the faithful manifested their reverence by an awestruck attitude unknown to earlier generations' (p. 233). He denounces the 'psychotic bifurcation' of civilization as articulated in C P Snow's *Two Cultures* (1959), in which 'what passes for a Renaissance man is a biologist who goes to the opera twice a year, or a poet who uses the laws of planetary motion as a metaphor for love' (p. xiv). The possibility that musical insights may have much to offer in reframing understanding of the tensons of modern civilization and the pursuit of global harmony is simply denied.

James offers the reminder that: 'Anyone who conceives of Pythagoras as the inventor of a geometric theorem, the formulator of laws of music theory, and the utterer of cryptic aphorisms will miss the essence of his thought entirely, for the whole point of what he taught is the interrelatedness of all human knowledge' (p. 23). This interrelatedness is again emerging as a challenge through information overload on the web and the technical aspirations for a 'Global Brain' -- whose nature Peter Russell describes with a musical accompaniment (http://www.peterussell.com/GBVideo.html). The possibility that its coherent organization and comprehension might be dependent on musical insights remains to be explored (see Judge, 1997]

Sustaining community through song

'Sustainable community' is a loose term that suggests desirable processes and indicators but cannot be easily related to anything in particular. It is perhaps clearest in the sense of surviving beyond short-term cycles. However it does not preclude the notion of a community existing on subsidies. This may be quite sustainable if the handouts persist.

Beyond the tangibles of community, there are community intangibles that can be experienced through collective singing. Examples include what is experienced and reinforced through work songs (include planting and fishing songs), military songs, student songs, learning songs (typical of kindergarten), campfire songs (promoted by youth movements), and religious songs (notably those of monastic communities). Activists of every kind have developed songs to sustain their community of belief and initiative (see the 30,000 songs in the Green Book of Songs at http://www.greenbookofsongs.com/freebrowse.asp). The much-reported final singing on the monument to Project Logic -- the *Titanic* -- raises interesting questions -- if only as to what song humanity might sing as it finally extinguished itself.

How is a community nourished and sustained by song? How do such processes differ from those associated with sustainable community development of a more tangible kind.? Morning 'assembly' in intentional communities or certain corporations may serve to 'sound a note', rather as in the attunement process of an orchestra, to evoke appropriate community coherence (whether to entrain dissenters, smother dissent, or exceptionally to recognize diversity).

A more essential question however relates to the distinction between:

- ensuring community coherence and identity (irrespective of its effects on other communities) and
- ensuring the healthy development of that community in relation to its external environment

The question might be phrased as: How is a community's development sustained by song? The question might be sharpened in the light of the Club of Rome's distinction between maintenance learning and evolutionary (or shock) learning (James Botkin, et al, 1979). In this sense it is especially significant in connection with learning communities where the challenge is some form of growth in insight, whether individual or collective? How does song sustain the development of such a community, especially when other learning supports are not available?

It might for example be argued that spiritual communities of the past have embedded learning pathways in song to enable insight to emerge whenever that is possible in subsequent generations. The function of the *Rg Veda* could be understood from this perspective --

as a means of sustaining community of insight despite interruptions by periods of social chaos. The *Rg Veda* could be chanted as a dead ritual through to periods when it triggered insight in a community -- or communities of insight could co-exist with the majority insensitive to the learnings embedded in such song.

This leads to the question of how learning pathways are embedded into song and music, in contrast to text. Legal texts successfully embody organization constitutions that may make provision for the organization's development. Programmed learning manuals are deliberately designed to enable exploration of such pathways. Music embodies patterns of structural development in other more direct ways. A piece of music may be designed around the development of a harmonic theme that directly engages awareness and memory. This facility is seldom possible with legal text or programmed learning. The current enthusiasm for multi-media learning is a recognition of this.

Key sets of concepts can be embodied into songs/chants. Many religions adopt this practice. But strangely precepts such as the 10 Commandments are not handled in this way. And yet the multiplication tables may be so handled when teaching arithmetic, as well as many other mathematical operations (see http://www.learninglyrics.com/t_mult.html). It might well be asked to what extent UNESCO has supported this mode of learning in Africa.

How do monastic communities establish a link between sets of precepts and the articulation of their constitutional rules to ensure that their order is sustainable?

Web knowledge organization and music

Whether or not Pythagoras or Ficino discovered any special association between particular tones and particular categories of knowledge, it is clearly possibly to make such an association if only as tonal labels in the light of personal preferences.

It is possible that the poetic originators of the chanted *Rg Veda*, and early Sanskrit scholars associated particular tones (or combinations of tones) with particular categories of knowing. It is the case that sounds were associated with particular modes of awareness by them, and in various forms by practitioners of musical therapy throughout the ages. On this point, Antonio de Nicolas stresses that the Sanskrit Rishis associated particular tones with particular categories of experience rather than of "knowledge". We know from neurobiology that the first two intelligence centers, the reptilian-kinesthetic and the limbic, express themselves only as vibrations. Their language is "sound" criteria (the fourth and fifth, the pairs, the cyclic octave etc.). For these experiences to become form they must pass and be converted as a translation by the right visual neocortex into visible forms. Theis visual forms may be the end result of an act of creation or it may become a ritual (a priesthood takes care of that) imposed from the outside on the unaware individual. Creation disappears and ideology takes over, religion gives way to idolatry. In view of this, what is the biological function of "sound" or "visual" criteria in the computer? Are they technologies that the "reader" can understand -- enabling them to become instruments of creation, or are they subtle "temptations" from a god-technology to convert infidels to faithful servants through the ritual of technology? Which one of these two language criteria, "sound" or "sight", sensitizes the reader more? Whatever the direction of this discussion the true result is that "sound" criteria for language is the original criteria of language, while sight criteria is derived and not original. (de Nicolas, 1978). As he says there:

> "Therefore, from a linguistic and cultural perspective, we have to be aware that we are dealing with a language where tonal and arithmetical relations establish the epistemological invariances... Language grounded in music is grounded thereby on context dependency; any tone can have any possible relation to other tones, and the shift from one tone to another, which alone makes melody possible, is a shift in perspective which the singer himself embodies. Any perspective (tone) must be "sacrificed" for a new one to come into being; the song is a radical activity which requires innovation while maintaining continuity, and the "world" is the creation of the singer, who shares its dimensions with the song." (p. 57)

Today users of the Windows operating system are familiar with the sounds that can be generated by a computer in association with particular software operations -- to confirm successful completion or warn against some form of error. These may be reconfigured by the user according to personal preferences and choices. Windows also offers special 'accessibility' features for those who are challenged by 'normal' text-based user of a computer. Increasingly voice recognition software also allows a user to control computer desktop operations by voice commands.

It is therefore but a short step to combine some of these initiatives and control a computer using tones and tonal sequences. Many of the keyboard and mouse functions could be triggered by tones rather than by voice commands. For someone with modest musical skills the need to be literate or computer literate could be reframed in terms of providing a tonal framework through which operations could be triggered. For example it might be quite unnecessary to have a menu button labelled 'File' or 'Options', when these functions are known to be triggered by specific sounds. When such a menu 'opens' as a result of the specifc tone, the submenu functions could be similarly triggered -- indeed these might be directly triggered by a chord or a simple melody. In effect a user could define 'tonal macros'. Participants in networked computer games already pass 'sound macros' between each other.

With further exploration, and very little technical adaptation, features of this kind could therefore enable people without textual skills to navigate websites. A computer user of the future might therefore be more like someone whistling a sequence of tones or simply meloldies. For those with musical skills, this could be much more rapid than keyboard or mouse operations. It is slightly ironic that the 'mouse' as first invented by Douglas Engelbart in the 1960s, was complemented by a 5-key chord Keyset device for the fingers of a hand -- as might be used to play a stringed instrument or flute, notably of a type common in Africa. The Keyset enabled a process known ironically as "chording" in which keys could be simultaneously used. Subsequently mouse operations were reduced to one or two finger 'pick and click', although the more recent 'major innovations' in 'intelligent mouse technology' have returned to five buttons. Chording is effectively done with keystroke combinations and macros.

The tonal equivalent to a software 'file manager' (like Explorer) might work more like playing an instrument such as a harp. 'Touching' the file label would trigger a sound, just as at present it could supposedly trigger a verbal label. Passing through a set of files would be like evoking a sequence of notes from a harp. This sort of understanding would quickly lead to ways of organizing knowledge in terms of musical frameworks. This mode of organization might be as impenetrable and incomprehensible to the average western mind as is, to other cultures, the textual organization that has acquired such prominence as a result of western dominance.

Future non-western use of a computer might even be perceived as resembling control of a sheepdog by a shepherd through whistles, or of a horse by clicks from the rider. People might control their web navigation by playing notes and chords on an instrument. But even more interesting is the possibility of tone pattern control in the case of users of 'sung languages' with a range of pitches (Norwegian, Mandarin Chinese, etc). Nearly a quarter of the languages of the world are tonal. Many of the languages of South-East Asia and Africa are indeed tone languages, although the tonal phonemes of most African languages are based on tone levels rather than the tone contours of most Southeast Asian languages, so pitched drums are sufficient to represent them. Such languages use pitch to signal a difference in meaning between words. These pitch variations are an important part of the language, just as stress and proper word order are in any language. In these languages, word meanings or grammatical categories such as tense are dependent on pitch level (more). There are major typological differences between tone systems, ranging from highly restricted tone systems such as found in Scandinavian, to systems with 5 distinctive tone levels, complex contours, and complex patterns of tonal alternations. African drumming is probably the most sophisticated in the world, often involving long training from childhood within traditional religious societies. It is suspected that these drummers can express a lot more than just tonal distinctions. Could such drumming be used to control collective web navigation?

It is useful to reframe the challenge of 'accessibility' of computers. Currently this is focused on those who are 'visually' challenged -- those who have failing vision and individuals with partial vision, as well as those who are blind. Visual redundancy of auditory clicks and tones has therefore been designed into accessibility features. Cognitively impaired individuals have their greatest difficulties in dealing with the software itself, although layout and labeling of operational controls can also effect their ability to use computers. Cognitive impairments can take many forms, including retardation, short- or long-term memory impairments, perceptual differences, learning disabilities, and language impairments. Of particular concern are computer, information or transaction systems which are intended for public use. Proper design of these systems can greatly increase the number of individuals with mild cognitive impairments who could use the systems.

Reframed however, it might be argued that another kind of interface (as with synthesizers) would work for the musically skilled but textually impaired. Indeed it might be argued that current computers are designed essentially for those who are musically impaired and with little effort to ensure that those whose higher skills are musical can benefit from them. Has current knowledge software essentially been organized for those who are effectively tone deaf and are totally dependent on 'textual accessibility' features?

There is a further twist to the prevailing information design philosophy with its emphasis on 'vision' -- notably as the basis for strategy making and global plans. This takes little account of the extent to which those using this metaphor are actually visually competent, rather than visually challenged. No one asks whether those articulating or exposed to such strategic visions can 'see' clearly and are not in need of a 'corrective lens' for a stategic equivalent of myopia or presbyopia -- athough suggestions that policy-makers are 'short-sighted' or 'far-sighted' are not lacking (Judge, 1993). Is it possible that the whole approach to knowledge systems and strategy is biased by assumptions about the primacy of vision, whilst denying both the many failings of vision and the skills associated with other senses such as sound that are possessed by significnt portions of the global population? In effect is global society permeated by patterns of sensory discrimination favouring the sighted ('sensism')? Is it any wonder that policy-makers have trouble 'hearing' the people -- and need special devices for doing so? Or that we are in danger of developing an essentially 'tasteless' society?

How would a sound browser on the web work for those with the appropriate skills? The notion of a 'sound browser' has already been appropriated, as has that of a 'sound search engine' (http://mmsound.about.com/compute/mmsound/msub23.htm). At present these are more focused on location of sound through text labels, not through sound patterns. What might emerge from the constituencies associated with musical file exchange over the web, using Napster-type software? A group Sense Internet (http://www.sensei.co.uk/) uses a homepage that points to the different senses, suggesting an intuitive recognition that reframing is possible.

From a musical perspective, many of the speculative points made in this paper with respect to knowledge organization and music (notably on the web) are given significance and legitimacy by the valuable study by David Rosenboom

C. Cognitive functions of gardening

Gardening and flowers

The resonances between diverse parts, so evident to the ear in music, are often acknowledged in nature -- whether in wilderness experience (as promoted by deep ecologists) or in an ordinary garden. Nature can be experienced as a symphony to the present moment. This is in contrast to preoccupation with nature as a threat or as an opportunity for exploitation.

The present moment can offer threat. It can be exploited, but it can also be gardened. The varieties of approach to gardening offer a useful reminder of the qualities of mind-set that can be brought to bear on the present. They might include:

- gardening for survival under harsh conditions (xeriscaping)
- casual gardening for decorative and recreational purposes
- competitive gardening
- specialized gardening (roses, chrysanthemums, exotica, etc)
- symbolic, memorial, or ceremonial gardening
- formal gardening (patterned layout, shaped bushes)
- designer gardening, carefully planned

- permaculture gardening (mutually supporting species)
- scientific or educational gardening (botanical and conservation, herbal pharmacopeia, and arboreta)
- minimal gardening ('let nature takes its course')
- allotment gardening
- landscape gardening
- unplanted (possibly surfaced) yard, with isolated gardened plots

A distinction can be made between gardening for a variety of mundane purposes and gardening intended to enhance some other level of meaning. The kind of discipline and long-term commitment required for an ideal Japanese garden (characteristic of the ideal Zen monastery), illustrates how a garden may be used to reinforce other levels of insight and community. Great attention is paid to the interplay of vistas through the seasons, with the plants and other features playing off against each other. And ideally the hand, and plan, of the gardener should be invisible. The garden becomes a meditation interface.

A distinction can also be made between gardening that is designed to include non-plant species, and gardening designed to exclude all species not essential to plants (unless they are only minimally disruptive and preferably decorative, like butterflies or peacocks). Most gardens are of the latter kind -- necessarily defended by pesticides. Inclusive gardening is especially challenging and is perhaps exemplified by the sacred groves typical of the Indian sub-continent. The exclusion of uncontrollable animal species from an ideal garden has connotations echoing back to the Garden of Eden. It exemplifies the fundamental challenges of sustainable community development. Most utopias, as well as monastic communities, achieve their sustainability by designing out 'animal' nature -- an impossibility in communities of relevance to the real world. The garden-focused Findhorn Community in Scotland, for example, prohibits pets.

Aside from the standard decorative use of plants to enhance the prestige of institutional buildings, conference rooms and places of worship, the relationship of plants to organization of knowledge and community is at present exemplified in two ways:

- Ironically many databases, menus and systems of categories make use of a 'tree-structure' metaphor, although this in no way benefits from insights into the structural variety of plants.
- The Japanese art of flower arrangement (Ikebana) is an aspect of the bushido discipline that underlies much of the Japanese approach to strategic thinking. A boardroom flower arrangement may therefore be used to carry important meanings and insights.

Web knowledge organization and flowers

With the emergence of the knowledge society based on the web, the explosion of websites has been widely noted. In the immediate future it is to be expected that no collective initiative, or active individual, will be without their own website. It may even become the prime affirmation of identity. The challenge of navigating and comprehending the knowledge implications of hundreds of millions of websites is only now becoming apparent.

Curiously one of the most useful metaphors through which to approach this is by recognizing that websites function in relation to one another like flowering plants in nature -- within 'food webs' within the 'web of life'. Arrays of websites may be the knowledge gardens of the future -- prefigured by so-called 'web rings'. Consider:

- Website design focuses on rendering particular websites comparatively more attractive to users, in order to increase the number of visitors, to delay their departure, and to ensure that they return. This resembles very closely what flowers have sought to achieve through natural selection.
- The high degree of competition between websites to ensure their survival is well mirrored by the relationship between flowering plants. Websites have to be innovative in developing a unique identity that ensures that they are recognizably distinct from others. In so doing they may specialize in response to particular kinds of visitor, as is the case with flowering plants.
- Increasingly websites are active rather than passive, meaning that visitors bring information to them (often unwittingly) and take information from them (if only in the manner in which their choice of subsequent destinations is determined by options on a given page). Many flowers are of a design that ensures that insects transfer pollen between plants.
- Increasingly websites are hosted on specialized servers that may determine those who have access to them or govern the routes whereby access is achieved. Similarly, particular plant species may only exist in certain habitats, protectively isolated from potentially competing species in other habitats.
- Websites exhibit patterns of growth, maturity and decay that are reminiscent of similar patterns in a flowering plant.
- Websites increasingly have complex internal structures to hold the relationship between the elements of knowledge to which they offer access. These structures may vary greatly (flat/deep hierarchy, meandering, labyrinthine, etc). Flowering plants are often distinguished precisely by the structural strategies they use.
- Websites have increasingly to protect themselves against deliberate or inadvertent abuse using a rapidly developing array of techniques. Flowering plants face a similar challenge and have an analogous array of defence mechanisms to ward off unwelcome visitors. Plants, like websites, are subject to the dynamics of predation, parasitism, commensalism, amensalism, symbiosis, etc.
- With the development of new sensory technologies (eg haptics), will come the association of odour generation. Websites, like flowers, may then make use of odours to distinguish themselves from other sites, just as music is starting to be used in this way. Flowers use odours both to attract and repel.
- As the degree of competition between websites increases, some kinds of website may well be threatened, endangered, and even rendered extinct in the same manner as flowering plants.

Website structure in comparison with flower organization

The key to flowering plant taxonomy, as initiated by Linneaus, lies in the analysis of the reproductive organs -- especially petal layout. This lends itself to mathematical description, notably use of Fibonacci series. Plants may therefore be distinguished and related by variations in these mathematical properties.

Websites are also open to the same analytical possibilities. Many of the simplest are based on a simple tree structure that is reflected in a menu checklist on the home page. The more complex sites may have many nested hierarchical levels with corresponding menus. Such hierarchical structures may also be displayed in centro-symmetric form, as is done with some website mapping (or with mind-mapping software).

Displayed centro-symmetrically, sets of website menus can be made to look remarkably like arrays of flowers in which the menu choices are associated with individual petals. The variety of flowers and their organization on a flowering plant, expressed mathematically, is a valuable guide to the potential variety of website structures. This comparison remains to be done. Existing websites may correspond to the simplest flowers.

From an aesthetic and ergonomic point of view, the ability to array floral menus attractively on a website may offer new possibilities in design. Clicking on a 'flower' could open it; clicking on a 'petal' could access further information (as in any menu). The further possibility that they may be arrayed in order to carry higher orders of significance (using Ikebana-style insights) may totally transform certain websites. It should be noted that many websites now resemble the main drag in an American town in which the main impression is of hard-sell advertising reflecting a very specific aesthetic. Presumably this is because the same information transfer concerns predominate in both contexts. Opening petals offers new centro-symmetric metaphors for organization / exploration of knowledge

The concern here is with the possibility that the use of biological metaphors in website design may offer more powerful and meaningful access to those with other aesthetic and cultural preferences in their navigation and acquisition of knowledge. It is possible that certain textually non-literate cultures (including sub-cultures in developed countries) may be able to by-pass hierarchical menu organization through such interfaces. This could be especially interesting to those from rural areas, notably indigenous peoples having strong cognitive bonds to the flora in their environment (cf Darell Posey, 1999).

Industrialized society tends to be highly dependent on structural organization based on recti-linear patterns, as are typical of urban buildings, apartment blocks, packaging, etc. These patterns are also applied to the organization of nature, as in garden and field organization. As noted above, they are also the basis for the organization of information, whether on websites, or in libraries, bookshops, or accounting systems. This 'cubic' pattern is to be contrasted with the far wider range of patterns characteristic of the organization of plants. Using floral patterns may therefore offer a richer variety of ways to organize information. It is also possible that the success of any endeavour to manage the environment, or to ensure sustainable community, may be dependent on the use of the non-cubic patterns more typical of them. History may prove that the attempt to use cubic patterning in sustainable development was nonsensical.

D. Participative involvement

Engagement in knowledge organization

Gardening in a knowledge society could then take on a whole new meaning. But its psycho-social significance to the individual might borrow from the current meanings of gardening. The degree of personal investment in gardening in modern societies should not be forgotten -- perhaps as a natural contrast to the invasion of 'cubism'. Website gardening opens new spaces for people who lack land and resources to garden conventionally. Everybody can grow 'flowers' -- and breed new variants (http://alife.org/) They can develop their own knowledge ecosystems -- as implied by the emerging discipline of knowledge ecology (http://www.knowledgeecology.com/).

Gardeners, and those who love flowers, typically have a strong personal involvement in their gardens, even if they are of the indoor or window-box kind. They are engaged by the variety of forms and processes over which they only have partial control. Care may be called for in ways that contrast with the care required of cubically patterned artefacts.

However another level of involvement is evoked by the macro-pattern of a garden or a landscape. This can be usefully explored through the relationship between the mandala-type form (eg the labyrinth in western culture) and its much-studied meditational significance as an integrative learning tool. This pattern is much used as a basis for gardens, or even ideal cities, that are intended to hold some higher level of significance. This centro-symmetric ordering may be thought of as at the interface between cubic patterns and the organic patterns of a natural landscape that evoke a less disciplined response than the mandala structure of any garden. It is this response that is the focus of deep ecology. The discipline of permaculture may also be considered in this context as an effort to embody more non-cubic patterning into horticulture to ensure its sustainability.

In the emerging discipline of knowledge visualization, there is a strong movement towards centro-symmetric structures. Although this tends to be applied to specific sectors, it is clear that the inter-sectoral patterning that is major feature of mandala type organization is nevertheless a concern. A valuable collection of web-related examples can be viewed in the *Atlas of Cybergeography* (http://www.cybergeography.org/atlas/atlas.html]

Historians of knowledge organization may be amazed at the manner in which modern civilization was constrained by the tabular organization of computer applications and desktops. Whether Windows, Apple or Linux, the sole option for information organization is the recti-linear pattern. It may even be said that it was Windows' 'panes' that underlay the 'pains' of modern society !

This is especially curious since that cathode ray tube basic to pre-LCD computer monitors has to have the electron beam specially constrained to travel in a recti-linear pattern. It is only monitors for the radar systems typical of air-traffic and missile control that use a centro-symmetric pattern. It might have been thought that this pattern was more isomorphic with that of cognitive organization and the formation of gestalts. Even though the eye of an individual 'scans' the environment, the manner in which it does this approximates more closely the radar scanner than a raster scanner.

Relatively little would be required to allow people to explore the value to them of centro-symmetric desktop displays -- a circular desktop. The desktop organization package *The Brain* (http://www.thebrain.com/), is a significant step in a direction that may be vital to reducing the computer literacy gap for many. Such desktop organization may also prove to be a vital tool for more appropriate organization of

knowledge in support of sustainable development of communities (as with spreadsheets, file-managers, web bookmarks). The need to input linear text could be associated with the type of textbox facility characteristic of graphics programs in which the text is an occasional attribute of the graphic -- rather than as in conventional word processors where the graphic is an occasional attribute of the text. It will be interesting to determine the degree to which the 3D desktops now under test address some of these concerns (see http://www.clockwise3d.com; http://research.microsoft.com/ui/TaskGallery/index.htm; http://www.medialab.chalmers.se/cube/index.html).

The schizophrenia of modern civilization, as seen from the desktop platform, is evident from the contrast between the aesthetic emphasis associated with many screen savers (when the computer user is inactive or 'meditative') and the recit-linear focus (when the user is working). The gardening metaphor, with floral 'menus', might be the basis for a new approach to desktop file management.

Moving through patterns

There is presumably an art to moving through the patterns through which the world can be perceived to be organized at any moment. Patterns offer bridges to other perspectives. But any pattern can easily become a trap from which it is difficult to detach in order to move to another (see Judge, 2000). They mirror habits and addictions.

An intriguing way of understanding this is in terms of the brachiating ancestors of the human species. Their pattern framework was the forest of branches through which they ran and swung, attaching and detaching from points of support within the framework.. This suggests the ways in which one can swing around and through a framework conceptually and existentially. Contemporary conceptual systems on the cubic model may even be thought of like 'monkey bars' in a cage around which the mind can clamber -- provided it always has the required points of attachment.

But from this perspective, the major evolutionary breakthrough occurred when the monkeys 'came down from the trees'. Their challenge was shifting to the new pattern of moving over, and surviving on, the ground. This would give them the ability to move from one tree cluster to the next.

The contemporary conceptual challenge of interdisciplinary, or inter-sectoral, dialogue is precisely that -- namely how to move freely **between** conceptual patterns or frameworks rather than simply **within** them. In this sense intellectuals are faced with the same challenge as our brachiating ancestors -- how to come down out of the trees. The conceptual 'trees' are of across the intertwined hierarchies of concepts that are so characteristic of any current organization of categories, whether in library catalogues, web menus, legislation and regulations, or the content organization of books and papers. This suggests another way of understanding the challenge of gardening knowledge.

Ability to move within and between patterns can also be thought of in terms of the motor organs available. In the case of animals, it is primarily the number and kind of limbs and how they are used. Do the limbs connect effectively with elements of the pattern to permit traction or suspension? In the conceptual case, these 'limbs' can perhaps be understood in terms of Jung's basic categories: sensation, thought, intuition, and emotion -- although some animals have more extensive configurations of limbs. Each of these functions like a psychological limb that can attach to part of a pattern for security -- or reaches towards another to pull or push the person's centre of focus elsewhere.

In Jung's terms, some of these functional 'limbs' tend to operate ineffectually and in a poorly coordinated manner in a given individual. Movement dependent on all of them together is then handicapped. For some, like children, 'getting on one's feet' or 'crawling' around a pattern may be a real challenge, let alone the need for all four limbs to be fully functional in order to get to another pattern. There will presumably always be patterns -- or transits between patterns -- for which the available limbs are inadequate. Hence the need for appropriate training and 'body-building'.

This suggests another way of understanding how a person navigates through a web of knowledge:

- Thought: enables the logical connections from website to website
- Intuition: triggers another mode of navigation with which many browser users are familiar; browser navigation is considered inadequate unless it ensures intuitive use (rather than reference to Help manuals)
- Emotion: may determine another pattern of movement, notably influenced by the aesthetics of the site or the affective response it engenders (sympathy, repugnance, etc), or the feeling associated with flow through a particular site
- Sensation: is a well-recognized trigger, especially for those intrigued by new web animations or the sensational offerings of some sites.

This anthropocentric perspective can also be usefully challenged however. Different species have different ways of engaging with their environments. It might be fruitful to consider that the relationship of an identity to a knowledge environment evolves through some parallel to phylogeny. Not only does ontogeny parallel phylogeny, but cognitive organization may parallel both of them. With respect to a particular knowledge environment, a person may therefore function like a lizard, or a worm, or a bird, or a fox -- and may be challenged to evolve onwards from that condition. The belief in reincarnation that holds that bad karma may ensure return in some such 'lower' form might be reflecting aspects of this understanding.

Navigation of a web of knowledge might usefully be explored in this light. Do some people 'fly' or 'glide' through the web, whilst others 'swim' or 'surf' through it, and others again 'worm' their way through? Are other modes being effectively evolved, possibly corresponding to 'higher' modes of organization for which there are no biological parallels?

E. Living the present moment

In the present

Music and song are vehicles for experiencing and enhancing the present moment. They may offer resonances to regretted past, or longed-for future, experiences, but it is above all the coherence of the present experience that they enable uniquely. This contrasts with written text where the present is de-emphasized in favour of past or future time, or distant places. Words, whether spoken or read, may celebrate the moment, as in poetry or romantic discourse, but typically they would then be labelled as 'like music to the ears'.

The present moment is however highly congested. Not surprisingly the experiential 'traffic' tends to be as busy as in the busiest of urban centres. A lot is happening and this is a challenge to attention pulled in every direction. It evokes awareness to ensure survival. Music may be used as an accompaniment to this experience. It may be played at high volume to drown out other experience or to provide a coherent background in preference to alternative experiences that might otherwise intrude chaotically.

It is its ability to attune awareness to non-linear order that contrasts most with alternative experiences. The latter, like vehicles passing by on congested streets, pull the attention elsewhere but offer little meaning in the present. Music catalyzes the integration of experience in the present. Whether through rhythm or rhyme, recurring melodic sequences, or other musical devices, it holds a pattern connecting diversity, and plays with its development. In this sense it might be compared to a transparent, experiential space (or diving) helmet ensuring breathable air in a hostile environment.

But music may be used to displace any other experience, like a drug. Then the helmet becomes opaque and the external world is completely shut out. A distinction should therefore be made between music used in this way to disengage, and the non-linear enhancement music can offer to the ability to integrate experience of an otherwise chaotically challenging external environment -- with which one is engaged.

Music, in this sense, is then a catalyst and scaffolding for a different mode of awareness. It is this integrative mode of awareness that is vital to sustainable community development, for it is music that demonstrates how the diverse features of community life can play off against each other. It is this interplay in the moment, as between musical instruments, which sustains a larger meaning and its development. Furthermore it demonstrates how these features of experience may be consciously played in the present moment with active participation. Community, as a theoretical system or model, is then experienced as a form of symphony that evokes participation. In this mode it engages living energy, whereas a community model, if it engages anything, can only engage the mind

Experiencing the moment

It is possible that the present moment is the next frontier for exploration. Most disciplines and activities of daily life distract from the present -- like taxis offering a free ride elsewhere, to an alternative reality where yet more free rides will be available. And yet the present moment is omnipresent and is the sustaining coherence that holds together the fabric of experience. How does an individual get into inhabiting the present? How does a community?

The conventional, reified world can be understood as a subset/sub-experience of a more flexible frame in which 'objects' explicate and implicate. We explicate or 'existify' in anticipation of movement:

- like a monkey reaching for a branch which is brought into existence by reaching/anticipation (as if)
- laying down track to ride on
- physics and observation

What 'exists' when we are not aware of it and how? Just as second hand objects are amusingly described as 'pre-loved', it is intriguing that we may well be faced with experience of the 'pre-sent':

- by whom, what, how, why
- projection over one's shoulders (Plato's cave)
- believing the projection and not how one was complicit in the sending process

The pre-sent may therefore be experienced as having been composed. Life may be experienced as a composition (Mary Catherine Bateson. *Composing a Life*) or an imposition. Recomposing it may seem challenging or inappropriate -- especially for a community.

Composing the world -- the en-choiring mind

The challenges of knowledge society are most often thought of in terms of 'acquisition' of knowledge, or its 'dissemination' to appropriate 'targets'. Understanding is often described in terms of 'grasping' knowledge. These terms all derive from metaphoric frameworks that may be dangerously simplistic or irrelevant to more fruitful or intriguing ways of relating to knowledge.

Is the acquisition and grasping of knowledge territory the only way? Do others have to be targeted to achieve this? Is one necessarily destined to seek to impose one's own pattern of order on others in some memetic replication of the genetic drive to reproduce one's chromosomal pattern as widely as possible?

If cognitive development is indeed to be understood as patterned in some way on urban development, then such metaphors may be appropriate. The information highways will be designed and built through the mind-sets that designed highways for automobiles. It is then to be expected that Chicago's of the mind should emerge, complete with conceptual gridlock in their knowledge traffic. This is the challenge of linear thinking and its efforts to exclude any more organic or richer approach.

The dilemma of the conventional approach is evident in the challenge that it poses for those who have been successful in their acquisition strategy, as well as for those who have not. The latter are undernourished in vital ways, and the former are faced with existential problems most obviously evident in the dysfunctionality of their progeny. The 'gap' bodes ill for both.

What might be the flavours of a different way of relating to knowledge? It could have some of the qualities of 'dancing' with it, 'courting' it, 'singing' to it (or with it), 'making love' with it (see Judge, 1996). It could have some of those associated with experiences in which nature holds many advantages, as known most respectfully by lone yachtsmen, mountaineers, and explorers of deserts, wildernesses,

and polar icecaps. It might have some of those known to farmers and gardeners in endeavouring to derive their sustenance from the land.

Rather than imposing order **on reality** and on others, it is then more a question of composing order **with reality** and others in the light of the insights continually derived from interaction with them. The challenge is then to compose the world with whatever is active in it. In contrast with that of the "inquiring mind", this might be usefully summarized as the essential activity of an "en-choiring mind".

Re-enchanting conceptual organization

The Renaissance was also a period when the roles of the arts and the nascent sciences were integrated in ways that were subsequently rejected in the development of both. In particular scientific development rejects the aesthetic characteristics of cognitive development. But aesthetic descriptors are frequently used to describe such development after the fact ('elegant', 'beautiful' theories) even though such expressions have no cognitive meaning within science. Is this a form of unconscious nostalgia for what scientific disciplines and methodologies have designed out, a sneaky exercise in appropriating the preoccupations of non-scientific disciplines, or a desperate public relations effort to entice into science those that value aesthetic qualities?

The development of social organization has followed a similar pattern, exemplified by its articulation in legalese and project management procedures. It is little wonder that questions are being asked as to why young people experience both science and governance as boring.

How might it be possible to get life back into evolving (conceptual) organization -- to 'reanimate' it?

- the dynamic interplay between the parts of the community
- like the human body
- mutation and transformation

Religions successfully built aesthetic dimensions into their architecture and behavioural patterns. This is notably the case with cathedral and temple design. Can it be said that the temples of science and governance enchant in the same way? What does an architectural comparison between the United Nations building in New York (or Geneva) and a cathedral suggest in terms of ability to offer a sense of coherence in the face of complexity?

F. Challenge of benefiting from insights of musicians, singers and gardeners

Although the previous sections point to the considerable merit of insights from music, there is a major challenge in obtaining such insights in practice. This challenge is associated with the understandable attachment of musicians and lovers of music to:

- actual performance of music (or song) rather than reflection on it
- appreciation of particular types of music (or song) and disparagement of other forms
- preference for particular styles of music (or song) within the type appreciated
- preference for particular composers or interpreters

This is especially awkward in deriving insights from a given musician or singer who is necessarily very sensitive to the possibility of performance (*in extenso*) by themselves or of their composition during any exploration of the relevance of music to organization or community.

To the extent that music has been successfully associated with major intergovernmental institutions (eg the UN or EU Symphony Orchestras), its potential value in reframing the organization of institutions, knowledge, or belief systems, is completely obscured by the commitment of all involved to the process of performance of a carefully selected program of pieces and to the see-and-be-seen social processes that go with such presentations. This set-up guarantees that no insight can be drawn from music or song to reframe community or knowledge organization. For example, no such insight transfer has been identified in relation to the current challenges of reform of the UN or EU institutions. The cognitive separation between music and its potentially wider organizational relevance is institutionalized to a degree reminiscent of that in split personalities -- exemplified in C P Snow's *The Two Cultures* (1959)

An illustration of a major contrast to this schizophrenic approach is a recent 1999 TV broadcast by the London Business School with the BBC Symphony Orchestra. Business executives were called upon to conduct the orchestra according to widely contrasting styles to obtain musical feedback on organizational implications for communication and control. The focus was not on completing a performance but on learning from performance. The learning processed was not captured by the imperatives and priorities of musicians but exemplified the learnings catalyzed by music. Ironically the dynamics of the experiment resembled those of the 'master classes' through which musical insights are typically shared amongst experienced musicians -- in contrast with any finished performance necessarily performed in its entirety within a program. The requirements of such an experiment are necessarily alien to many musicians and music lovers. Intriguingly, the London Symphony Orchestra, riding the crest of recent artistic and organizational successes, as a self-governing symphony orchestra now confronts the challenge of engendering a culture in which, in the words of the managing director, "everyone in the orchestra is constantly thinking, how can we make this better?" and has been the subject of a Harvard Business School case study (see J. Richard Hackman, et al, 2000).

In a far more modest experiment, the author has twice collaborated in joint presentations to large international gatherings with a colleague, Tim Casswell, gifted both musically and in group dynamics:

- **World Congress towards Spiritual Concord** (Alma Ata, 1992): Using musical devices (consonance, dissonance, etc) to illustrate how dissonance could be embedded within harmony to render the latter less bland. This is a key issue in moving beyond superficial agreement to forms based on higher orders of consensus.
- **Club of Budapest** (Budapest, 1996): Alternating pieces of a verbal presentation with peices of a song to demonstrate their complementarity in the transmission of insight.

It is appropriate to note that insights from jazz improvization are used in workshops for business executives (cf John Kao: *Jamming : The Art and Discipline of Business Creativity*, 1997, now extended into a website http://www.jamming.com/). Such initiatives are to be completely contrasted with the use of music and song for the 'interior decoration' of a conference process, to grace an occasion. It is noteworthy that two international bodies that have a constitutional mandate for integration of the arts, namely the World Academy of Art and Science and the Club of Budapest, have been unable to move beyond the decorative phase.

Clearly, despite these experiments, there is a musical challenge in developing the interface between musicians and those who would learn from them -- rather than simply be passively entranced by their worldview. A related challenge has been articulated by the author with respect to insights from statesmen-poets into poetry and policy-making (see https://www.laetusinpraesens.org/docs/poetry/poetpolh.php). More has been achieved in the establishing the relevance of the visual arts to scientific creativity (see Gyorgy Kepes: *Language of Vision*).

These arguments could also be applied to the challenge of obtaining insights from gardeners, horticulturists, and those concerned with the cognitive insights of indigenous cultures embedded in nature. (Darrell Posey, *Cultural and Spiritual Values of Biodiversity*, 1999)

G. Conclusions

Dialogue context -- in Camelot or Eden

The term 'dialogue' is increasingly applied to situations in which it is hoped that new ways of interacting will lead to new patterns of organization to deal with the more intractable problems of society. Statesmen dialogue at summits. The Hannover Expo 2000 had a series of 'global dialogues'. Inter-faith gatherings stress the importance of dialogue. Academics have always been inspired by the dialogues recorded by Plato. Presumably when extraterrestrials finally arrive, we will dialogue with them.

Unfortunately 'dialogue' as currently practiced differs in few respects from people just talking at each other in groups from prepared and unchangeable positions. It has become a public relations term to disguise inability to achieve more through the interaction process. Group facilitators have not been of much assistance because, like chefs, they tend to focus on their own proprietary dialogue recipe and have little taste for those of others. Academic dialogues, as supposedly characterized by the university common room, are renowned for their sterility. Academic study of dialogue has generated few practical insights.

The dialogue archetype continues to be nourished by ideals of how dialogue might work in the Garden of Eden, or Camelot, or utopian communities. Its nature is hinted at in fiction, notably Herman Hesse's *Glass Bead Game*.

Dialogue is a precursor and catalyst of group organization. It sustains the life of such communities. Gardening and music offer accessible insights into the nature of harmony in dialogue as practical echoes of the archetypal memory. They help to focus attention on the moment-by-moment dynamics of dialogue exchanges. They offer a richer template than that which has emerged through decades of applied social sciences and the study of reconciliation processes and conflict resolution. Ironically, perhaps, it is the Renaissance figure Marsilio Ficino whose insights at the origins of European humanism might be most relevant to the dialogue crisis of modern times. He endeavoured to embody in the moment the harmonic attributes of nature and music as a means of healing. Whilst his writings are available (and a website http://www.prismanet.com/ficino/ for an International Marsilio Ficino Committee), his practice of dialogue in the moment has necessarily been lost.

The limitations of the current focus on the use of 'organizers' as essential tools to structure interaction amongst busy people need to be recognized. The next generation *Attention User Interface* from Microsoft acknowledges the pressures on how attention is organized in the moment. This is especially important in dialogue where the whole process of how significant insight is detected and organized is vital. How is the mind to be 'tuned' to cluster knowledge appropriately? Who does the tuning? How might this be done, or abused (cf Goebbels) ? How does a dialogue participant create 'bonding sites' into which other insights can link (as in molecular bonding)? How do patterns emerge in dialogue into which insights can be fitted, as do participants in collective singing? The visual equivalent is to be seen in the Chladni patterns of filings on a vibrated plate, and the more recent work on crowd patterning (Dirk Helbing et al., 1998).

Harmonizing project initiatives

The many past development decades have admirably demonstrated the inability to coordinate development initiatives amongst different agencies, especially in situations of humanitarian crisis. The same is proving true with respect to environmental initiatives and indeed in any global program to deliver or catalyze remedial measures. This failure is necessarily disguised by efforts at upbeat reporting in order not to discourage further worthy initiatives.

The question worth exploring is whether there is a 'higher' discipline than the Project Logic that has been the principal tool in support of development initiative. Is it likely that these same techniques will still be used at the end of the 21st century, or will more appropriate ones be found? If this is possible, what form might they take? How might they shift beyond grid-thinking to some other pattern as exemplified by music or gardening (and perhaps by the work of Christopher Alexander or Edward de Bono)? How might public information promoting such initiatives shift beyond simplistic slogans (the conceptual equivalent of musical jingles) to melodic themes anticipated by engaged pop songs? Why are global declarations unsung, unsingable and unmemorable? Some music enchants some people, as with IMF and World Bank plans -- some does not, and that is an essential point of departure for future harmonization of initiatives.

How could 'financial cycles' for a project be organized musically as a composition? What might 'fine tuning' a project come to mean? What might be meant by the 'practicing' of 'parts' in the field? What are the efficiencies of high order 'elegance' in self-organizing flow? What might be important in the choice of 'rhythm' of project phases and reporting cycles?

Should Project Logic be understood as the 'differential calculus' of organization -- a 'digital approach' inhibiting any ability to 'take' naturally in a sustainable community that resonates to 'analogue' approaches? Can a farm be run sustainably using Project Logic, when so

much attention has to be given to cycles, and cycles within cycles, as in music and gardening?

If there is another way of exchanging: insights / infeels / insmells / intouches to be discovered, would the present approach to dialogue within a Project Logic context be seen in those terms as invasive and jarring, like a form of 'kiss of death', 'dead hand', or 'halitosis' ? Is it useful to seek to convince those inhibited in this way by their embedding in Project Logic -- rather than simply switching to a new mode to demonstrate its viability?

Reframing present initatives

In the light of the explorations above it is useful to take a new look at the features of the Project Logic scene at the beginning of the 21st century.

Conferences are set up as, and claimed to be, serious events through which the crises of the times can be navigated. But commentary on theme by critics, the media and participants suggests that they can be seen in another light. Even the G8 summit is viewed as a 'show' -- with that of 2000 estimated to have cost US$70-100 million per participant. Others are described as a 'dance', a 'circus' or even as a 'jungle' or a 'zoo'. Perhaps then there is a case for integrating rather denying such perceptions. Conferences might be usefully seen as 'soap operas', 'morality plays' or 'songfests' -- especially when participants gather each year to repeat the same recommendations and affirmations -- effectively rehearsing their 'goode olde song'. Participants may voice a 'chorus of protest', or approval.

The challenge is not to see this cynically ('Nero fiddling while Rome burns'), but rather as an opportunity to improve the quality of the dance, show, opera, or song. Given that so much effort is expended on the decorative features of such events, perhaps their dramatic and aesthetic qualities should be integrated into the substance. If the principal focus of media attention at such events is on the encounter of bemused statesmen with children singing and dance troupes, perhaps there is a case for exploring how the cognitive significance of such performance could usefully reframe the cognitive frameworks of the event. This would be consistent with the emerging 'edutainment' focus of the media (http://www.edutainment.com.au/). Even the dynamics of parliaments could benefit from being articulated and explained in dramatic or dance terms. This would be an improvement on the ways in which they are caricatured in cartoons and puppet shows -- as 'legislainment'.

Declarations and global plans are also taken very seriously. But as noted above, they are absolute disasters in terms of aesthetics and popular appeal. There is a need to review how they are articulated from poetic and musical perspectives. Introducing aesthetic dimensions may ensure that they are able to hold complex checks and balances in a more comprehensible and credible manner. *Agenda 21* should be patterned on the ecosystem it purports to manage, rather than exemplifying the grid-thinking which is destroying that ecosystem. If it is a paen to restoring balance on Earth, then it should be as singable as the great epics like the *Mahabarata*, the *Kalevala*, or the *Ring* cycle of Wagner. The 100-odd Leitmotivs (cf Deryck Cooke's 192 examples, including variations) used in the latter suggest a way of encoding an array of dynamically related issues that need to be collectively comprehended - perhaps a kind of periodic table.

The Leitmotivs are easily remembered melodic elements associated either with a character or object in the opera, or with a specific emotion or feeling. They are used to illustrate and represent a variety of characters, symbolic objects and themes of easily recognizable melodic, rhythmic or harmonic identity. The melodic fragments acquire symbolic meaning in the music-dramas and serve a structural purpose. Extended symphonic passages are built up on them and they are combined, contrasted and superimposed, one on another, in a manner to suggest the development sections of symphonies. Their relevance in popular culture is explored in a powerful comparison with their use in the *Star Wars* film series (Kristian Evensen, 1999). [These points regarding Wagner were made to the author by Nadia McLaren]. Such a "pattern language" is consistent with that developed by Christopher Alexander as a participative design tool, and subsequently adapted as a guide for computer programming. There is a case for associating a Leitmotiv with each article of a charter or global plan as a way of ensuring its memorability and, through exploring relationships between them, rendering comprehensible the systemic relationships between its parts. The recently formulated UN *Earth Charter* could thus acquire a memorable musical articulation.

The *Universal Declaration of Human Rights* should resonate in peoples hearts rather than appeal only to those who enjoy legalese or the slogans derived therefrom. To the extent that plans address the darker side of humanity, those functions should be factored into dramatic presentations that render credible and coherent the dynamics of the plans -- especially since the implementers of such plans are themselves viewed with increasing suspicion as open, to dubious temptations. How many kinds of 'dance' are evident in the dynamics of a parliament? Should the United Nations Charter be formulated in epic form as a major cultural artefact of modern civilization? Why should the 'communiqués' of global summits not be as significant to the peoples for whom they are purportedly conceived as the 'hit' songs that people take up with such enthusiasm? Why do such communiqués exemplify imaginative failure and unmemorability to such a high degree?

Much is made of new 'models' and 'paradigms' as the basis for new approaches to the conditions of the disadvantaged. These tend to be articulated in forms that exemplify grid-thinking. As suggested here, there is a case for representing the dimensions of models in musical form as melodies or even as flowering plants. Ironically formal conferences tend to be swamped in flower displays whose cognitive relationship to the content of the event is as cut off from its roots as are the flowers on display. What can be learnt from ikebana in this context?

The organizations convening meetings, and through which plans are implemented, are also taken very seriously as the principal vehicle for remedial strategies. They are acclaimed as symbols of hope and vehicles for the highest values of humanity. Many agencies within the UN system even use logos and symbols from the Greek pantheon, as do many other intergovernmental programmes. Their headquarters are treated like the temples in Rome -- complete with priesthoods and ritual ceremonies. However, it would be useful to accept that all is not well on Mount Olympus. As in the mythical context, the gods relate poorly to each other and often quarrel -- with great hostility. These dynamics are also part of the symbolic life of humanity and need to be presented as such -- if there is to be any possibility of rendering them healthier. The pretence that such dynamics are totally incidental, rather than systematically undermining

every effort at articulating an integrated approach to the planetary condition, is totally irresponsible.

It should be emphasized that the argument here is not for music or gardening as such, but rather for the cognitive frameworks through which music and gardening sustain communities, and are appreciated by them. It is for the wisdom embodied in these modes of understanding.

Back to Africa

The condition of Africa in 2000, after many 'development decades', exemplifies the total failure of Project Logic and the hopes invested in it by arrogant western institutions and their supporting academic disciplines. Not only is the failure patent, but the conceptual vacuum regarding new remedial initiatives with some chance of future success is only too obvious. Many have simply given up -- as they have to a lesser degree with respect to the disadvantaged in their own cultures. Worse still, there is the suspicion that western economic logic only 'works' when the pool of disadvantaged is constantly replenished. It is difficult to distinguish between this logic and *Pyramid Selling* or *Ponzi Schemes* (see http://www.moneypages.com/syndicate/stocks/sec/ponzi.html), except in terms of scale. Africa is the ideal sucker for such a process. The projects that it has had to receive have more often than not been as damaging to local cultures as 'projectiles'.

African cultures have been encouraged, required, or forced to adopt western institutional models, conceptual frameworks, and management procedures -- if they are to be considered serious, or appropriately rewarded by assistance or investment. A variety of western consumer products have been 'pushed' at them to ensure an addiction that bears a strong resemblance to that associated with the substance abuse condemned in western societies. This addiction severely handicaps any capacity to explore other approaches, which are naturally quickly ridiculed by those pushing western products.

In western terms, where do the 'competitive' advantages of African cultures lie? Should they all be expected to shine at western games, even though some do? Should articulation of their advantages in other areas be disparaged as treated with condescension?

The argument here is that there is a case for exploring dimensions of African cultures that hold cognitive frameworks and processes distinct from those of western cultures (as argued extensively by Darrell Posey et al, 1999). The issue is what modes of organization and management emerge naturally from these? What conceptual advantages do they offer in the emerging knowledge society? This case has been made, and partially accepted, in the case of alternative health products -- if only for lack of resources to import western pharmaceutical products. It is curious that African American studies do not appear to explore the insights of musical harmony as a basis for new modes of social organization.

As with the natural rainforests, African 'cultural rainforests' may well hold vital insights for the future of humanity. Only they may know how to 'sing the songs' through which disaster can be effectively faced -- as their cultural response to slavery illustrated. A western equivalent would be the preservation of Irish cognitive skills through Celtic songs, despite efforts to suppress them by the Catholic Church and the English. Given the conceptual gridlock at the international level regarding the challenges of global governance, who is say that the African understanding of music may not in fact hold a vital key to the emerging challenges of governance? The key to a harmonious future might indeed be musical -- especially since it is only music that has elaborated a rich theory of 'harmony'.

The key may lie in the ability to relate to a myriad of diverse forms, as in the rainforests, at a time when the western world is reducing the species in its natural environment to a handful -- and legislating against their diversity within the European Union. Or the key may lie in the kinds of understanding of 'global' that emerge from an intimate relationship with basket weaving (see Judge, 1980).

As the rise and fall of individual European cultures have shown, the competitive advantage of African cultures may lie in a subtle attitude quite unrelated to western definitions of useful knowledge. It may prove to be the case that the cultural genius of Africa lies in a different and richer understanding of relationships. These insights may be poorly carried by the western conceptual schemes presented to them as the royal road to civilization. If 'vision' is the key to western dominance of the future, and the Africans are considered 'blind' by the west, it is worth recalling the tale concerning 'the land of the blind where the one-eyed man was king'. The polarized, 'one-eyed' visions of society may yet disrupt any efforts towards a coherent future. But there is an untold story about the 'land of the tone deaf' where surely the 'man whose sang out of tune' might have been king. In terms of the future challenges of governance, it is western culture that may be shown to be 'tone deaf', and 'singing out of tune'. The time of Africans may come.

The fundamental sin in Africa has been maintaining the illusion of the relevance of western management. The World Bank and the IMF, unlike the Pentagon, never have a 'Plan B'. They are totally dependent on a 'Plan A' -- whose flaws they deny. The Bank's *Global Knowledge Partnership* fails to take account of perspectives alien to western patterns of thought -- or pays lip service to them in cynically pushing more of the same under a new guise.

The 'digital divide' is designed to frame a new pattern of dependency valuable to the telecommunications industries of industrialized countries. Africans can reframe this challenge to their own advantage, avoiding this dependency (Judge, 1999). Africans can bypass the digital divide by focussing on software interfaces that empower them in their ability to organize knowledge in new ways sustained by their own cultural frameworks. An interesting example is the Indigenous Information Centre of the South Australia Museum that uses a CD-ROM with a visual interface to facilitate interrogation by Aborigines with limited literacy skills (see http://www.samuseum.sa.gov.au/media/aacg_infoctr.htm) -- it is very successfully used by families motivated to update historical information.

It is the inability of western mindsets to resonate with these new forms that will be to the advantage of Africa -- as illustrated by the disadvantage westerner's experience in response to the African talent for dance at every level of society. The western-oriented may 'surf' the web now, but Africans may 'dance' and 'sing' it in the future, perhaps collectively as much as individually. Coherent knowledge organization of web information may be evoked through a form of 'drumming' process reflected in patterning of visual information on large screens. Text may become quite secondary to the integration and coherence offered to other senses.

Who knows, but the intriguing experiments with artificial languages based on musical tones, such as Solresol, may be a basis for reflection on an African policy language. Solresol, or "Langue Musicale Universelle", was invented at the beginning of the 19th century by Jean Francois Sudre, a music master who realized that the seven-note diatonic scale could provide elemental symbols for a universal language. The words in Solresol consist of sequences of notes. Sudre planned to use seven words of one note, 49 words of two notes, 336 words of three notes, 2268 words of four notes, and 9072 words of five notes [more]. Steven Speilberg's film *Close Encounters of a Third Kind* drew renewed attention to this approach. There are a suprising number of experiments in artifical or constructed language design -- some of which might be focused on management-related issues (see http://www.sys.uea.ac.uk/~jrk/conlang.html). In this respect, the admission of the director of an elite management school in the West that all they did was 'teach a new language' bears some reflection. Several NGOs have made conscious use of languaging to focus their development efforts, notably the Hunger Project and the Institute of Cultural Affairs. These efforts have been the subject of research under the direction of David L Cooperrider through the Weatherhead School of Management

Western management and politics accepts that in governance the 'right-hand' may not know what the 'left-hand' is doing -- and the actions of the two may be poorly integrated and even undermine each other, as in adversarial decision-making. Any skill in music requires that the hands 'play together' and this harmonious integration may prove to be the basis of a new style of policy-making and management.

The breakthrough for Africa may come through a new alliance between musicians, computer software specialists, people skilled in alternative knowledge frameworks, and others concerned with their relevance to new styles of management and organization. The world may yet see song in the plenary assemblies of the Organization of African Unity -- and the national parliaments of Africa -- conditioning wall screen computer visualizations of unusual aesthetic design. The rest of the world will be left to wonder how musical integration in harmony with African aesthetics enables an articulation of policy that engenders unusual forms of coherent action, down to the local level, that are incomprehensible within the cognitive frameworks of western cultures.

African culture, having changed the culture of the world over the past centuries as a result of its musical response to slavery, may yet offer the world a new and more appropriate form of music to articulate the challenges of humanity -- as a quarter of its population falls victim to the AIDS epidemic. .

Scene and heard: Ugandan dancehall (as reported by John McDonnell. *Guardian Music Blog*, 5 January 2009)
A dancehall collective called Fire Base Crew, have set up a breakaway republic, the Ghetto Republic of Uganja, in one of the slums in Uganda's capital, Kampala. The republic has a full cabinet of appointed members: Bobi Wine (who is the leader of the crew) is the president, the vice president is an artist called Buchaman, they also have a prime minister, a defence minister, a minister for disaster preparedness, a minister of agriculture (whose crop of choice, unsurprisingly, is cannabis) and many more. The whole concept may appear trivial, but these musicians have much more influence on local people than politicians could ever wish for.

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