



# laetus in praesens

Alternative view of segmented documents via Kairos

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## Conversion of Global Hot Air Emissions to Music

### Aesthetic transformation and instrumentalization of vaporware

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## Introduction

In the period of last minute preparations for the [United Nations Conference on Climate Change](#) (Copenhagen, 2009), the focus worldwide is on the challenge of curtailing carbon emissions. At this stage there is concern that this event, held by many to be one of the most vital for the future of humanity and the planet, will not reach the appropriate conclusions to meet that challenge.

From a more general systemic perspective it could however be argued that humanity is faced with a three-fold "emissions problem", each to some extent serving as a metaphor for the other. However it is the emissions on which the UN Conference is focused which effectively disguise and distract from the other two (*Climate Change as a Metaphor of Social Change: systemic implications of emissions, ozone, sunlight, greenhouse and overheating*, 2008).

The three-fold emissions problem might then be presented as

- carbon emissions and the concern that they will result in a dangerous level of global warming -- "hot air"
- verbal emissions, whether in text or speech, notably in the worldwide preparation and processes of commentary on challenges of society, often described as "hot air", especially when fruitless -- resulting in an increasingly dangerous level of information overload and information underuse
- sexual emissions, carbon emissions with their own inherent multiplicative propensities -- engendering an every increasing population on a dangerously resource-constrained planet

It is increasingly clear, despite the volume of verbal emissions and the number of resolutions at every level of society, that these are unlikely to ensure adequate constraint of carbon omissions. Such emissions, and other promises of effective change, may therefore be appropriately named as "vaporware". Both forms of hot air will continue to increase. More challenging is the extent to which, irrespective of both, the third form will itself continue to increase and, in so doing, will most probably further increase the first two. Characteristically, there is a large volume of verbal emissions denying this.

The three forms of emission might be usefully recognized as "cognitively entangled", with one entraining the other (David Biello, *More hot air on climate change from world leaders?* *Scientific American*, 22 September 2009; *UN climate change conference: more hot air?*, *Ethical Corporation*, September 2009; Alex Morales and Kim Chipman, *Hot Air Emitted by Climate Summit Equals 20,000 Cars*, *Bloomberg.com*, 6 December 2007; Chris Lang, *G8's hot air on climate and REDD*, *REDD-Monitor*, 13 July 2009).

Although the volume of verbal emissions is evident in the preparation of the UN Climate Change Conference, and although it constitutes a high degree of information overload for all sensitive to the challenge, the generation of these emissions is no more challenged than the quantity of carbon emissions associated with travel to such events. This denial is also evident in relation to the challenge associated with the third form of emissions. To the extent that population is mentioned, it is taken as self-evident that no form of constraint is appropriate and that any form of constraint is itself problematic -- as with verbal emissions. To that extent the UN Climate Change Conference has

been appropriately discussed elsewhere as the *United Nations Overpopulation Denial Conference: exploring the underside of climate change* (2009).

The focus in what follows, however, is on the challenge of verbal emissions, whether generated in relation to the prospects of climate change or to other potential crises. At the time of writing the draft agreement under discussion for Copenhagen is recognized as being long, confusing and contradictory (David Adams, *Copenhagen negotiating text: 200 pages to save the world? The Guardian*, 28 September 2009). Of wider and more fundamental concern, in the light of the misleading "hot air" progressively developing and sustaining the financial bubble of 2008, is the question of how "hot air" is misused to sustain global strategies (*Globallooming -- Strategic Inflation of Expectations and Inconsequential Drift*, 2009).

**The question is whether the linear approach to processing exploding quantities of information can be circumvented using other modes.** The possibility has of course been well-recognized in justifying the many developments of multi-media facilities not entirely dependent on text or speech. Whilst welcome, such facilities constitute a potentially problematic break from the content articulated in text or speech. The primary constraint is in the cognitive capacity to process such linearly presented information. One of the scarcest resources is time -- attention time and learning time -- if people are prepared to allocate it to such challenges.

**The exploration here is therefore concerned with how linearly presented information can be "compressed" to facilitate whatever comprehension a person (or a group) considers appropriate.** The concern is however primarily with how this might alleviate the current challenges of processing information of relevance to governance. It notably follows from an earlier exploration (*Coherent Policy-making Beyond the Information Barrier: circumventing dependence on access, classification, penetration, dissemination, property, surveillance, interpretation, disinformation, and credibility*, 1999). This was itself framed by speculative consideration of the role of aesthetics in processing such knowledge (*Aesthetics of Governance in the Year 2490*, 1990). Other papers (indicated below) reflect various efforts to exploring the appropriateness and feasibility of such an approach. The original stimulus for these investigations was the project, directed by *Johan Galtung*, on Forms of Presentation of the Goals, Processes and Indicators of Development project of the *United Nations University* (cf *Forms of Presentation and the Future of Comprehension*, 1984).

## Challenge of information overload and information underuse

This challenge has been variously explored in detail in earlier papers (*Societal Learning and the Erosion of Collective Memory: a critique of the Club of Rome Report: No Limits to Learning*, 1980; *Coherent Policy-making Beyond the Information Barrier: circumventing dependence on access, classification, penetration, dissemination, property, surveillance, interpretation, disinformation, and credibility*, 1999). A project of the Global Learning Division of the United Nations University in the 1980s was specifically focused on Information Overload and Information Underuse (IOIU) and resulted in a variety of studies.

At a time when there is increasing concern about a possible *technological singularity*, it is appropriate to argue that this may be intimately associated with some form of cognitive or memetic singularity (*Emergence of a cognitive singularity*, 2008); *Emerging Memetic Singularity in the Global Knowledge Society*, 2009). There it is argued that the focus of *Jared M. Diamond* (*Collapse: how societies choose to fail or succeed*, 2005) on material resources, and that on energy by *Thomas Homer-Dixon* (*The Upside of Down: catastrophe, creativity, and the renewal of civilization*, 2006), could be usefully reframed in terms of information and knowledge -- perhaps even *memes*. For it is likely that, just as globalization was undermined by loss of confidence in the financial system, global civilization may implode into a black hole of meaninglessness.

Widespread concern has been variously expressed regarding the ability to achieve any measure of viable and sustainable coherence in response to the emerging "crisis of crises" -- despite the plethora of insights generated in a global knowledge society. The Copenhagen event is therefore an interesting test case, given the claims for its critical importance. There is every likelihood that in addition to the huge volume hot air it will engender, whether in reality or metaphorically, its outcome will itself constitute what is well-recognized in the information world as vaporware.

To be reinterpreted as a relevant metaphor, the introduction to the entry in *Wikipedia* reads:

**Vaporware** is a term used to describe a product, usually software, that has been announced by a developer during or before its development and, therefore, may never actually be released. The term is usually applied to products which fail to emerge after having well-exceeded the period of development time that was initially claimed or would normally be expected for the development cycle of a similar product. The term implies unwarranted optimism, an as yet unannounced abandonment of a project, or sometimes even deception; that is, it may imply that the announcer knows that product development is in too early a stage to support responsible statements about its completion date, feature set, or even feasibility. However, most vaporware would not be considered a hoax since the makers have a genuine intention to create their product, even if it ultimately never materializes. Products with unspecified release dates or long development times that outwardly demonstrate regular, verifiable progress in production are not normally labelled vaporware.

A relevant extension of this metaphor derives from the fact that, as computer software, vaporware is typically subject to a complex network of *legally enforceable patents* constraining its use -- whether or not it becomes a viable product. With respect to verbal and textual emissions, this may take the form of *intellectual copyright*, constituting a fundamental constraint on the re-use of that emission however insightful -- namely the capacity to "recycle" it? With respect to the challenge of constraining carbon emissions, such constraints on "hot air" production -- however "hot" the insight -- might be understood as highly problematic "cold air" in that they constrain the very human ingenuity through which it is hoped to avoid future crises (*Thomas Homer-Dixon, The Ingenuity Gap*, 2000).

Of relevance, ironically, is that the most legally binding constraints to emerge from Copenhagen may well be those relating to wider use

of any documents presented to it to clarify the issue -- and, perhaps most significantly, that governing the copyright of the [symbol of the Copenhagen event](#). In contrast to other such UN symbols, this is a valuable effort to embody the global challenge as discussed elsewhere (*Metaphorical Geometry in Quest of Globality -- in response to global governance challenges*, 2009). Such copyright policies are in marked contrast to the [open source philosophy](#) appropriate to an open society.

At the time of writing the legal implications of the metaphor are significantly illustrated by its use in relation to the "chill wind" of censorship of embarrassing information (an "inconvenient truth"), as described by [Ian Hislop](#) (*A Chill Wind for the Press*, *The Guardian*, 14 October 2009) with regard to reporting of the "alleged" dumping of toxic waste in Africa by the multinational corporation [Trafalgar](#):

The injunction against *The Guardian* publishing questions to ministers tabled by the Labour MP Paul Farrelly is an example of a chill wind blowing more widely through the press. In increasing numbers, aggressive lawyers, who used to use libel law to protect their clients, are now using injunctions to secure privacy and confidentiality. They have found it is a legal technique which shuts stories down very quickly so that now it is not a question of publish and be damned, as it used to be: we are now finding that we can't even publish at all.

Beyond the legal instruments use to prevent media from reporting in ways that may prejudice a trial, is the emergence of "super-injunctions" as described by James Robinson (*How super-injunctions are used to gag investigative reporting*, *The Guardian*, 14 October 2009) with regard to the 12 notices of injunctions that *The Guardian* had been served in the previous year concerning stories that could not be legally reported. These "super-injunctions" -- of which there are currently some 200 in the UK -- prevent news organizations from revealing the identities of those involved in legal disputes, or even reporting the fact that reporting restrictions have been imposed -- namely of the existence of a super-injunction. This is a form of institutionalized *omerta*. The issue goes to the root of the *Right to Know* as it relates to parliamentary debate.

The application to toxic waste dumping suggests that such legal instruments will be increasingly used as a form of "chill wind" to constrain any future "hot air" reporting of environmental issues, notably including "hot air" associated with carbon emissions -- perhaps as the simplest way of maintaining the pretence that such issues are of no significance. It might well be asked whether "super-injunctions", or their analogues, are not already in operation with regard to other significant issues -- such as that of overpopulation (*Institutionalized Shunning of Overpopulation Challenge: incommunicability of fundamentally inconvenient truth*, 2008). How would it be possible to know whether or not this was the case?

Curiously the term "cap" is used in describing remedies to all three forms of emission noted above: cap-and-trade, putting a cap on it, and contraceptive cap. In each case use of such a cap then enables a form of trade. The financial crisis might be seen as the consequence of putting a cap on information regarding the toxicity of assets that could then be successfully traded. Super-injunctions are even more effective in that they specifically ensure that the cap is invisible -- reminiscent of the tale of emperor's clothes (*Entangled Tales of Memetic Disaster: mutual implication of the Emperor and the Little Boy*, 2009).

More familiar, but equally curious as the other face of the "reputation management" giving rise to super-injunctions, is the increasing extent of news management. This is widely named as "[spin](#)" but for which other metaphors are also used implying the need for new skills (*Viable Global Governance through Bullfighting: challenge of transcendence*, 2009).

## Technical feasibility of musical sonification

The technical feasibility of "compressing" information so that the patterns of content can be more easily apprehended has long been a theme of [sonification](#), namely the use of non-speech audio to convey information or perceptualize data. This has been promoted by the [International Community for Auditory Display](#) which prepared a seminal report on the field for the US National Science Foundation (*Sonification Report: Status of the Field and Research Agenda*, 1997).

Various technical possibilities have been summarized in a recent report (*Convertor from Text to Poetry, Song or Music: computer-assisted aesthetic enhancement of treaties, declarations and agreements*, 2007). The feasibility of such initiatives is now widely recognized through rapid development, and widespread use, of applications such as:

- [Speech recognition](#) (also known as **automatic speech recognition** or **computer speech recognition**) converts spoken words to machine-readable input. The term "voice recognition" is sometimes used to refer to speech recognition where the recognition system is trained to a particular speaker -- as is the case for most desktop recognition software,
- [Screen readers](#) which attempt to identify and interpret what is being displayed on the screen. This interpretation is then re-presented to the user with text-to-speech, sound icons, or a Braille output device. Screen readers are a form of assistive technology (AT) potentially useful to people who are blind, visually impaired, illiterate or learning disabled, often in combination with other AT, such as screen magnifiers.
- [Music visualization](#), a feature found in some media player software, generates animated imagery based on a piece of recorded music. The imagery is usually generated and rendered in real time and synchronized with the music as it is played.

Some possibilities of computer-based animation of relevance to the argument here have been discussed in earlier papers (*Dynamic Exploration of Value Configurations: interrelating traditional cultural symbols through animation*, 2008; *Dynamic Exploration of Value Configurations: polyhedral animation of conventional value frameworks*, 2008).

Given the parallel explored between biological genes and [memes](#) -- as postulated units or elements of cultural ideas, symbols or practices -- it is appropriate to note that a number of experiments have been made in representing molecular structures as music. In one case, as noted by M. A. Clark (*Transcriptions: the music of protein sequences*, 2001; *A Protein Primer: a musical introduction to protein structure*; *Genetic Music: an annotated source list*, 2005) all of the musical sequences are "simple linear readouts of the amino acid

sequences of the proteins indicated. However some sense of the protein's higher order structure emerges from the alternation between the higher-pitched polar amino acids and the lower-pitched nonpolar amino acids".

The point to be made is that if the structures constitutive of the human body lend themselves to useful musical representation, there would appear to be a case for seeking to represent the legal instruments purportedly constitutive of the human community to music -- as has been characteristic of many faith-based communities of the past. This argument of course applies more generally to any understandings of conceptual complexes -- understood as memes. The challenge might be framed as one of setting memes to music

## Potential relevance of sonification and animation

These possibilities have notably been considered in relation to institutional structures and their strategies (*Animating the Representation of Europe: visualizing the coherence of international institutions using dynamic animal-like structures*, 2004; *Polyhedral Pattern Language: software facilitation of emergence, representation and transformation of psycho-social organization*, 2008).

Of particular interest is the value of such approach in relation to major global initiatives, conventionally embodied in lengthy, indigestible texts -- widely acknowledged as essentially unread, even by relevant policy-makers. The 300-page EU *Lisbon Treaty* is a prime example. This is liable to be the fate of the outcome of the Copenhagen effort to give form to the *United Nations Framework Convention on Climate Change* -- as a successor to the essentially forgotten *Agenda 21* agreed in 1992.

Relevant discussion of possibilities in relation to declarations includes:

- *A Singable Earth Charter, EU Constitution or Global Ethic?* 2006
- *Reframing the EU Reform Process -- through Song: responding to the Irish challenge to the Lisbon Treaty*, 2008
- *Participative Development Process for Singable Declarations: applying the Wikipedia-Wikimedia-WikiMusic concept to constitutions*, 2006
- *Structuring Mnemonic Encoding of Development Plans and Ethical Charters using Musical Leitmotifs*, 2001

Potentially of great interest is the relation of such approaches to cultures and sub-cultures (whether in developed or developing countries) for which music is a primary mode of communication. Africa offers an especially interesting example (*Knowledge Gardening through Music: eliciting patterns of coherence for African management as an alternative to Project Logic*, 2000).

## Allocation of musical elements to text phrases

As previously discussed (*Convertor from Text to Poetry, Song or Music: computer-assisted aesthetic enhancement of treaties, declarations and agreements*, 2007), there are interesting possibilities for research on the attribution of musical devices to portions of text.

- **Setting text/poetry to music/song**
  - musical accompaniment / backing for written (on screen) text presentation
  - musical accompaniment / backing for text-to-speech reading
  - using [GarageBand](#) or [Audacity](#) applications: source text can either be existing or created. [[more](#)]

**Feasibility:** Musical accompaniment is already used on some websites. As noted earlier this could be extended to the accompaniment of voice output (of screen readers). The process of "setting" a text to music or song is well developed. The question is the degree to which the music or song reflects and carries the semantic content, possibly to the point of substituting for it under certain conditions. Roger Alsop (*Enhancing the Emotional Impact of a Text through Electronic Manipulation*) notably comments on some of the particular musical devices appropriate to carrying particular emotions. The challenge with legal texts is whether then in fact have any emotional content that could be usefully carried in this way (and if not, why not) and how such content might be detected in order to render it musically.

- **Musical rendering**
  - music generation:
    - [Virtual Music Composer](#)
    - Jef Allbright. Computer-generated Music [[resources](#)]
    - Synth Zone. [Computer Generated Music Sites](#)
  - **generative music:** whether *Linguistic/Structural* (music composed from explicit analytic theories), *Interactive/Behavioural* (without input), *Creative/Procedural* (music generated by processes that are designed and/or initiated by the composer), *Biological/Emergent* (non-deterministic music and unrepeatable)
    - Koan Generative Music Engine ([Koan Pro](#), 1994-2007), originally distributed by SSEYO; initiative now continued by [Intermorphic](#)
    - Karlheinz Essl: [FLOW](#) (1998-2004), an ambient soundscape generator, and [Seelewaschen](#) (2006), a generative sound environment
    - [MusiGenesis](#) (2005), a program that evolves music by adding randomly-generated notes to a song and letting the user decide whether to keep or delete each one. This process quickly creates a unique piece of music.
    - Emily Howell (2009): Developed by [David Cope](#) at the University of Santa Cruz as the first software claimed to be capable of generating classical music (Jacqui Cheng, *Virtual composer makes beautiful music -- and stirs controversy*, *Ars Technica*, September 2009; Mark Lawson, *This artificially intelligent music may speak to our minds, but not our souls*, *The Guardian*, 23 October 2009)
  - music generation from images:
    - Lauri Gröhn has developed [Synesthesia](#) software that generates music (midi file) from any

- a facility also offered by [ArtSong Lite](#)
- conversion of text/poetry into sound/music:
  - based on manipulation of direct conversion (ASCII/UNICODE to MIDI)
  - based on semantic content
  - symphonic poems or [tone poems](#) are pieces of orchestral music, in one movement, in which some extra-musical programme provides a narrative or illustrative element. Clearly this programming element could come from a treaty text

**Feasibility:** Extensive work has been done on music generation. As with generation of poetry, it is unclear to what extent this has been based on an input text as "seed" for the process -- or whether the modules lend themselves to such seeding. Again the question is how the semantic content gets translated and whether it can be "read" (possibly by analogy with Braille). Generative music, notably as exemplified by the Koan engine, typically works from a user-selected musical seed. It is possible that this approach could be extended to a text seed. The generation of music from images has already been successfully demonstrated. Clearly this offers a way of experimenting with the processing of text images. With respect to the conversion of text/poetry into music, it is possibly that this could be explored as an adaptation of text reading applications -- outputting sound rather than voice.

The question is how far it is possible to go in embodying into music a cognitive pattern conventionally expressed in text. Some simple approaches are to allocate key combinations (chords) to keywords or key phrases in a text. This might be extended to melodies based on those chords. Clearly such attributions could more easily be done in the personalization of a transposition process, in a manner somewhat analogous to the use of "skins" in personalizing a browser window. An organization website might in this way provide a set of musical codes for the topic themes with which it was preoccupied.

Such possibilities could be facilitated by the use of melody libraries from which melodies could be selected and associated with particular patterns of keywords -- or even the use of standard metaphors. More interesting would be extending the approach, building on the techniques of generative music, to take melodies attributed in this way to portions of a text and subject their interplay to fruitful composition. Clearly the discipline to be discovered lies in the freedom of improvisation allowed by the user -- who might be offered the facility of restricting the creativity of such development.

Also of interest is enabling the music to give expression to standard treatment of themes (notably in political speeches) as recognized metaphorically in labelling such patterns as "singing the same tune". The ultimate challenge might be to be able to provide a musical interpretation of a debate between radically opposed parties, as exemplified by democratic parliamentary debate -- typically of the utmost tedium to other than the initiated. How are "upbeat" and "downbeat" to be given expression?

The availability of a basic musical "feed" from any debate or text might encourage a high order of creativity in working with such "material" to augment its memorability whilst striving for a degree of fidelity to the cognitive content. Again, the possibility of "compressing" the result is of great interest given the challenge of attention span. A further question is whether, expressed aesthetically, the patterns suggest richer connectivity in the original text or the strategies they endeavour to articulate. Might challenging strategies open strategic windows of opportunity when expressed in musical terms (cf *Polarities as Pluckable Tensed Strings: hypercomprehension through harmonics of value-based choice-making*, 2006)?

Given the much sought quest for a "paradigm shift" and the emergence of a "new paradigm", it is through such musical experimentation that these more complex patterns might become evident and rendered sustainable (*Paradigm-shifting through Transposition of Key: a metaphorical illustration of unexplored possibilities for the future*, 1999).

## Pattern recognition in global declarations and speeches

The previous paragraphs raise the question of the nature of the cognitive patterns already embedded in conventional international texts and modes of debate. How could these be best detected? To what extent are these to be understood as implicitly reflecting the cybernetic requirements of governance of complex institutional systems in response to a complex problematique requiring a resolutique of requisite complexity? Again, are such understandings a feature of the emergent insights into knowledge cybernetics?

One simple experimental approach was to use dynamically generated maps of networks of relationships within a set of interlinked web databases -- holding profiles of thousands of world problems, strategies, international organizations, etc -- as a means of articulating characteristic sound files (*Communication between Network Visualization and Music*, 2001; *Simulating a Global Brain -- using networks of international organizations, world problems, strategies, and values*, 2001).

Given the capacity of an existing software application such as *Leximancer* to take a substantial body of text and rapidly consolidates it into meaningful 'Themes', 'Concepts' and their associated relationships, might it be relatively easy to experiment with automated musical encoding of such patterns -- otherwise expressed in visual maps -- amenable to user modification. Ironically such visual maps might currently be "read" in the style of adaptations of [musical notation](#) for avant garde music -- as with [musical graphic notation](#).

Of interest is the possibility that specific problems of musical adaptation of a text may usefully raise fundamental questions regarding the communicability of the pattern in the text in its original form. Do intractable difficulties in adaptation signal inadequate articulation in that original -- systemic defects? On the other hand could such conversion signal shifts in focus usefully to be interpreted as "off message", namely "out of tune" or a "failure to hold a tune"?

It is possible that the body of international conventions might be represented and comprehended through a relatively limited range of patterns. Perhaps more to the point, cognitively at this point only a relatively limited range of patterns may be used to the expression of global strategy. Expressed musically, this might enable and encourage innovation from an aesthetic perspective that could feed back into the elaboration of richer and more appropriate strategies. As has often be said, greater elegance of form has a tendency to be more appropriate to greater functionality.

The real challenge is to be able to embed multiple voices -- radically opposed voices -- in the same musical representation. Music has played extensively with such possibilities of concord and discord. A multicultural, democratic world, a Concert of Democracies, needs to benefit from the possibilities of harmony in relation to polyphony (*All Blacks of Davos vs All Greens of Porto Alegre: reframing global strategic discord through polyphony?* 2007).

Given that the metaphor of "thread" is widely used in relation to electronic discourse and conferences, does the representation of a thread as a melodic pattern enable deviations and enhancements (through transposition of key) facilitate cognitive tracking of the thread as a coherent whole? More intriguing is the possibility that a range of threads -- in a multidisciplinary context -- may be "woven" together into a more complex pattern -- a "theme" or a network of "songlines"? (cf *From Information Highways to Songlines of the Noosphere*, 1996).

Such developments may be rendered comprehensible and communicable through musical representation -- which may suggest further developments. Douglas Hofstadter (*Gödel, Escher, Bach: an Eternal Golden Braid*, 1979) made insightful use of the musical metaphor of a fugue to render a complex argument comprehensible -- for which he was awarded the 1980 [Pulitzer Prize](#). In this sense is there a possibility of weaving a "magic carpet" of legend to enable cognitive transportation (*Metaphors as Transdisciplinary Vehicles of the Future*, 1991)?

## Enabling user personalization and creativity

The emphasis here is on user engagement with the exploration of any possible musical adaptation. For a start it needs to benefit from the kind of creative energy brought by disciplined open source communities to the development of *Linux* or *Wikipedia*. But the objective is the development of applications that can take any text and convert it into a musical form which the listener finds meaningful.

The prime criteria is whether the user can by this means increase skills in pattern recognition, whether for learning or to sustain the development and implementation of any initiative. Any compression capacity to enable larger amounts of information to be scanned and rendered memorable is to be appreciated -- a shift from the challenges of "speed reading" to those of "speed listening". This was recognized as an early advantage of sonification in detecting patterns of significance in very large quantities of scientific data..

Potentially even more interesting is to use such a facility to configure musically a large array of knowledge in the light of the insights of "composition" and "orchestration". Might a blogger be able to configure years of web activity in this way?

## Specific applications

A range of specific possibilities may be usefully considered:

**Conference communiqués and declarations** (as indicated above): This points to the possibility that, in an increasingly musically-oriented (if not musically dependent) culture, successful communication of conference declarations, resolutions, and action plans should be expressed in musical form. As an acid test, if a degree of rhyme cannot be introduced there is a high probability that the outcome is substantively incoherent to some extent. As further argued, if the outcome is not "singable" it is essentially not memorable and will not be internalized into collective learning processes (*A Singable Earth Charter, EU Constitution or Global Ethic?* 2006).

Efforts have been made to develop a "climate change song" expressing popular demand to the delegates to the Copenhagen event (*Musicians and Celebrities collaborate on Climate Change Song - Launched by Kofi Amman*. Apparently this had been a final project of Michael Jackson (*Matthew Moore, Michael Jackson 'working on new climate change song before death'* *The Telegraph*, 27 June 2009).

How might this contrast, expressed in musical form, with the pattern of provisions embodied in the draft text under discussion? But, of far greater relevance, will it be possible to express the **outcome articulated by the delegates at the Copenhagen event** in meaningful musical form? Will there be a "climate change declaration song", given the earlier courageous effort in articulating the complex challenge of sustainable development through song by Franz Josef Radermacher, director of FAW, the German [Institute for Applied Knowledge Processing](#) (*The Globalization Saga: balance or destruction*, 2004)? Would an **outcome song** have wider significance than those forms currently envisaged? Radermacher's own subsequent involvement with the [Global Contract Foundation](#) suggests that its initial *Global Contract Report* (2005) might be fruitfully rendered into musical form. It raises the question of how any "global contract" might best be constructed musically -- given the rich understandings of harmony -- in order to interrelate all the "voices" appropriately.

A musical form also offers the possibility of traversing cultural and linguistic barriers more coherently than do text messages. The essential concern, meriting extensive investigation, is the nature of the pattern that it is considered vital to communicate to instigate and sustain any proposed collective initiative. Such investigation should benefit significantly from the insights from knowledge cybernetics articulated by Maurice Yolles (*Knowledge Cybernetics: a new metaphor for social collectives, Organisational Transformation and Social Change*, 2006; *Exploring Cultures Through Knowledge Cybernetics, Journal of Cross-Cultural Competence and Management*, 2007).

**Speeches:** As noted, much effort is made to articulate policy and criticism in lengthy speeches, panel and conference sessions at every level of society. This is commonly held to be the primary mode through which learning and wisdom is conveyed and inculcated. There is therefore a case for considering how such linear output can be converted "on the fly" into musical form. Of particular relevance is the extent to which an audience may be as convinced by the presentation as by its content -- as Barack Obama has perhaps most notably demonstrated. Specific cases include:

- **Conference speeches:** Given the widespread use of earphones to increase audibility and/or providing a means of communicating an interpretation of a conference speech (often with a choice of languages), the infrastructure is clearly present (whether wireless or wired) to enable an extra channel to be used for a musical form. It is of course the case that many in an audience may anyway be listening to a musical programme if the content of the speech is boring. The issue is therefore how the speech can be converted via speech recognition software into musical form -- possibly with a degree of user choice of genres and beat.
- **Lectures:** These are a primary mode of providing education. Again, any audience is as likely to be listening to a musical program

of the content of the lecture is boring. There is clearly a case for determining whether content cannot be converted into musical form, notably to bypass the linguistic constraints of lecturer or listener. Again the question is what exactly is the pattern of coherence that is the purpose of an educational communication. If that pattern is relatively complex, there is every reason to enable those with a degree of competence in recognizing pattern in music to benefit from such a mode. It might prove a key to education in notoriously difficult areas -- such as urban slums.

- **Radio/TV commentary:** Again there is a case for enabling the user to switch to a sonification of the commentary, retaining the screen image in the case of TV. With the increasing integration of home computers and TV, such a switch (and the transposition) may in fact be an application on that computer rather than otherwise made available. This offers the possibility of a much higher degree of personalization and experiment by the user.
- **Telephone:** Perhaps more cynically, in the case of persistent callers who indulge in monologues, this might be a means avoiding any offence in cutting the call by transposing the content into musical mode.

**Screen readers / E-book readers:** As noted above, in one form or another such devices are becoming of increasing significance to the processing of text. However, as currently used, they imply a process of linear listening. Specific possibilities include:

- **E-book complementary application:** In 2009, it is believed that there will be a breakthrough in **e-book readers**, as with the *Amazon Kindle* product. There has been relatively little commentary on the ease with which such a product now offers a text-to-speech feature (Stephen Windwalker, *Looking beyond the 'Text-to-Speech' Kindle Kerfuffle*, TeleRead, 13 February 2009). Such an adaptation could be further extended through transposition of the text into musical mode, notably compensating for any linguistic "disability". This would enable lengthy texts in a variety of languages to be otherwise appreciated. One of the great merits would be the possibility of "speed listening", namely compressing the text content into a more compact musical form -- allowing the reader-listener to move into and out of "cruise mode" in response to any change of pattern in the original text. Of interest, for example, would then be the possibility of auditory "zooming" of texts of global strategic significance, according to the attention span of the listener. Such an extension of e-book readers might respond to criticism of such devices, as articulated by Nicholson Baker (*Amazon Kindle 2: Centuries of evolved beauty rinsed away*, *The Guardian*, 10 October 2009).
- **Internet discussion threads, blogs and commentaries:** Clearly the arguments with respect to e-book readers also apply. The merit in this case is that screen readers already enable web text to be read in this way. Missing however is the ability of the current applications to transpose the text into musical form -- as suggested by applications providing visual animation of music. Open source development of such text transposition offers considerable potential, especially if it seeks to maximize user personalization of the output. Such applications would enable lengthy discussions threads and sets of comments to be "compressed" -- with whatever degree of "zooming" seemed appropriate -- to ensure greater appreciation of any emergent pattern.

**Education:** Again, as noted above, transposition of text content into musical form may offer a form of shortcut to significance learning. The issue raised is of course the nature of the learning that might be facilitated in this way. Many would readily argue that this is unsuitable for what should be the priorities of education. However if education is, to some degree, reframed as a matter of apprehending new patterns (rather than the details which are ordered by such pattern), then musical transposition offers a form of cognitive bypass. It may then offer a fast-track to acquisition of a cognitive toolkit.

This may be as relevant to those "illiterate" in the preoccupations of a particular discipline as to those whose disciplines are more closely associated with other modes of intelligence. Again this offers a means of empowering those who are otherwise increasingly dependent on music for apprehension of patterns. It therefore addresses the possibility that people are now shifting cognitively to an epistemology based on music -- to a language based on sound, as extensively argued by Antonio de Nicolas.

**Culture / Ways of knowing:** It is readily forgotten or ignored that text-based and speech-based modes of communicating knowledge represent a culturally specific bias that is arguably related to particular modes of knowing that may well be insufficient to encompass cognitively the strategic challenge with which humanity is faced (*Strategic Challenge of Polysensorial Knowledge: bringing the "elephant" into "focus"*, 2008). This issue has been variously articulated by Howard Gardner (study *Frames of Mind: The Theory of Multiple Intelligences*, 1983), Magoroh Maruyama (*Mindscapes in Management: use of individual differences in multicultural management*, 1994) and Darrell A. Posey (*Cultural and Spiritual Values of Biodiversity*, 1999).

**"Developing cultures":** The previous point is potentially of the greatest significance to "developing" cultures (as highlighted by Posey, 1999) and earlier in relation to "development" by Andreas Fuglesang (*About Understanding: ideas and observations on cross-cultural communication*, 1982). As noted above, the potential of music in this respect has yet to be explored (*Knowledge Gardening through Music: eliciting patterns of coherence for African management as an alternative to Project Logic*, 2000).

**Intelligence gathering:** Intelligence services have the responsibility to process unimaginably vast quantities of information in order to detect patterns to be interpreted as signalling potential threat (James Bamford, *Who's in Big Brother's Database? The New York Review of Books*, November 2009). Considerable research has been devoted to automated detection of keywords and phrases in telephonic communication, in e-mails and in other texts. At some stage however, human intervention is required. With the quantities of information this is itself a challenge. Clearly conversion of such information into musical form enables patterns to be more readily detected by the human ear. The analogous challenge has been a primary pressure for sonification research in relation to scientific data. Funds may have already been allocated to this possibility.

The challenge might be generalized into one of "insight gathering", especially in the light of the disastrous experiments to this end in seeking (or claiming) to engage citizens in processes of governance, exemplified by the US *Citizen's Briefing Book* (2009) -- as discussed elsewhere (*Considering All the Strategic Options -- whilst ignoring alternatives and disclaiming cognitive protectionism*, 2009). Provocatively it might be suggested that the technical capacity of intelligence services could be "inverted" to catalyze insight emergence (*From ECHELON to NOLEHCE: enabling a strategic conversion to a faith-based global brain*, 2007).

**Memory challenges of ageing:** Any exposure to the phenomena of memory loss with ageing, the onset of Alzheimer and the like, is impressed by the loss of capacity. One television documentary noted its onset in the author of several books on quantum physics, for example. Appreciation of music is typically encouraged as a compensating therapy. The question is whether compression of text (or other conceptual notations) into music would offer a valued tool to those who have lived an intellectual life and are faced with the progressive diminishment of their capacities. Would such a conversion of their own work, or that of their peer group, offer an appreciated cognitive environment. Clearly the capacity of any further compression of complex texts, into even simpler tunes, would be important as the person's capacities progressively diminish.

**Wisdom literature:** With the increasing availability via the web of the "wisdom literature" of the world, there is clearly a possibility of major potential significance of transposing the patterns of insight into a musical mode. Rather than the industrial metaphor of "mining" by which this potential has been valuably highlighted by Susantha Goonatilake (*Toward a Global Science: mining civilizational knowledge*, 1999), the challenge may be one of the "orchestration" of patterns to enable meaningful access to the conceptual integration they represent (*Patterns of Conceptual Integration*, 1984). Given the extent to which personal and collective websites now constitute collections of wisdom (*Transforming Static Websites into Mobile "Wizdomes": enabling change through intertwining dynamic and configurative metaphors*, 2007).

The latter notes the critical comment with regard to the "flat education: networked mono-knowledge" now characteristic of an understanding of cyberspace, Marcus Bussey (*Global Education from a Neohumanist Perspective: a musical exposition*, *Journal of Futures Studies*, August 2007) uses musical metaphors to interrelate a variety of otherwise mutually incomprehensible educational models:

The future harmonies inherent in the various visions of global education can indeed be understood via musical metaphors. While all represent structure and hierarchy, they do so in quite different ways. Barenboim takes up this point and how difficult it is to strike the balance here between structure, hierarchy and the individual: "in music there is a hierarchy, a hierarchy if you want with equality. And that is what of course is much easier than in life. How difficult it is to achieve equality and yet to find a hierarchy"

Such pointers raise the question of how any "wizdome" is to be configured and understood through musical metaphors.

**Collective articulation and reframing of knowledge:** To the extent that global declarations constitute a unique embodiment of collective wisdom with regard to engaging with the future, the manner of their articulation and communication is especially significant. Since they will be increasingly held in on websites offering worldwide access, of special interest is the collective process through which they are elaborated. There are various experiments, inspired by open source knowledge initiatives such as *Wikipedia*, to use that modality to elaborate what amount to the elements of a "declaration" -- namely its component "articles" -- as discussed elsewhere (*Consciously Self-reflexive Global Initiatives: Renaissance zones, complex adaptive systems, and third order organizations*, 2007).

The argument here is whether this modality could be used to give musical form to such "declarations" (*Participative Development Process for Singable Declarations: applying the Wikipedia-Wikimedia-WikiMusic concept to constitutions*, 2006). Given the new strategic initiative of *Wikipedia* itself, there is the possibility that such global knowledge bases may in future be "read" through musical transposition as suggested above with respect to adaptation of current screen "readers".

## Possible texts for experiment

An earlier discussion of these possibilities (*Convertor from Text to Poetry, Song or Music: computer-assisted aesthetic enhancement of treaties, declarations and agreements*, 2007) suggested the following focal texts that lend themselves to experiment with combinations of the above modules and processes:

- UN *Universal Declaration of Human Rights*. One example of a simple (non-aesthetic) enhancement of this text is the *Universal Declaration of the Rights of Human Organization: an experimental extension of the Universal Declaration of Human Rights* (1971)
- US *Declaration of Independence*
- Classical Chinese text: *Tao Te Ching*. One experiment on this text is the *Musical Articulation of Pattern of Tao Te Ching Insights: experimental sonification based on magic square organization* (2003)
- Constitutional treaty texts of the European Union (most notably the *Lisbon Treaty*)
- *Earth Charter*
- ILO *Labour Conventions*
- Council of Europe *Conventions*
- *The Gettysburg Address*
- *Papal Encyclicals*

## Challenge of self-reflexivity

In any commentary on the increasing challenge of the plethora of "hot air" emissions it is of course appropriate to recognize the perspective articulated by Douglas Hofstadter (*Gödel, Escher, Bach: an Eternal Golden Braid*, 1979; *I Am a Strange Loop*, 2007). The above text is an emission that merely adds to the volume of hot air with which global society is faced. Hence the need for a higher degree of self-reference on the part of any global initiative, such as that of the UN Climate Change Conference, as argued previously (*Consciously Self-reflexive Global Initiatives: Renaissance zones, complex adaptive systems, and third order organizations*, 2007).

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Douglas Hofstadter:

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- I Am a Strange Loop. Basic Books, 2007 [[summary](#)]

Thomas Homer-Dixon:

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