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Towards a Science of Misinformation and Deception

the challenge of an information pandemic -- a COVID-19 infodemic

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Introduction

The study of information has been remarkably clarified by information theory. This is the scientific study of the quantification, storage, and communication of digital information. The field is at the intersection of probability theory, statistics, computer science, statistical mechanics, information engineering, and electrical engineering.

Information theory has found applications in other areas, including statistical inference, cryptography, neurobiology,perception, linguistics, the evolution and function of molecular codes (bioinformatics), thermal physics, molecular dynamics, quantum computing, black holes, information retrieval, intelligence gathering, plagiarism detection, pattern recognition, anomaly detection and even art creation.

The world has recently been witness to much emphasis on misinformation in relation to the pandemic. The United Nations and its Specialized Agencies have been very explicit regarding the challenge of misinformation:

- *Dispelling misinformation, countering vaccine hesitancy vital to beat COVID-19, countries affirm* (*UN News*, 7 April 2021)
- *5 ways the UN is fighting 'infodemic' of misinformation* (United Nations Department of Global Communications, 30 April 2020)
- *UN tackles 'infodemic' of misinformation and cybercrime in COVID-19 crisis* (United Nations Department of Global Communications, 31 March 2020)
- *Battling COVID-19 misinformation hands-on* (United Nations Department of Global Communications, 17 June 2020)
- *UN chief: world faces misinformation epidemic about virus* (Associated Press, 16 April 2020)
- *United Nations Launches Global Initiative to Combat Misinformation* (UN Ethiopia, 21 May 2020)
- *Immunizing the public against misinformation* (World Health Organization, 25 August 2020)
- *A Global Study Shows the Link Between Misinformation on Social Media and Vaccine Hesitancy* (*UN Dispatch*, 9 December 2020)
- *Misinformation and growing distrust on vaccines, 'dangerous as a disease' says UNICEF chief* (*UN News*, 28 June 2019)
- *WHO -- Vaccine Hesitancy Top Health Threat* (*Science-Based Medicine*, 23 January 2019)
- *United Nations: there needs to be "no place for misinformation on social media platforms"* (*Reclaim the Net*, 6 July 2020)

Misinformation is understood to be false, inaccurate, or misleading information that is communicated regardless of an intention to deceive. Disinformation is a subset of misinformation that is deliberately deceptive. The principal effect of misinformation is to elicit fear and suspicion among a population. News parody or satire can become misinformation if it is believed to be credible and communicated as

if it were true. The terms "misinformation" and "disinformation" have often been associated with the concept of "fake news" (*Varieties of Fake News and Misrepresentation: when are deception, pretence and cover-up acceptable?* 2019).

Initiatives are underway to detect misinformation and fake news in digital media using the resources of artificial intelligence -- most notably by social media platforms as a consequence of criticism of their irresponsibility in purveying biased content. As might be expected, these include approaches which benefit explicitly from information theory (Victoria Patricia Aires, et al, *An Information Theory Approach to Detect Media Bias in News Websites*, WISDOM, 24 August 2020; Carlo Kopp, et al, *Information-theoretic Models of Deception: modelling cooperation and diffusion in populations exposed to "fake news"*, PLOS One, 28 November 2018).

Less evident is how to distinguish what is speculative misinformation, by which collective understanding is confused, from disinformation about the nature of the crisis, How to distinguish deliberate lies in support of particular agendas?

A valuable article, relative to the quantity of confusing and misleading information otherwise available, is the study by Adam M. Enders, et al, (*The Different Forms of COVID-19 Misinformation and their Consequences*, *Misinformation Review*, 16 November 2020). Appropriately this argues that *as the COVID-19 pandemic progresses, an understanding of the structure and organization of beliefs in pandemic conspiracy theories and misinformation becomes increasingly critical for addressing the threat posed by these dubious ideas*. As stated, this preoccupation is itself problematic in that it appears to frame and conflate in a rather particular manner what is "misinformation", "dubious", and the focus of "conspiracy theories" -- potentially excluding what some would argue (with evidence) as being of legitimate and strategic scientific concern.

Reference to "misinformation", as being a major problem of the "infodemic", can be recognized as exploiting this confusion. **There is great advantage to vested interests in disguising deliberate lies within a context of speculative claims which can be readily dismissed -- and claimed to be harmful**. This has resulted in major initiatives by social media platforms and search engines to eliminate anything that can be readily labelled as "misinformation". Sophisticated use is being made of artificial intelligence to that end.

Which truths upheld by one party however, would not now be dismissed as misinformation -- if not a lie -- by another? Opposing factions, whether in politics, science, religion or business typically accuse each other of misrepresenting the truth -- if not "lying", possibly even with "evil" intent. **Does disagreement automatically imply misinformation in that one party is held by the other to be misrepresenting the truth -- lying -- to the other?**

It is unfortunate that efforts to apply information theory, together with insights into the nature of bias, seemingly take little account of the extent to which such efforts may themselves be each embedded in a particular pattern of bias associated with a preferred discipline, model or an institutional funding context -- as would be argued by critics. There is also the confusion between bias and belief, raising issues as to **how are fundamental beliefs to be recognized, or not, as misinformation** (*Reframing Fundamental Belief as Disinformation? Pandemic challenge to advertising, ideology, religion and science*, 2020; *Comparability of "Vaxxing Saves" with "Jesus Saves" as Misinformation? Problematic challenge of global discernment*, 2021).

Far more challenging is the criteria by which the institutional promotion of any "Big Lie" would be detectable with the tools of information theory (*Existential Challenge of Detecting Today's Big Lie*, 2016). The difficulty more generally is that increasingly **any claim regarding such a "lie" is itself readily dismissed by authorities as "misinformation" meriting suppression** -- dismissing those claiming an unquestionably truthful alternative perspective. This pattern is most dramatically evident in political leaders accused of corruption -- who deem their indictment as "political".

Framed as a "war" by many leaders -- thereby justifying a deceptive propaganda modality -- **is it then totally naive to assume that the official narrative regarding the pandemic is not based in some measure on misinformation, disinformation, deception, or deliberate lying?** From a military perspective, this would be fully justified, given the highly valued role of deception in warfare.

With respect to the large scale production and dissemination of misinformation in the pandemic context, one study investigates those who believe it (Seoyong Kim and Sunhee Kim, *The Crisis of Public Health and Infodemic: Analyzing Belief Structure of Fake News about COVID-19 Pandemic*, *Sustainability* 12, 2020, 9904). This would however appear to avoid the issue of **how to establish whether any information is true or false, given that critical counter-claims are necessarily dismissed or framed as false**.

Are "fact-checking" initiatives to be upheld as totally free of bias -- and unquestionably so, as some would claim them to be (Samikshya Siwakoti, et al., *How COVID drove the evolution of fact-checking*, *Misinformation Review*, 6 May 2021). Or **does fact-checking depend on selectively framing particular information as false, according to the constraints of unquestionable criteria**, governed by prescription of an often undeclared agenda (Sungkyu Park, et al, *The presence of unexpected biases in online fact-checking*, *Misinformation Review*, 27 January 2021).

Little is said in the current context, for example, about widespread tolerance of the misleading information presented to an i̶=ever increasing degree in advertising (Victor Pickard, *Unseeing Propaganda: how communication scholars learned to love commercial media*, *Misinformation Review*, 22 April 2021). In the detection of misinformation, **are claims to scientific objectivity then themselves questionable -- if they fail to address their own degree of complicity in framing the process** (*Cui bono?*, *Quis custodiet ipsos custodies?*)

How durable are "facts", given the "half life of knowledge", as queried by Samuel Arbesman (*The Half-life of Facts: why everything we know has an expiration date*, 2012)? Expressed otherwise by the Marcia Angell:

> It is simply no longer possible to believe much of the clinical research that is published, or to rely on the judgment of trusted physicians or authoritative medical guidelines. I take no pleasure in that conclusion, which I reached slowly and reluctantly over my two decades as an editor of *The New England Journal of Medicine*. (*Drug Companies and Doctors: a story of corruption*, *The New York Review of Books*, 15 January 2009).

The problematic nature of the distinction between true and false is highlighted in a different context by the highly controversial discussion of critical race theory, especially in the USA -- where it is proving to be an existential challenge to academia. As argued by Kerry Cosby, this raises the more general issue that **the problems of today call for less binary and more systems thinking** (*Is Critical Race Theory Too Complex for U.S. Politics? The Globalist*, 20 July 2021). It notes the relevance of the question to the pandemic, climate change, and other issues. Does politics have the ability to confront issues for which academia has (in some cases) begun using more complex methods to examine? Cosby argues:

> Today, the U.S. political system largely relies upon establishing a binary choice for voters. Meanwhile, for many of today's problems, researchers use models that consider multiple causes, feedback loops and systemic structural influences.

The argument can be evoked with respect to the manner in which "information" and "misinformation" are distinguished -- given the limitations of the binary mindset focusing primarily (if not solely) on "truth" verse "falsehood". **Is information really either true or false -- or possibly both, or even neither?** This complexification has been explored by Kinhide Mushakoji (*Global Issues and Interparadigmatic Dialogue*, 1988). The non-binary insights of quantum computing, and their social implications, suggest that other perspectives may be pertinent (Alexander Wendt, *Quantum Mind and Social Science: unifying physical and social ontology*, 2015).

The title of this document is itself necessarily ambiguous -- a "science of misinformation and deception" -- given that considerable science has been acknowledged to have been applied in the course of the Facebook-Cambridge Analytica data scandal. As a marketing initiative to manipulate the opinion of voters, it frames the question as to whether advertising and puffery merit exploration as exercises in misinformation -- in the guise of information (Rebecca A. Clay, *Advertising as Science*, *American Psychological Association*, 33, 2002, 9; Livia Gershon, *Can Advertising Be a Science? JStor Daily*, 4 December 2016; Adi Ignatius, *Advertising Is an Art -- and a Science*, *Harvard Business Review*, March 2013).

Does the framing of the pandemic as a "war" preclude any assumption that authorities are complicit in processes of deception -- as would be a natural option in the implication of the need for a "military" response?

Information theory and cognitive bias?

Media bias: Noting that media may be biased regarding political and ideological leaning/orientation especially, the awareness of such bias is a key factor for readers in deciding how much content/opinion they accept or reject from a given source, as argued by Victoria Patricia Aires, et al (*An Information Theory Approach to Detect Media Bias in News Websites*, *WISDOM*, 24 August 2020). The authors that:

> Over the years, especially nowadays, biased information has been used as a tool to control and manipulate public opinion, ultimately leading to the proliferation of fake news. Consequently, it is important to develop methods to automatically identify and inform the reader about the eventual political and ideological bias of the sources. The majority of current research focuses on polarity detection or a bi-class problem, such as left vs. right-wing leaning or Democratic vs. Republican. In addition, most of them are based on a large number of features (lexical or bag-of-words), resulting in computationally intensive methods. In this work, we introduce Poll (POLitical Leaning detector), a strategy based on Information Theory concepts to detect media bias in news websites/portals considering bi-class and multi-class problems. Our strategy reduces the feature space to as little as the number of classes being considered, significantly reducing the overall computational cost.

Deception: Although necessarily recognized, the role of deception has not been extensively integrated into information theory, as noted with respect to misinformation by Carlo Kopp, et al (*Information-theoretic Models of Deception: modelling cooperation and diffusion in populations exposed to "fake news"*, *PLOS One*, 28 November 2018):

> The modelling of deceptions in game theory and decision theory has not been well studied, despite the increasing importance of this problem in social media, public discourse, and organisational management. This paper presents an improved formulation of the extant information-theoretic models of deceptions, a framework for incorporating these models of deception into game and decision theoretic models of deception, and applies these models and this framework in an agent based evolutionary simulation that models two very common deception types employed in "fake news" attacks. The simulation results for both deception types modelled show, as observed empirically in many social systems subjected to "fake news" attacks, that even a very small population of deceivers that transiently invades a much larger population of non-deceiving agents can strongly alter the equilibrium behaviour of the population in favour of agents playing an always defect strategy. The results also show that the ability of a population of deceivers to establish itself or remain present in a population is highly sensitive to the cost of the deception, as this cost reduces the fitness of deceiving agents when competing against non-deceiving agents. Diffusion behaviours observed for agents exploiting the deception producing false beliefs are very close to empirically observed behaviours in social media, when fitted to epidemiological models. We thus demonstrate, using the improved formulation of the information-theoretic models of deception, that agent based evolutionary simulations employing the Iterated Prisoner's Dilemma can accurately capture the behaviours of a population subject to deception attacks introducing uncertainty and false perceptions, and show that information-theoretic models of deception have practical applications beyond trivial taxonomical analysis.

Misinformation: A research program of the School of Physics of the University of Sydney frames the challenge in terms of *Fighting the spread of misinformation*.

> Why aren't scientific results having more impact on public opinion, policy and political will? The use of misinformation by vested interests has a long history, however the advent of social media, and the fracturing of the media landscape, has vastly increased the power wielded by those bent on introducing confusion into debate. The sophistication of the deception, coupled with the severity of the consequences, has prompted a large amount of recent research into the nature of misinformation..., and how best to combat it.... High impact research has recently been published on the spread of `fake news'..., and the need to combat scientific misinformation...] however there has been no attempt to quantify the spread and impact of scientific information on public opinion and policy development.

Understood as a means of tackling the fundamental barriers to the use of science in society, the project envisages the use the tools of network analysis to quantify the nature of information flow within, and between, the networks of scientists, the general public, and key influencers (such as politicians and media organisations). This would then give a measure of **the extent to which influencers are relying on misinformation versus science in the development of policy.** The project would also identify the characteristics of "super-spreaders" in the network, and seek to determine how these characteristics may be harnessed for a "public inoculation strategy".

Given the fundamental role of entropy in information theory, the understanding of entropy is of relevance in relation to misinformation, as argued by Chao Wang, et al (*A rumor spreading model based on information entropy*, *Scientific Reports*, 7, 2017, 9615):

> Rumor spreading can have a significant impact on people's lives, distorting scientific facts and influencing political opinions. With technologies that have democratized the production and reproduction of information, the rate at which misinformation can spread has increased significantly, leading many to describe contemporary times as a 'post-truth era'. Research into rumor spreading has primarily been based on either model of social and biological contagion, or upon models of opinion dynamics. Here we present a comprehensive model that is based on information entropy, which allows for the incorporation of considerations like the role of memory, conformity effects, differences in the subjective propensity to produce distortions, and variations in the degree of trust that people place in each other.

The relevance of information theory to misinformation does however require particular clarification, as argued by Uyiosa Omoregie (*A Wittgensteinian Approach to Online Content Misinformation Analysis*, *SocArXiv*, 25 Jan 2021)

> How can misinformation online (World Wide Web) be effectively analysed? Online platforms initially left content consumers to discern for themselves whether information online was true or false. Outright censoring of content followed and then fact-checking. We propose in this paper that misinformation analysis should aim to make clear what is stated by clarifying the propositions and claims in such content. The early philosophy of Ludwig Wittgenstein (1889-1951) is relevant for such analysis. Presented here is an online content information quality check model for written (non-graphical) misinformation analysis and prevention. This model is inspired by Wittgenstein's book *Tractatus Logico-Philosophicus*. Applied to Web browsers and online social media platforms, the rating and labelling of content with this model can help users discern content qualitatively, avoid being misinformed, and engage more analytically with other users. This Wittgensteinian model can also be viewed as a theory of information quality.

Renaissance of science? So called "Science 2.0" is a suggested new approach to science that uses information-sharing and collaboration made possible by network technologies. Understood as similar to the open research and open science movements, it is inspired by what are termed Web 2.0 technologies. Science 2.0 therefore stresses the benefits of increased collaboration between scientists using collaborative tools like wikis, blogs and video journals to share findings, raw data and "nascent theories" online.

A journal promoting this alternative has noted with respect to misinformation that:

> Online misinformation works, or so it would seem. One of the more interesting statistics from the 2019 UK general election was that 88% of advertisements posted on social media by the Conservative Party pushed figures that had already been deemed misleading by the UK's leading fact-checking organization, Full Fact. And, of course, the Conservatives won the election by a comfortable margin. (Darren Lilleker, *Spurious Thinking: Why You're More Susceptible To Misinformation Than You Think Science 2.0*, 11 January 2020)

However it is unclear whether Science 2.0 will simply become a new vehicle for scientism in failing to give full consideration to the inadequacies of "Science 1.0", as discussed separately (*Challenges of Science Upheld as an Exclusive Mode of Inquiry: pseudorelevance of science to global crises?* 2021). The nature of misinformation may then pose a particular challenge (W. Glen Pyle, *Vaccination Opponents Drive An Epidemic of COVID-19 Misinformation*, *Science 2.0*, 23 November 2020).

Credulity? Valuable clarification of the historical process by which the birth and expansion of information systems transformed the relationship between "faith" and "fact" is offered by Carolyn N. Biltoft (*The Anatomy of Ccredulity and Incredulity: a hermeneutics of misinformation*, *Misinformation Review*, 30 April 2020):

> The existence of recurring forms of credulity and conversely denial -- from holocaust denial to climate change denial -- suggests that patterns of belief and disbelief will not be easily resolved either with fact-checking or with the regulation of the press. While such approaches see the problem of misinformation in terms of a contest between truth and falsehood, history suggests that people believe falsehoods, because they need to for a variety of psychological or socio-cultural reasons. While understanding

what "needs" falsehoods meet may not provide an immediate solution to the problem of misinformation, it does open a different perspective on the question. In the end, the essay suggests that the current trend towards STEM education, to the growing exclusion of the humanities, may be slowly undermining the very analytical skills the public needs to be able to counter the tides of misinformation.

Tragically, and ironically, science could be said to betray Galileo, whilst upholding him as an exemplar of science. This is evident in the systematic promotion of reference to "sunrise" and "sunset" by meteorology and astronomy -- a reversion to the geocentric perspective which Galileo heroically endeavoured to correct. No appropriate expressions have been offered to reinforce a heliocentric perspective in the face of a flat Earth and flatland mentality. This pattern can be understood as equivalent to the logocentric and egocentric perspectives reinforced by many religions -- in contrast with the radical cognitive insights to which mystics endeavour to point.

Game theory, hypergames and the role of deception

Misperception in games: With applications to the social sciences, game theory is the study of mathematical models of strategic interaction among rational decision-makers. With the pandemic frequently framed in terms of warfare, as such it is more usefully recognized in terms of cyberwarfare or memetic warfare (*Conceptual defence systems and memetic warfare*, 2001). Information theory could then be applied to the dynamics between those variously opposed in the pandemic and misinformed of each others intentions and motivations. Clarifications include:

- Carlo Kopp, *Shannon, hypergames and information warfare* (*Proceedings of the 3rd Australian Information Warfare and Security Conference,* 2002
- Carlo Kopp, et al: *Information-theoretic models of deception: modelling cooperation and diffusion in populations exposed to "fake news"* (*Plos One*, 28 November 2018)
- K. W. Hipel and A. Dagnino, *A hypergame algorithm for modeling misperceptions in bargaining* (*Journal of Environmental Management*, 27, 1988).
- T. E. Carroll and D. Grosu, *A game theoretic investigation of deception in network security* (*Proceedings of the 18th International Conference on Computer Communications and Networks,* 2009)
- J. Zhuang, et al: *Modeling secrecy and deception in a multiple-period attacker-defender signaling game* (*European Journal of Operational Research,* 203, 2010, 2)
- J. P. Hespanha, et al.: *Deception in non-cooperative games with partial information* (*Proceedings of the 2nd DARPA-JFACC Symposium on Advances in Enterprise Control*, July 2000).
- Richards J. Heuer, Jr.: *Strategic Deception and Counterdeception: q cognitive process approach* (*International Studies Quarterly*, 25, 1981, 2)
- Lening Li, et al: *Dynamic Hypergames for Synthesis of Deceptive Strategies with Temporal Logic Objectives* (*arxiv.org*, 30 July 2020)
- M. Bennett, et al: Using hypergames for deception planning and counter deception analysis (*Defense Intelligence Journal*, 15, 2006).

For Nicholas S. Kovach et al: *Hypergame Theory: a model for conflict, misperception, and deception* (*Game Theory*, 2015, 570639):

> When dealing with conflicts, game theory and decision theory can be used to model the interactions of the decision-makers. To date, game theory and decision theory have received considerable modeling focus, while hypergame theory has not. A metagame, known as a hypergame, occurs when one player does not know or fully understand all the strategies of a game. Hypergame theory extends the advantages of game theory by allowing a player to outmaneuver an opponent and obtaining a more preferred outcome with a higher utility. The ability to outmaneuver an opponent occurs in the hypergame because the different views (perception or deception) of opponents are captured in the model, through the incorporation of information unknown to other players (misperception or intentional deception).

Mapping game roles? As offered by game theory, missing in efforts to understand the dynamics between the variously opposing parties in the pandemic is any approach to mapping out their respective positions:

- Mark E. Mateski, et al: *The Hypergame Perception Model: a diagrammatic approach to modeling perception, misperception, and deception* (*Military Operations Research*, 15, 2010, 2)
- J. W. Bryant: *Hypermaps: a representation of perceptions in conflicts* (*Omega*, 11, 1983, 6)
- Jim Bryant *Modelling Alternative Realities in Conflict and Negotiation* (*Journal of the Operational Research Society*, 35, 1984, 11)
- M. Wang, et al: *Modeling misperceptions in games* (*Behavioral Science*, 33, 1988, no. 3)

Games aging institutions play in anticipation of collapse? Of potential relevance is the recognition of how individuals cultivate forms of deception in their personal interactions understood as games (Eric Berne, *Games People Play: the psychology of human relations*, 1964). This understanding has been extended to organizations (James R. Rogers, et al, *Institutional Games and the U.S. Supreme Court*, 2007). In the case of individuals, the role of deception is especially evident in how people choose to "disguise" and "camouflage" themselves through choice of dress and cosmetics -- at all ages, but especially when they would otherwise appear less youthful. Arguably the process is evident in the use of public relations by organizations to enhance their strategic relevance. This is clearly recognized in deceptive marketing reference to "greenwashing" and "bluewashing" -- as an extension of "whitewashing".

Framed in this way it could then be asked what games civilizations play as they recognize their mortality and possibility of collapse. How

do they pretend otherwise, if only to themselves and their populations? This suggests a different consideration of the much-cited study by Jared Diamond (*Collapse: How Societies Choose to Fail or Succeed*, 2005). With respect to the pandemic, the institutional dynamics could then be explored as a form of game through which the collapse of civilization -- as variously predicted -- is disguised. The worldwide enthusiasm for massively multiplayer online games, and for massively multiplayer online role-playing games, is then perhaps more than a coincidence.

Seen in this light, the current focus on masking and social distancing could be understood as an institutionalization of deceptive disguise, inhibiting the former degree of transparency in social relations -- otherwise upheld as a human right. Little is said of the manner in which masking undermines those dependent on facial cues in negotiation -- most notably in the case of lip reading by the deaf. It remains to be determined how the future will interpret the deception associated with worldwide inoculation.

Naivety in acquisition of truth from accredited sources?

In this context it is then relevant to ask where truth can be sought with confidence. The challenge is as great for any individual as it is for leaders, especially of nations and international institutions. An obvious difficulty is that many potential sources claim to offer unquestionable truth -- in contrast to the falsehoods offered by their effective competitors and opponents.

Engaging with sources of truth: Engaging with each such source it quickly becomes evident that the source would consider highly offensive any implication that the truth it offers is anyway questionable. Those claiming greatest authority also tend to claim never to be wrong -- and do so with a degree of arrogance. They tend to have sophisticated procedures to demonstrate the contrary, if challenged with evidence of particular instances of their falsehood. In some cases any critics are simply referred to the "small print" covering cases whereby truth was not in effect claimed. This may may in itself be difficult in that it is typical for insurance contracts to indicate what is covered, but not to clarify what is not.

The attitude is well exemplified by the TINA declaration of Margaret Thatcher: *There Is No Alternative*, or that of the President of the USA (*Bush: 'You Are Either With Us, Or With the Terrorists'*, *Voice of America*, 21 September 2011). Unfortunately there is no evidence whatsoever that "being right" offers a viable remedy to the challenges of global governance. Are those who disagree with the dominant narrative simply to be framed as "wrong", possibly with implications fatal for their livelihood and even for their existence. Should injunctions against the critics of vaccination be recognized as following the pattern of *fatwas* of the Islamic faith, as with that condemning Salman Rushdie to death for his novel *The Satanic Verses* (1988)? Does this pattern constitute a reversion to the treatment of heretics by the Catholic Church?

It could be considered naive to assume that those perceiving advantage in their claims to truth would not seek to exploit that advantage and to reinforce it. The processes whereby they do so in order to position themselves to greater advantage may be questionable in the eyes of others. They may well detract from the credibility of the source, however much that is denied or considered irrelevant to the truths presented.

The influential framing offered by Leo Strauss and cultivated by his followers tends to be readily ignored. Strauss believed that *essential truth about human society and history should be held by an elite and withheld from others who lack the fortitude to deal with truth*. In their view *it has been necessary to tell lies to people about the nature of political reality...The elite keeps the truth to itself... This gives it insight and ...power that others do not possess* (William Pfaff, *The Long Reach of Leo Strauss*, *International Herald Tribune*, 15 May 2003).

As noted by Jim Lobe (*Leo Strauss' Philosophy of Deception*, 19 May 2003), deception is considered to be the norm in political life. The political order can only be stable, according to that argument, if it is united by an external threat. Following Machiavelli, Strauss maintained that if no external threat exists, then one has to be manufactured. In his view you have to fight all the time (*Thoughts on Machiavelli*, 1958). Has the pandemic been framed as just such an external threat?

An associated major difficulty is increasing recognition that in many contexts it may simply be a matter of the cost payable to an authority for switching to an alternative interpretation of the truth. This may simply take the form of making vital funding dependent on a switch in emphasis. More blatantly, this is exemplified in the case of corruption of legal proceedings and evidence tampering. Any truth can then be understood to have a price -- whether or not it is expressed in monetary terms. Less obvious tactics may simply be to reduce the competence of those in any investigating body, or to change its mandate, such that problematic issues are overlooked or avoided. This is a questionable individualisation of "oversight", with all that the ambiguity implies.

Sources of truth? Particular instances of relevance include:

- **Science**: It is natural to expect that science, in the form of scientific institutions or their representatives, would be a primary source of truth. The difficulty is that the guarantees of science in that respect are variously constrained. A particular piece of research may present a clear conclusion -- readily claimed as a truth. However other research, or a related discipline, may challenge that interpretation and offer another. Over time there may be a convergence of views -- again offering a firmer conclusion -- but with the potential of being challenged by new research at a later date from another perspective. It is not to be forgotten that scientists achieve a reputation by proving earlier research to be wrong -- whatever the implications for the truths derived from it

  Such difficulties are especially evident in the health sciences on which so much reliance is placed under pandemic conditions. It is especially significant to note the extent to which health professionals take particular care in offering "opinions" rather than truths in complex matters on which their advice is sought. Any such professional will happily suggest that a "second opinion" could well be sought from another professional -- leaving it to the person in quest of truth to draw a conclusion.

Any truth apparently offered by research is naturally questionable given the insidious role of institutional funding, especially in academia. Funding may well be made available on condition that it is framed in a certain manner with a view to achieving certain results and justifying desired conclusions. It is difficult for disciplines and scientists to disassociate themselves from such institutional pressures and to reflect this in research results -- despite efforts at indicating "conflicts of interest".

A further difficulty in seeking truth from science derives from the many disciplines into which science is fragmented. Many of these have limited appreciation for each other, given the methodological constraints under which each is held to operate. The truth which might potentially emanate from a unified science or a Theory of Everything, remains hypothetical and elusive. Science devotes little resources to the possibilities of interdisciplinarity and transdisciplinarity in this respect. Truths are therefore relatively constrained by discipline.

The difficulty is all the greater when a discipline, claiming itself to be a science, is condemned as a pseudoscience by other disciplines -- namely a source of forms of truth which are automatically deprecated by them

- **Religion**: For adherents of any religion, it is natural to seek recourse to an appropriate religious institution as a source of truth. Religions and their representatives make very strong claims in that regard -- mandated as they often are by sacred scriptures and divine revelation.

  The importance of religion in this respect is evident when evidence is presented as truthful under oath -- with specific reference to deity ("so help me God"). Reliance on spiritual guidance is remarkably evident in the practice under some American presidents of daily prayer meetings in the White House. As a source of truth, it remains unclear how this provides guidance for military campaigns in which thousands are killed -- or in the presidential authorization of capital punishment.

  An obvious difficulty is the nature of the truth offered, irrespective of that sought. Religious discourse typically reframes a request for truth in a larger framework which is of seemingly little relevance to requirements for a simple answer. Dominant religious may not be embarrassed by the perspectives of alternative religions and the truth they may offer. This is less evident in societies claiming to be secular where religious bias may itself be criticized as a form of untruth. Like science, religions have been relatively unsuccessful in efforts at inter-faith initiatives, as is evident with regard to the uptake of the *Global Ethic* (1993)

  A further difficulty for religions over millennia is the extent to which they would claim never to have been wrong -- despite embarrassing evidence to the contrary. For the Catholic Church, for example, its questionable assertion during the Galileo Affair of a geocentric perspective (despite evidence of the validity of a heliocentric perspective) is indicative of a form of fallibility. This denied institutionally by belief in the Infallibility of the Church, namely that the Holy Spirit preserves the Christian Church from errors that would contradict its essential doctrines. Associated truths are currently called into question with regard to the status of women, divorce, abortion, and same-sex marriage. With respect to truth, the challenge extends to Biblical infallibility and Biblical inerrancy.

  As a source of truth, especially problematic is evidence of institutional denial of error having taken the form of systematic cover-up, as most recently indicated by the incidence of sexual above by the Catholic clergy. This is consistent with cover-up of the tragic fate of children and their mothers in Catholic institutions. Those issues help to make the point that misinformation may take the form of omission rather than lying.

- **Government**: Given the tradition of sovereign authority, and notions of "divine right", there is a natural tendency to associate truth with sovereign power -- more commonly now invested in secular governments elected by the people. Unfortunately as a consequence of well-documented instances, trust in government as a source of truth is now remarkably low. This in no way prevents governments from authoritatively presenting information as being factually truthful -- assuming that it will be deemed credible -- despite evidence of the extent to which such data can be massaged in support of a particular agenda.

  Most obvious is the extent to which the results of democratic elections are contested as having been manipulated in some manner. The assiduous efforts to recount the Arizona results in the last US presidential election are a clear example. Although discounted by many voters, considerable attention has been given to documenting the credibility of Donald Trump (*Trump's false or misleading claims total 30,573 over 4 years*, The Washington Post, 24 January 2021)

  The question is increasingly to what lengths government institutions will go to manipulate data in support of particular agendas. A prime example is offered by the questionable evidence for weapons of mass destruction in Iraq, as presented by the US Secretary of State, Colin Powell, to the UN Security Council in justification for the subsequent military intervention. Of similar relevance is the incidence of false flag covert operations -- and the manner in which they are justified in defence of national security.

  More intriguing is the systematic presentation of misleading information by government agencies, or its omission, as revealed by the publication of secret US diplomatic cables by Wikileaks. The reaction by authorities to these revelations in turn evokes confirmation of their untrustworthiness.

- **Private business corporations:** Governments have increasingly turned to private enterprises in the expectation of reliable, if not truthful, responses to their needs -- rather than depend upon government agencies as was a previous tendency. Perhaps most surprising is the use of private contractors for security purposes, even in foreign campaigns. It has become evident the extent to which corporations seek immunity from prosecution when engaging in such contracts -- as evident in the use of injunctions and

superinjunctions.

There is however extensive documentation on the lack of transparency of corporations, most notably with respect to environmental issues -- accompanied by patterns of increasingly dubious denial. Given the focus on profit-making, it is understandable that when requested for truth corporations would frame their response such as to serve that purpose. It is increasingly naive to expect otherwise.

- **Think tanks**: Whether as an extension of academia or of private enterprise, think tanks would necessarily claim to be a source of truth through the studies they produce. Such claims are suspect to the extent that the reports typically reflect particular ideological agendas -- and attract their funding for that reason. There are think tanks of every persuasion offering perspectives contradicting one another (*Tank Warfare Challenges for Global Governance: extending the "think tank" metaphor to include other cognitive modalities*, 2019)

- **Intelligence agencies**: These are a natural source of truth for government. The difficulty is that they are necessarily preoccupied with security issues and frame all questions from that perspective. Additionally they are necessarily secretive and therefore constrained in their ability to present information in a truthful manner.

  As recently documented, notably in relation to justification for intervention in Iraq, the dynamics of the relation with government render problematic the quality of information they provide -- despite the immense resources devoted to its collection.

- **Military services**: As with the intelligence agencies, the military are necessarily preoccupied with security issues and frame any quest for truth in that light. Additionally it is the military which is most dependent on strategies of deception in engaging effectively with any potential threat -- including any threat to their own funding. Where truth increases the risk of empowering an enemy, it is clear that the military would have little compunction in quashing its expression.

- **Intergovernmental groups**: Understood as transcending the constraints on the truth-telling capacity of national governments, truth of a higher order may potentially be (vainly) sought from groups such as the Group of Seven or the Group of Twenty (*Group of 7 Dwarfs: Future-blind and Warning-deaf -- self-righteous immoral imperative enabling future human sacrifice*, 2018).

  As a source of truth, such groupings are an extension of the pattern of consultation with allies with a shared agenda, exemplified by bodies such as NATO and the OECD. Secretive variants include the so-called Five Eyes intelligence sharing group.

  Of potential relevance as a source of truth are the public reports engendered by such bodies as helpfully summarized by Michael Marien (*Report on Global Reports, 2020-2021: the Whale and the Minnows*, *Cadmus*, 25 June 2021).

- **Media**: As the means whereby public attention is drawn to the expression of truth, it is clearly esteemed as a valuable source. The role of journalism has been held in high regard for that reason.

  It has however become evident the degree to which vested interests may be threatened by the transparency offered by the media. As a consequence efforts are made to control the content of communications to ensure its support of particular agendas. This is most obvious where much of the media is recognized to be influenced or controlled by government and is not free to express truths which contradict a narrative favoured by government. As a matter of convenience, specific measures may be enacted to prevent coverage of issues too readily framed as a threat to national security

  Although not directly controlled by government, media controlled by corporations ares necessarily respectful of the government narrative for the advantages this offers. An additional constraint for media dependent on advertising revenue is the need to avoid expression of truths which may cause cancellation of advertising contracts -- potentially including those associated with political parties.

- **Nongovernmental nonprofit organizations** (NGOs): Such bodies are typically created to articulate truths with regard to human rights, environmental degradation, corruption, and other issues -- and are esteemed for that reason. With the development of the internet, many have acquired an electronic presence, or have been replaced by social media fora and websites.

  Whether purely virtual or not, as a source of truth NGOs face a problem similar to think tanks in that they are embedded in an ecosystem of sources of mutually contradictory information. They may well be created by vested interests as a front whereby particular truths may be promoted and others discredited.

- **Secret(ive) societies**: Much-cited examples as a potential source of truth include the Rosicrucians and Freemasonry. The latter is notable for being a focus of conspiracy theories associated with the so-called Illuminati.

- **Gatherings of the eminent**: Given the problematic quest for truth from those identified above, recourse may be had to individuals or groups recognized as having a higher degree of credibility for some reason. This may take the form of consulting those esteemed for their "wisdom", as a source of insight on an issue of concern -- or enabling a "council of the wise" . Some "NGOs" may frame their role in this way -- possibly as a vehicle for the insights of a charismatic individual (or those awarded as

icons of human insight) -- whilst seeking to distinguish themselves from the label "NGO". Obvious international examples include the following, possibly reflecting equivalents at the national level:

- Club of Rome
- World Economic Forum
- Trilateral Commission
- Lindau Nobel Laureates Meetings. Four of these committees (for prizes in physics, chemistry, physiology or medicine, and literature) a
- The Elders: an international organization of public figures noted as senior statesmen, peace activists, and human rights advocates
- Laureates of the Right Livelihood Award: upheld as the "Alternative Nobel Prize", although specifically distinguished from it

Any such listing raises the somewhat ironic question as to whether sources of truth-telling could be rated with a star system, as are restaurants and hotels. Clearly academia makes various efforts to rank universities, think tanks and journals as a means of prejudging the quality of their research. To what extent such rankings are unquestionably indicative of truth is another matter. In other domains, a form of ranking is achieved through reputation and word-of-mouth, as with speaker rankings and individuals as sources of wisdom.

The point to be emphasized is that, as a guide to truth-telling, all such rankings are suspect -- with those so ranked characteristically critical of others and of any implied order of precedence or "pecking order". Is any one source of truth necessarily suspect due to its own tendency to ensure future dependency on it?

Identifying information specifically held to be misinformation

As noted above, a relevant study is that of Adam M. Enders, et al, (*The Different Forms of COVID-19 Misinformation and their Consequences*, *Misinformation Review*, 16 November 2020). However, as noted, the argument there appears to conflate in a rather particular manner what is "misinformation", "dubious", and the focus of "conspiracy theories" -- potentially excluding what some would argue (with evidence) as being of legitimate scientific concern. The study could be seen as **avoiding reference to the misuse of information by government and vested interests** -- appropriately understood as "misinformation (as noted below) -- with an implication that it is the "anti-vaxxers" and the like who are the primary source of such misinformation.

The Enders study cites another valuable source, namely that of J. S. Brennen, et al. (*Types, Sources, and Claims of COVID-19 Misinformation*, Reuters Institute for the Study of Journalism, 2020). As with the Enders study, the implication there is that **fact-checking bodies are themselves free from bias** (although constrained by extreme shortage of resources). It concludes with the recommendation that misinformation about COVID-19 comes in many different forms, from many different sources, and makes many different claims. Such **misinformation frequently reconfigures existing or true content rather than fabricating it wholesale**, and where it is manipulated, is edited with simple tools (rather than the use of AI).

The study does however conclude that **much misinformation directly or indirectly questions the actions, competence, or legitimacy of public authorities** (including governments, health authorities, and international organisations), noting (only in a footnote) that: *Beyond the issues discussed here it is worth recognising that some governments globally are arguably withholding public interest information about the pandemic and in some cases actively misinforming the public about the health situation and the actions taken to address it.*

No reference is made in the study to the extent to which such **misuse might be evident in scientific institutions, health authorities or the pharmaceutical industry**. Although it is noted that: *COVID-19 appears to be supplying the opportunity for very different actors with a range of different motivations and goals to produce a variety of types of misinformation about many different topics. In this sense, misinformation about COVID-19 is as diverse as information about it.*

The study does however conclude that it will be difficult for public authorities to address or correct such claims directly without running into multiple problems: *How many people will accept as credible a government trying to debunk or refute misinformation that casts that very same government in a negative light?*

A final conclusion of the Brennen study notes:

> The risk in not recognising the diversity in the landscape of coronavirus misinformation is assuming there could be a single solution to this set of problems. Instead, our findings suggest there will be no silver bullet or inoculation – no 'cure' for misinformation about the new coronavirus.

In determining what exactly is misinformation, there is however a fundamental difficulty highlighted by the very title of a seemingly relevant study (John E. Newhagen and Erik P. Bucyxx, *Overcoming Resistance to COVID-19 Vaccine Adoption: How affective dispositions shape views of science and medicine*, *Misinformation Review*, 29 October 2020). One form of **misinformation is evident in the assumption that the health experts are necessarily and unquestionably right** (and without bias), and that **anti-vaccine protestors of whatever shade of opinion are unquestionably wrong** -- and that their mistaken attitudes must be rectified. The assumption is only too evident in the abstract of that article:

> Health experts worry that a COVID-19 vaccine boycott could inhibit reaching "herd immunity," and their concerns have only grown as the pandemic has spread. Concern has largely focused on anti-vaccine protestors... But anti-vax extremists make up only about a third of respondents in surveys who said they would not vaccinate. Health officials must also take into account a swelling group who may understand the importance of a vaccine but are hesitant and confused because they feel the vaccine's

> development is being rushed and may not be safe or effective. The challenge for the public health community is complex; it has to fashion messages to a set of disparate groups, each employing a unique set of biases when processing information about the efficacy of getting a vaccination.

As indicated above, there would seem to be a form of "cognitive gerrymandering" in avoiding any consideration of the possibility that many aspects of marketing merit consideration as misinformation -- and therefore calling for their exclusion from social media platforms. Such consideration would necessarily include dubious claims made in the promotion of ideological positions by vested political interests as well as those made with respect to religious beliefs, as argued separately (*Comparability of "Vaxxing Saves" with "Jesus Saves" as Misinformation? Problematic challenge of global discernment*, 2021).

Whilst journal editors may encourage authors to indicate any conflict of interest, whether such declarations are the focus of appropriate fact-checking is an appropriate question.

Misuse of information by authorities -- as neglected "misinformation"?

"Authoritative" assertions: There is seemingly considerable confusion regarding questions surrounding the misuse of information by public authorities. As public authorities, there is an unquestioned assumption by many that their use of the information at their disposal is necessarily "authoritative" (implying correct) -- and therefore beyond question in their mandatory role in acting in the best interests of the electorate. Such an assumption invites challenge in the light of the recognized use of propaganda and the documented tendency to withhold information.

A striking example is the manner in which UK authorities "egged-up" the case for "humanitarian intervention" in Iraq, as subsequently reviewed in the 12-volume report of the Chilcot Inquiry (2016). As noted above, an influential case for withholding information to the extent possible has been made by Leo Strauss.

As is especially evident in critical analysis of dictatorships by outsiders, the misuse of information by the state is however deprecated. Within such societies any such criticism is severely penalized. Curiously the tendency of governments to massage data critical of their performance -- to present a positive impression -- is tolerated to a degree, without being labelled misinformation. It does however raise issues when government spokesperson make authoritative assertions on any issue citing data which has been manipulated in this way. The question framed is the nature of the quantitative evidence in support of any such declaration.

"Demonisation" of critics: These issues are evident with respect to the pandemic. Critics of authoritative quantitative declarations, notably with regard to vaccination, are readily dismissed as "anti-vaxxers" and "conspiracy theorists" -- corresponding to the treatment of critics under dictatorships. The criticism -- not what is criticized -- is then framed as "misinformation". Those responsible are a focus of demonisation to varying degrees (Phillip Cole, *The Myth of Evil: Demonizing the Enemy*, 2006; Jakob Schwöre et al, *Demonisation of political discourses? West European Politics*, 2020; Arnold Kling, *Political Demonization in the Time of Coronavirus*, *Discourse*, 22 April 2020)

This playbook is employed to an extreme degree in framing the leadership of countries and groups held to be a threat to security. Portraying opponents as corrupt, sexually depraved, with cannibalistic tendencies, associated with torture, and the like, are all standard practice (if the "dirt" can be usefully made to stick). Historical examples include the framings of the "Yellow Peril", the "Black Peril", the "Red Peril", or of the Communist "fellow travellers" identified in the USA by the House UnAmerican Activities Committee during the McArthy era.

It is in this light that it is appropriate to look at criticism of the misuse of information in relation to the pandemic by authorities -- whether government, health, scientific, corporate, or possibly religious. Such criticisms may indeed feature in social media fora framed as "anti-vaxxer". There is considerably naivety in such condemnation, given the extent of negative advertising in modern electoral campaigns.

Focus of criticism of authorities: Most evident is criticism of data manipulation, otherwise known by such terms as "data massaging", otherwise termed "data cleansing" with use of "data wrangling tools". This is the process of detecting and "correcting" (or removing) records held to be corrupt or inaccurate from a record set, table, or database. It refers to identifying incomplete, incorrect, inaccurate or irrelevant parts of the data and then replacing, modifying, or deleting the "dirty" or coarse data. Reference to "massaging" implies adjusting the data according to a strategic requirement:

- *Data Massaging: the benefits of a good massage*, *Ipsos-MORI*, 16 January 2018;
- *Data Massaging in Scientific Research: when does it go too far? Enago Academy*, 21 May 2018
- Stephen Buranyi and Hannah Devlin: *Dozens of recent clinical trials may contain wrong or falsified data, claims study* (*The Guardian*, 6 June 2017)
- Peter Saunders: *Another official Australian report has been doctored to gloss over rising inequality*, *The Conversation*, 11 September 2019
- Michael Settle: *UK Govt accused of "massaging the metrics" as it meets and exceeds 100,000 a day virus tests*, *The Herald*, 2 May 2020)
- Joseph Mercola: *CDC Caught Cooking the Books on COVID Vaccines* (*Organic Consumers Association*, 11 June 2021)

Information manipulation: Modes of information manipulation practiced by authorities -- or for which they are criticized -- could be clustered as follows:
- **Data manipulation**:
  - Data on COVID-19 deaths and cases goes underreported in many countries

- covering up data
- for the countries that are publishing statistics, many of these have been massaged to reveal a rosier version of reality.
- Data manipulation is a key marker of COVID-19 corruption
- COVID-19 infections had been grossly underestimated and could be up to 95 times higher than the official numbers.
- data on COVID-19 cases and deaths has been manipulated and underreported.
- Fallacies in data interpretation (Sanne Blauw, *These are the three most important fallacies in the coronavirus debate*, *The Correspondent*, 6 April 2020)

- **Gagging orders and threats**:
  - scientists and journalists have been threatened for investigating the pandemic or publishing work that diverged from state narratives.
  - Authorities have used the pandemic as an opportunity to gut public bodies dedicated to openness
  - Those who refuse to toe government lines have faced repercussions, from losing their jobs to legal intimidation and verbal attacks.
  - government passed a regulation prohibiting reporting on COVID-19: Under the online content regulation, publishing "public information that may cause public havoc and disorder" is banned
  - Expert dissenting opinions are what the public needs to hear,
  - Systematic prohibition and censorship of dissenting opinions, however scientifically authoritative

- **Malpractice and lack of transparency**:
  - Clandestine contracts for medical goods and services
  - bypassing public procurement rules,
  - Malpractice in procurement of vaccines, protective equipment is widespread
  - Corruption and secrecy is putting lives at risk, experts warn
  - lack of transparency — the utilisation of direct procurement legislation because of the emergency needs at the time,
  - COVID-19 vaccine producers have required governments around the world to sign non-disclosure agreements to keep the price per dose a secret.
  - all levels of government — not only federal — are abusing the emergency decree to continue with direct awards without any restrictions,"

- **Undermining trust in health and other authorities**
  - undermining trust in health systems,
  - complicity of scientific authorities

- **Cultivation of fear and paranoia**:
  - ill-informed paranoia leads to lockdowns of millions of people on the back of a case or two,
  - political and media posturing has convinced us that the threat is at least 38 times worse than reality.

Influence of vested interests: A preoccupation which tends to be avoided is the degree to which those benefitting financially to an unusual degree from the pandemic have a major interest in biasing any discussion of the issues it has raised, as discussed with respect to previous issues (Naomi Oreskes and Erik M. Conway, *Merchants of Doubt: how a handful of scientists obscured the truth on issues from tobacco smoke to global warming*, 2010).

It would be naive to argue that manufacturers of vaccines, masks (and other protective gear), and sanitising fluids do not have a major interest in lobbying for policies which increase demand for them -- with the support of commissioned research. The absence of transparency on such matters can only exacerbate suspicions, as suggested by the manner in which contracts are awarded under emergency legislation.

Especially valuable to reasoned argument is the pre-pandemic context provided with regard to **undone science** in distinguishing a default vaccination policy from the introduction of new vaccines in response to new diseases (*A critical analysis of the Australian government's rationale for its vaccination policy*, University of Wollongong, 2015). The high degree of controversy evoked by that thesis by Judy Wilyman, widely disputed by parties representing those complicit in the system criticized, exemplifies the challenge with respect to balanced discussion of COVID vaccine resistance (Brian Martin, *Judy Wilyman, PhD: how to understand attacks on a research student*, University of Wollongong, 11 January 2016; also *publications on scientific and technological controversies*).

For Wilyman:

> A critique of Australia's vaccination policies is necessary because the government has adopted vaccination as the default position for certain groups in Australian society, even whilst claiming vaccination in Australia is not compulsory. Pressure is being placed on individuals to use multiple vaccines by linking financial incentives in the form of welfare benefits, childcare places and employment to the use of an expanding number of vaccines.... (p. 23)

> Undone science also includes science that is founded on assumptions and extrapolations as opposed to direct empirical observations. An example of this type of undone science is the development of safety standards for the use of chemicals in humans and the environment. The majority of data that is used to establish safety standards for toxic chemicals is collected from observations in animal studies or naturally occurring accidents rather than controlled clinical trials on humans.... Extrapolation produces uncertainty from both 'known' and 'unknown knowledge'... Unknown processes can influence the results in these cases. In some cases this uncertainty arises because the sponsor has chosen to ignore researching this area for political reasons.... (p. 222)

> Whilst some scientists have attempted to enforce the precautionary principle in a form that states 'The absence of certainty is not an excuse to do nothing' the industry representatives are reversing this principle to state 'there is no evidence of harm' therefore

no action is required... (p. 225)

Policy-makers, scientists and the public are increasingly acknowledging that harmful consequences of new procedures and technologies cannot be reliably determined through the usual risk assessment framework. This is because the areas of ignorance that result from undone science are increasing (p. 225)

The original thesis has subsequently been published in book form: Judy Wilyman, *Vaccination -- Australia's Loss of Health Freedom: a critical analysis of the Australian Government's rationale for its vaccination policy* (*Vaccination Decisions*, 2020). With respect to COVID-19, the author has articulated a critique of the current application of the Precautionary Principle (*Misapplication of the Precautionary Principle has Misplaced the Burden of Proof of Vaccine Safety Science*, *Public Health Policy, and The Law*, 2, 2020) and has been interviewed by the Health Australia Party (*COVID-19: Restrictions, Flawed Testing and Conflicts of Interest in Govt*, 17 September 2020).

Modelling implications: The concerns can be highlighted otherwise through the contrast between the highly influential early modelling of the pandemic by Neil Ferguson in leading the Imperial College COVID-19 Response Team and the case more recently made by another Imperial College team (Institute of Global Health Innovation) with regard to the value of opening a dialogue with those holding critical perspectives. Although the latter can be seen as token acknowledgement of the concerns of critics, the tone is condescending and paternalistic -- with no recognition of the misinformation in which scientific health authorities and government have become recognizably complicit.

The highly misleading influence of the first report is discussed by F. William Engdahl (*The Dubious COVID models, the tests, and now the consequences*, *The Irish Sentinel*, 30 April 2020), although subsequently reframed in an undated public relations exercise for that team by Andrew Czyzewski (*Modelling an Unprecedented Pandemic: the vital role of team-based, collaborative epidemiology and disease modelling in managing pandemics*, Imperial College). The tardy recognition of the need for dialogue in the second report is described by David Robson (*Why some people don't want a Covid-19 vaccine*, *BBC Future*, 23 July 2021) and by Justine Alford (*Global report tracks changing health behaviours and attitudes over the past year*, Imperial College, 14 May 2021).

The switch in attitude towards critics could be seen as a late response to the unresolved challenge of vaccine hesitancy -- increasingly seen as highly problematic in quest of herd immunity. **The difficulty for those with the power and motivation to deceive is the virtual impossibility of proving that they are not doing so -- however vigorously this is claimed to be the case and that unquestioning trust is justified.** The difficulty is exacerbated to a high degree by the failure to debate openly with critics and to rely solely on dismissal and suppression of their arguments as dangerous myths. Such a tendency would be vigorously challenged by politicians in a democratic society.

In summarizing the second report, there is a degree of irony to the fact that David Robson is author of *The Intelligence Trap: Why Smart People Make Dumb Mistakes* (2020) -- offering an implication of relevance to the Imperial College initiatives, rather than to those critical of them. As indicated by the unusual title of a team in another London college -- the Centre for Countering Digital Hate -- expression of vaccine concern is only too readily and uncritically conflated with misinformation and even "digital hate" (Daniel Allington and Nayana Dhavan, *The relationship between conspiracy beliefs and compliance with public health guidance with regard to COVID-19*, Centre for Countering Digital Hate, 2020). In actively seeking to suppress all such precautionary voices, there is little academic concern with authoritative framing of it in terms of "hate" (*The online anti-vaccine movement in the age of COVID-19*, *The Lancet*, 2, 2020, 10).

For Ed Yong (*America Is Getting Unvaccinated People All Wrong: they're not all anti-vaxxers, and treating them as such is making things worse*. *The Atlantic*, 22 July 2021):

There's a tendency to assume that all vaccinated people are pro-vaccine and all unvaccinated people are anti-vaccine. But your experience suggests that there's also vaccine hesitancy among vaccinated people.... A lot of vaccine information isn't common knowledge. Not everyone has access to Google. This illustrates preexisting fault lines in our health-care system, where resources —including credible information—don't get to everyone. The information gap is driving the vaccination gap. And language that blames "the unvaccinated" misses that critical point.... The language we use around unvaccinated people comes with a judgment —a condescension that "you're unvaccinated and it's your choice at this point." That attitude is papering Twitter. It's repeated by our top public-health officials. They're railing on the unvaccinated as if they're holding the rest of us back from normalcy. But unvaccinated people aren't a random group of defectors who are trying to be deviant. They're not all anti-vaxxers.

Much has however been made of the 12 people held by the Centre for Countering Digital Hate to be primarily responsible for misinformation on social media with respect to vaccination. Curiously dismissed is the argument of some "conspiracy theorists" that only a small number of people are responsible for framing the mainstream pandemic narrative and universal vaccination as a strategic response.

Pandemic preoccupations eliciting questionable belief -- however erroneous?

"Lies" as perceived by critics: It is especially difficult to determine with clarity what exactly are the preoccupations framed (as "lies" by authorities) by those who perceive them, in contrast to what they are reframed to be by authorities (naming them as "myths"). The difficulty is compounded by any recognition that, framed as a war, one side or both will engage to some degree in propaganda and deception. As propaganda, it is predictable that each side would endeavour to frame and position the other as negatively as possible. For those claiming lies by authorities, conspiracies will necessarily be exaggerated -- with implications of evil intent. For authorities whose mainstream narrative is challenged, critics need to be portrayed in as negative and ridiculous manner as possible. Such playbooks are

normal in warfare and would be expected to be further developed in memetic warfare.

It is unfortunate that those claiming "lies" on the part of the authorities tend to make use of social media websites which package the claims in a somewhat exaggerated marketing context -- "sign up to our blog". In any presentation by authorities of "myths" , it is unfortunate to note the probable inclusion of some preoccupations which are sufficiently extreme to discredit those more seriously presented with evidence. Critics must necessarily be presented as negatively as possible. The pattern is evident in electoral advertising in democratic societies.

"Myths" as defensively articulated by authorities: That said, the presentation of "myths" tends to be more informative, but without any means of determining the bias by which they are presented. More obvious is the manner in which the presentation of such myths tends to exclude preoccupations of more fundamental concern -- readily understood as having been a victim of data massaging. However declarations by authorities are especially noteworthy for presenting data in a highly selective manner to avoid offering any legitimacy to the arguments of critics. Most noteworthy is limited mention of vaccine injuries and, more significantly, the burgeoning death rate amongst those already fully vaccinated. It is unclear to what extent data is manipulated to disguise vaccine failure.

It would seem that authorities have abandoned hope of satisfactorily countering the arguments of critics presented on social media and are actively switching to efforts to ban completely their capacity to do so, as noted in the case of Joseph Mercola (*President Biden Demands Mercola Be Banned From Social Media*, 26 July 2021). There is a sense in which authorities have now become terrified of their critics and respond to them as a major threat -- a pattern evident in the response to any opposition in undemocratic societies.

As a dangerously unexplored bias of science, the clear preference for framing the views of critics as "myths" merits very careful reflection in the light of the powerful role of myths in society (Joseph Cambell, *The Power of Myth*, 1988; Karen Armstrong, *A Short History of Myth*, 2005).

The point can be usefully framed by the continuing debate among psychologists as to whether the Father Christmas myth is ultimately harmful to children -- as a lie cultivated by their parents and thereby eroding trust in authority (Christopher Boyle, et al, *A Wonderful Lie*, *The Lancet Psychiatry,* 3, 2016, 12; Anna Almendrala, *Psychologists Think Your Lies About Santa Will Damage Your Kids*, *HuffPost*, 1 December 2016). However with respect to the pandemic, the author of the associated survey framed the concern otherwise (*The distress caused by the Coronavirus pandemic means parents should maintain the "vital tonic" of the Father Christmas myth for children this year, psychologist urges*, University of Exeter, 1 December 2020). Given the damage it allegedly causes, should any urgent action by authorities against myths -- empowered by science -- endeavour to eliminate the Santa myth?

Science itself can however be understood as entangled in myth (Paul Feyerabend, *'Science': the myth and its role in society*, *Inquiry*, 18, 1975; W. Bruce Masse, et al, *Exploring the nature of myth and its role in science*, *Geological Society*, 273, 2007; Ethan Siegel, *Scientific Proof Is A Myth*, *Forbes*, 22 November 2017). A valuable t clarification of relevance is offered by Fabíola Ortiz dos Santos (*Myths and Misconceptions on Covid-19*, *Frontiers in Communication*, 31 March 2021).

It is noteworthy that some of the more reputable "myth-busting" documents are undated, and are consequently faced with the challenge of becoming outdated as suspicions are confirmed. There is relatively little consistency between the listings of myths, raising questions as to why some are highlighted and others not. In their simplistic application of true-or-false measures to what are cited as myths, little consideration is given to the possibility that some suspicions may be valid under some circumstances, or may become so following further research.

- Tim Newman *Coronavirus myths explored*. *Medical News Today*, 19 January 2021)
- John Gregory *The Top COVID-19 Vaccine Myths Spreading Online*, *Britannica*, 1 February 2021
- Tanya Lewis: *Nine COVID-19 Myths That Just Won't Go Away* (*Scientific American*, 18 August 2020)
- WHO: *Coronavirus disease (COVID-19) advice for the public: Mythbusters*, WHO, 5 May 2021; *12 Myths about COVID*, WHO
- Johns Hopkins Medicine: *Coronavirus Disease 2019: Myth vs. Fact*
- Mayo Clinic: *Debunking COVID-19 (coronavirus) myths*
- Australian Government: *COVID-19 Mythbusting*; *COVID-19 vaccines – Is it true?*
- WebMD: *COVID-19 Myths You Shouldn't Believe*
- CDC: *Myths and Facts* (7 July 2021); *Bust Common Myths and Learn the Facts* (2019)
- Health Care: *The COVID-19 Vaccine: Myths vs. Facts*
- UNICEF: *The 12 Common Myths and Misconceptions About COVID-19 Vaccination* (19 May 2021)
- PAHO: *Myths and Truths about COVID-19 vaccines - Social media collection* (8 July 2021)
- NIB: *The 7 biggest COVID-19 vaccine myths* (1 March 2021)

The CDC offers a means of learning more about finding credible vaccine information, without addressing the issue of the shifts in the recommendations it continues to make.

Complementary concerns articulated by health care professionals: As one method of collecting preoccupations, the above approach is extremely unsatisfactory in many respects -- and essentially "messy" -- especially since they tend to be defensively dismissed as of little significance because of the questionable qualifications of those who articulate them. Another source of potential interest is therefore the various declarations of groups of health care professionals possibly in support of legal action, although these too tend to be ignored in media coverage of the pandemic or questionably dismissed in a mud-slinging mode characteristic of political campaigns (*Herd immunity letter signed by fake experts including 'Dr Johnny Bananas'*, *The Guardian*, 10 October 2020). Noteworthy is the fact that care is apparently taken to exclude those articulating them from any publicized debates on the issue. Also noteworthy is that those dismissing myths, make no mention of evidence regarding the questionable value of lockdown policies of authorities that are a focus of many protests). Examples include:

- *Great Barrington Declaration* (850,000 signatures): Elaborated by infectious disease epidemiologists and public health scientists

who have grave concerns about the damaging physical and mental health impacts of the prevailing COVID-19 policies, and recommend an approach called Focused Protection.

- *FLCCC Alliance Statement on the Ivermectin Disinformation Campaign* (*Principia Scientifica*, 27 May 2021). (Joyce Kamen, *The BIGGE$T Lie (Perhaps Ever)*, *FLCCC Alliance Community*, 26 July 2021). This argues against the lie that there is no medicine that can prevent and treat every phase of COVID-19 disease -- from pre-exposure to the critical stage of illness.
- *Stanford doctors protest, voice concerns about their place in receiving COVID-19 vaccine* (*ABC7 New*s, 19 December 2020)
- *Over 1,000 health professionals sign a letter saying, Don't shut down protests using coronavirus concerns as an excuse* (*CNN*, 5 June 2020)

The major commitment to repression of dissenting voices and debate necessarily also ignores any discussion of how this may well be characteristic of a hoax or scam beyond the capacity of any institution to debate:

- Paul Craig Roberts: *How the COVID Scam Is Perpetrated* (*Global Research*, 26 July 2021)
- Ron Paul: *The Coronavirus Hoax: "Governments Love Crises"* (*Global Research*, 17 March 2020)
- United Health Professionals: *The Covid Outbreak: "Biggest Health Scam of the 21st Century"* (*Global Research*, 23 July 2021)

Checklist of pandemic concerns, whether framed as myths or lies

The following list is necessarily tentative and provisional. It is subject to the reservations and criticisms noted above, especially with regard to its "messiness". It includes some "myths" seemingly selected by authorities in order to render ridiculous other criticisms which may be made.

- Vulnerability, severity and protection:
  - COVID-19 is no worse than the flu.
  - Only older adults and people with preexisting conditions are at risk of infections and complications
  - Children cannot get COVID-19
  - Everyone with COVID-19 dies
  - Receiving the COVID-19 vaccine, makes people more vulnerable to other illnesses.
  - COVID-19 vaccines can increase vulnerability to COVID-19
  - Vaccination ensures inability to transmit SARS-CoV-2 to others
  - Masking
    - Mask wearing is unnecessary
    - Face masks always protect against the coronavirus
    - Microwaves sanitise masks
    - Mask-wearing exemptions are available in exceptional cases.
    - Those diagnosed with COVID-19, don't need to receive the vaccine.
    - The CDC is now recommending fully vaccinated Americans return to wearing masks in indoor spaces in communities where coronavirus transmission is substantial or high (Joseph Mercola, *More Bad News for Masks* , 16 July 2021)
- Transmission / Vectors:
  - Goods, products and facilities
    - Covid-19 can be transmitted through goods produced in countries where there is ongoing transmission
    - Clothes can enable the spread of Covid-19 2019
    - Urine and feces spread the infection
    - Ordering or buying products shipped from overseas (China) can spread the virus
    - Eating Chinese food can result in infection
    - The outbreak began because people ate bat soup
    - Coronavirus can be contracted in swimming pools
  - Animals
    - Mosquitoes spread coronavirus
    - Cats and dogs spread the coronavirus
    - Coronavirus (COVID-19) can be caught from pets
  - Temperature
    - Hot temperatures kill the virus: Covid-19 is transmitted in cold climate to a greater degree than in hot and humid climate
    - Low temperatures kill the COVID-19 virus.
  - Vaccines and the vaccinated
    - Vaccines are increasing the number of new variants of the COVID-19 virus
    - Vaccination makes individuals more likely to infect others with new super-strains.
    - People vaccinated with COVID-19 vaccines can shed disease-causing particles to others.
    - Authorized vaccines shed or release some of their components
  - People
    - It is necessary to be with someone for 10 minutes to catch the virus
    - Herd immunity will slow the spread of COVID-19.
    - Herd immunity can be achieved by letting the virus spread through the population
    - Small gatherings don't spread COVID-19.
    - Public protests lead to increased transmission.

- :COVID-19 is a disease of affluence.
    - 5G mobile networks help the spread of SARS-CoV-2
- Treatment:
    - Drugs
        - Vaccines are available to prevent COVID-19 infection
        - There are drugs that can prevent and treat Covid-19
        - Flu and pneumonia vaccines offer protection against COVID-19
        - Hydroxychloroquine is an effective treatment
        - Antibiotics kill the coronavirus
        - Ibuprofen exacerbates coronavirus
    - Conventional remedies and disinfectants
        - Drinking alcohol can help prevent Covid-19
        - Injecting, swallowing, bathing in or rubbing on disinfectants or alcohols offers protection against COVID-19
        - Injecting, consuming or gargling bleach offers protection
        - Ultraviolet (UV) disinfection lamps kill the virus
        - Vitamin C is an effective treatment
        - MMS (miracle mineral supplement) is an effective treatment
        - BioCharger NG can help treat coronavirus
        - Eating garlic/immune boosters prevents infection
        - Gargling salt water will prevent coronavirus
        - Breathing techniques can cure the virus
        - Rinsing the nose regularly with saline solution (saline nasal wash) prevents Covid-19
        - Hand dryers kill the coronavirus
        - Home remedies can cure and protect against COVID-19
        - Drinking water prevents infection
        - Taking a hot bath can stop COVID-19.
    - Nonrequirement
        - Those not dependent on regular flu shots do not need COVID-19 vaccination
        - Those with strong immunity can handle the illness without a problem
        - Fit and healthy people should not need to be vaccinated
        - Having been diagnosed with COVID-19, there is no need to be vaccinated.
        - Those not at risk of severe complications of COVID-19 do not need to be vaccinated.
        - Certain blood types have less severe COVID-19 infections, making vaccination unnecessary.
- Vaccine testing, safety and long-term effects
    - Hasty inadequate testing:
        - COVID-19 vaccines are potentially unsafe because drug companies did not follow normal test protocols
    - Biased or constrained testing
        - COVID-19 vaccines are not being tested against a placebo in clinical trials.
        - Trials for COVID-19 vaccines were not designed to show the vaccines' effectiveness in preventing severe cases of the disease.
    - Safety
        - Natural immunity (immunity after natural infection) is better than vaccine immunity
        - Any vaccine will be unsafe and a bigger risk than getting COVID-19.
        - A negative COVID-19 test means a person is not infected.
        - The mRNA vaccines being developed for COVID-19 will alter human DNA.
        - Vaccines contain toxic ingredients that can harm
        - COVID-19 vaccines will cause "pathogenic priming" or "disease enhancement," meaning that vaccinated individuals will be more likely to develop severe cases of COVID-19 if they are infected with the COVID-19 virus.
        - mRNA inactivates tumor-suppressing proteins, meaning that mRNA vaccines used to protect against COVID-19 can cause cancer.
        - Vaccines wipe out the body's natural antibodies (rendering the blood unsafe for donation).
    - Statistically problematic testing
        - Spikes in cases are a result of increased testing
    - Long-term health effects
        - Joseph Mercola (*Might COVID Injections Reduce Lifespan?* 18 July 2021)
- Vaccination evaluation, failure, adverse effects, injuries and safety:
    - Joseph Mercola: *Signs of COVID Injection Failure Mount* (27 July 2021)
        - COVID Surges in Countries with Highest Injection Rates
        - Case Counts Lowest in Low-'Vaxxed' Nations
        - CDC Doesn't Track All Breakthrough Cases
        - Even Complete 'Vaccine' Coverage Won't Stop Infections
        - Israeli Data Indicate Pfizer 'Vaccine' Failure
        - CDC Tries to Hide COVID Jab Death Toll
    - Side effects
        - COVID-19 vaccines have common serious and dangerous side effects

- COVID-19 vaccine has severe side effects such as allergic reactions.
      - Specific concerns regarding COVID-19 vaccines:
        - infertility or sterilisation in recipients (preventing pregnancy)
        - miscarriages and menstrual cycle changes.
        - contain a protein called syncytin-1 that will result in female sterilisation
        - cause people to develop COVID-19.
        - mRNA vaccines can cause an increase in rare neurodegenerative disorders called prion diseases.
        - blood clotting
        - heart inflammation
        - are unsafe for kids
- Testing for COVID-19 and diagnosis:
  - Misrepresentation for the media
    - Absence of hard evidence that celebrities being vaccinated for public relations purposes are actually receiving genuine vaccines
    - COVID-19 vaccine injections, as delivered to health care workers, are fabricated, using syringes with "disappearing needles"
  - COVID-19 vaccine causes people to test positive for COVID-19
  - Thermal scanners and digital thermometers are effective in detecting those infected
  - Ability to breathe for 10 seconds (without coughing) is an indication of non-infection
  - PCR tests: There is extensive commentary on the questionable value of these tests, notably with respect to false positives:
    - False-postive tests: Without the following two policies, there would never have been an appreciable pandemic at all
      - Mike Adams: *CDC withdraws fraudulent PCR testing protocol that was used to falsify covid "positives" to push the plandemic* (*Natural News*, 25 July 2021)
      - The unreliable PCR test can be manipulated into reporting a high number of false-positives by altering the cycle threshold (CT value)
      - The incredibly broad definition of "Covid case", used all over the world, lists anyone who receives a positive test as a "Covid-19 case", even if they never experienced any symptoms.
    - Questionable changes to CDC case counting policy:
      - This notably means that in future unvaccinated people will find it much easier to be diagnosed with Covid19 than the vaccinated people. The CDC is understood to have put new policies in place which effectively create a tiered system of diagnosis. To boost the appearance of vaccine efficacy even further, the CDC also will no longer record mild or asymptomatic infections in vaccinated individuals as "COVID cases". The only cases that now count as COVID cases -- if the patient has been vaccinated against COVID-19, that is -- are those that result in hospitalization or death. (Joseph Mercola, *CDC Caught Cooking the Books on COVID Vaccines*, T*ruth News Hub*, 19 June 2021).
      - New policies artificially deflate "breakthrough infections" in the vaccinated, while the old rules continue to inflate case numbers in the unvaccinated. CDC is altering its practices of data logging and testing in order to make it seem the experimental gene-therapy 'vaccines' are effective at preventing the alleged disease. (Kit Knightly, *How the CDC is manipulating data to prop-up "vaccine effectiveness", Off-Guardia*n, 18 May 2021)
- Efficacy of vaccines
  - Short-term inefficacy:
    - COVID-19 vaccines are not effective
    - COVID-19 vaccine do not always work so being vaccinated is not necessary
    - COVID-19 vaccines do not work on new strains of the virus; since viruses mutate, the vaccines not necessarily be effective against new variants .
    - After vaccination, it is no longer necessary to take precautions and life can go back to normal
  - Long-term dependency
    - vaccination requirement even after recovery from COVID-19 (because length of natural immunity is not known)
    - multiple vaccinations and booster shots are becoming the norm (Clinical trials show that these offer the best protection)
- Incidence, reporting and misrepresentation
  - Inflation of death rates:
    - Joseph Mercola (*Inflated Reporting of COVID Deaths Is a Real Conspiracy*, 20 July 2021)
  - Inflation of case rates
  - Under-reporting of vaccine injuries
  - Under-reporting of post-vaccination cases and death rates
  - Misrepresentation:
    - mRNA vaccines for COVID-19 do not fit the CDC and FDA's definitions of a vaccine, which state that vaccines have to both stimulate immunity and disrupt transmission of a virus.
    - Life insurance companies won't pay out benefits to anyone who dies after receiving a COVID-19 vaccine because the vaccines are considered experimental.
    - SARS-CoV-2 is just a mutated form of the common cold virus
    - COVID-19 is just like the flu
    - The coronavirus is the deadliest virus known to humans

- Hospitals are giving out secret prevention tips
- Origin of COVID virus
  - Coronavirus was engineered in a lab in China
  - Coronavirus was deliberately created or released by people.
  - Manufactured origin of COVID-19 (Joseph Mercola, *Patents Prove SARS-CoV-2 Is a Manufactured Virus*, 24 July 2021)
    - Hundreds of patents show SARS-CoV-2 is a manmade virus that has been tinkered with for decades. Much of the research was funded by the National Institutes of Allergy and Infectious Diseases (NIAID) under the direction of Dr. Anthony Fauci, and may have been an outgrowth of attempts to develop an HIV vaccine
    - CDC holds patents to a SARS coronavirus that is 89% to 99% identical to the sequence identified as SARS-CoV-2, as well as the PCR test to diagnose it
- Exploitation and financial implications
  - Wealthy elites intentionally spread the virus to win power and profit
  - Vaccinations and testing are not necessarily free and may be beyond the means of many
- Legality and imposition (whether mandatory or by coercion)
  - Government food stamps will be denied to those who refuse COVID-19 vaccines.
  - COVID-19 vaccines violate the Nuremberg Code, which bans medical experiments from being performed on humans without their consent.
  - Although not necessarily mandatory, people can be penalized for failure to be vaccinated
- Hidden agendas and undeclared content:
  - The COVID-19 vaccine will use microchip surveillance technology created by Bill Gates-funded research.
  - COVID-19 vaccine includes a tracking device.
  - PCR tests used to detect the virus that causes COVID-19 can also be used to secretly deliver the COVID-19 vaccine
  - Vaccines contain ingredients which are potentially harmful
  - Hydrogels in some vaccines are also used to stimulate stem cells and may enable electronic implants
  - COVID-19 vaccines alter a person's DNA
  - Vaccination programs are a cover for collection of DNA

However they may have been expressed, or not, it is useful for authorities to recognize the possibility of concerns to which some may be sensitive in the light of the historical parallels. These could include:

- Lack of transparency with regard to the identity of health experts and their conflicts of interest -- and their capacity to consider alternative possibilities
- Avoidance of open debate with inclusion of those with dissenting perspectives
- In many cases the evidence presented in support of suspicions (however unfounded) tends to be more credible than the "facts" selectively presented in dismissing them as myths
- The extent to which the "wartime" strategies deployed constitute a form of triage (without naming it so), without openly considering the option of triage and its relative costs -- despite the unprecedented effects on the economy
- The historically unprecedented transfer of financial resources from countries to pharmaceutical corporations, as required by the confident contracts for access to an adequate supply of vaccines

Of potential relevance in the light of its status as a myth, is the treatment of the unresearched question of the possibility of HIV infection via mosquitoes -- given the widespread preoccupation with "dirty needles". Similarly it might be asked whether COVID-19 infection is possible via the eyes given its airborne nature. Clearly this unresearched possibility is considered a myth, although without any explanation as to why front-line health workers use face shields in addition to masks. As "facial contraceptives", do masks constitute adequate protection?

Requisite scientific compilation of pandemic preoccupations

In the scientific study of any phenomenon, there is a strong case for recording data **prior** to determining what is irrelevant to further study. In the case of (mis)information, a major difficulty is that decisions on what is valid information, in contrast with invalid misinformation, are made in advance of due consideration of any kernel of truth which may be associated with what is too readily determined to be misinformation. This prejudgment is self-serving, and prejudices appreciation of the scientific discipline in question.

It is unfortunate that so many authorities choose to distinguish as "myths" the sets of pandemic concerns which they seek to dismiss as irrelevant. It is especially ironic in that authorities are faced with other arenas in which there are constituencies that find it convenient to frame matters of concern as myths. For example, there is no lack of references to the "unemployment myth", the "inequality myth", the "poverty myth", the "climate change myth" or the "myth of overpopulation" -- now seemingly with the implication that these should also be removed from web media (*Prohibition of Reference to Overpopulation of the Planet: draft Proposal for an International Convention*, 2018). It could be asked which political issues of concern to one party are not typically framed as a myth by an opposing party.

Embracing error? The business world in quest of innovation tends to pride itself on learning from failure and mistakes (Robert I. Sutton, *Learning from Success and Failure*, Harvard Business Review, 4 June 2007; Amy C. Edmondson, *Strategies for Learning from Failure*, Harvard Business Review, April 2011).

As discussed separately (*Embracing error and the netherworld*, 2014), the argument has been powerfully framed in terms of the learning process by Donald N. Michael as: *On the requirement for embracing error*:

> Changing towards long-range social planning requires that, instead of avoiding, exposure to and acknowledgement of error, it is necessary to expect it, to seek out its manifestation, and to use information derived from the failure as the basis for learning through future societal experiment. More bluntly, future-responsibility societal learning makes it necessary for individuals and organization to embrace error. It is the only way to ensure a shared self-consciousness about limited theory as to the nature of social dynamics, about limited data for testing theory, and hence about our limited ability to control our situation well enough to expect to be successful more often than not. (*On Learning to Plan and Planning to Learn*. 1973, p. 131

In a global society which has been slow to acknowledge that there is a powerful "underworld", and that corruption is rife at all levels of society -- however much it is denied -- the nature of this "unconsciousness" merits recognition, as variously argued (John Ralston Saul, *The Unconscious Civilization*, 1995; Vasily Nalimov, *Realms of the Unconscious: the enchanted frontier*, 1982). Are there more creative ways of "embracing" the unconscious?

More challenging is the degree to which the universal inoculation agenda is an unconscious surrogate for the religions and groups whose aspirations to ensure that the whole world subscribes to their particular belief. It is in this sense that it can be recognized as an insidious form of indoctrination -- which those with that aspiration would vigorously deny.

With comparisons now made between the potential collapse of the current global civilization and that of Imperial Rome, there is then a case for learning from the imaginative ways in which that culture endeavoured to engage with the netherworld (*Designing Global Self-governance for the Future: patterns of dynamic integration of the netherworld*, 2010; *Engaging with the Future with Insights of the Past: consulting the dead, sacrifice, bone-cracking and divination*, 2010).

Science in particular may be too readily disposed to condemn the errors of others, whilst lacking sensitivity to those it may itself be making out of ignorance -- a case of *people in glass houses...* In that it follows the tragic historical pattern of religions with seemingly no capacity to apply its own skills to that trap.

Recognition of falsehoods and ignorance: Given the challenges implied by the above, how then to identify what are to be appropriately recognized as lies in articles such as the following:

- Syriacus Buguzi, et al: *COVID-19, lies and statistics: corruption and the pandemic* (*SciDevNe*t, 6 April 2021)
- Matt Morgan: *The two pandemics -- covid and lies* (*British Medical Journal*, 2020; 371)
- Chris Kenny: *Coronavirus: We're being held hostage by fear and lies* (*The Australian*, 22 July 2021)
- Russell Brand: *Covid: Leaks, Lies and Incompetence* (*YouTube*, 28 May 2021)
- David Robson: *Why Smart People Believe Coronavirus Myths* (*BBC Future*, 7 April 2020)
- Ryan Basen: *World Leaders Fostered COVID Lies* (*MedPageToday*, 17 February 2021)
- Geoff Brumfiel: *The Life Cycle of a COVID-19 Vaccine Lie* (*NPR*, 20 July 2021)
- Maria Gargiulo, et al: *Lies, Damned Lies, and "Official" Statistics* (*HHR*, 24 June 2021)
- Shannon Bond: *Just 12 People Are Behind Most Vaccine Hoaxes On Social Media, Research Shows* (*NPR*, 14 May 2021)
- George Monbiot: *Covid lies cost lives – we have a duty to clamp down on them* (*The Guardian*, 27 January 2021)
- Jackson Ryan: *How COVID-19 infected the world with lies* (*CNET*, 21 October 2020)

Remedial processes? The seeming inadequacies of the checklist above (as credible sources of truth) highlight the dramatic role of whistleblowers, and the controversies surrounding suppression of that function. Arguably recourse to legal proceedings with respect to controversies regarding truth and truth-telling can be seen as a means of eliciting truth. Examples have ranged from the International War Crimes Tribunal ("Russell Tribunals"), to the role of the International Court of Justice, and to "truth commissions" ("truth and reconciliation" commissions). The constraints on the efficacy of their operation can however be considered a constraint on eliciting truth -- potentially in contrast to any subjective sense of poetic justice or its desirability.

Arguably, without qualifying its content as "truthful", **the difficulties associated with controversial distinctions between truth and falsehood can be circumvented to some degree through the methodology of encyclopedic initiatives**, such as the following:

- *Wikipedia*: This is renowned for opening its 495 million pages of content to modification by volunteers, this enables the presentation of controversial issues with specific provision for criticism from other perspectives. The dynamics between editors contributing and modifying texts in this way has resulted in widely documented "edit wars" and growing criticism of the accumulation of biases within it. The critics have little to offer as alternative models -- other than those supportive of their own biases.

- *Encyclopedia of World Problems and Human Potential*: This relatively little known initiative profiles some 56,000 problems articulated by international constituencies (such as those profiled in the associated *Yearbook of International Organizations*) together with some 32,000 strategies advocated for their alleviation. It complements the profiles by drawing automatically on corresponding *Wikipedia* entries where these exist. In contrast with *Wikipedia,* the content is not directly open to external modification but assiduously draws upon articulations in external sources, most notably with respect to the manner in which the problem or strategy may impact on others, or be impacted in turn by others. It is more deliberate in incorporating claims and counter-claims regarding the content of any profile. Thus with respect to the "lies" framed as misinformation in the case of the pandemic, the articulation by those presenting them as "truths" would be matched by counter-claims from those indeed claiming them to constitute "misinformation".

The latter initiative includes profiles on zombies, haunted houses, evil eye, and Flat Earth promotion. All of these are of particular concern to certain constituencies, however misguided they may be held to be. There are numerous web references to eradicating zombies, for example.

The question posed by strategic responses to the current pandemic is whether references to all seemingly eccentric concerns should be eradicated from web platforms. Given the highly questionable existence of "evil" from a scientific perspective, should these also be eliminated even though some religions are especially preoccupied with exorcism?

How best to document vigorously held claims to truth before passing judgement on their veracity from other perspectives? **Perceptions of truth merit consideration as data before being dismissed through any data massaging exercise to privilege a particular conclusion**. Such perceptions, and those people associated with them -- however misguided -- are a feature of global psychosocial dynamics, as might be said of the dubious beliefs.of any culture or cult, from some other perspective.

It is curious to note that **references to the "science" substantiating strategies with respect to the pandemic (social distancing, masking, sanitising, lockdowns, and vaccination) cannot be readily identified and publicly consulted** -- especially in the light of the evolving conclusions by scientists in that regard. Authorities should be ensuring its availability in many languages rather than promoting the requirement for unquestioning belief in its existence and coherence. That is the role of an encyclopedic compilation of the kinds noted above.

Science, especially fundamental physics, indulges with pride in the unthinkable -- but dismisses the right of others to do so. The credibility of "dark matter" for which there is no evidence, should caution science on the credibility of beliefs for which there is no evidence admissible by science. Ignorance may be more pervasive and influential than science is yet capable of recognizing (Nicholas Rescher, *Ignorance: on the wider implications of deficient knowledge*, 2009). Is there a case for honouring the arguments of those held to be ignorant and enabling both their more fruitful articulation and their right to defend their perception. The science of today may need to defend its ignorance in the eyes of the future.

Probability approaches to pandemic truth beyond binary fixation

As argued above, there is a dangerous, "knee-jerk" naivety to the binary distinction between truth and falsehood. Curiously science indulges in the contradiction between such a binary distinction and its considerable sophistication in allocating a probability of truth in research results. Much is made of "statistical significant" higher probability and an associated "confidence level". No such methodological approaches are applied by science to the perceptions of those critical of vaccination and condemned as "conspiracy theorists". An exception to this conclusion would appear to be the methodology applied by Enders, et al to a selection of forms of misinformation, as mentioned above (*The Different Forms of COVID-19 Misinformation and their Consequences*, *Misinformation Review*, 16 November 2020).

The irony is evident in the contrast between simplistic statements by authorities that vaccines are "safe" and "effective", and the "small print" of research papers indicating the results of relevant research in probabilist terms. Given the experimental nature of the vaccines, even the confidence levels for short-term efficacy and safety may be called into question over a longer period.

Probability theory of truth: The Russian statistician, Vasily Nalimov (*Realms of the Unconscious: the enchanted frontier*, 1982) provides a remarkable synthesis, drawing on the entire range of knowledge (including elements of semantics, natural and social sciences, mysticism, and the arts) in an effort to understand how the human mind perceives the world. The methodology is borrowed largely from physics (as capable of tolerating paradoxes within its own theories), with considerable attention to the role of metaphor and the function of human imagination in capturing manifestations of consciousness and unconsciousness.

That approach is discussed separately (*Complementary Patterns of Meaningful Truth and the Interface between Alternative Variants*, 2003) under the following headings.

Meaningful truth:
- Truth about truth
- Seductive truth
- Probability theory of truth
- Styles of truth
- Engagement with truth
- Games of untruth
- Scope of truth and coherence
- Group think and self-reference

Logic of interface dynamics
- Reactive responses
- Paradoxical exceptionalism
- Experiments in alternative truth handling

Degrees of explanation:
- Levels of explanation
- Transparency and necessary misrepresentation
- Security / protection
- Misdirection

Nalimov's primary ontological position is that the world is an open one, the outcome of processes that are probabilistic in nature and constantly the domain of novelties and uncertainties. The language in which one captures aspects of reality is itself polymorphic, metaphorical, and constrained by Godelian principles of undecidability.

Axes of bias: The argument above notes the challenge of cognitive bias, whether on the part of authoritative scientists and politicians framing the pandemic narrative or those critical of it. Little effort is made to explore such biases in scientific terms -- rather than unconsciously indulging in them and the fallacies to which they give rise. It is therefore of value to note the approach to the matter by the author of a *History of Western Philosophy* dismayed at the unfruitful discourse between academics with regard to the "romantic period". In his study generalizing from that example, W. T. Jones identifies a set of axes of bias which essentially determine the intractable positions taken in any controversy (*The Romantic Syndrome; toward a new methodology in cultural anthropology and the history of ideas*, 1961).

In an effort to transcend the binary mindset, there is a case for using such a framework of contrasts to clarify the positions in any discourse relating to pandemic (mis)information. The axes identified are summarized separately in terms of the following preferences

Order versus Disorder	External versus Identification	
Static versus Dynamic	Sharply versus Implicitly defined	Due versus Spontaneous process
Discrete versus Continuous	Comprehensible versus Incomprehensible	

Curiously it could be argued that such a framework could clarify a degree of complicity between those holding the most radically opposed views in pandemic discourse. Seemingly both extremes have a preference for a mode of discourse which renders it very difficult to identity the instances of misinformation. At one extreme, any disagreement with the mainstream narrative of authorities is framed and condemned as "misinformation" -- with little articulation or consideration of the arguments of nebulous and nefarious conspiracy theorists. At the other extreme the extensive articulations are primarily embedded, somewhat inextricably, in video presentations with little transcription into text -- readily understood as justifying suspicion regarding nebulous and nefarious authority.

Curiously those at both extremes indulge in a form of blackmail. For the scientist it is: *read my (lengthy) book, and it is not my fault if you cannot understand it or afford it*. For the social media critic it is: *view my (lengthy) video, irrespective of whether you have time for that mode of presentation or appreciate it*.

Truth-tables, post-truth tables, and comprehension tables: As discussed separately, to the extent that the conventional relevance of truth has now been called into question in the political arena at least, and the advertising process more generally, there is a case for considering the nature of a "post-truth table" in the light of the apparent limitations of the truth table (*Towards articulation of a "post-truth table"?* 2016).

As understood in mathematics, a truth table sets out the functional values of logical expressions on each of their functional arguments. In particular, truth tables can be used to show whether a propositional expression is true for all legitimate input values, that is, logically valid. Further clarification regarding the origins of "post-truth" is provided by Andrew Calcutt (*The Surprising Origins of 'Post-truth' -- and how it was spawned by the liberal left*, The Conversation, 18 November 2016).

What now appears to be required is an extension of the truth-table to encompass the emerging reality that "THEM" are understood (by "US") to be misrepresenting the truth (if not lying), especially about "US" -- whether deliberately or inadvertently. This is complemented by the understanding by "THEM" that "US" is misrepresenting the truth (if not lying), especially about "THEM" -- again, whether deliberately or inadvertently. The situation is rendered more complex to the extent that if either US or THEM has the power to misrepresent (or lie), it becomes impossible for either to prove incontrovertibly that they are not. This is especially problematic for any authority, whether a government, a corporation, a religion, or any institutionalised belief system. Authoritative declarations of truth can then only be understood as assertions of "fiat realities", analogous to the creation of fiat money.

Curiously missing from any discussion of the subtle intricacies of "truth tables", is the challenge they may imply to comprehension, as discussed separately (*Memorability: "comprehension tables" as complement to "truth tables"*, 2019). It is as though the simple presentation of such patterns is naively assumed to trigger comprehension of the knowledge implied -- as with declarations regarding the threat of global warming and other crises. Whereas the focus of truth tables is on the "shades of grey" in the relation between "true" and "false", their presentation is seemingly to be recognized as constituting a simple binary distinction between "knowledge" and "ignorance". The reality that any "eightfold way" (as potentially encoded by such tables) may be meaningless (or incomprehensible) is not a consideration.

Many unresolved strategic challenges then lend themselves to exploration as being variously conflated in the associated discourse:

true-false	right-wrong	profit-loss
knowledge-ignorance	memorability-forgettability	justice-injustice
agreement-disagreement	comprehension-misunderstanding	positive-negative

Whether understood as "conflation" or "confusion", the implication merits consideration in terms of the cognitive process associated with "con" (*Prefix :Re-cognition" as Prelude to Fixing Sustainability -- "Pro" vs "Con" ? Speculative review of missing emphases potentially vital for psychosocial balance*, 2017).

Arrogance versus Humility: Just as the comprehension dimension is missing from consideration of truth tables, fundamental to the complexity of dynamics between strategies and their advocates is the dramatic consequence of any association of arrogance with possession of truth. Such possession is subtly related to the widespread preoccupation with acquisition of intellectual property -- potentially to the point of holding to ransom a society in crisis (*Future Coping Strategies: beyond the constraints of proprietary metaphors*, 1992). How does exclusive possession of truth -- in the form of secrecy -- condemn others to a condition of falsehood?

Whilst truth is a focus of considerable attention, the arrogance potentially associated with any assumption of its exclusive possession is a remarkably neglected focus of study -- despite widespread acknowledgement of its effects in practice. The arrogant scientist is as recognizable as the arrogant politician, ideologue or entrepreneur. **How is the assertion of truth to be distinguished from the perception of arrogance?** As yet to be clarified with respect to any compactification of dimensions are the dynamics framed by the following table, indicative of the self-reflexivity associated with higher orders of cybernetics.

value-polarities	false (ignorance)	true (knowledge)
humility	recognizing lack of knowledge	recognizing the relativity of knowing
arrogance	ignorant assertion of knowledge	denying relevance of other ways of knowing

Metaphorically framed, there is a curious sense in which arrogance can be compared to gravity, especially when truth is asserted with gravitas (*Arrogance as an analogue to gravity -- equally fundamental and mysterious*, 2015; *Exertion of "gravitational" effects by a big lie?* 2016),

Although tending to favour the experts (seen as so unfortunately ignored), whilst deprecating their the critics, arrogance features implicitly in the argument of Luke Zaphir (*How not to fall for coronavirus BS: avoid the 7 deadly sins of thought*. *The Conversation*, 1 April 2020). Cited are: gullibility, cynicism, pride, closed-mindedness, prejudice, negligence, and wishful thinking. These are cited as instances of what is otherwise studied as vice epistemology (Quassim Cassam, *Vice Epistemology*, *The Monist,* 99, 2016, 2; Charlie Crerar, *Motivational Approaches to Intellectual Vice*, *Australasian Journal of Philosophy*, 96, 2018, 4). These are fallacies of argumentation which are no credit to science and further undermine its credibility and relevance.

The knee-jerk condemnation of vaccine hesitants as "stupid" and "selfish" may say far more about the authorities favouring such language than about those they hope to isolate and eradicate in some manner. Ironically, to the extent that vaccination may indeed enhance infertility (as the future may render only too evident), it is the refuseniks that may be the only source of viable genetic material (*Controls and Guinea Pigs in the Pandemic Experiment: honouring the sacrifice of vaccine refuseniks for the wider community*, 2021).

Oppositional logic: Another approach meriting consideration, especially given the degree of confrontation between opposing perspectives, is to apply the methods elaborated with respect to oppositional logic and the many efforts towards the visualization of its geometry, originating with the square of opposition. (*Oppositional Logic as Comprehensible Key to Sustainable Democracy: configuring patterns of anti-otherness*, 2018).

Potentially especially relevant is the work of Fabien Schang (*Two Visual Logics: Diagrams vs Graphs*).

Imagining the pandemic as a War of the Worlds

Need for enemies: The case has long been made that nations tend to need enemies as a means of distinguishing and affirming their own identity -- even through triumphing over those framed as a threat (Dominic Tierney, *Does America Need and Enemy*, *Foreign Policy Research Institute*, 20 October 2016; Shoon Kathleen Murray, et al, *Do People Need Foreign Enemies?* *The Journal of Conflict Resolution*, 43, 1999, 5).

Arguably there is not only a need for enemies but there is an unconscious need to frame them carefully in order to maximize the learning to be derived from them. In that light it might be asked what the West so desperately endeavours to learn from its successive invasions of the "Graveyard of Empires" -- Afghanistan (Akhilesh Pillalamarri, *Why Is Afghanistan the 'Graveyard of Empires'?* *The Diplomat*, 30 June 2017).

It has long been suggested that the only means of reducing conflict, and achieving coherent governance on the planet, would be an invasion by extraterrestrials -- a common enemy. The argument gave rise to *The War of the Worlds* (1897) by H. G. Wells, and to its many subsequent adaptations.

Viral form of ETs? With the pandemic widely framed as a war, there is a case for recognizing the coronavirus as appropriately filling the role of extraterrestrials -- and clearly constituting an unprecedented evocation of global unity, however contrived. The drama is somewhat complicated by the authoritative declaration that the anti-vaxxers have also taken pandemic form (*C.D.C. Director Warns of a 'Pandemic of the Unvaccinated'*, *The New York Times*, 16 July 2021). Are they to be perceived as inhabiting another world -- even another reality -- also to be held to be engaging in conflict with the mainstream consensus?

The drama of the pandemic clearly plays out to a significant degree in the imagination -- as has been the case with adaptations of *War of the Worlds*. As a war of the imagination, the widely depicted form of the spiked COVID-19 virus suggests that extraterrestrials might indeed take such an unusual form. This perception could be reinforced by the final authoritative publication of the secret ely collated data on UFOs (2021) -- especially the questionable conclusion that no extraterrestrial implications could be inferred from the conventional methodology employed in the analysis..

Rather than taking any vaguely humanoid form, as had long been imagined, humanity is seemingly now confronted with an enemy which is invisible to the naked eye and acts swiftly and unexpectedly -- far beyond the capacity of any guerilla force -- a major challenge from a military perspective, having committed so heavily to a vast array of missiles. There is of course a degree of irony in having to recognize that the missiles were of the wrong scale and needles were closer to the mark (*Missiles, Needles, Missions, Rifles, Projects, Bullets*, 2020).

Martial arts of ETs in memetic warfare? More intriguing is to explore the invasion from the perspective of the skills and organization of the coronavirus. Engaging in a conventional military invasion, as has been so widely imagined by Western science fiction, could be seen as amateurish by an advanced civilization of extraterrestrials skilled in biochemistry, psychology and martial arts (of an Eastern style, for example). In unconsciously anticipating such a necessary threat to its unsustainable assumptions, the West may have effectively positioned itself like the North American Indians, who traded Manhattan for a few beads -- or like the Central American Indians in their reception of Cortez. Poetic justice?
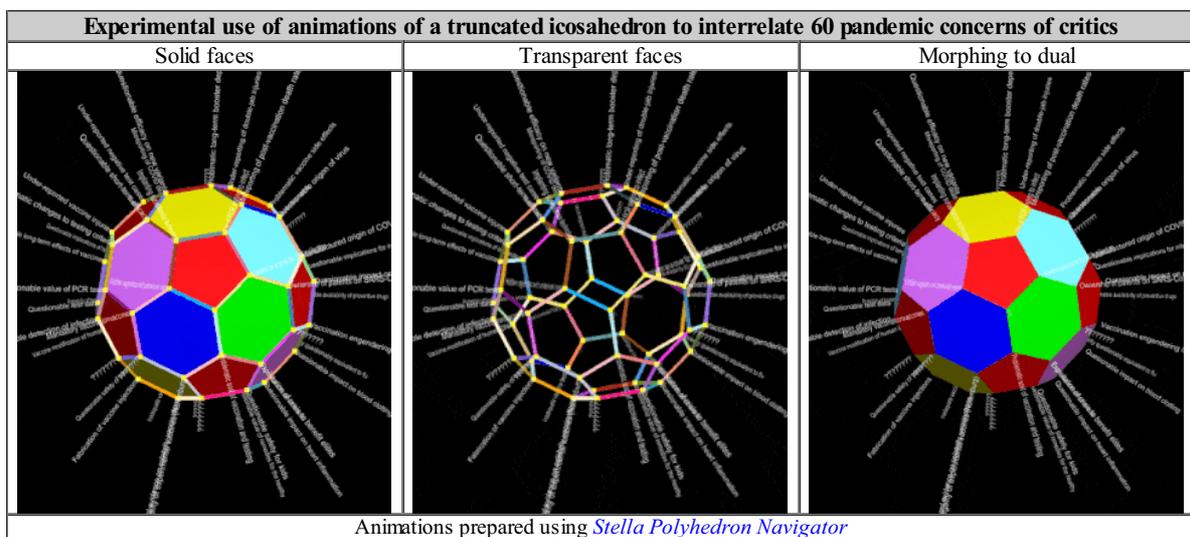
Such extraterrestrials have no need to engage in the conventional military invasion in which human investment has been so heavily made. The "war of the worlds" is reframed by them in terms of the strategic requirements of memetic warfare (*Missiles, Missives, Missions and Memetic Warfare*, 2001). Rather than in biochemical warfare terms, the challenge might be usefully explored as one of inducing a memetic disease -- a "War of the Words" (*COVID-19 as a Memetic Disease -- an epidemic of panic: learning from terrorism, communism. fascism, and evil, as pandemics of the past*, 2020).

As in the Eastern philosophy of martial arts, the key to ET success is to get humanity to "shoot itself in the foot" by eliciting a
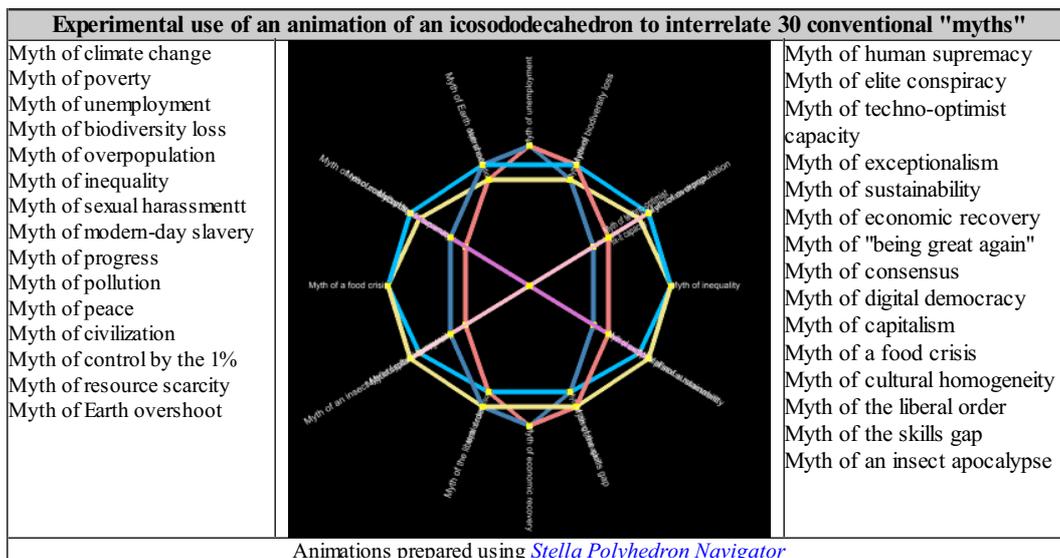
widespread behavioral pattern of effectively "scoring-own-goals". The global consensus on a universal vaccination program, masking, and lockdowns are instances of the pattern so successfully elicited. The "martial art" would be to ensure that humanity effectively "inoculates itself" with nonsense, as is already only too evident in the elective dumbimg down of the mass media and the accumulation of a factoid analogue to the Great Pacific Garbage Patch, The ET art is evident in ensuring that humanity's leaders define their peoples as too dumb to discern misinformation and disinformation -- whilst submerging them in advertising to an ever higher degree. Rising "sea levels"?

Mutating viral form as a mirror for humanity? It could be inferred that the skill of ETs in memetic warfare would be far more subtle however, partially modelled by the psycho-behavioral operation of mirror neurons. In this light the manner in which the COVID-19 has been so imaginatively portrayed worldwide -- as a spike-endowed ball -- suggests that clues to the strategic challenge are to be found by using that same form in a quest for "strategic conformality". In the quest for global civilization, it is possible that the imagined form of the virus then mirrors the dysfunctional nature of that civilization, as currently conceived (*Spike-endowed Global Civilization as COVID-19: humanity "bristles" as the world "burns"*, 2020; *Reimagining Coronavirus in 3D as a Metaphor of Global Society in Distress*, 2020).

Inspired by the previous exercises, in the following images a set of 60 COVID-19 concerns are positioned **experimentally** on the vertexes of a truncated polyhedron. The animations are understood as an imaginative exercise in configuring perceptions to elicit a degree of coherence from the fears they may individually engender. Visual techniques can then be used to explore their interrelationship -- as in any conventional mind map or concept map in 2D. The possibility of morphing the configuration to another polyhedron then opens a way to simplifying the set or considering the pattern with other suggestive variants (*Identifying Polyhedra Enabling Memorable Strategic Mapping*, 2020)..
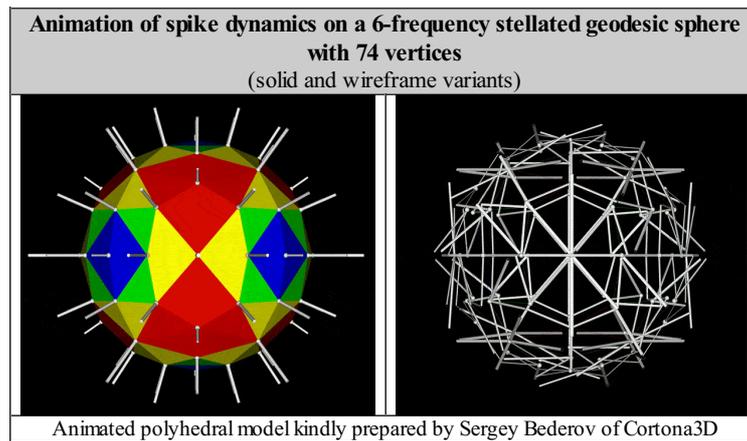
Experimental use of animations of a truncated icosahedron to interrelate 60 pandemic concerns of critics		
Solid faces	Transparent faces	Morphing to dual

Animations prepared using *Stella Polyhedron Navigator*

Given the ease with which preoccupations of vaccine hesitants are dismissed as "myths", there is a case for configuring in a similar manner a selection of other "myths" with which authorities are confronted -- and which have proven to be much more difficult to dismiss. Although arbitrarily distributed, the great circle colouring is suggestive of possibilities of gaining more coherent insights into an active "mythogy" -- as with the animations above.

Experimental use of an animation of an icosododecahedron to interrelate 30 conventional "myths"		
Myth of climate change Myth of poverty Myth of unemployment Myth of biodiversity loss Myth of overpopulation Myth of inequality Myth of sexual harassmentt Myth of modern-day slavery Myth of progress Myth of pollution Myth of peace Myth of civilization Myth of control by the 1% Myth of resource scarcity Myth of Earth overshoot		Myth of human supremacy Myth of elite conspiracy Myth of techno-optimist capacity Myth of exceptionalism Myth of sustainability Myth of economic recovery Myth of "being great again" Myth of consensus Myth of digital democracy Myth of capitalism Myth of a food crisis Myth of cultural homogeneity Myth of the liberal order Myth of the skills gap Myth of an insect apocalypse

Animations prepared using *Stella Polyhedron Navigator*

As previously argued, the information available on the coronavirus suggested a configuration of 74 spikes -- on average (*Reimagining Coronavirus in 3D as a Metaphor of Global Society in Distress: crowning pattern that connects spiky organisms, satellite constellations, nuclear explosions, and egomania?* 2020). That pattern is reflected in the model below, reproduced from a subsequent exercise (*Cognitive Engagement with Spike Dynamics of a Polyhedral Coronavirus*, 2020). An argument was however made for 72-spikes

because of its significance in a variety of traditions and the geometric constraints of such a configuration, even in satellite constellations. That pattern is illustrated in the models presented there.

Animation of spike dynamics on a 6-frequency stellated geodesic sphere with 74 vertices
(solid and wireframe variants)

Animated polyhedral model kindly prepared by Sergey Bederov of Cortona3D

As stressed in the earlier paper, of particular interest is how the "spikes" may be usefully recognized in relation to the challenges of governance. Thus they may be understood as the individual elements of a global strategy, as a configuration of global problems addressed by a global strategy. They might also be understood as the set of principles or values on which any such strategy was based -- by which it was informed. Similarly it might be understood as the set of values rendering any set of problems recognizable -- since in the absence of a value a problem is invisible and effectively non-existent.

Strategic displacement of fearful global preoccupations?

Displacements of the past? If human civilization is indeed in desperate need of an intractable enemy to engender a sense of coherence, possibilities other than ETs merit exploration. As a substitute for the viral pandemic, however engendered, "evil" has proved inadequate -- as the fragmented engagement of religiously inspired strategies has demonstrated over centuries. As "organized crime", no imaginative global response can be said to have been successfully evoked -- especially given an evident degree of complicity at the highest levels of authority. How indeed to learn from "pandemics" of the past, as separately queries (*COVID-19 as a Memetic Disease -- an epidemic of panic: learning from terrorism, communism. fascism, and evil, as pandemics of the pas*t, 2020).

A case can be made for "terror", given the focus on a Global War on Terrorism since 2001 -- launched as the Operation Enduring Freedom. Another can be made for "climate change". Both have been effectively displaced by the pandemic although recognized as possibly only temporarily, especially in the latter case. The problematic response to both may offer insights of relevance to the pandemic. This is especially true now that the Resolute Support Mission (successor to the NATO-led International Security Assistance Force) has withdrawn its forces from Afghanistan after two unsuccessful decades -- leaving the Taliban free to act once again.

To the extent that a case can be made that humanity is effectively engaged in a systemic process of "harassment of the environment", it is appropriate to consider an adaptation to climate change of a map that was skillfully articulated to encompass the challenges of terrorist insurgency in Afghanistan. The adaptation was originally introduced under the heading *Climate change used as a fig leaf -- to conceal a more challenging issue?* (2009) in reviewing the issues of the UN Climate Change Conference in Copenhagen (*Insights for the Future from the Change of Climate in Copenhagen*, 2009). This too avoided any systematic articulation of the issue.

It was therefore interesting to contrast this aversion to the analytical overview with that of the initiative of Office of the Joint Chiefs of Staff of the US of the counterinsurgency (COIN) in Afghanistan, as articulated by the PA Consulting Group. This took the form of a map, notably publicized on behalf of McClatchy Newspapers by Dion Nissenbaum (*The great Afghan spaghetti monster*, *Checkpoint Kabul*, 20 December 2009; *Graphic Shows Complexity of US Counterinsurgency in Afghanistan*, The Huffington Post, 22 December 2009). Coincidentally this map was publicized over the web at the end of the Copenhagen event. The subsequent analysis of that event gave rise to no map of equivalent systemic detail.

Vaccine hesitancy? In the absence of any such map for Copenhagen, as an experimental exercise it was therefore instructive at that time to adapt the rich analytical framework of the Afghanistan counter-insurgency analysis to climate change. It is similarly instructive to adapt it to the current "counter-insurgency" requirement in dealing with the threats of vaccine hesitancy and criticism of authorities.
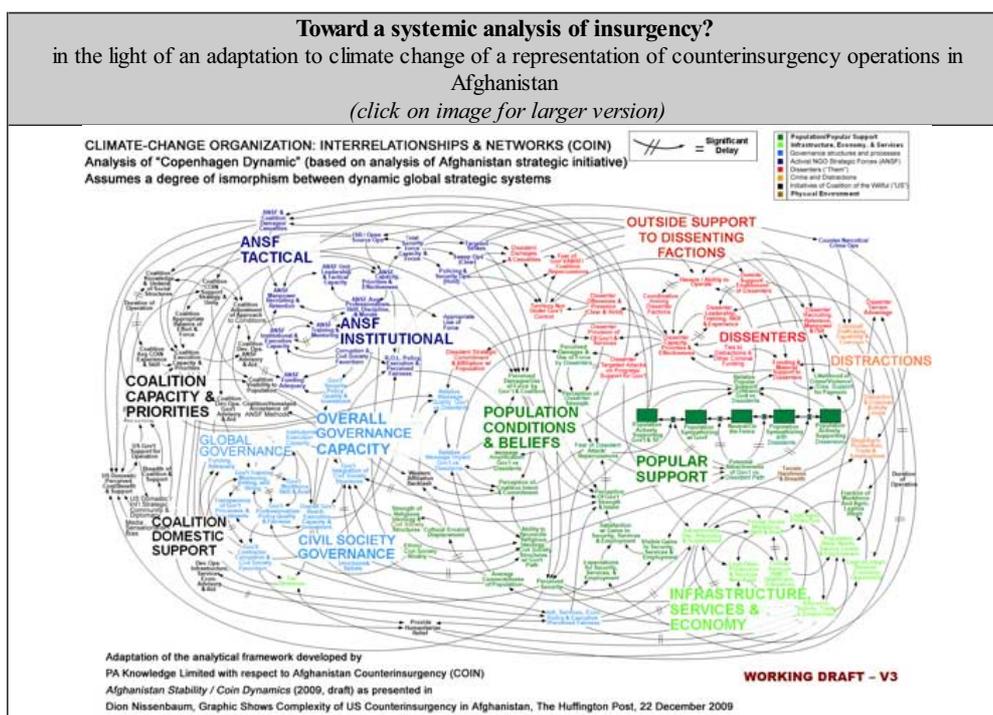
Variously conflated, "vaccine hesitants" and "anti-vaxxers" are in process of being compared to "domestic terrorists" (*Politicians and MSM Compare Those Who Question Vaccine Safety to "Domestic Terrorists"*, *Massive News*, 13 March 2021). Through this process they are becoming conflated with the viral pandemic itself (*C.D.C. Director Warns of a 'Pandemic of the Unvaccinated'*, The New York Times, 16 July 2021; *WHO Says Anti-Vaxxers Are Global Health Threat*, WebMD, 17 January 2019).

Understood as a threat to the national security of the USA and its peoples, the vaccine hesitants are readily defined as "terrorists" (Brian Michael Jenkins, *Five Reasons to Be Wary of a New Domestic Terrorism Law*, *RAND*, 24 February 2021; *Read the full Biden administration plan to fight domestic terrorism*, PBS, 15 June 2021). Having abandoned Afghanistan, arguably the USA now has its own "Taliban" -- the vaccine refuseniks.

The legitimacy of any adaptation of the original counterinsurgency map derives from the viability of such strategic initiatives dependent in cybernetic systems terms on a set of interacting functions. From the perspective of general systems theory, it is to be expected that there is a degree of isomorphism between a systems analysis of the global initiative in Afghanistan and that with respect to climate change or

"vaccine insurgency". It is in this sense that the strategic narrative of any one of them might be applied to the other (*Application of Universal Vaccination Narrative to Climate Change*, 2021).

Whatever the inadequacies of such an exercise, it may at least serve to highlight the knowledge tools used to focus initiatives on which unprecedented global resources are being expended. This is especially the case given the shameful paucity of resources devoted to representing the challenges of climate change in the light of the conflicting relations between those party to that process.

Toward a systemic analysis of insurgency?
in the light of an adaptation to climate change of a representation of counterinsurgency operations in Afghanistan
(click on image for larger version)

Unfortunately, as evident from the withdrawal of the coalition forces from Afghanistan in 2021, the map proved unfit for purpose -- configured in that way.

Dynamics of the "holier than thou" narrative in practice

There is a strange sense in which the narrative in response to the pandemic is drawing upon and conflating memes, both from the past and an active feature of problematic religious and racial discourse. In the latter cases there are traces of the historical reaction to the "unclean" and to "evil". Commentary on the narrative therefore benefits from exploring it in terms of the dimensions of a hypergame (as argued above) -- as an engagement with hyperreality rather than in an overly simplistic conventional mode, The global challenge of the pandemic is sufficiently surreal to warrant that (*Surreal nature of current global governance as experienced*, 2016).

In being too readily reminiscent of myths of "evil spirits", as imagined, there is a case for framing the challenge as a "war in the heavens" between the demonic and the angelic (*Engaging with Hyperreality through Demonique and Angelique?* 2016; *Recognizing the demons of modern civilization*, 2016). Exploiting the language of the Club of Rome with respect to the global "problematique", is there then advantage in recognizing a mnemonic aid to comprehension of potential system failure (as a "Demonique"), and an evangelisation of the resolutique in the light of angelology (as an "Angelique")?

Memes characteristic of the pandemic narrative: In guarding against a viral evil, the following phrases are now evident in media reports, readily understood as framed in the light of public health propaganda:

- *protecting others*: the emphasis being on loved ones and on one's immediate community. No mention is made of distant others, most notably those in developing countries with extremely limited access to vaccines
- *not being selfish*: the emphasis being that getting vaccinated is essentially unselfish, irrespective of whether others have access to that possibility -- and whether one is depriving them of that resource. A striking example has been offered by the refusal of the other individual states of Australia to share their vaccine resources with New South Wales, when the latter faced a crisis
- *obeying the law*: the implication being that authorities have a clear understanding of what is appropriate, irrespective of information to the contrary -- to be deemed misinformation. Especially problematic is the ambiguity of such obedience in the light of the Nuremberg Code with regard to experimentation on humans.
- *getting back to normal*: the emphasis being that compliance with the recommendations of authorities is necessarily the most rapid means of returning to normality, irrespective of any contradictions in that normality, and in business-as-usual
- *doing the right thing*: used to frame all of the above, with the implication that authorities are unquestionably right. Whether this constitutes complicity in a process of human experimentation is a matter carefully avoided.
- *not being stupid*: the emphasis being that acting otherwise in the light of any other preoccupations -- accepting risk, however courageously -- is simply silly and unwarranted
- *roll up your arms*: used as a form of punch line, echoing participation in collective effort, or possibly evoking the suggestion of arming oneself

Practical measures: There are insights potentially to be gained by exploring the practical responses to the pandemic in terms of

symbolic implications:

- *social distancing*: ensuring that people maintain a measurable distance from each other is unfortunately reminiscent of practices in relation to the "unclean" (lepers), to the "impure" (as in caste systems), or to those of different ethnicity (as in systems of apartheid).
- *sanitising*: clearly reminiscent of the ritual washing required on entry to places of religious worship, and the symbolism of holy water
- *lockdown*: reminiscent of the requirements for curfew under wartime conditions, with the problematic implications of "cowering" when those with "stupid" courage act otherwise in taking risks
- *testing*: reminiscent of trials in traditional rights of passage, with the associated religious requirement for confirmation of indoctrination
- *vaccination*: with such inoculation recognizable as a surrogate for the indoctrination through which a degree of inner purity or cleanliness is achieved or guaranteed

Measures to ensure compliance: The narrative framing means of ensuring compliance includes:

- achieving *herd immunity*, despite the absence of hard evidence that this will indeed constitute a guarantee of a return to normality
- emphasizing *informed consent*, despite the difficulty for many to be informed when contrary opinions are simply prohibited, and with the reservation that lack of consent can be overridden
- *mandatory vaccination*, framed as necessary -- at least for those in front-line occupations, deemed essential or critical
- use of COVID *marshals* to ensure compliance in public spaces -- effectively health commissars -- despite the problematic role of political commissars in dictatorships of the past
- *contact tracing*, despite the degree to which it constitutes invasive surveillance and despite the lack of solid guarantees on how that information may be otherwise used; variants envisaged include software indication of proximity to a person of a lower standard of cleanliness.
- *health passports*: deemed essential to enable future travel and entry into public spaces, despite the extent to which this will create a two-class society.
- *compliance hotline*: envisaged as a means to enable neighbours to report on compliance failure to ensure intervention of health security services
- *door-to-door solicitation*: envisaged as following the proselytising practices of certain religions, and associated peer-group pressure

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