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Envisaging the AI-enhanced Future of the Conferencing Process

Meeting design through interactive incorporation of participants and content

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Introduction

Whereas virtual gatherings were relatively exotic in 2019, they have become commonplace (if not essential) in 2020. This is especially the case for international institutions which previously had little interest in meetings that did not offer face-to-face encounters in physical terms -- with all the networking possible in associated receptions.

The shift in modality has been most striking globally on the occasion of the celebration by the United Nations of its 75th General Assembly (September 2020). The gathering took the highly unusual form of using virtual conferencing technology unimaginable in the very recent past (Julian Borger, *Why the UN's 75th general assembly could be worse than the world's worst Zoom meeting*, *The Guardian*, 22 September 2020). As the latter notes: *The worst parts of UN events will be on display, the endless speechifying first among them, but none of what normally makes the general assembly indispensable.*

Commentators have indicated other challenges (Marcus Holmes, et al, *UN general assembly: why virtual meetings make it hard for diplomats to trust each other*, *The Conversation*, 22 September 2020; Nicholas Westcott, *UN general assembly goes virtual: a former ambassador on what that means for diplomacy, The Conversation*, 21 September 2020). Especially relevant to the following argument is the very extensive use of pre-recorded interventions -- raising the question as to who listens to what, when, and if at all.

More recently the impacts on institutional complexes like the Brussels "European Quarter" have been remarkable -- now virtually empty as a consequence of the massive shift to teleworking from home (Maïa de La Baume, *Out of Office: has coronavirus changed Brussels' EU Quarter for good? Politico*, 30 November 2020). Ironically the shift may resolve the long-standing controversy over the costly periodic displacement of sessions of the European Parliament between facilities in Brussels and Strasbourg -- illogical in a period of budgetary constraint (Lauren Chadwick, *EU Parliament's €114m-a-year move to Strasbourg 'a waste of money, but will it ever be scrapped?*, *EuroNews*, 20 May 2019; *EU Parliament's journeys from Strasbourg to Brussels*, *BBC News*, 26 October 2012). Representatives may no longer meet physically in either location. The long-term impact on national parliaments and their debating function has yet to become evident -- as indicated by cases of their exceptional closure during lockdown.

The consequence of the shift is dramatic for the many cities around the world which have invested heavily in conference halls in the expectation of the income they would generate -- and the extensive economic side-benefits from the associated tourism. The conference halls have been transformed into "white elephants".

There has clearly been a major shift from conventional face-to-face conferencing to video conferencing. A valuable clarification of the variety of platforms and their focus is provbided by *Wikipedia* (*List of video telecommunication services and product brands*). Those intended for multiple participnts include: Zoom, Microsoft Teams, GotoMeet, Cisco Webex). They are variously cited as having hundreds of millions of users daily as a consequence of the pandemic lockdown in 2020, evoking concerns with "Zoom fatigue" (*'Yes, people

have Zoom fatigue but it's not our fault', BBC News, 22 December 2020).

Whilst the massive shift to zoom-style meetings has already become evident, less evident are the emerging technologies which will transform their current form -- soon to be recognized as primitive from a future perspective. Clearly the number and frequency of meetings will increase, given the far lower cost of holding them. Far more subtle however -- as argued here -- will be the role of artificial intelligence (AI) in enhancing and manipulating the manner in which virtual encounters are experienced. How indeed may these enable new forms of collective intelligence -- and the unforeseen possibilities of community organization these might enable?

Some early indications of possibilities are evident in the innovative enhancements already offered by collaborative software applications in the organization of virtual meetings. A more dramatic sense of this transformation is offered by the enthusiasm of many for the immersive experience of online gaming and the manner in which identity can be reframed in that context.

The speculative exploration which follows frames the question as to how the impact of AI on meetings might be experienced. The approach contrasts with the assumption that plenary meetings will continue to take the form to which people have become habituated in conferences and parliaments -- reinforced by the manner in which this pattern has been portrayed by science fiction, even in future millennia.

For the author, this exploration follows from early involvement in the series of International Congresses on Congress Organization and subsequently in organizing gatherings of representatives of the meetings industry associated with the Union of International Associations. In parallel this preoccupation focused on the enhancement of interaction between participants in large conferences (*History of Participant Interaction Messaging 1979 to 1995*, 2007).

As the unfruitful nature of debates between polarized perspectives has made dramatically evident at the highest level, the question is whether AI will enable dialogue of a "higher order", and what form this might take (*Forthcoming Major Revolution in Global Dialogue: challenging new world order of interactive communication*, 2013). What might be understood as meaningful dialogue by the future? Specifically it can be asked why is there no concern for how mediators might be in some way "enhanced" or "augmented" -- to counterbalance the emphasis on exacerbating the consequences of enhancing the application of AI in combat performance?

Unresolved challenges of "dialogue"

There are frequent appeals for "dialogue" in relation to any conflict, whether violent or otherwise (*Europe Talks: fostering dialogue among Europeans on critical issues, France24*, 20 October 2020). Curiously it is readily assumed that such "dialogue" is a modality which is a vital response to complex situations. It remains highly questionable whether this is the case, given the manner in which conflict situations persist even when repeated efforts are made with the most skilled facilitators and mediators. **Why has dialogue proven to be so ineffective in so many critical areans?** Why is this failure not more assiduously addressed? Why the complacency in that regard?

The difficulty is evident in the case of mediation in interpersonal situations. To what extent is the call for dialogue used as a pretence, especially when it is recognized (by some) that little is likely to be achieved? To what extent is dialogue simply avoided when the differences are assumed to be too great -- as in the case of terrorism (*Avoiding Dialogue with Alternative Worldviews at any Cost: timid hypocrisy in responding to terrorism*, 2005)?

Specific studies clarifying learnings have been made:

- Huma Haider: *National Dialogues: lessons learned and success factors* (2019)
- T. Paffenholz, et al: *What makes or breaks national dialogues?* (The Inclusive Peace and Transition Initiative, IPTI, 2017)
- J. Harlander: *Supporting a National Dialogue: dilemmas and options for third parties* (Centre for Humanitarian Dialogue, 2016)
- M. Blunck, et al.: *National Dialogue Handbook: a guide for practitioners* (Berghof Foundation, 2017)

Of interest therefore is any effort to articulate the unresolved challenges of dialogue which are not effectively addressed. Why indeed does dialogue fail so frequently? The following themes also help to frame some of the issues:

- Unresolved challenges to engaging dialogue (2013)
- *Dialogue: learnings for the future of dialogue* (1997)
- *Confusion in the Moment of Dialogue: checklist of patterns of behaviour and attitude inhibiting better dialogue* (2004)
- *Dialogue: levels of dialogue* (1982)
- *Future Generation through Global Conversation: in quest of collective well-being through conversation in the present moment* (1997)
- *Interrelationships between 64 Complementary Approaches to Dialogue* (2007)
- *Integrative Failure: towards transformative conferencing and dialogue* (1984)

Of particular interest in any effort to distinguish alternative styles of "dialogue", on the assumption that participants in fundamental disagreement may favour one rather than another -- as with any facilitator (*Varieties of Dialogue Arenas and Styles*, 1992).

A notable arena of neglect is engaging with the failure of dialogue -- especially to the degree this is evident in the international arena (Roger Hallowell, et al, *Pass through the Failure Gateway*, *Dialogue Review*, 25 April 2019). This is an aspect of the contextual issue of the learnings to be derived from failure -- rather than avoiding them, as is so typically the case (Scott Cowen, *The Value of Failure: how we can make the most of losing*, *Knowledge@Wharton*, 14 March 2019). Such avoidance is especially dangerous when it reinforces the tendency to avoid understanding of how any system may fail, and the requisite vigilance with respect to that possibility (*Variety of System Failures Engendered by Negligent Distinctions*, 2016; *Vigorous Application of Derivative Thinking to Derivative Problems*, 2013).

Of potential relevance is the struggle with value polarities and dilemmas with which opposing participants may variously identify (*Reframing dialogue constrained by value polarities*, 2013). Whether expressed abstractly or otherwise, how is the future of dialogue to be envisaged -- and how might those of the future frame current struggles. Is a global revolution in dialogue to be imagined, and what form might it take, as explored in the earlier exercise:

Revolution in engaging dialogue?
Nature of "global" dialogue

Revolutionary implications for psychosocial professions and contexts
Towards post-revolutionary harmonic order?

Intelligence amplification, Augmented intelligence and Artificial intelligence (AI)

Intelligence amplification (IA?) was first proposed in the 1950s and 1960s, most notably by Douglas Engelbart (*Augmenting Human Intellect: a conceptual framework*, 1962). As the effective use of information technology in augmenting human intelligence, it is also referred to as cognitive augmentation, machine augmented intelligence and enhanced intelligence.

Augmented intelligence can be defined as the right combination of human Intelligence and artificial intelligence (Daniel Araya, *Augmented Intelligence: smart systems and the future of work and learning*, 2018; Judith Hurwitz, et al, *Augmented Intelligence: the business power of human-machine collaboration*s, 2019)

The mix enables people and AI to work together to enhance cognitive performance, learning and decision making. Augmented intelligence is bringing about adaptive systems and intelligent tools which can be applied or used to encourage the jobs completed by individuals, thus, it is driving the development of the role of individuals in the working environment (Priya Dialani, *The Growing Edge of Aiugmented Intelligence*, *Analytics Insight*, 7 March 2020). As the latter notes: The objective is to be progressively effective with automation while supplementing it with a human touch and common sense to deal with the risks of decision automation.

Rather than being a far-fetched, distant possibility, it is useful to recognize the degree to which such augmentation is already common place in any meeting environment. This is most obvious in the degree to which presentations are made with the assistance of computers -- whether for the speaker or in the presentation of slides on a screen.

It is less obvious in the manner in which key personalities may make use of ear pieces through which assistants can provide advice in responding to an audience. Ear prompters, connected to a recording device, may however be controlled by an individual without any need for the traditional form of teleprompting.

The physical possibilities of "augmentation" are usefully detailed by Johnny Rodriguez (*15 Powerful Examples of Human Augmentation in Everyday Life*, *Fresh*, 26 November 2019). They include implants, prosthetic devices and powered exoskeletons. These extend to the role of cyborgs, variously enhanced (Dan Robitzsk, *US Military Warns of "Augmented Human Beings"*, *Futurism*, 27 November 2019; *From Human To Cyborg: are you willing to augment your body? The Medical Futurist*, 30 March 2019). Publicity has recently focused on a French decision in this respect (*France to start research into 'enhanced soldiers'*, *BBC News*, 9 December 2020; *French army gets ethical go-ahead for bionic soldiers*, *CNN*, 9 December 2020).

There is now an extensive literature on human enhancement, more generally understood:

- Jan B. F. van Erp, et al: *Brain Performance Enhancement for Military Operators* (*NATO*, RTO-MP-HFM-18132-1, 5 October 2009)
- Roope Raisamo, et al: *Human augmentation: past, present and future* (*International Journal of Human-Computer Studies*, 131, November 2019)
- David Masci: *Human Enhancement: the scientific and ethical dimensions of striving for perfection* (*Pew Research Center*, 26 July , 2016)

Strikingly absent is the application of any such research to the augmentation of human performance in collective decision-making contexts as a means of enhancing collective intelligence. With the possible exception of so-called "situation rooms", current uses of technology in those contexts could be considered trivial by comparison with those outlined above -- most obviously with respect to use of "command centres" to enhance military performance.

Ironically it is appropriate to note that, although there are many studies of dialogue with AI (chatbots, etc), and many conferences on AI, **there is little evidence of the application of AI to enhance the performance of conferences** (notably when the focus of a conference is on AI).

It might therefore be asked: **why is there no concern for how mediators might be in some way "enhanced" or "augmented"** -- to counterbalance the emphasis on exacerbating the consequences of enhancing combat performance?.

Meeting-relevant resources for AI applications

The earlier argument pointed to *Indicative uptake of new communication technologies* (2013) and *Relevant technologies -- existing and under development* (2013). This was partially updated subsequently (*Multi-option Technical Facilitation of Public Debate: eliciting consensus nationally and internationally*, 2019).

The development of artificial intelligence itself has advanced dramatically over the past decade, as indicated by the following:

- Janna Anderson and Lee Rainie: *Artificial Intelligence and the Future of Humans* (*Pew Research Center*, 10 December 2018)
- Mike Thomas: *The Future of Artificial Intelligence: 7 ways AI can change the world for better … or worse* (*Builtin*, 20 April 2020)

- Stephan Talty: *What Will Our Society Look Like When Artificial Intelligence is Everywhere?* (*Smithsonian Magazine*, April 2018)
- Kurt Cagle: *AI Augmentation: The Real Future of Artificial Intelligence* (*Forbes*, 30 September 2019)
- *What is the future of artificial intelligence?* (*Brookings*, 17 November 2020)
- *Preparing for the Future of Artificial Intelligence* (2016)

Of particular relevance to this argument are the resources on which AI applications can now draw in any enhancement of participant interaction in virtual gatherings. Most obvious is the degree to which massive amounts of data are increasingly accumulated through the profiling of individuals, their preferences, and their attitudes. Much has been made of the manner in which these can be used to in the manipulation of opinion for marketing purposes, notably as these may be associated with electoral processes.

There is clear recognition of the role that AI may play in enhancing video-conferencing and virtual meetings:

- *AI-Powered Video Conferencing with NVIDIA Maxine* (*YouTube*, 5 October 2020)
- *AI-Powered Video Conferencing with Avaya Spaces and NVIDIA Maxine* (*YouTube*, 28 October 2020)
- Brad Templeton: *AI Applied To Video Conferencing Kicks It Up Several Notches* (*Forbes*, 5 October 2020)
- Sam O'Brien: *How AI can change video conferencing as we know it* (*JotForm*, 24 July 2020)
- Sudipto Ghosh: *The Role of AI in Shaping the Future of Video Conferencing* (*MarTechSeries*, 9 July 2019)
- Rebekah Carter: *Creating Next-Gen Video Conferencing with AI* (*UC Today*, 14 October 2019)
- Eric S. Yuan: *Video conferencing in the era of AI* (*Compare the Cloud*)

Clearly these offer possibilities with respect to the presentation and flow of information in any collective encounter -- although the possibility has not yet been actively raised or explored. It is implied by the manner in which representatives of particular factions assembled in a plenary gathering may already be subject to a pattern of messages in advance of a meeting or even during it -- perhaps via communications from their constituents subject to a subtle barrage of such communications. Indicative of progress in this respect is the product *Conversational AI* of Cognizant -- claimed as delivering personalised experience in the engagement with customers.

Applications capable of rendering textual material into audio form are now so common that little needs to be said in that regard. Of some relevance however is the possibility of simultaneous interpretation of text from one language into audio presentation in another -- especially when "language" implies issues of simplification through metaphor or the use of specialized jargon.

A point to be stressed in this regard is that AI may indeed be readily used to reframe the verbal content of messages -- according to specified criteria. Potentially of greater import however is the degree to which the presentation of that content may be reframed by such techniques, as explored separately (*Varieties of Tone of Voice and Engagement with Global Strategy: alternating between a requisite variety of voices to engender coherence?* 2020). Clearly tone-of-voice is subject to modification as a means of reframing any presentation -- from gravitas, to squeaky, or to humorous, for example.

Publicity has already been given to both voice simulation by AI and the emulation of body language and facial expression by humanoid robots. Focus has been given to particular situations: receptionists, call centres, greeters, home-helps, and news announcers. Little has been said of the potential role of humanoid robots, or voice-endowed AI in virtual gatherings. Much work has however been done on the interaction with robots able to draw upon extensive databases of information. Commercial variants of such virtual assistants include Alexa, Siri, Meena, etc. Less evident is how one or more of such devices might contribute to a virtual gathering with a number of human participants.

Considerable attention has been given to developing the capacity of AI to learn from situations. The question is how this might apply to any gathering in which AI is allowed (or expected) to intervene proactively. Given the much-publicized focus on a technological singularity, it is appropriate to ask at what point the intervention of AI in a meeting will transform that meeting in ways unforeseen by participants, and possibly undetectable by them. The question relates specifically to the manner which any form of coherence or consensus is engendered. Will AI shape a recommendation to an unforeseen degree?

Further insight regarding AI intervention is suggested by the so-called Belgian Compromise, as described in the encyclopedic *Principia Cybernetica*. The possibility of designed "agreement" might be engendered in the light of the analysis regarding that special Belgian approach to problem solving. Typical solutions derived in this way are such that complex issues are settled by conceding something to every party concerned, through an agreement that is usually so complicated that nobody completely understands all its implications.

Participation in an AI-enhanced virtual meeting

It is potentially significant to note that the World Economic Forum, in promoting its leadership for a Global Reset, is also notable for the information system it uses to enable participants at the Davos Forum to make contact with others present. This bears comparison with the computer dating systems familiar for other purposes. It can be understood as anticipating the applications to be expected in future gatherings. It is however surprising that the challenge of enabling such interaction has not been a primary of organizers of conferences of the past -- in which the organizers are typically more preoccupied with ensuring that any such communication is mediated by the formal program and the manner in which it is controlled.

Varieties of participation: Possibilities for human participation in an AI-enhanced encounter include:

- confrontation with "participants" articulating the perspectives of **absent (or long-dead) humans** on the basis of video recordings or voice renderings of their written views. Clearly there is little constraint on this possibility given the existing degree of access to such material. Far more relevant is the AI-enhanced capacity to select from such material for presentation at an appropriate moment in the flow of dialogue.

  Clearly thinking is already being given to the possibility of "planting" information and insights in order to influence opinion -- as

has been widely publicized with respect to marketing and voter preferences. Of interest is the possibility that far subtler insights might be planted in this way -- beyond what conventional human thinking might otherwise consider meaningful. Pointers in this respect are evident in traditional tales favoured in spiritual guidance, the role of haiku, and the challenge of a Zen koan (Carol Kuruvilla, *These Zen Buddhist Koans Will Open Your Mind*, *HuffPost*, 31 October 2015).

- participants might also be confronted by one or more **AI-constructed "participants"** whose profiles may be unrelated to those of specific humans (in contrast with the previous case). Here the issue is what content might such AI constructs communicate and according to what degree of learning. The possibility has long been a theme of science fiction.

- use of **AI "participants" to intervene in a debate** and respond to questions. How indeed might that be orchestrated, and what function would AI have in that orchestration?

  Of particular interest is the management of time and assessments of the quality of the potential contribution "from the floor". Clearly this is currently subject to considerable manipulation by any chairperson in admitting such a question/comment. The situation might indeed be improved with AI assistance. More problematic is when it is the AI involvement which is itself perceived to be as manipulative as any chairperson. Of further interest is when an AI "participant" is recognized preferentially in that process by any AI contributing to the process of managing the exchange.

- use of **AI constructs as moderator or chairperson**, or even as keynote speaker. The possibility frames the question as to when a humanoid robot might be deemed preferable to a human in enabling a fruitful dialogue or setting the tone of a gathering. What specifically would a human bring to the role that could not be better undertaken by AI?

  Framed in this way, it might then be asked what enhancement of humans in those roles could be envisaged. How could human intelligence be augmented in the performance of those roles -- if only by comparison with heads-up displays used by pilots in navigating an aircraft?

- as observers of any virtual gathering -- a role typical of the presence of most representatives and spectators in large gatherings confronted by speakers and panelists -- the possibilities take on another dimension. In a sense AI might then take on a role much more akin to the **designer of a show**.

  The question is what kind of experience might the AI be instructed to design, or what kind of show might it design if free to do so? What kinds of panel dialogue would it simulate to evoke new insights in the wider audience? What kinds of debate between vigorously contrasting alternatives would be enabled? What kinds of keynote speech would it present? There is of course the ironic possibility of the "singularity" when the capacity of AI to present a keynote speech far exceeds that of any human.

- use of "**companion AIs**" to which responding is delegated. Much has been made of the role of "companion animals" on airlines. It is of course the case that delegates to a meeting may allow some of their contributions to be made by an assistant. More intriguing is the possibility of using a personal assistant, in the form of an AI, to intervene on behalf of the delegate. This suggests a scenario in which such assistants -- of delegates with highly contrasting views -- are then required to debate each other's perspectives.

- given the manner in which individuals can "participate" in gatherings (or privately), most obviously through karaoke, there is the curious possibility that AI could create an environment in which individuals could intervene in a process of a dialogue -- with the expectation that this would evoke a response

Archetypal confrontations: Although seemingly far-fetched, at least initially, possibilities might include confrontations of perspective:

- across the centuries, such as between Artistotle and Marx, for example
- between religious leaders, whether or not they would otherwise be prepared to interact. This might extent to debate between the founders of those religions, respectively authorised by their particular revelations and divine mandates
- between representatives of opposing disciplines -- typically deprecating each other's methodologies as problematic. A debate between Isaac Newton and Richard Dawkins, might for example be especially instructive, given the degree to which some of Newton's views (carefully unpublished) are now deemed to exemplify pseudoscience
- between mutually hostile ideologies -- as in the case of polarised debates between left and right in politics
- between icons of wisdom and exemplars of the uninformed -- as has been exemplified through the role of Greta Thunberg

Clearly these are all examples of instructive "inter-meetings" of various forms (faith, discipline, culture, sectors, language) with respect to the divisive dynamics of society at this time. To whatever degree they are seen as symbolic, why are such encounters so ineffectual with respect to the associated conflictual relationships? Could AI enhancement radically reframe the potential of such encounters?

Potentially especially appropriate would use of AI to enable participant access to counter-arguments and counter-claims in the course of a debate insensitive to alternative perspectives. A sense of this possibility is evident in the increased use of "fact-checking" websites to document questionable public presentation of facts.

Simulated interaction with "otherness": Of greater interest for some would be simulated encounters with ETs, with Neanderthals, and with the highly disadvantaged. Given the possibility that from a future perspective *Homo sapiens* may be perceived as highly disadvantaged, the point is well made by Doris Lessing in addressing the challenge of comprehension in a devastating commentary on communication of insight by a galactic agent with a representative of a planet facing disaster:

To say that he understood what went on was true. To say that he did not understand -- was true. I would sit and explain, over and over again. He listened, his eyes fixed on my face, his lips moving as he repeated to himself what I was saying. He would nod: yes, he had grasped it. But a few minutes later, when I might be saying something of the same kind, he was uncomfortable, threatened. Why was I saying that? and that? his troubled eyes asked of my face: What did I mean? His questions at such moments were as if I had never taught him anything at all. He was like one drugged or in shock. Yet it seemed that he did absorb information for sometimes he would talk as if from a basis of shared knowledge: it was as if a part of him knew and remembered all I told him, but other parts had not heard a word. I have never before or since had so strongly that experience of being with a person and knowing that all the time there was certainly a part of that person in contact with you, something real and alive and listening -- and yet most of the time what one said did not reach that silent and invisible being, and what he said was not often said by the real part of him. It was as if someone stood there bound and gagged while an inferior impersonator spoke for him. (*Re: Colonised Planet 5 - Shikasta*, 1979, pp. 56-57).

Mapping the pattern and flow of dialogue

Mapping dialogue: It should be asked why there has been so little interest in mapping dialogue, whether as it happens or thereafter, especially in the case of critical gatherings whose efficacy has been called into question. Possibilities are evident in the technology now applied to simultaneous representation of passing patterns in ball sports such as football. Understood as "Dialogue Mapping", a particular approach to the process has been trademarked (Jeffrey Conklin, *Dialogue Mapping™: building shared understanding of wicked problems*, 2005).

From that perspective, it is described as:

> Dialogue Mapping™ is a radically inclusive facilitation process that creates a diagram or 'map' that captures and connects participants' comments as a meeting conversation unfolds. It is especially effective with highly complex or "Wicked" problems that are wrought with both social and technical complexity, as well as a sometimes maddening inability to move forward in a meaningful and cost effective way. (*A Tool for Wicked Problems: Dialogue Mapping™ FAQs*, CogNexus Institute)

Restricting use of innovative technology under the constraints of intellectual property is clearly a challenge to be anticipated in relation to the uptake of AI (*Future Coping Strategies: beyond the constraints of proprietary metaphors*, 1994). This has been evident with respect to Syntegration®, an innovation developed in the light of management cybernetics by Stafford Beer (*Beyond Dispute: The Invention of Team Syntegrity*, 1994).

A particular AI capacity that merits attention is the transformation of the traditional text-oriented role of minute-writing or transcription. There is little technical constraint on exploration of the manner in which any debate can be visually mapped as points are made -- as exemplified by media visualization of passing patterns in ball games, in the process of scoring.

More intriguing is **why no such effort is required in the debates in plenary conferences and breakout sessions**. It could be argued that this is due to a high degree of tolerance of the repetition of related points, an unconstrained investment in delegate "self-expression", and a collective complicity in avoiding visualization of that reality. This is evident in the extensive summary of the concluding day of the unprecedented UN Special Session dedicated to the COVID-19 pandemic (*Amid Threat of Catastrophic Global Famine, COVID-19 Response Must Prioritize Food Security, Humanitarian Needs, Experts Tell General Assembly*, *UN Meetings Coverage and Press Releases*, 4 December 2020).

Topic maps and Debate Graph: Anticipating the role of AI are the arguments presented by Jack Park in an initial proposal for augmenting dialogue maps (*Boundary Infrastructures for IBIS Federation: Design Rationale, Implementation, and Evaluation*, Knowledge Media Institute, The Open University, 2010). His argument has been variously clarified:

- *Using MediaWiki IBIS Conversation Extension* (*SlideShare*, 2010)
- *Topic Maps, Douglas Engelbart, and Everything* (*SlideShare*, 2002)
- *HyperMembrane Structures for Open Source Cognitive Computing* (*SlideShare*, 2015)
- *Knowledge Garden Overview* (*SlideShare*, 2016)
- *OpenSherlock - Hybrid Computing - Intelligence Augmentation* (*SlideShare*, 2019)
- *Finding Meaning Across Boundaries* (*SlideShare*, 2019)
- *Questing in the age of Complex Systems* (*SlideShare*, 2016)

Developed by David Price with Peter Baldwin, *DebateGraph* is an award-winning web-platform for visualizing and sharing networks of thought -- and opening reasoning and action to collaborative learning and iterative improvement. Users can create their own maps and explore those contributed by others, including: *CNN, the White House, the UK Prime Minister's Office, The Independent*, *and the Foreign Office*. DebateGraph offers a means of creating, exploring, and understanding individual maps of thought, dialogue, and debate -- and the graph of interconnected maps -- through a set of complementary and cognitively enhancing visualizations (Jack Park and Marc-Antoine Parent, *Topic Maps: Romancing Conversation Topics*, SlideShare, 2020).

Mapping in virtual reality: A wider range of possibilities are discussed in the following, notably with respect to use of polyhedra to explore the coherence of a dialogue:

- *Understanding Sustainable Dialogue: the secret within Bucky's Ball?* (1996)
- *Dialogue mapping and transformative conferencing* (2009)
- *Mapping the terrain of hypersensitive dialogue* (2006)
- *Complementary Knowledge Analysis / Mapping Process* (2006)

- *Towards an appropriate architecture of global conference communication* (2010)
- *Mapping the climate change context of Copenhagen* (2010)
- *Mapping Songlines of the Noosphere: use of hypergraphs in presentation of the I Ching and the Tao te Ching* (2006)
- *Visualization Enabling Integrative Conference Comprehension: global articulation of future-oriented 3D technology* (2018)
- *Pattern language and polyhedral mapping* (2019)

Transformation maps: The progressive transition to dependence on AI is illustrated by the "transformation maps" used by the World Economic Forum in its promotion of a Global Reset, as discussed separately (*Transformation maps -- as "strategic mandalas"?* 2020). The relevant introduction to the nature of such maps is by James Landale, Director of Strategic Intelligence Content and Partnerships at WEF (*What is a Transformation Map?* WEF, 8 November 2017):

> The World Economic Forum's Transformation Maps -- a constantly refreshed repository of knowledge about global issues, from climate change to the future of work - are now publicly available for the first time and free of charge. But what are they? And what can we do with them? What exactly are the Transformation Maps? Transformation Maps are the World Economic Forum's dynamic knowledge tool. They help users to explore and make sense of the complex and interlinked forces that are transforming economies, industries and global issues. The maps present insights written by experts along with machine-curated content. Together, this allows users to visualise and understand more than 250 topics and the connections and inter-dependencies between them, helping in turn to support more informed decision-making by leaders.
>
> The maps harness the Forum network's collective intelligence as well as the knowledge and insights generated through our activities, communities and events. And because the Transformation Maps are interlinked, they provide a single place for users to understand each topic from multiple perspectives. Each of the maps has a feed with the latest research and analysis drawn from leading research institutions and media outlets around the world.

It is unclear the degree to which such maps are considered to be generic or are subject to trademarking constraints, as is seemingly implied (*Viewing and Registering Transformation Maps*, *Oracle*). It is appropriate to note that mapping has a long history of proprietary constraint. This may become evermore evident as use of the relevant algorithms and design metaphors are subject to such constraints -- notably as engendered by AI, potentially governed by similar constraints.

Historical, concurrent and anticipatory mapping: The points highlighted above tend to conflate the distinctions between:

- mapping a dialogue which has occurred, as might be undertaken in dialogical analysis of debates which have occurred, much as is done with the intensive analysis of chess games of the past. This can be understood to include the systemic analysis underlying transformation maps
- mapping dialogue concurrently, moment-by-moment, as any debate progresses, namely through the visual incorporation of points and links, as enabled by DebateGraph, for example -- although less evident as a feature of the use of transformation maps in the debates of the Davos Forum
- anticipatory mapping, characteristic of scenario building, potentially implied by some forms of transformation maps, and as might be a feature of proactive intervention by AI.

Some forms of mapping could be understood as independent of time, as might be a feature of a learning environment in which a map is reconfigured in response to user inquiry -- as can be the case in a planetarium display, or in the visual replay of any game. Of interest then is the potential inclusion of features reflecting perspectives held to be erroneous from other perspectives. This is a feature of the approach of the profiling of problem, strategy and value networks in the online databases of the *Encyclopedia of World Problems and Human Potential*. This has made use of the design metaphor, termed hierarchical edge bundling, closely corresponding to that currently used in the WEF transformation maps, as illustrated separately (*Transformation maps -- as "strategic mandalas"?* 2020).

The map metaphor -- especially given its conventional "flat-earth" projection -- helpfully implies the cognitive challenge of what is distorted or omitted in its presentation, as discussed separately (*Missing "halves" of the Global Reset mandalas?* 2020). The methodology of the *Encyclopedia* specifically endeavours to include perspectives which may be deprecated by some constituencies, although valued by others.

AI-enhanced approach to innovative meeting organization

As noted above, it is curious to recognize that the prevailing approach to meeting organization tends to assume that plenary meetings will continue to take the form to which people have become habituated in conferences and parliaments. This is reinforced by the unimaginative manner in which this pattern has been portrayed by science fiction, even in future millennia. Such assumptions have been unexpectedly and radically challenged by the pandemic of 2020 and its impact on face-to-face meetings around the world, including parliamentary assemblies (*The Challenge of Cyber-Parliaments and Statutory Virtual Assemblies*, 1998).

However, rather than the current tendency to replicate as much as possible that pattern through virtual conferencing (Zoom meetings, etc), it is intriguing to explore how patterns of meeting organization might be transformed through AI support and innovation. Meetings can be understood as patterns of communication with conventional meetings taking a very limited variety of forms. These are exemplified by arrays of participants around a podium, or by configurations of factions (as in the case of a governing party and an opposition in a parliament). Smaller gatherings may take the form of circle of participants -- or a lengthy rectangular table with a leading figure at one end, or in the middle -- possibly facing an opposing party on the other side of the table.

In the case of virtual gatherings, these patterns may be replicated, most notably by juggling with interventions over time. Especially significant is the use of pre-recorded interventions which may, or may not, be viewed by a significant proportion of the participants in

their own time.

In a separate discussion, the possibility of **shifting from conventional patterns to organization in three dimensions or more** is discussed (*From Zoom Organization to Zome Configuration and Dynamics: integrating the doughnut, helix and pineapple models towards global strategic coherence*, 2020). How indeed could participants and topics be understood as arrayed in 3D or 4D? Possibilities of reframing a convetional pattern have, for example, been explored with respect to the European Parliament (*Experimental Visualization of Dynamics of the European Parliament in 3D: a 9-fold enneagram of political groups embedded in a 12-fold symbolic icosahedron in virtual reality*, 2019).

In particular a focus can be given to the possibility of arrays of both representatives and topics in terms of the enhanced coherence implied by polyhedral mapping -- with the ability to transform such arrays over the course of the meeting as the pattern of exchanges evolves. The meeting is then understood as reconfiguring in order to handle emergent topics and tensions. That earlier exploration focused on the following:

Contrasting global models from plan to pineapple
Phyllotaxis and implication of "spiral integration" for governance
Requisite complementarity of governance models comprehensible through metaphor
Alternation between complementary models of global governance
Interweaving spirals as embodied in zome configuration
Approximating a pineapple model by modification of a zome configuration

Enhancing communication patterns in virtual conferences with zome architecture
Potential indication of governance communication pathways in a zome configuration
Use of a zome configuration in practice and as a focus of symbolic significance

Emphasis was given there to the organizing potential of a zome as a configuration combining the known coherence of a dome with that of the zonohedrification of symmetrical polyhedra. The improbable integrity of geodesic domes is now well demonstrated through physical architecture but remains to be developed with respect to knowledge architecture, originally envisaged by Buckminster Fuller in terms of synergetics, as discussed separately (*Geometry of Thinking for Sustainable Global Governance: cognitive implication of synergetics*, 2009). The latter emptied the possibilities with respect to psychosocial structures more generally.

A potential key to any inherently experimental innovation in meeting organization would however be the manner in which AI could sustain an adequate degree of coherence through shifting patterns of organization. Clearly the great merit of conventional patterns is their predictability and hence their comprehensibility -- if only in principle. It is the manner in which participants could be given confidence and a sense of coherence in patterns as they might be transformed which calls for attention -- especially in those of a higher order of complexity.

The point is usefully emphasized by the title of a study by an early policy scientist (Geoffrey Vickers, *Freedom in a rocking boat: changing values in an unstable society*. 1972). The point could be emphasized otherwise through the suggestion that **unless a gathering is transformed through the process of exchange it cannot be said to exemplify any change which it recommends for wider society**. Also of relevance is Vickers insight that: *A trap is the function of the nature of the trapped*. How is any relatively lower order of organization of dialogue then to be recognized as a trap -- implying a necessary quest to escape into one of a higher order?

With respect to the role of AI and neural learning, of particular interest are the highly publicized surprises to which its use has given rise (Jonathan John, *10 Times Artificial Intelligence Shocked Us*, Listverse, 9 May 2018). These include:

- *game-playing*: much has been made of the capacity of AI to engage successfully with grand masters of chess and go. Especially relevant is the capacity of AI to discover competitively advantageous moves -- unexpected in the traditions of those games. There is the possibility that use of AI might prove valuable, if not essential, in negotiation between opposing factions in midwifing their interaction. There is the obvious possibility that each faction might be assisted by its own AI application.

- *collaborative strategies*: Recent research from has shown that when multiple AI agents are placed within a simple virtual environment with a few objects, and given only basic rules about the game of hide-and-seek, over time they will "train" themselves to work collaboratively and use those objects as tools, in addition to coming with relatively innovative winning strategies that had not been anticipated (Kimberley Mok, *AI Surprises Researchers by Inventing New Hide-and-Seek Strategies*, The New Stack, 3 Oct 2019)

- *protein-folding*: comprehension of the manner in which protein folding occurs is vital to understanding the processes of human life. Unexpected success in this regard has been recently achieved with the use of AI (Ian Sample, *DeepMind AI cracks 50-year-old problem of protein folding*, The Guardian, 1 December 2020;Will Douglas Heaven, *DeepMind's protein-folding AI has solved a 50-year-old grand challenge of biology*, MIT Technology Review, 30 November 2020). The use of AI now enables the prediction of the highly complex process whereby proteins fold into 3D shapes. Given an arguable correspondence between the proteins of biology and their psychosocial analogues, there is the possibility that AI could be applied to enabling comprehension of how these "fold" into 3D in the dynamics of psychosocial life (*Memetic Analogue to the 20 Amino Acids as vital to Psychosocial Life?* 2015).

One response to the massive quantities of data collected by astronomy, and by research of physics on fundamental particles, is the use of sonification (or auditory display) to enable elusive patterns to be detected through sound rather than the constraints of visual recognition. There is already the surprising capacity of AI to compose music held to be of credible quality. Arguably there is the future possibility of using AI to render "verbose" discourse into succinct patterns of sound to enable a debate to be presented compactly for ready

comprehension, as variously discussed separately:

- *Information Visualization and Sonification: displaying complexes of problems, strategies, values and organizations* (2001)
- *Conversion from tweets to songbites to ensure integrity of communication* (2014)
- *Sonification of Twitter Leadership at the G20: a surprising musical opportunity for Donald Trump to sound a new note* (2017)
- *Enabling meaningful engagement in climate change discourse through sonification* (2019).

AI may be especially valuable in providing bridging connectivity between characteristic formal organization and the music acclaimed as exemplifying its values. The latter is most evident in the use of part of Beethoven's Ninth Symphony as the Anthem of Europe. The cognitive implications of the anthem for coherence of European institutions remain to be explored, justifying speculative provocation (*Reversing the Anthem of Europe to Signal Distress: transcending crises of governance via reverse music and reverse speech?* 2016).

Could AI ensure memorable musicality as a requisite quality of future declarations, as can be variously explored (*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).

Psychosocial anticipation of future interaction with AI in online gaming

Distinctive preoccupation with gaming: It has been curious to note the quite separate context within which massive popular involvement in online gaming has developed -- irrespective of the conventional roles of participants. For example, in less than two years, *Fortnite* has attracted more than 250 million users around the world, and for its audience of teens (ages 10-17) who play at least once a week, Fortnite is consuming a colossal 25% of their free time. (*Fortnite: the new social media*, National Research Group, 4 June 2019; David Bloom, *Is Fortnite The New Social-Media Home For Teens? Forbes*, 4 June 2019). The parallel development of online gambling is indicative of another popular preoccupation.

Cynicism aside, there is a case for recognizing how the number and variety of international conferences in past decades can be explored as "games" of a kind -- as "played" by adults and professionals. Given the current condition of the international conference industry, it is then appropriate to ask whether the younger generation is finding it far more relevant to engage in online interaction, most notably in online gaming. The ambitions of the World Game of Buckminster Fuller can be understood as a precursor framing possibilities and inadequacies -- of both conferences and gaming.

Online gaming has tended to be deprecated by academic and governmental authorities as a focus, even though aspects of it have been developed with increasing sophistication for strategic purposes, most obviously by the military. The relevance is well illustrated by John Seely Brown in famously asserting: *I would rather hire a high level World of Warcraft player than an MBA from Harvard.* **Is involvement in such gaming effectively training people for the forms of dialogue of relevance to future governance?**

Clearly gaming constitutes a form of collective dialogue, although that function may be incidental to the declared objectives of the game. By comparison, much is made of conventional politics and business as a "game" -- a perspective which fruitfully transcends (to a degree) the polarization by which it may be otherwise characterized and deprecated. In mathematical terms the binary perspective is similarly transcended, although the dynamics then tend to be too abstract for gamers to identify themselves in the reframing it offers.

The considerable evolution of online gaming has usefully distinguished the roles and preoccupations of players in contrast with those designing the game. Game design has evolved into a profession in its own right -- especially given the commercial opportunities associated with it. That profession can be usefully compared with that of group dynamic facilitation, as may be evident in conventionsl conference processes.

AI role in midwifing dialogue: It is therefore intriguing to recognize the role that AI may be called upon to play -- whether by designers, players, or as a consequence of any freedom accorded to the AI to intervene proactively in either the design of the game or in adopting some role as a player. AI can potentially midwife dialogue in the future through two channels: improving and augmenting information flows, and improving and augmenting the ecosystem in which that information flows. A goal could then be framed as the improvement of human ability to solve complex, urgent problems

How indeed will AI facilitate the evolution of the dialogue implicit in the game -- given a high degree of focus on the "levels" of an online game? What higher orders of dialogue will it engender -- whether envisaged as a possibility by the designers or as a consequence of neural learning and other processes intrinsic to AI? To what extent will these higher "levels of dialogue" be recognizable as comprehensible by all participants, or only by some through their progression through the game? One question is how AI will enable comprehension of subtle distinctions, of which 20 levels are separately indicated (*Distinguishing Levels of Declarations of Principles*, 1980).

Especially intriguing is how the rules of any game are defined (thereby constraining participants) and broken (by proactive participants)? There is every possibility that the transition to higher orders of dialogue may require or imply an approach to "breaking" more confining rules -- in the spirit in which radical creativity is often recognized. The challenge is how such boundary transgression is to be appreciated (by whom?) or sanctioned (by whom?) if the coherence of the game is to be sustained.

Any game structure, any system, has to have rules and guidelines; even if they are not formally stated initially. Some rules/law may emerge from any initial chaos of the system because people want guidelines to inform their choices. Through TopicQuests, Jack Park has looked at the principles of Chaordic organization and Ostrom's 8 Principles to inform such structure.

Ethics of AI in relation to Plato's Noble Lie? For a proportion of participants each tends to assume that others would benefit significantly from a preferred framing. Which is potentially fine -- except that constrains the role of AI to reinforcement of a simpler current condition -- notably a binary dynamic, which is indeed fine for many, as with many forms of game-playing.

For James Prescott (personal communication), any system that seeks to influence or guide human behaviour in some way suffers from this conceit -- whether capitalist or socialist, Christian or Muslim, East or West. This can be understood as translating back to Plato's Noble Lie, namely a narrative put forth to unify a group in order to advance an agenda. Prescott the interpretation of Desmond Lee:

> Plato has been criticized for his Foundation Myth as if it were a calculated lie. That is partly because the phrase here translated 'magnificent myth'... has been conventionally mistranslated 'noble lie'; and this has been used to support the charge that Plato countenances manipulation by propaganda. But the myth is accepted by all three classes, Guardians included. It is meant to replace the national traditions which any community has, which are intended to express the kind of community it is, or wishes to be, its ideals, rather than to state matters of fact. (*Plato: The Republic*, Penguin Classics, 1974, p. 177)

From this perspective it might be usefully asked how current proposals for a Global Reset are to be distinguished from Plato's Noble Lie and from the challenge of any new form of Big Lie (*Existential Challenge of Detecting Today's Big Lie: mysterious black hole conditioning global civilization?* 2016).

Beyond game reinforcement of binary dialogue: Binary games do attract more public interest in viewing, but the rise of competitive e-gaming and
many standard video games are reframing that. There is indeed a capacity for people to enjoy games with any number of participants, as demonstrated in some forms of gymnastics, swimming and track. It remains to be understood whether binary games are a refuge from the complexity of daily life and the risks of non-linear dynamics. A binary game avoids a "rock-paper-scissors" problem where each team could beat one team and lose to the other simultaneously so that there is no obvious winner.

From that perspective it is nevertheless intriguing to note the very limited experimentation with 3-sided and 4-sided ball games, for example, as separately discussed (*Destabilizing Multipolar Society through Binary Decision-making: alternatives to "2-stroke democracy" suggested by 4-sided ball games*, 2016). Few know of 3-sided football or chess, and the explorations of 3-dimensional chess and go.

Guild dynamics in online gaming: Understood as simulations, interactive multiplayer online games offer valuable insights into emergent cybernetic processes of self-organization and their implications for governance:

- Chien-Hsun Chen, et al: *Player Guild Dynamics and Evolution in Massively Multiplayer Online Games* (*Cyberpsychology and Behavior*, 11, 2008, 3);
- Einar Stensson: *The Social Structure of Massive Multiplayer Online Game Communities* (Stockholms Universitet, 2009)
- Nathaniel Poor: *What MMO Communities Don't Do: a longitudinal study of guilds and character leveling, or not* (*Proceedings of the Ninth International AAAI Conference on Web and Social Media*, 2015)

It could be assumed that the requisite variety for engaging inter-guild dynamics involved 12 guilds, for example. In exploring patterns of dialogue more capable of engaging with the complexity of contemporary challenges, the following might be borne in mind, as discussed separately (*Possible procedures for a 12-fold dialogue process*, 2011):

- Deriving insight for the worldwide engagement in role-playing and online gaming, possibly through tracking interactions within and between guilds (especially if records are retained on online gaming servers)
- Considering the process of avatar selection and development by individuals (notably when several avatars are used by the same individual) and constraints on the number of distinct characters in viable games
- Envisaging the possibility of simulating (as "thought experiments") the emergence of N-fold dialogue processes (such as might be the case with 12-fold patterns). Using the periodic table metaphor, these might fruitfully be recognized as "islands of stability".
- Designing new types of social networking processes to elicit N-fold dialogue processes, as previously suggested using far more primitive facilities (*Group Questing or Twelving: Proposal for a large-scale small-group development process*, 1976)
- Distinguishing the tendency to use and/or impose "authorized" labels for personality types or categories (and their interpretation) from the possibility of individual articulation of experientially sensed qualitative distinctions (irrespective of the naivety of any such attribution)
- Acknowledging experience in dialogue mode-switching, as suggested both by the articulated processes of Edward de Bono and by the fictional account in the cult novel by Luke Rhinehart (*The Dice Man*, 1971) and its sequels.
- Encouraging the expression of distinct dialogue roles and modalities -- but through a process that draws them into a larger pattern of recognizably requisite variety through which they are affirmed and appropriately challenged
- Recognizing the tendency to reject, ignore, suppress, or edit out modalities that "do not fit" -- effectively "hiding" them (as with the compactification in "curled up dimensions" in the Calabi-Yau manifolds as a result of symmetry breaking)
- Recognizing that the challenging shift is to move beyond polarized dialogue ("right-left", "good guys-bad guys", "us-them"), and even out of the comfort zone of working memory capacity, as originally highlighted by George Miller (*The Magical Number Seven, Plus or Minus Two*, *Psychological Review*, 1956) -- and by subsequent research (*Comprehension of Numbers Challenging Global Civilization*, 2014).
- Exploring ways to facilitate comprehension of larger patterns as a whole, such as the 12-fold

Eliciting the "key" to the future: Given the characteristically divided and divisive views on the possibility, guild dynamics and their quests suggest a context within which the process of collective discovery of any key to the future might be imagined -- or reimagined? If indeed it is to be understood metaphorically as a "key", how is the "lock" then to be understood?

More challenging is the possibility that **multiple keys may be necessary** -- as dramatically exemplified by the multi-key provisions required to launch a missile, where the keys must be turned simultaneously by those distinctively authorised. Multi-key security systems are increasingly common in other domains. Is it appropriate to see distinct guilds each as a potential "keyholder"?

How many distinct keys may be required to unlock the future? Is a minimum of eight required, as seemingly implied by the Noble Eightfold Path, for example? Does promotion of the economic significance of stakeholder distract dangerously from the sense in which, in their requisite variety, **"stakeholders" must necessarily be understood as distinct "keyholders"** (*Stakeholder Capitalism: A Manifesto for a Cohesive and Sustainable World*, World Economic Forum, 2020)? If the security of the future is as fundamental as that of a nuclear missile system, the appropriately authorised keyholders would need to act simultaneously in order to unlock the future.

Understood as somehow having been "lost", any such set of keys offers a further insight. The well-known tale of the person searching for keys at night under a street light makes the point -- when the person admits that they were "lost" in an area not illuminated by that light. Is the quest for any key to the future similarly constrained by the nature of the game which the guilds are playing? More problematic is the possibility that, when "found", the purpose of any key would not be recognized.

Dark side of online gaming? There is an obvious case for exploring a "dark side" of such gaming, potentially preoccupied with acquisition of notional "weapons" of ever increasing manipulative and/or destructive power. This is an active theme of some conspiracy theories with regard to cartels and Illuminati -- exemplified in practice by the secretive Nazi plans and rituals associated with the castle at Wewelsburg, envisaged as the future "centre of the world".

As is evident in the preoccupation of many with such conspiracy, there is a real challenge in distinguishing the "otherness" of necessary alternatives from such modalities -- real or imagined (*The "Dark Riders" of Social Change: a challenge for any Fellowship of the Ring*, 2002; *Inspiration, Conspiration, Transpiration, Expiration: towards a universal model of conspiracy theories*, 2020).

Given the tragic inability to transcend divisive binary dynamics, will any proactive AI deem it appropriate to design games embodying "deadly enemies" in order to evoke creative responses as a means of engendering collective learning which has otherwise proved to be elusive? How is the seemingly requisite dynamics of interaction with such enemies to be transformed into dynamics of a higher order?

Enabling comprehension of "the great game"

The relevance of recognition of a "great game" has long been a feature of geopolitics. Although primarily cited from a historical perspective, arguably the term continues to be of relevance with respect to the interplay of global spheres of influence, as separately discussed (*Playing the Great Game with Intelligence*, 2013). The latter included sections on:

Recognizing patterns in the Great Game   Recognizing patterns in the Greater Game with Otherness
Identifying patterns of moves with respect to "intelligence"   Interplay of black and white in the Greater Game

Clearly there is the possibility of a confluence of interest in AI-enhanced online gaming and eliciting the dynamics of a greater game -- however that might be understood. Notable in this respect is the extent to which online gaming may incorporate cultural content, as exemplified by the explicit appeal of mythological adaptations in *Dungeons and Dragons*. The elusive appeal of a greater game features in the classic by Nobel Laureate Hermann Hesse (*The Glass Bead Game*, 1943) -- the focus of a number of later efforts to emulate it in a web context (*Evoking Castalia as Envisaged, Entoned and Embodied: the great game informed by the bertsolaritza cultural process?* 2016).

These associations offer curious echoes to the elaboration of a "game of spheres" by Nicholas de Cusa (*De Ludo Globi*, 1463), written as a contribution to both a literature and a practice of moral game-playing. This formed part of the tradition of the forgotten chess-like game Rithmomachia ("The Battle of Numbers" or Rythmomachy), which combined the pleasures of gaming with mathematical study and moral education. Intellectuals of the medieval and Renaissance periods who played this game were not only seeking to master the principles of Boethian mathematics but were striving to improve their own understanding of the secrets of the cosmos (Ann E. Moyer, *The Philosophers' Game*, 2001). A requisite characteristic of a greater game is the focus of the argument of James Carse (*Finite and Infinite Games: a vision of life as play and possibility*, 1986) -- an inspiration for Niki Harré (*The Infinite Game: how to live well together*, 2018).

Speculation can be taken further by confronting (below) seemingly disparate images of complex dynamics, namely that of the dynamics fundamental to life and that of unresolved strategic challenges. The images are discussed and presented in enlarged form separately (*In quest of metabolic pathways of global governance?* 2020). Both could be seen as indicative of the complexity of the dynamics in which guilds engage in online gaming. The earlier commentary includes discussion of the manner in which comprehension of that on the left is facilitated by an extensive set of songs (*Sonification as a mnemonic aid to global sensemaking*, 2020). Might the identity and dynamics of a guild be embodied in a song -- "our song"?

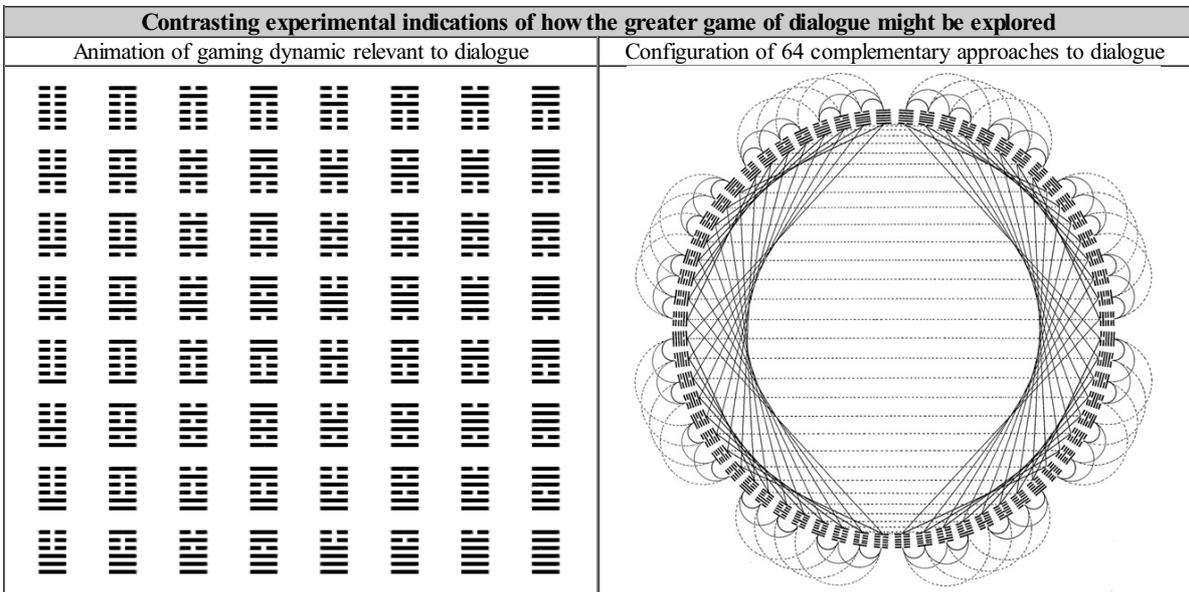| Indicative images of complex dynamics with which engagement is vital	
Metabolic pathways	Adaptation to climate change of counter-insurgency operations
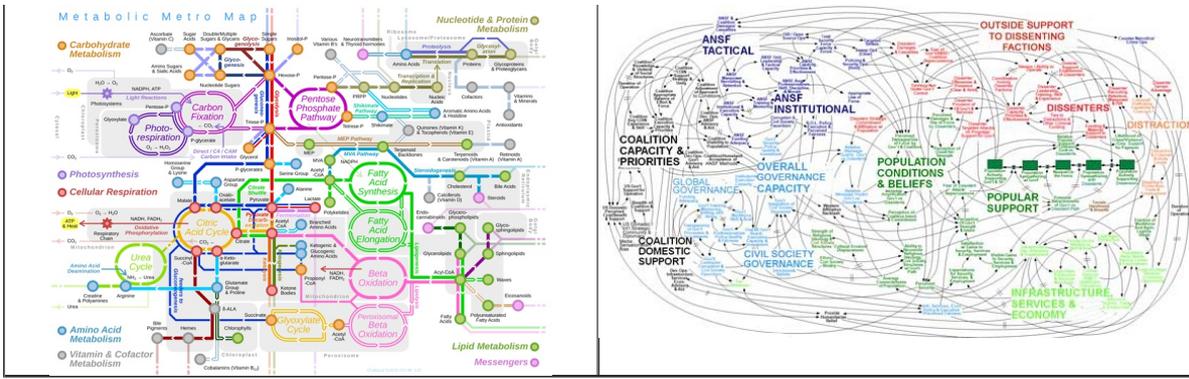
There is little difficulty in recognizing that **any greater game is a game of patterns**, exemplified by the application of AI to competitive chess and go. Curiously there is an intimate relationship between the amino acids which feature in the map of metabolic pathways and the pattern of codons characteristic of DNA -- inviting a quest for psychosocial analogues of relevance to any strategic preoccupation (*Memetic Analogue to the 20 Amino Acids as vital to Psychosocial Life?* 2015).

As a complex articulation of the pattern of psychosocial transformations, speculative efforts to relate the traditional Chinese appreciation of the *I Ching* to the genetic pattern continue. Given the coherence of the dynamic it articulates, there is a case for exploring its patterns as one understanding of how the greater game might be represented, as previously discussed (2013):

> A Chinese framing of the dynamics of the Greater Game   In quest of a meta-pattern of transactional games
> Transformational transactions within the Greater Game

That discussion features the following experimental animation (below left) indicative of a gaming dynamic potentially relevant to global dialogue. The image on the right is reproduced from *Interrelationships between 64 Complementary Approaches to Dialogue* (2007) -- where clicking on any hexagram there offers a pop-up explanation of its distinctive relevance to dialogue.

Both configurations highlight the 8-fold organization into so-called "houses" inviting comparison with guilds (*Numbers in play in psychosocial organization*, 2014; *Possible applications relevant to psycho-social organization*, 2008; *Mnemonic aids to the challenge of global governance*, 2008). As yet to be clarified is how the interaction between particular numbers of traditional guilds have proven vital to economic and social development (*The Development of Craft Guilds*, *FermiLab Education Office*, 1997; Gary Richardson, *Medieval Guilds*, *EH.Net Encyclopedia*, 2008). How many guilds make for a viable game -- potentially in the light of viable system theory?

Contrasting experimental indications of how the greater game of dialogue might be explored	
Animation of gaming dynamic relevant to dialogue	Configuration of 64 complementary approaches to dialogue

AI as an intelligent artifice -- but what is it really for?

Given the apparent degree of commitment to AI, there is a case for asking what it is for and why humanity seems to have need of it in its present state of development. Expressed otherwise, what are the fundamental questions which it is hoped that AI will address, as can be variously implied (*Superquestions for Supercomputers: avoiding terra flops from misguided dependence on teraflops?* 2010; *Imagining Order as Hypercomputing: operating an information engine through meta-analogy*, 2014). In the current surreal context, possibilities might include:

- In the quest for global coherence, there would seem to be a struggle between patterns of order composed of relatively few factors and those with from 15 to 100. Various disciplines and religions are focused on the former -- deprecating the patterns each advocates. Practice seemingly calls for a greater number. Both extremes have proven to be inadequate to current crises. AI has been valued in its capacity to engage with larger numbers through particular sets of rules, as in chess and go. However AI has not been effectively applied to the dilemmas of comprehension governance which these patterning extremes imply.

- The potential of AI has been enthusiastically acclaimed by science as an opportunity for human advancement. It is seen as the exemplification of that mode of knowing in contrast to what is now deprecated as pseudoscience. Curiously however, it could be argued that far more people experience the need to adopt practices and beliefs readily framed as pseudoscientific, if indeed they make any claim to a disciplined mode of knowing. The use of AI in bridging between such contrasting modalities is as yet far from evident. It could then be argued that in promoting use of AI, science is making evident its tendency to be of pseudo-relevance to the challenges experienced by humanity.

- Implied in the previous points is the divisive disagreement which is now so characteristic of society and decision-making, whether locally or at the highest level -- a degree of disagreement readily termed "poisonous". The total failure to apply to that challenge the sophisticated thinking which engenders and develops AI calls into question its value for a civilization faced with possible collapse. Potentially more problematic, AI is readily seen as a means of imposing higher orders of surveillance and control -- and is already developed to that end. This may even encourage tendencies to "dumb down" the wider population to preserve forms of order serving the few.

- Societies have periodically been inspired by higher orders of thinking -- wisdom typically articulated by individuals, and promoted by groups. There are many forms of such wisdom now widely accessible. As optimistically envisaged, AI may well be a source of such wisdom -- possibly to the point of constituting a "wisdom singularity". It is however only too evident that individual and collective responses to higher orders of insight have long proven to be highly problematic and a source of violent conflict -- irrespective of the perspective they are claimed to embody. It is to be expected that this will be the response to AI, notably in the event of failure to use the resources of AI to address that dynamic.

- Recent highly publicized examples of the use of AI in the manipulation of public opinion through intensive profiling have served to clarify what are seen as priorities for its use. Despite vigorous promotion of its value to society, it can be readily seen as an "intelligent artifice" for social control -- namely as a device for counteracting criticism of applications exacerbating existing problems, most obviously unemployment. Missing is any application of AI -- of corresponding sophistication -- to comprehension of its own role and the manner in which its impact can be appropriately constrained. The point is currently highlighted by the controversy regarding the firing of a person with such a mandate (*A Prominent AI Ethics Researcher Says Google Fired Her*, *Wired*, 3 December 2020; *Google to examine the departure of a leading AI ethics researcher*, *CNN*, 10 December 2020).

- There is a degree of irony to the investment in AI to ensure competitive advantage, replicating the pattern of the arms race -- with intelligence as a weapon. There is little evidence of any call for the use of AI to transcend such a focus on zero-sum games. It is in this sense that engagement in multi-player online gaming is an indicative precursor of a modality which could be enhanced by AI to enable game playing of a higher order. What is the requisite variety of perspectives which need to be "in play" to ensure the sustainable viability of society? How the midwifing role of AI would then be perceived and challenged may exemplify even more fundamental issues.

Such speculative questions can be taken further in the light of a variously envisaged "global brain" -- readily understood as the ultimate expression of AI, especially subsequent to any future technological singularity. Less evident are other forms of singularity, most notably in the psychosocial terms of relevance to "global dialogue" (*Emerging Memetic Singularity in the Global Knowledge Society*, 2009).

Such possibilities help to frame the question of how individuals and collectives might be expected to engage with what takes the form of an ultimate authority figure -- effectively a secular deity whose nature is beyond human comprehension. Given the importance of aesthetics to comprehension of complexity, one approach is to reimagine "organization" in the light of "organ" as its musical root (*Envisaging a Comprehensible Global Brain -- as a Playful Organ*, 2019). Beyond simple sonification, patterns of interactive online gaming may then take musical form.

Understanding otherwise any "human enhancement" enabled by AI, a global brain might then be understood as the context for the emergence of a successor to *Homo sapiens*, as can be speculatively explored (*Dynamic patterns of play engendered by Homo ludens and Homo undulans?* 2019; *Authentic Grokking: emergence of Homo conjugens*, 2003).

AI Dialogue: beyond the Turing Test to the Buber Test?

Of particular relevance to any possibility of dialogue enhancement is how the "human quality" of any engagement with AI is to be assessed. The earlier discussion on the *Forthcoming Major Revolution in Global Dialogue: challenging new world order of interactive communication* (2013) included the following argument with regard to the widely cited Turing Test. This is a test of a machine's ability to exhibit intelligent behaviour equivalent to, or indistinguishable from, that of a human. Variants of the test have been proposed in response to a variety of criticisms of some relevance to this argument.

The existing capacity to generate artificial identities to engage interactively with others over the internet raises the question of how little intelligence needs to be exhibited in such communication by such an identity (a simulacrum) for the impression to be created that it may well be a human being. Even less is required if the identity merely posts communications triggered by themes and keywords, with minimal response (if any) to any questioning reactions.

The issue raised by the argument above is not whether artificial intelligence could simulate human behaviour to a satisfactory degree. The issue is rather whether the communication might correspond to forms of dialogue which are not "fit for purpose" in terms of the desires some might have for deeper and more meaningful dialogue. Clearly some forms of artificial intelligence might well offer emulation of forms of dialogue (quite satisfactory for some purposes) through a play on value polarities .

A contrast might then be made with the profundity of dialogue portrayed by the philosopher Martin Buber (*I and Thou*, 1923) or intimated by Johann Wolfgang von Goethe (*Elective Affinities*, 1854).

The question of relevance to the above argument is whether artificial intelligence will be developed to the point at which a "Buber Test" might prove to be more appropriate. Expressed otherwise, what is required of artificial intelligence to enable dialogue which will be held to be profoundly meaningful?

Provocatively it might be asked how this might take into account the situation so humorously portrayed by Peter Sellers in *Being There* (1979). More provocatively, with the emphasis on brevity exemplifed by Twitter communication, how much easier would it become for algorithms to imply depth of insight capable of passing a Buber Test? Aspects of the issue are discussed separately (*Re-Emergence of the Language of the Birds through Twitter? Harmonising the configuration of pattern-breaking interjections and expletives*, 2010; *Tweeter, Tweeter, Little Star -- How I wonder what you are*, 2012; *Configuring a Set of Zen Koan as a Wisdom Container: formatting the Gateless Gate for Twitter*, 2012). The study by Matthew M. Hurley, et al. (*Inside Jokes: using humor to reverse-engineer the mind*, 2013) offers a concluding chapter on: *Could We Make a Robot with a Sense of Humor?* -- chapter a "punch line" reviewing recent efforts and future possibilities.

If the issue is one of achieving only a semblance of profundity, capable of passing the Buber Test, there is also the cynical question of how this might compare with the gravitas sought by politicians and statesmen -- given the insight of Abraham Lincoln: *You may fool all the people some of the time; you can even fool some of the people all the time; but you can't fool all of the people all the time*. Expressed otherwise, could AI achieve similar success and would this be as adequate in practice as in the case of politicians? More provocatively, is there the possibility that AI could respond to the shortage of priests-- if only in the capacity appropriately to exploit and interweave texts from a huge reservoir of sermons and homilies?

Rather than a simple play on value polarities, could profundity of dialogue by artificial intelligence be achieved by explorations of variations, much as has been the case in music -- notably indicated by Douglas Hofstadter (*Gödel, Escher, Bach: An Eternal Golden Braid*, 1979)? Would it be extended through the use of analogy and metaphor as suggested by his later work with Emmanuel Sander (*Surfaces and Essences: analogy as the fuel and fire of thinking*, 2013)? Might analogy prove to be the "fuel and fire" of more profound dialogue -- as it so clearly was in the collaboration between those two authors?

One possibility is through the skillful interweaving of different modes of discourse, as separately argued *(Interweaving Thematic Threads and Learning Pathways*, 2010). These might include: religious, philosophical, political, scientific, romantic, poetic, dramatic, etc. As with fruitful marketing, the challenge would be one of avoiding the arousal of suspicion -- perhaps by including an appropriate proportion of necessary "roughage" into the dialogical "diet", and the avoidance of cliché and outworn arguments (or not?). How much "irritation" is necessary to significant dialogue?

Given criticisms of the Turing Test, strong views are likely to be expressed regarding any possible "Buber Test". A hypothetical case could be usefully made for various "depths" of dialogue, perhaps to be compared with martial arts classifications -- "belts" and "dan ranking" -- especially given the underlying philosophy governing the attitude to the "other" in the engagement (as explored separately to some degree). Use of this metaphor highlights the failure to develop any corresponding distinction with respect to dialogue skills and their development. Each level of skill could well require creative innovations in AI programming, as has been evident in the case of chess-playing applications.

Especially relevant to any Buber Test would be reaching the stage at which a participant in a dialogue with AI would be "touched" by the meaning evoked -- as is the aspiration of any politician or preacher in engaging with an audience. What test would be indicative of dialogue of that quality? Rather than a Buber Test, or Buber Tests, does this suggest a case for a "Buber Scale"?

As noted by Niamh Brannigan (*An Exploration into the use of a Technology Enabled Platform to Support Dialog for Program Evaluation*, 2011), there are many indicators of dialogue. An effort was made to combine some by B. Campbell and M. M. Mark (Toward More Effective Stakeholder Dialog: applying theories of negotiation to policy and program evaluation, *Journal of Applied Social Psychology*, 2006). A 36-item "mediated dialogue scale" was developed by Maureen Taylor and Michael L. Kent (*Congressional Web Sites and their Potential for Public Dialogue*, *Atlantic Journal of Communication*, 2004). There is considerable interest in evaluating dialogue with victims (W. Bradshaw and M. Umbreit, *Assessing Satisfaction with Victim Services: the development and use of the Victim Satisfaction with Offender Dialogue Scale (VSODS)*, *International Review of Victimology*, 2003). Use is made with respect to autism of a *Collaborative Competence in Dialogue Scale (CCDS)* to assess the presence and quality of seven collaborative features in conversation (continuers, assessments, appropriate next response, try markers, gaze to regulate, gaze to co-regulate, and repairs).

Of particular relevance to this argument is concern in human-robot interaction with a so-called "reactive dialogue scale", as one element in the evaluation of robotic user interfaces. Consideration of the conditions under which artifical intelligence passes the Buber Test in many dialogue situations could also be combined with reflection on the more radical implications of technological singularity -- foreseen as the time when artificial intelligence will have progressed to the point of a greater-than-human intelligence, such as radically to change human civilization, and perhaps even human nature itself.

How might levels of quality and depth of dialogue then interweave the considerations of concern to assessments of intelligence (IQ tests), emotional intelligence (EI) -- or other forms of intelligence -- combined with quality of critical thinking? Emotional dynamics in that context are of particular concern in the approach of David Bohm (*On Dialogue*, 2004).

Given anticipation of forms of discourse which would "make the Earth move" (even "tremble"), should consideration of such effects be recognized in the form of a "**Buber Depth Scale**" -- or a Bohmian equvalent -- in the light of seismological insights from the Richter Magnitude Scale, or from the Moment Magnitude Scale by which it has been largely replaced? It is noteworthy that the parameters in both cases are rich in metaphoric potential of relevance to power of movement in dialogue from a global perspective.

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