Department of Politics

Can global political cooperation and evidence-based governance be enhanced with computer-based tools ?

Dissertation for MSc in Global Politics, Birkbeck, University of London

Michael E. Arth, 13 November 2020

ABSTRACT

This paper examines the benefits and challenges related to the historical, current, and potential state of global politics in relation to rapidly evolving information technology (IT). From this it argues that cooperation and evidence-based governance could be improved and defended against profit-seeking entities and authoritarian countries that are already managing our behavior with persuasive technology. Reform is predicated on governing bodies adapting IT to overcome invasive, exploitive, anti-democratic forces. History provides reasons to be optimistic in the face of obstacles. In the modern era, previously isolated human cultures have largely merged into a shared legal, scientific, geopolitical, and economic system that transcends national borders. This happened despite illiberal factors such as dogmatic religious beliefs, ideology, magical thinking, nationalism, tribalism, and authoritarianism. Recognition of this interdependency, and the need for even more global cooperation and evidence-based governance, has a history of being resisted by malignant, self-serving power. Arguably, the biggest obstacle to good governance is how logical fallacies, together with cognitive and emotional biases, allow people to be manipulated by special interests and polarized into different groups. This was apparent even before users of social media were being monitored and programmed to adopt habits and beliefs for the benefit of private corporations. Ethical, democratically-guided regulations governing information technology, including data collection and interpretation, might help circumvent these obstacles by providing a reliable, independent source for public policy. A well-regulated, global, hive mind, grounded in factual data, has the potential to enhance the dignity, creativity, and input of individuals. This idea, which originated with early information scientists and futurists, might soon be possible.

TABLE OF CONTENTS

ABSTRACT……..…….……..….1

INTRODUCTION……...……3

1. THE EVOLUTION OF GLOBAL POLITICS

1.1. From isolated tribes to a rules-based global order…….……..……5

1.2. Towards a Global Brain……..……..…..….9

2. CHALLENGES TO GOVERNANCE

2.1. Our Own Worst Enemy…….…….12

2.2. Authoritarianism……15

2.3. Covid-19: A Ongoing Case in Point…….…….……...…..……18

3. INFORMATION TECHNOLOGY

3.1. Accelerating Returns in Computing Could Overwhelm Humans……..…….……..20

Figure 3.1.a: Computing through 2000……21

Figure 3.1.b: Computing through 2018……22

Figure 3.1.c: Double exponential growth...……23

3.2. Social Media as Persuasive Technology……24

3.3. Quantum Biology…….……...……28

3.4. Toward Democratic Solutions……. 30

4. CONCLUSION……..…37

BIBLIOGRAPHY……..……39

INTRODUCTION

This paper endeavors to answer the question whether global political cooperation and evidence-based governance can be enhanced with computer-based tools. Computers, the internet, the web, and their myriad applications evolved out of the inherent tendency of modern humans toward cooperation, even while they were competing to build increasingly sophisticated machines to garner power and resources. The question, which includes determining how competition and cooperation might work together for the benefit of all, is approached from three perspectives: human history, human nature, and evolving technology. The evolution of politics from isolated tribes to a rules-based global order is examined in Section 1. By the end of the 19th century, the spirit of cooperation, bolstered by the understanding of comparative advantage, had joined with 18th century Enlightenment values to take on a global character. In the early 20th century, information scientists like Paul Otlet, and politicians like Woodrow Wilson, began seeking to bring about peace and further cooperation by organizing the world's knowledge. Despite many setbacks, global politics has to a large extent knitted together previously fragmented and isolated human cultures into a shared legal, scientific, geopolitical, and economic system that transcends national borders (Harari, 2015, 166-172).

In Section 2, we examine challenges resulting from human weaknesses that also manifest in autocratic leaders and governments. In recent years, authoritarianism has been undergoing a resurgence, abetted by technology. Most notably, the Chinese mass surveillance state operates directly through surveillance and police activities, and indirectly through government monitored capitalist enterprises like WeChat, Tencent, Baidu, and Alibaba both domestically and abroad. For purposes of social control, China is projected to have one CCTV camera for every two of their 1.4 billion citizens by 2022, and is already exporting their AI-powered surveillance technology to at least 18 other authoritarian regimes (Campbell, 2019). Meanwhile, AI is on track to replace virtually all existing jobs everywhere, thus further devaluing humans. According to historian Yuval Harari (2017, p. 396), data processing will continue in all aspects of human activity until algorithms know us better, in every measurable way, than we know ourselves. It is at this point, he says, liberalism will collapse.

Liberalism refers here to the Enlightenment values that support human rights, reason, science, free-speech, freedom-of-assembly, open-mindedness, rule of law, democracy, and secularism, associated to varying degrees with the world's democracies. Liberalism also refers to the Liberal International Order as applied to the institutions, alliances, and rules created and defended by the United States following the Second World War. Liberal values may prevail, but in a multi-polar world with neoliberalism, nationalism, and authoritarianism on the rise, liberalism is under threat. For it to survive, deep structural change is needed to uphold values, increase democratic participation, reduce inequality, and protect the environment. Steven Pinker in *Enlightenment Now* (2018, p. 4) believes that our cherished ideals will endure, but only if buttressed with a "wholehearted defense," against certain aspects of human nature including: "loyalty to tribe, deference to authority, magical thinking, [and] the blaming of misfortune on evildoers"

In Section 3, we will delve into how the accelerating pace of computer evolution could quickly overwhelm both individuals and institutions. This affects us already in two important ways: First of all, before progress in artificial intelligence (AI) is given a double exponential boost with quantum computing, it is already becoming integrated into all human activities. The fear is that AI might eventually render our societal contributions irrelevant, or useless. At the same time, it is quite possible that humans can successfully manage, or perhaps even merge with their technology. Secondly, algorithms developed by software engineers at private companies like Apple, Alphabet, Microsoft, Google, Amazon, Instagram, and Facebook are recording and analyzing our preferences and personal connections; and tracking our movements in order to sell us more goods and services. Meanwhile, profit-seeking social media companies are constantly refining techniques to addict people to the engaging social connections they provide. This creates a feedback loop that makes us increasingly susceptible to manipulation by those entities who want to sell things, or disseminate propaganda and misinformation for political purposes. These developments, coupled with issues related to our inherent nature, call for actionable solutions that can handle increasing complexity and provide well-organized, responsive governance.

Virtually all human activities are being increasingly scrutinized in a growing mountain of data, the interpretation of which is being done in the political sphere by leaders of varying intelligence and competence. It is these flawed humans, susceptible as they are to corruption, fallacies and biases, who determine the quality of our representation. No human or existing organization, no

matter how exceptional, is presently capable of analyzing all available data to make efficient policy decisions. And even when faced with good advice, we often sabotage ourselves by ignoring wise counsel for political or psychological reasons (Tasler, 2013; Blunden, et al., 2017). Still, we rely on competing hierarchical structures, governments, and bureaucracy to administer and make sense of it all. It is an inefficient process, vulnerable to manipulation and exploitation by bad actors, and distorted by ideological, political, psychological, and economic interests. Meanwhile, with sophisticated algorithms and data mining, control over the public domain is increasingly being appropriated by private companies in search of profit and power, and governments in search of control. We could use IT to serve the public interest, but any proposal has to overcome both the structural issues that shape politics, and obstacles inherent in our nature. Section 3 ends with a discussion of ongoing efforts as well as a proposal about how we might improve global governance with public policy wikis that allow for direct interaction by everyone, while also weeding out the ubiquitous, self-deluding tendencies we all share.

1. THE EVOLUTION OF INFORMATION TECHNOLOGY

1.1. From isolated tribes to a rules-based global order

To fully appreciate the recent, astonishing rise of technology and the global order that has brought us to current apex of human history requires perspective. Anatomically modern Homo sapiens emerged around 300,000 years ago, yet all of written history has unfolded in the last 6,000 years. Even during this brief period of recorded history, very little changed from generation to generation, except that the development of writing brought organization and increased trade, thus quickening the pace in relation to the previous millennia (Harari, 2015). The vast majority of the data that has been created during the spectacular and unforeseen rise of the internet and the world wide web occurred over the last 30 years. This sliver of time represents only 0.001% of the history of our species, yet it is only the beginning of a much grander story that is currently unfolding. In late 2016, IBM Watson (Statista, 2018) reported that 90% of all data had been created in the previous two years, and that the size of the digital universe was

doubling every two years. From 2010 to 2020, the volume of information increased *25 times*. In the same period, the global online penetration rate in northern Europe reached 95%—with nearly 60% of the world's population being online, compared to less than 17% in 2005 (Statista, 2020). Meanwhile the data, as organized and manipulated by algorithms for the benefit of corporations, gives an endless stream of increasingly valuable information that has far surpassed oil as the world's most valuable resource. But unlike oil, data is easily extracted and the supply is endless (Economist, 2017).

Because of the dizzyingly pace of technological change, coupled with models that dissolve in the fog of second-order chaos and complex variables, it is now impossible to accurately predict a few years into the future, let alone one generation. Even so, our fate will depend on political choices made now, even though we can only know later if we are making wise decisions. Unfortunately, our decisions are shadowed with the reality that, with accelerating growth and progress, the margins for error are narrowing. Neither the electorate, or their leaders, have enough information to make smart choices under such constraints. Surely we can better collect, analyze, and disseminate the data in a way it can be understood in context, and made comprehensible to the average citizen. How data is organized—through various forms of information technology that began with writing—has accelerated the process of driving humans from isolated tribes into a rules-based global system. The impetus for this transition is encoded in our genes, but also accumulating in cultures and shaped by politics. Governments, language, social conventions, war-making, peace-seeking, and all the other peculiarities and contradictions in our nature, have been molded by natural-selection and our evolving culture. Humans are hardwired to communicate, cooperate, and seek justice.

Despite a propensity for competition and occasional violence, archeological and genetic research reveals that we are, like some of our primate cousins, a highly social, cooperative species who cares deeply about justice and fairness (Brosnan, 2013). Our genetic code holds the seed of our religious and moral codes, which were further shaped by politics. Our language evolved from the sort of limited range of calls and warnings that other animals exhibit, to the capability to describe and shape our spatial, trans-temporal, environment. The ability to speak in abstractions allowed the creation of intersubjective realities such as religion, money, nations, corporations, and other

mutually agreed upon conventions. All these collective myths depend on commonly shared beliefs and trust, and these fictions are necessary to organize large groups of people (Harari, 2012). But over-attachment to the organized fictions known as sovereign states contributed to two world wars and compelled humanity to seek world peace through cooperation and shared knowledge.

Many have resisted the illiberal trends of the last several decades, and argued for systemic change to the international order, especially in relation to equality. Economists Thomas Piketty (2014), Robert Reich (2015; 2018), Joseph Stiglitz (2002), Paul Krugman (2009; 2020), and many others continue to criticize the inequities produced by market capitalism, which is not self-regulating in a way that provides for the common good. Instead, so-called laissez-faire capitalism has been shaped by powerful special interests who can influence the legislation, subsidies, and taxes to their advantage (Polanyi, 1944; Joseph Stiglitz's forward, 2001, p. vii, xxviii, xxix). Balancing social capital with the market as in the Nordic countries may be the best model we have of how to distribute the benefits of capitalism without quashing its wealth-generating qualities. As economists Saez & Zucman (2019, p. *viii*) put it, "Without taxes there is no cooperation, no prosperity, no common destiny—there is not even a nation in need of a president."

As happened during the Gilded Age and again today, laws increasingly favor plutocrats who use their influence to reduce their taxes and cut social programs (Piketty, 2014, p. 264; Polanyi, 2001, p. v). Following Karl Polanyi (1944, 2001), economists acknowledge that capitalism and free trade produces wealth, but it takes a "double movement," where social protection is embedded in the market to harness capitalism for the betterment of society. Effective government could determine the ideal balance between the market and the social safety net. But in the arena of polarized politics, the truth gets obfuscated, spun, ignored, or steamrollered. All of the usual logical fallacies and misrepresentations—including the myth of the "self-made man" who deserves to grab whatever he can—can be marshaled by the powerful in defense of the indefensible. The task is balancing the complex elements that make up the global order while also creating free and open societies.

The institutions supported by these ideals are social constructions, which means they are also subject to the support of the body politic and evolving conditions. To endure they have to rely on factual information. This acceptance of reality, combined with self-examination and positive change, remains integral to a healthy liberalism. Supporting these ideals is premised on developing a progressive techno-democracy that strives to inform people and give them the tools to avoid cognitive biases and logical fallacies. The birth of science necessitated the "discovery of ignorance" (Harari, 2017, p. 248), which required humility to admit there are gaps in our knowledge, and to have enough curiosity to seek the truth. Critical thinking allowed us to refine our powers of observation, while also being conditional in our opinions about things of which we are less sure (Pinker, 2018, pp. 9, 381, 385). The utility of reason is unquestioned, at least by reasonable people, and liberal values are upheld by the United Nations' Universal Declaration of Human Rights (UN, 1948). Liberal democracies struggle both within and outside their borders to promote these values in both social and political realms.

Global coordination and cooperation is challenged by diverse interests and goals spread among 195 countries, intergovernmental organizations like the UN, the G7, the WTO, and some ten million non-governmental organizations. Authoritarianism and great-power rivalries also threaten values-based internationalism, which forms the backbone of the global community (Wright, 2018). At the same time, 84% of the world's population in 2010 was affiliated with thousands of major and minor competing religions, all of which promote conflicting articles of faith (Pew Research 2012). All of these secular and religious organizations attempt to influence policy. In addition to nearly eight billion actual humans, there are tens of millions of "legal persons" in the form of profit-seeking, private corporations adding to or subtracting from the greater good in varying degrees. The legal fictions known as corporations contain further administrative divisions, comprised of both real people and algorithms, and they are all interconnected through the internet and world wide web. Taking the broad overview, and ignoring the setbacks along the way, culture, education, regulation, market forces, free trade, social media, and the internet are increasingly shepherding the herd toward greater cooperation and decreasing religiosity (Pinker, 2018, p. 435).

The UN defines civil society and good governance as being accountable, transparent, effective, inclusive, efficient, equitable, honest, and consensus-driven. In their view, governance should also be responsive to the present and future needs of society, and follow the rule of law (Sheng, n.d.). Attaining these goals involves problem-solving in an anarchic economic and ecological environment where cooperation lags behind competition. To be fair and effective, new rules have to be based on the cogent analysis of big data, which is already being exploited by special interests outside democratic control. Interactive AI could counteract this trend by providing a method to increase the "wisdom of the crowd" which, even in the most democratic countries, consists of an ill-informed, easily-manipulated, and distracted electorate. It could also illuminate the ways in which elites control the nominating process in elections through campaign financing and electoral artifice. Tools created with cloud-based information technology could address these shortcomings with education, increased participation, and access to expert analysis. An organized global system based on data acquisition, processing, analysis, and advice could better ensure good governance if it integrated factors that affect our decisions—political or otherwise—to better understood ourselves, the natural world, and the flow of data.

1.2. Towards a Global Brain

The pioneers of information science believed that if people had access to the facts they would see how to manage what surely would be a peaceful world. In the late 19th and early 20th century Paul Otlet, Henri LaFontaine, President Woodrow Wilson, and others sought to find political solutions and harm reduction through data collection, organization, interconnection and cooperation (Mazower, 2012). Otlet, who created the Universal Decimal Classification, and LaFontaine who won the Nobel Prize for Peace in 1913, together founded the Universal Bibliographic Repertory in 1895, which by 1934 had 15 million entries. Beginning in 1896, the two men also established a fee-based service where they would answer questions sent in by mail. Their analog search engine attempted to catalogue the world with a range of articles, letters, images and reports (Wright, 2014). Otlet's earliest attempts at processing information consisted of paper and index cards; but as early as 1903, he spoke of "a machine for exploring time and space" that would be a kind of mechanical brain (Otlet, 1903, p. 86). In 1910, Otlet and LaFontaine established a "city of knowledge" for the world's information called the "Palais

Mondial" which in 1924 they renamed the Mondaneum. It was to radiate peace, knowledge, and universal cooperation. Such efforts contributed to instances of global cooperation that culminated, with President Wilson's guidance, in the armistice (for which he won the 1919 Nobel Peace Prize) and the creation of the League of Nations in 1920. By 1934, Otlet was imagining substitutes for books that would include future forms of television, combined with a telephone, wireless telegraphy and microfilm, so people could access the world's information. He even imagined a form of computer-aided design (CAD) and a sheet loading printer (Otlet, 1934, pp. 216-247). As envisioned, his Universal Network for Information and Documentation would link "centers of production, distribution, and use regardless of subject matter or place." It would be an encyclopedic body of knowledge that anyone could contribute to or access (Otlet, 1934, p. 415). Essentially, he was conjuring today's virtual office.

During the 1930s and 1940s, information technology was increasingly being used to inform people, but also being employed as propaganda. Soviet communism, fascist dictatorships, the Great Depression, two world wars, and countermovements within the democracies inspired widespread discussion of information control, and whether humanity was facing a utopian or dystopian future. After *The Time Machine* (1895) where his protagonist journeys to the past and future, H.G. Wells created at least three utopian thought experiments. In *A Modern Utopia* (1905, Ch. 3:1) freedom is not limited so much by "thou shalt nots" as by conditional prohibitions such as: "If you go to sea with men you employ, you must go in a seaworthy vessel." *Men Like Gods* (1923) was an anarchic, secular utopia existing in a parallel universe, guided by "The Five Principles of Liberty": free discussion, truthfulness, free movement, unlimited knowledge and privacy. In *The Shape of Things to Come* (1933), Wells presents a world government run by a benevolent dictatorship consisting of "middle-class intellectuals" where religion has been banned. In a filmed interview before the last book was published, Wells said that sovereign nations would necessarily disappear and be replace by a "single federal government that will have continually increasing power" (Wells, 1931).

Aldous Huxley's *Brave New World* (1932) was written as somewhat of a parody of Wells' two earlier novels (Heje, 2002). It offered a dystopian vision of a scientifically advanced intellectual caste system, where humans are created in labs, education consists of sleep-learning, and the citizens are pacified by a drug called "soma." George Orwell's *Nineteen Eighty-Four* (1949) was

the darkest of all these novels and the most influential. Orwell depicted panopticonic mass surveillance and repression conducted by Thought Police in a totalitarian dystopia. People are monitored by two-way "telescreens" and constantly reminded that "Big Brother is watching you," even though the all-powerful, infallible ruler of the Party seemed to be an ageless fiction.

Wells, inspired by Otlet, and perhaps chastened by Huxley's masterful novel, abandoned science fiction to propose more immediate and practical solutions to governance. In *World Brain*, a collection of writings written from 1936 through 1938, Wells describes a free, permanent, independent "World Encyclopedia" containing universal authoritative information. He saw it being on a projector with microfilm, instead of on a screen with the internet. It would be a "sort of mental clearing house for the mind, a depot where knowledge and ideas are received, sorted, summarized, digested, clarified and compared" (Wells, 1938, p. 49). Furthermore, it would establish the standard source for all learning, "verification of facts, and the testing of statements —everywhere in world." He believed it would be universally accepted because "we are all humans with the same kinds of brains" (Wells, 1936). Wells' next book was *The New World Order,* written in 1940. The title came from a term used by politicians such as Winston Churchill and Woodrow Wilson (Knock, 2019). The content came from the foundational idea behind the League of Nations (1920-1940), which is that nations of the world should unite in common purpose to end war and bring everlasting peace through a global legal system that protects human rights. There is an implicit conflict involved when the rich and powerful cognoscenti are asked to act against their perceived selfish interests to help develop plans for how to share wealth, power, and information with others. Thus peace can be elusive when proposals are motivated by a desire to maintain existing power structures and income streams.

The Mondaneum and Wells' idea of a World Brain was an early analog precursor to Wikipedia, and the idea that successful global governance would be informed by accurate, universally accessible information. With 52 million articles, continually created and updated by nearly 38 million registered users, written in over 300 languages, and with bibliographies that run into the hundreds of millions, Wikipedia is a singular and invaluable accomplishment, more comprehensive than any encyclopedia ever published. Ironically, Wikipedia is perhaps most thoroughly critiqued in an exhaustive, 18,000-word, Wikipedia article (with 206 citations) as being subject to vandalism, various biases, poor fact-checking, conflicts of interest, privacy

concerns, excessive rule-making, social-stratification, over-zealous editors, self-promotion, incomplete information, stifling consensus seeking, edit wars, and many other issues. But when viewed with an understanding of its limitations, including that it is not a primary source for research, its value is firmly established. Crucially, its open-source format means that all versions are archived and sourced, and anyone can follow the citations to secondary and primary sources to judge information from different perspectives, as should be done anyway.

But Wikipedia, as a form of earned media, is not a wiki designed to shape policy. Rather, its goal is to cultivate a neutral point of view (NPV) through a self-monitoring structure. Its mission is to deliver encyclopedic information not advocacy. Wikipedia is unlike social media platforms in that all editors are literally on the same page, even if there are more pages that can ever be read by any human. Instead of search engines tailoring information to individual biases and consumer preferences that contribute to conspiracy theories and polarization, there is a presumption that NPV will be ferociously enforced by anonymous editors to produce a singular, shared view of the world. In section 3.4, the case is made for creating a public policy wiki (LOGOS) that reinforces consensus based on an evidential, shared reality. While not NPV, the policy recommendations would be shaped by consensus and grounded in defensible arguments backed by non-anonymous contributors and sources.

2. CHALLENGES TO GOVERNANCE

2.1. Our Own Worst Enemy

Humans are subject to a wide range of emotions, logical fallacies, and cognitive biases that make a morass out of political debates and hinders the adoption of evidence-based policies. It makes it exceedingly difficult in most countries to find reasonable and consensual solutions to problems, while at the same time allowing the rich and powerful to gain advantage. The art of propaganda draws heavily from suppressing information in favor of repeating lies that create the illusion of truth (Stafford, 2016). Even though, as Sophocles supposedly once said, “a lie never lives to be

old," lies do not have to grow old to be useful. They only have to serve their purpose until the next lie is produced for rhetorical misdirection. But some politicians are more dishonest than others, so to not recognize proportionality and say, "they all do it," is to commit the fallacy of false comparisons. There are many forms of misinformation, including rumor mongering, playing dumb, changing the subject, creating distractions, and emotionalizing. People are not only misinformed but, according to the Dunning-Kruger (2011) effect, the misinformed are often unaware of their own ignorance. Terror Management Theory (Solomon et al., 2015) states that many adopt ideology, nationalism, religion, heightened security measures, and aggression toward others to manage their terror of death and give their lives meaning. High Attentional Engagement in eye-tracking studies show that simple and entertaining circus-like spectacles in politics hold the attention of conservatives more than harder-to-digest, unpleasant facts and analysis. This results in a higher negativity bias for conservatives compared to liberals (Oosterhoff et al. 2018). These issues compound the problems caused by the many dozens of formal and informal logical fallacies.

Combining all these cognitive traps with data overload, misunderstanding, voter indifference and/or ignorance, corruption, cumbersome deliberative processes, and polarization, means that liberal democracies have seemingly endless challenges to overcome. Winston Churchill famously said, "democracy is the worst form of government except for all those other forms that have been tried." Churchill was echoing the American Founding Fathers who recognized the difficulty in balancing popular majority rule with a flawed constitution designed to protect the liberties and rights of all citizens. Benjamin Franklin at the Constitutional Convention in 1787 stated: "When you assemble a number of men to have the advantage of their joint wisdom, you inevitably assemble with those men, all their prejudices, their passions, their errors of opinion, their local interests, and their selfish views" (Beeman, n.d.). Similarly, the first US president, George Washington, warned in his 1796 Farewell Address that factions work against the goal of upholding the common national interests, a speech which two men from opposing parties—James Madison (Democratic-Republican Party) and Alexander Hamilton (Federalist Party)—helped write. Thus, even in the 18th century, the Founding Fathers were aware of cognitive biases that are now well documented by researchers, including the observation that humans become less reasonable as they polarize into opposing camps. This fact is demonstrated the

world over by intense loyalties by fans to competitive sports teams where passions sometimes break out into riots. This happens irrespective of their wide-ranging religious and political beliefs, thus further emphasizing the emotional nature of their loyalties. Party followers, acting like sports fans, will root for their side by rejecting or condemning legislation that might have been accepted and praised under their own banner (Arth, 2010, pp. 106-108). Just as bad, because of various biases and competing political interests, the resulting laws are often ill-conceived, harmful, inadequate, and distracting from more important issues.

Much scholarship has been devoted to authoritarianism and how it is related to organized religion (Burge, 2018). Deference to authority is seen by psychologists mostly as personality-driven while sociologists see it as emerging from one's social environment. Whatever the case, authoritarianism, and nationalism are strongly correlated with non-evidential, faith-based epistemologies. Countries with a strong religious influence on nationalism are also far more susceptible to discrimination and human rights violations (Rieffer, 2003). The United States has a constitutionally mandated separation of church and state, as well as freedom of religion, but both religion and nationalism are intertwined with illiberal, conservative ideology. Around 83% of white evangelicals, for example, are Republican, and half of adults think the Bible should influence the law (Pew, 2020). In a Gallup poll, 42% of American adults and 69% of churchgoers believed "God created human beings pretty much in their present form sometime with the last 10,000 years or so (Newport, 2014)." Forty-one percent also believe that Jesus will definitely or probably return by 2050 (Pew, 2010). Diversity in religion, culture, and politics, combined with constitutional guarantees including the separation of church and state, has thus far prevented the slide toward theocracy in the US. But Muslim countries—especially those in which an Islamic state has been declared—have far less resistance to extremism, intolerance, and authoritarianism, making it hard for democracy to take root (Fish, 2002, pp. 4-37). Research shows that Muslim countries are democratic underachievers and that a major factor of the "democracy gap" is patriarchal authoritarianism, exemplified by the treatment of women and girls (Springborg, 2007; Fish, 2011).

On the other hand, the Arab Spring (facilitated by social media) also showed promising openness to democracy by much of the populace even when the views were not shared by their leaders.

According to Freedom House, democracy and pluralism have generally been in decline globally for 14 consecutive years, including in the United States and India, where religion and nationalism are strongly correlated (Repucci, 2020). Freedom House's Freedom on the Net survey (2019) shows that only 15 of the 65 listed countries had free access to the internet, with China having the most censorship and Iceland having the least. By 2019, internet freedom in the US had been in decline for three years.

2.2. Authoritarianism

Increasingly vulnerable global supply chains that deliver goods on time depend on being able to adapt to rising levels of complexity to solve problems. Likewise, governments are vulnerable because they are often not flexible, efficient, or sustainable in how to meet the demands of citizens. We are increasingly dependent on digital innovation by private interests in regulated markets to keep up, an advantage lacking in previous civilizations. To this point, Archeologist Joseph Tainter (1988) blamed complexity for civilizational collapse saying that "civilizations are fragile, impermanent things" that require constant innovation to deal with problems. Similarly, Samual Huntington, in *Political Order in Changing Societies* (1968, p. 39) argued that complexity and disorder increases as societies modernize, leading to an increased threat of violence.

Huntington's ideas were appropriated by Chinese neoconservatives in the 1980s to justify a new Chinese style of authoritarianism that came to a head with the Tiananmen Massacre of June 4, 1989. The student protests, and the beginning of the end of the Chinese Democracy Movement, began immediately after the April 15, 1989 death of its liberal hero, Hu Yaobang. As part of the crackdown, Premier Zhao Ziyang was arrested and put under house arrest until his death for being sympathetic to democratic reforms (Zhao, 2009). "Neoauthoritarianism" thus became the Chinese Communist Party's response to the 1989 Tiananmen Square protests, a position that solidified after the fall of the Berlin Wall five months later, and the dissolution of the Soviet Union in 1991. The color revolutions involved mostly non-violent uprising against authoritarian governments during the early 2000s, include the former Soviet republics, the Balkans, and the

PRC. These revolutions, as well as the Arab Spring that followed in 2011, spooked Putin who, in 2014, while also doubtlessly remembering the breakup of the Soviet Union, said: "For us this is a lesson and a warning. We should do everything necessary so that nothing similar ever happens in Russia." Putin also said the United States was trying to subjugate Russia and stir up opposition against him, in order to build up nationalist sentiment (Korsiunskaya, 2014).

Xi Jinping's reactions to these events was similar. China's dictator sees the color revolutions, China's own quashed democracy movement, and mistakes made by Mao during the Cultural Revolution as cautionary tales. The lesson for Xi is that China needs a strongman because people are untrustworthy and need to be controlled in order to avoid chaos. Xi has also stated that talk of human rights, democracy and free speech is an American plot to ensure its dominance. But that was not entirely the case in the 1980s. *Foreign Policy* editor James Palmer points out that nearly every development of the PRC was copied from the Soviet Union. So changes under Gorbachev involving *glasnost* and *perestroika,* which accelerated after the 1986 Chernobyl disaster, were at first received favorably in China (Palmer, 2016). But after the fall of the Berlin Wall in 1989, Beijing's attitude against democracy hardened. The CCP abandoned *glasnost* while accepting that private enterprise was necessary for economic development. For all of these reasons, Putin and Xi fear the internet, and work to stymie the spread of free information and democracy. What may be needed is to de-escalate the tension between the democracies and the autocracies by discouraging the saber rattling and focusing on presenting a compelling model that everyone wants to emulate. This could draw focus from competition among states and more attention to developing global governance based on collectively shaped and shared principles.

Ideology and nationalism, as was discussed in the previous section, are barriers to reaching consensus. According to Vladimir Lenin, dialectical materialism opposed religion not only because of its unscientific and metaphysical nature, but also because religions are seen "as instruments of bourgeois reaction that serve to defend exploitation and to befuddle the working class" (Lenin, 1909, 1999). The unstated reason for religious suppression was that religions are subversive, rival ideologies, and a challenge to the authority of the communist state, which also represents a quasi-religious, absolutist ideology. Under the new tsar, Russia has reverted to twinning nationalism with religion, and using the tools of propaganda to bolster the central authority. But China uses nationalism like Lenin did—by suppressing religious practices—most

apparent in its incarceration of Uyghur Muslims in Xinjiang. Otherwise, the CCP, like the Supreme Soviet of the Soviet Union (and its successor, Russia's Federal Assembly), has abandoned the class-war dogma of Marxism-Leninism and embraced a form of capitalism combined with the corruption inherent in absolute power.

The flip side of the repression *of* religion is the repression *by* religion involving both laws, violence, and thought control. Numerous examples abound, especially involving Muslims as both oppressors and victims. The never-ending Jewish-Palestinian conflict involves one counter-atrocity after another, with the powerful Jewish state being more criticized in recent decades than its weaker neighbor (Human Rights Watch, 2019). In India, Narendra Modi and his right-wing, Hindu nationalist party, Bharatiya Janata, came to power in 2014. Since then, the government has increasingly been using selective population control, discriminatory citizenship policies, and the tacit acceptance of selective mob violence, to attack or otherwise oppress the Muslim minority (Chotiner, 2020). Throughout the Muslim world, extremists from different sects are prone to violently oppose one other, or propagate terror all over the world against both Muslim and non-Muslims alike. The Roman Catholic Church has a long history of science denialism and persecution, which it now disavows to some extent, but it still claims papal infallibility, makes absurd claims, limits choices, and fleeces its flock. In the United States, most fundamentalist Christians—like their Muslim counterparts—seek to repress people socially and politically—with strict gender conformity, limited reproductive rights, heteronormative marriage laws, and science denial. Evangelical Christians are far more likely to deny global warming, claim it is part of a natural cycle, or believe that the impending end times make it irrelevant (Pew, 2015) (Gander, 2019). Many also support voter suppression to ensure Republican control, apparently agreeing with Trump that if voting were made easier in America, "you would never have a Republican elected in this country again" (Cole, 2020). The truth claims of the dogmatic religious are just another form of authoritarianism. As mythologist Joseph Campbell (1987) has said, myths are not facts, they are poetic lies that tell psychological truths. The problem comes when people take their myths literally, and when people equate opinion with facts or adopt faith over evidence.

When competing religions demand respect for their contradictory claims on absolute truth, it is not surprising when somewhat less dogmatic adherents claim that there are alternative facts and

realities, or that "we all have our own truth." Of course, it is not only the devout who abuse the truth, even though faith-based beliefs may still be involved. This was graphically illustrated when a senior official working for U.S. president George W. Bush told journalist Ron Suskind that people like him were part of what White House insiders derisively call the "reality-based community…who believe that solutions emerge from [the] judicious study of discernible reality….We're an empire now, and when we act, we create our own reality." (Suskind, 2004)

Michiko Kakustani in *The Death of Truth* (2018), states that President Trump represents "some sort of climax in the warping of reality." Indeed, The Washington Post's fact-checker team estimates that Trump had told some 25,000 presidential lies by election day. However, reality denial is not only a faith-based, right-wing phenomenon. Kukustani also blames post-modern deconstructionists like Jacques Derrida who claimed that historical, architectural, literature, and social science texts are unstable, irreducibly complex, variable, and subjective, and who rejected Enlightenment ideals as "vestiges of old patriarchal and imperialist thinking." As Kukustani writes, "Some of the terms [post-modernists] use—like the 'indeterminacy of texts,' 'alternative ways of knowing,' and the 'linguistic instability' of language….feel like pretentious versions of phrases used by Trump aides to explain away his lies, flip-flops, and bad-faith promises." (Kukustani, 2018, pp. 53-60). Kukustani points out that such thinking was presaged by a 1943 essay where George Orwell wrote about the disinformation put out by the National Socialists in relation to the Spanish civil war: "What is peculiar to our age is the abandonment of the idea that history could be truthfully written. In the past people deliberately lied or they unconsciously colored what they wrote, or they struggled after the truth, well knowing that they must make many mistakes; but in each case they believed that 'facts' existed and were more or less discoverable." (Kukustani, 2018, p. 55).

2.3. Covid-19: An Ongoing Case in Point

Whether it was the Chinese government's cover-up of the initial outbreak and persecution of doctors who raised the initial alarm, or Trump's lying about how the virus would "miraculously disappear," the Covid-19 pandemic has illustrated the danger of avoiding, concealing, or denying facts. Information technology can be used to illuminate the truth just as the coronavirus and the

associated recession also exposed a wide range of problems. As billionaire investor Warren Buffet once explained: "You only find out who is swimming naked when the tide goes out." Referring to how a recession is an accounting crook's worst enemy, *The Economist*'s (18 April 2020) editors added: "This time, thanks to a pandemic, the water has whooshed away at record speed." In addition to the economic reckoning, Covid-19 is a unique black-swan event that allows us to simultaneously observe how individuals, companies, institutions, organizations, and countries handle crises. The ramifications will doubtlessly take years to sort out, and lead to profound changes, but we can already make some observations. First of all, as Peter Pomerantsev states, the virus has heightened all the usual political problems: "We're in a stream of ever-evolving data, and it's being shaped around cognitive biases, partisanship and preferences embedded in our cultural identities" (Warzel, 2020, quoting Pomerantsev).

Intrusive surveillance helped China control the pandemic but the secrecy and lies were the main reason the outbreak was not dealt with promptly to start with. The cover-up also speeded up calls for reform, at least initially. In China, the coronavirus caused a "generational awakening" consisting of a minority of China's youth who, suddenly having plenty of time for reflection, are taking to social media in attempts to circumvent the censors to demand free speech and stop the muzzling of whistle-blowers (Wang & Hernández, 2020). Young Chinese, in exchange for tolerating authoritarianism, had been promised prosperity, stability, and jobs. Now some are beginning to see that criticism is not incompatible with love for country. However, in reaction, the CCP increased nationalistic slogans and suppression of criticism. The virus was also quickly contained with minimal deaths compared to the West, and the first contraction since 1976 did not turn into a recession. This emboldened Beijing to increase domestic surveillance, continue their military buildup, build even more Uighur concentration camps, and crack down on Hong Kong's special status. Considering that China's overwhelmingly dominant party is ruled by an autocrat with no term limits means that liberal reform is unlikely to occur anytime soon.

Other countries are also using pandemic-related political acts to limit rights, or selectively enforce Covid-19 related laws to serve power (Gebrekidan, 2020). Reporters Without Borders (2020) listed 38 examples of countries that were using the pandemic as a pretext for harassing the media. Because the president of the United States has been long considered the "leader of the

free world" Trump is the most egregious example. Trump, aided and supported by his enablers and supports, is also a case study by himself of everything that is wrong with politics. On an almost daily basis, he presented new examples of how a leader should not act. Without constitutional restraints he would undoubtedly have been much worse. "Diseases, far more than any human enemy, ruthlessly expose and exploit the weaknesses of their victims," wrote *conservative* columnist Max Boot. "Now the coronavirus outbreak is laying bare the pathologies of the Trump administration—which include compulsive lying, pandering to dictators, ideological aversion to 'globalism,' inveterate hostility toward experts and expertise, and….sheer incompetence" (Boot, 2020). Donald Trump had apparently taken the advice of Steve Bannon, his former chief strategist, who said to a journalist: "The real opposition is the media, and the way to deal with them is to flood the zone with shit" (Wehner, 2020).

Measures that incorporated Modern Monetary Theory and guaranteed minimum income—considered fringe-worthy in the United States before the Covid-19—were instituted almost immediately in a bipartisan spirit (even though Republicans soon thereafter blocked further aid to the needy). Work-at-home, distance learning, and teleconferencing were suddenly ubiquitous and indispensable. The crisis illustrated how freely available data properly analyzed in a public forum, and acted upon accordingly without political interference, could have saved lives and lessoned the impact. It also showed how information technology combined with the creation of a digital human subject might be able to prevent such pandemics altogether. Since 2018 scientists have been using *in vitro* models of the human immune system to test age-specific vaccine responses (Sanchez-Schmitz et al, 2018). Based on the knowledge of the viruses already known about the the potential for mutation and human transmission, it is likely that, with sufficient funding, drugs and vaccines could also be preemptively created to meet the threats (Kahn, 2020). What could have been done to prevent the spread of Covid-19 should have been done, but we did not have the organizational and political tools in place to do it. The task was also complicated by poorly regulated capitalism—abetted by exponential growth in computing—which has allowed persuasive technologies integrated into social media to distract, manipulate, create dependency by users, and hack elections.

3. INFORMATION TECHNOLOGY

3.1. Accelerating Returns in Computing Could Overwhelm Humans

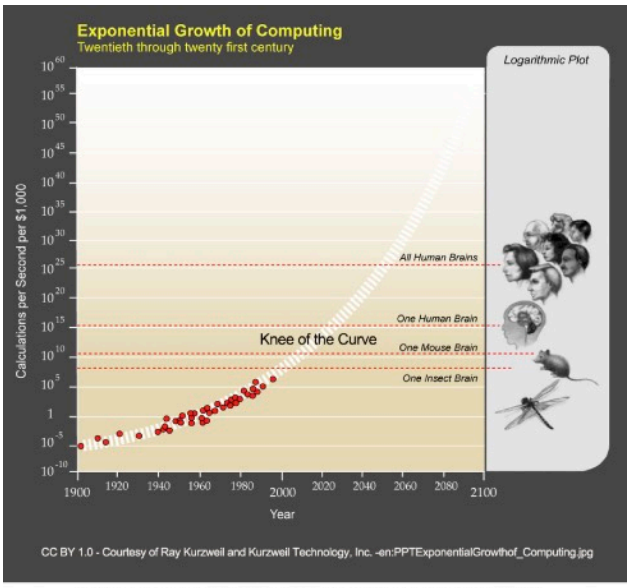

Figure 3.1.a: 2000 chart showing past and future exponential growth in computing. Note that we are currently in the "knee of the curve."

Thirty steps in an arithmetic progression like 1, 2, 3…. gets you thirty. But in an exponential or geometrical progression, where each number in the progression is doubled, thirty steps gets you to one billion. An arithmetic progression constitutes what Ray Kurzweil (2005, pp. 7-14) calls the "intuitive linear view" common to humans. This may at least partly why President Trump said that U.S. coronavirus cases would go from 15 to "close to zero" within a couple of days, and why many people believed him (Chait, 2020). After it became apparent that cases were doubling in short order, experts flooded the media with charts illustrating exponential growth. People began to see the importance of flattening the exponential curve by reducing the infection rate. The epidemiological models also reminded people of the importance of variables, which is why accurate predictions about the future are impossible, even though running potential scenarios remains crucial. The persistence of the intuitive linear view makes humans less likely to grasp both the accelerating pace and mathematics involved

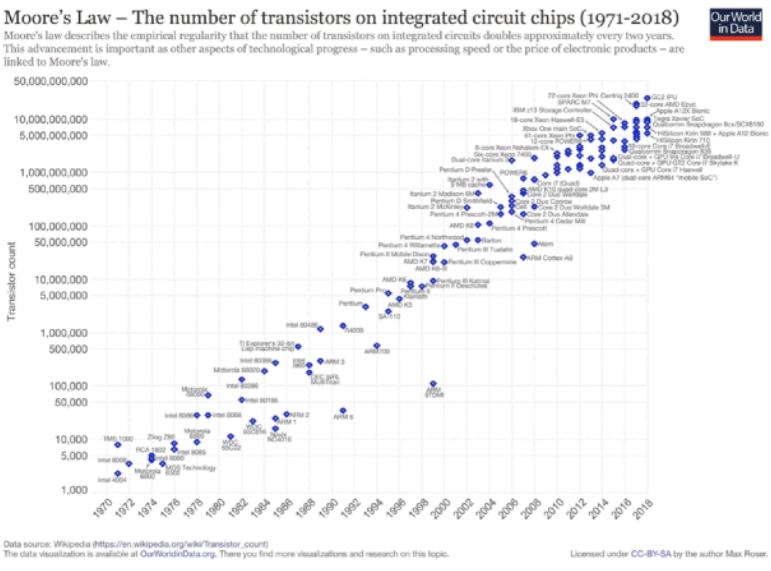

Figure 3.1.b: This graph continues to show a doubling approximately every two years, with the data points continuing to line up as predicted through 2018. As remarkable as the exponential growth in computing is, quantum computing is expected to bring double exponential growth. (See figure 3.1.c.)

in information technology and its potential to change all aspects of society even more than any virus. Algorithms already beat expert players in any game devised by humans, make stock trades in microseconds, and will soon become our chauffeurs, on their way to taking over almost all other jobs as well. Because of their ability to process enormous quantities of data, algorithms can analyze and act instantly upon news in the market. This enables algorithm traders to exploit minute deviations from market equilibrium by moving in and out of stock positions in microseconds, while transmitting data between trading centers by microwave at light speed. Such algorithm-driven high frequency trading (HFT) now accounts for the vast majority of orders in the equity and futures markets. Algorithms, such as those by AlphaZero, developed by the AI research company DeepMind, can generate its own knowledge from scratch to teach itself how to master chess, shogi (Japanese chess) and Go, the abstract, ancient Chinese, strategy board game. Go is far more complex than chess, with more allowed board positions moves than the estimated number of atoms in the universe (10^{80}). AlphaZero's play style is said to be "like chess from another dimension," with grandmaster Peter Heine Nielsen saying that playing with AlphaZero was like encountering a superior alien species. (BBC, 2017).

In the 1950s, John von Neumann spoke of "ever-accelerating progress of technology and changes in the mode of human life, which gives the appearance of approaching some essential singularity in the history of the race beyond which human affairs, as we know them, could not continue (Ulam, S., 1958)." British mathematician and Bletchley Park cryptologist I.J. Good (1965, p. 33.) believed that the creation of a super intelligence is highly likely and that a significant improvement on human intelligence would create a positive feedback cycle leading to an "intelligence explosion." Verner Vinge (1993) wrote that "we are on the edge of change comparable to the rise of human life on Earth." Ray Kurzweil, building on his 1999 book, *The Age of Spiritual Machines*, wrote in *The Singularity is Near* (2005) that the pace of accelerating change lends itself to making accurate predictions about the future up to the technological singularity—the point at which machine intelligence surpasses all humans on Earth. Since 2005, Eliezer Yudkowsky and others have pointed out that software development and other insights lag behind Moore's Law, so predictable milestones on the way to a technological singularity are problematic even if industry-driven chip development were sustained.

Neurobiologist David Linden (2011) believes that we will eventually fully understand and be able to interface with the human brain. Indeed, by 2020, Google, Microsoft, Facebook, Synchron, BrainGate, and Elon Musk's Neurolink were already working on brain-machine interfaces with promising results, using both invasive and non-invasive techniques (Velasquez-Manoff, 2020). China is also in the "brain arms race." Nevertheless, Kurzweil's timetable allowing brain-uploading by 2039 may be conflating biological data with biological insight. Data collection may be growing exponentially, but knowledge is increasing linearly, as is the case with sequencing genomes compared to understanding genetics. On the other hand, a software bottleneck only means that it might take longer to get to the same place. Even Kurzweil acknowledges that even if quantum computing is required for simulating a human brain, it would change his timetable but not his predictions (Kurzweil, 2005, p. 452)

Whatever the fine points on brain interface and the technological singularity are, the pandemic is accelerating automation, as robots take over jobs that require close human contact. Haass (2020) believes the pandemic will accelerate history rather than reshape it, and that not every crisis is a turning point. His point may be a matter of semantics since the knee of exponential growth regarding information technology describes a mathematical turning point that graphically illustrates where we are now and the radically different place we may be within a few decades. Figure 3.1.a was plotted in 2000, but the data points shown in the 2018 graph (figure 3.1.b) match the earlier projections. Classical computing is running up against some physical limits, but quantum computing is about to make even more impressive gains. In late 2019, Google claimed to have attained quantum supremacy, where a quantum computer proves that it can solve a problem unmatched by any other machine (Frank, et al., 2019). However, IBM claimed that simulation of that quantum computer could theoretically be done in a classical, electronic computer, even if it took two and half days instead of three minutes (Pednault, 2019). Both of the dueling claims are interesting because Google has shown what can be done with quantum computing and IBM has shown how self-learning algorithms used with classical

Image Credit: Public Domain

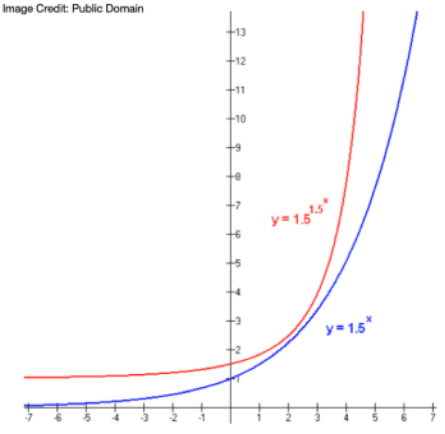

Figure 3.1.c. The blue line represents the single exponential function. The red line represents the double exponential function. Quantum computing will probably bring double exponential growth.

computing can be made that duplicates some quantum computing tasks (Ray, 2019). However, this competition only applies in the interim period before quantum computing really takes off. The Neven curve predicts double exponential growth which would greatly accelerate the exponential curve (see figure 3.1.c.). Exponential growth grows by the power of two. Double exponential growth grows like this: 2^{2^1}, 2^{2^2}, 2^{2^3}, 2^{2^4} (Harnett, 2019). Classical computing has brought us to the knee of the curve, but quantum computing could make the curve more like a hard vertical turn. What will be the consequences for humans if they continue to be manipulated for profit and political control by self-learning, super-intelligent algorithms?

3.2. Social Media and Persuasive Technology

Humans evolved incrementally over millions of years, but technology has evolved many orders of magnitude faster than the ability of the average human to properly assess and assimilate. Processing power alone increased a trillion times between 1956 and 2015 (Dorrier, 2015). Meanwhile, software engineers backed by huge corporations, using sophisticated algorithms, are constantly refining how they can get our attention to sell us more stuff. The exponential growth of information technology is most apparent to the average person through computing platforms and social media, but information technology now influences nearly all human endeavors. Computers were initially greeted as work saving devices. The internet was a miracle that knitted the world together. Social media became an ingenious way to connect with others, find a mate, and locate lost friends. The smart phone released us from the office and gave us the ultimate Swiss pocket knife—a tool that can do nearly everything, while acting as a magic two-way mirror to the world. In the 1990s, long before ubiquitous smart phones and social media, the internet was a restless but promising youth rising with the sun on the plains of the wild frontier. As computer philosopher and computer scientist Jaron Lanier put it in 1998, just after the appearance of a few simple social media platforms:

> The Internet has created the most precise mirror of people as a whole that we've yet had. It is not a summary prepared by a social scientist or an elite think tank. It is not the hagiography of an era,

> condensed by a romantic idealist or a sneering cynic. It is the real us, available for direct inspection for the first time. Our collective window shades are now open. We see the mundanity, the avarice, the ugliness, the perversity, the loneliness, the love, the inspiration, the serendipity, and the tenderness that manifest in humanity. Seen in proportion, we can breathe a sigh of relief. We are basically OK. (1998, p. 60)

Since then, the internet has provided endless positive applications in relation to social justice, communication, business efficiency, knowledge sharing, and convenience. But today many critics, including Shoshana Zuboff (2019, p. 309) *and* Jaron Lanier, are *not* OK with the way the internet is being used to surveil and control us. Lanier (2018) lists ten arguments for immediately deleting your social media accounts "to resist the insanity of our times." Among his arguments: You are losing your free will. It is making you obnoxious. It is an assault on the truth. They are destroying your capacity for empathy. It is making you unhappy, and it is making politics impossible. He says we are all lab animals now, but at we can at least be more like cats with our dignity intact, rather than like sycophantic dogs trained to do their master's bidding. A cat can remain autonomous and still in charge of its life while still being integrated into the modern high-tech world. A dog is an obedient slave that responds to dog whistles only they can hear. Lanier has deep concerns with a tech industry that is constantly refining its ability to monetize data extracted from human behavior, which they then use to manipulate the choices people make for even more profit. At the very least, Lanier wants users to be paid for sharing their data. And if we are like cats, he says, we may still keep some social media accounts anyway just because we like them and no one can tell us what to do.

Until recently most social media users have been unconcerned or unaware of the predatory feedback loop that is turning them into obedient slaves, or how the lack of oversight has allowed tech companies like Amazon, Google, Apple, and Facebook to quickly become some of the richest and most powerful companies ever created. Surveillance Capitalism is "a new economic order that claims human experience as free raw material for hidden commercial practices of extraction, prediction, and sales." (Zuboff, 2019). It has been blamed for tech addiction, data-mining for profit, misinformation, diminished creativity, and depression. Fifty-nine percent of American teens have experienced at least one of the six types of cyberbullying (Pew, 2018).

Increased anxiety and depression among teenagers also correlates with the rise of social media (Vidal, et al., 2020). There are also widespread concerns related to behavior modification, search neutrality, antitrust issues, censorship, loss of privacy, political polarization, and threats to democracy.

Tristan Harris (2017), former design ethicist for Google who studied at the Persuasive Technology Lab at Stanford, in a presentation to his colleagues in 2006, stated that 50 software designers, "20 to 35 year old white guys in California," were making decisions for two billion people, primarily based on maximizing profit (Orlowski, 2020). Google was monetizing its search engine through a "race for our attention" that overrode ethical concerns. Harris, along with growing numbers of former insiders, including the former president and vice-president of Facebook, Sean Parker and Chamath Palihapitiya, decry how companies specializing in information technology know that fear and outrage gets our attention more than a calm newsfeed, and misinformation or advertising precisely targets the most susceptible people. Harris believes that in the same way magicians exploit our psychological and cognitive vulnerabilities, certain companies exploit unconscious habits, misdirection, and subliminal messaging to direct our attention where they want.

As Harris (2017; Orlowski, 2020) also points out, the predominate Silicon Valley truism is that when we do not pay for the products we use, advertisers pay for them, thus making us the product. Zuboff (2019, p. 377) goes even further, comparing our personal data to ivory tusks and tech companies to elephant poachers, "You are not the product, you are the abandoned carcass. The 'product' derives from the surplus that is ripped from your life." However it is framed, what Zuboff calls "Big Other" is in the objectifying business of grabbing and commodifying our attention. "It's the classic race to the bottom when you have to get attention," according to Harris "The only way to get more is to go lower on the brain stem, to go lower into outrage, to go lower into emotion, to go lower into the lizard brain." As a result, only inattention, or worse—sleep—is an even bigger threat to their profit stream than their competitors. Lanier (Orlowski, 2020), on the other hand, holds the "you are the product" view to be a bit simplistic. Rather, for him, "it's the gradual, slight, imperceptible change in our own behavior and perception that is the product." But because we are talking about the whole world, even gradual, small changes still involve a lot

of money that can cause a lot of harm. "Persuasive surveillance and constant subtle manipulation," according to Lanier, "is unethical, cruel, dangerous, and inhumane."

Chamath Palihapitiya, the former vice president of user growth at Facebook, said in 2017:

> "The short-term, dopamine-driven feedback loops that we have created are destroying how society works: no civil discourse, no collaboration, misinformation, mistruth and it's not an American problem. This is not about Russian ads. This is a global problem. Facebooks algorithms are a threat to democracy. It is eroding the core foundations of how people behave by and between each other." (Vincent, 2017)

Amid his "tremendous guilt," Palihapitiya's solution was to quit Facebook in 2011, and stop using social media. With the capital he has raised, he then focused on structural changes he can control. After voicing similar concerns and leaving Google, Tristan Harris co-founded the Centre for Humane Technology (humanetech.com). As its president, he has helped develop a list of principles designed "to align the goals of the persuader with the goals of the persuadee….What we need to recognize is that the human architecture is limited," says Harris "and that we have certain boundaries or dimensions of our lives that we want to be honored and respected, and technology could help do that." (Harris, 2017) Social media is not just a tool, it demands something from you. Instead of a tools-based tech environment, our environment is manipulating and addicting us. Calling the people who use social media "users" (like "drug *users")* emphasizes the addictive nature of this new technology. The tools now have their own goals just as drug dealers have their own goals (Harris/Orlowski 2020). Whether human concerns expressed through ethical guidelines and politics are respected or not, information technology will continue to ascend in influence, with the potential for good and evil. Palihapitiya, for example, soon after his harsh criticism of social media said that overall Facebook is doing good in the world thus reminding us that how a tool is used makes all the difference (Lanier, 2018, p. 9). Even more dramatic changes, whether consisting of promise or peril, are now in the pipeline.

3.3. Artificial General Intelligence, Consciousness and Quantum Biology

Artificial General Intelligence, where computers surpass any human intellectual task, is only a theoretical possibility largely because we do not yet understand the nature of consciousness. But nature routinely produces consciousness in humans (and presumably in other living creatures), so it is safe to assume that humans and their machines will figure it out. When we do, we might be able to reverse engineer it in a digital or quantum mechanical substrate, where it can dwell in servers and the computational cloud. A possible clue to solving this riddle was the recent discovery that biological systems host quantum computation. To this point, a small but growing numbers of biologists, neuroscientists, physicists, and social scientists believe that humans might be less defined by classical computation than by quantum mechanical processes. Previously it was believed that macroscopic quantum coherence was not possible, especially in a "warm, wet, noisy" environment. Now it may be possible that the quantum effects of superposition, entanglement, and non-local causation remain coherent when scaled up to the macroscopic world of feeling, human behavior and consciousness. This could make understanding human nature vastly more complicated. But quantum computing might rise to this new challenge if it provides the key to understanding human behavior without resorting to anything metaphysical. Whatever the nature of consciousness is, it must belong inside the "causal closure of physics." This means that all of reality, including consciousness and all social behavior, is in some sense physical, even if the boundaries of what is physical have to be expanded to account for unresolved mysteries.

Reductionist assumptions led to many to believe that consciousness could emerge from classical computers. In the late 1990s and early 2000s, inventor Ray Kurzweil made very specific predictions about the future of humanity in relation to accelerating computation. Following von Neuman, I.J. Good, and Vinge, Kurzweil saw history culminating in a "technological singularity" where humans would merge with sentient, recursively self-improving computers (see fig. 4.1.a). When Kurzweil's *The Singularity is Near* was published in 2005 he estimated that a functional simulation of the human brain would require 10^{16} calculations per second. The world's fastest supercomputers already far exceed this speed, and exascale computers (10^{18} cps) are already in development in 2020. In April 2020, the collective, globally distributed computing Folding@home network surpassed 2.5 exaFLOPS (faster than the 500 top supercomputers) while analyzing Covid-19 (Hruska, 2020). Despite such prodigious computing power, there is no

evidence that a supercomputer or distributed network has any more consciousness or self-awareness than a rock.

Dataism is the idea that mathematical laws apply to both biochemical and electronic algorithms. This assumption is now accepted across every scientific discipline, including neuroscience. From this it follows that companies using non-conscious algorithms will increasingly understand and control humans and their enterprises using classical computation (Harari, 2017. p. 428). However, Dataism leaves out any plausible explanation for consciousness, because there is still no indication that it will emerge from digital computation. Philosopher Daniel Dennett (1991, pp. 309, 406), for example, has dismissed consciousness as an accidental byproduct of evolution and an "illusion."

Meanwhile, Alexander Wendt (2015), a social constructivist in the field of international relations, uses quantum biology and quantum consciousness theory to propose a quantum social science. It is based on the idea that quantum effects reach beyond the microscopic world of quantum mechanics and into the macroscopic world of human behavior. To support this view, Wendt references anesthesiologist Stuart Hameroff and Nobel-prize-winning physicist Roger Penrose's Orchestrated OR theory, and physicist Giulio Tononi's Integrated Information Theory (IIT) (Koch, C.,Tononi, G. 2008; Tegmark, 2017, pp. 381-315). Hameroff and Penrose (2014) theorize that consciousness arises through quantum processes in the microtubules in the neurons. The recent finding that quantum computing occurs in the human brain, in bird navigation and (perhaps) in photosynthesis, lends support for what they call "Orchestrated Objective Reduction." All of this together has given rise to the new field of quantum biology. Tononi's IIT, a modern form of panpsychism, posits that some form of consciousness is intrinsic to matter all the way down to the molecular level. Coupled with quantum biology, this would increase the possibility that quantum computers might eventually be conscious.

The strongest arguments for Wendt's quantum social science is that quantum decision theory predicts every single one of the Kahneman-Tversky anomalies that have been bedeviling classical decision theory. The implications for the future of IT and all human affairs would be profound if the puzzle of consciousness were solved and computers or the hive mind permeating cyberspace became minded. But whether the Internet-of-all-Things will function automatically

or become self-aware, the steps we should take are still the same. How we usher in the new era of computing, whether computers are functioning like highly intelligent zombies or as a new form of conscious life, depends entirely on how we manage global governance and the ethical questions surrounding AI.

3.4. Toward Democratic Solutions

Regulations in most countries currently allow tech companies to mine our personal data to enhance their advertising revenue, while providing various "free" services. In the second quarter of 2020 Facebook had 2.7 billion users, making it the world's largest social network. It might have another billion users if WeChat—the "app for everything"—did not have a monopoly in China, where heavily censored users are subject to mass government surveillance on all emails, texts, money transfers, video conferencing, phone calls, photos, and posts, as well as location sharing. Siva Vaidhaynanthan, author of *Antisocial Media*, and Annalee Newitz worry that Facebook, like other companies, might be willing to further compromise its already questionable values in order to reach Chinese users (Newitz, 2019). In the Commerce and Judiciary hearings (2018), Facebook founder and CEO Mark Zuckerberg told Senators that, despite the political data-mining company Cambridge Analytica being inadvertently given access to the profiles of some 87 million people, Facebook made money by selling ads, not by selling data to advertisers. He promised changes, including enhanced privacy settings and the possibility of a paid version that would be free of ads. Zuckerberg also stated that AI will help with the problem of sorting out hate speech and other troublesome posts.

Tech companies are not inclined to limit their profits through self-regulation. The proper setting is a regulatory environment, shaped and maintained through the representatives of a well-informed citizenry. But IT services have be marshaled to help as well because humans by themselves cannot keep up with the growth of artificial intelligence or its applications. The perennial problem of governments and organized religious interests seeking to ignore or distort reality in the service of power now compete for our attention with online platforms. Such actions call for a concerted effort to establish a global framework for security and mutual benefit just as

air traffic regulations and safety standards keep air disasters at a minimum in all countries. The Future of Life Institute, with its efforts to guide the ethical development of AI, seeks to do just that, for example.

Malign or misguided forces have always arrayed themselves against liberal democratic ideas, but the best defense is truth, transparency, and alluring power. This is also why a trustworthy clearinghouse for information, studies, expert opinion, reliable surveys, and other data has to be independent of any government and freely available to all. But dishonesty is a powerful adversary. The old adage "A lie travels around the globe while the truth is putting on its shoes," has been affirmed by researchers, who in one analysis of Twitter showed that it takes about six times as long as falsehood to reach 1500 people (Vosoughi, et. al, 2018). If algorithms, built upon data collected by media platforms, amplify human biases and spread lies much faster than the truth, then algorithms will have to be devised that neutralize biases and direct people toward factual, pragmatic, and humane solutions.

In regards social media, Safiya Umoja Noble suggests "slow media" whereby public platforms set limits on how fast content would load, thus allowing for facts to compete with lies through a curation system (Newitz, 2019). As long as "slow" does not actually make a search substantially slower, but rather acts as a filter, it could work, but it would have to curated by algorithms designed by independent engineers. Wikipedia's volunteer editors as well as algorithms are already used to deal with spam and misinformation, but an encyclopedia is a different animal from a search that turns up a billion hits. For example, to deal with scattershot hits that might mix graphic sexual images with Disney characters, Noble proposes "The Imagine Engine" where all search results are presented in a visual rainbow of color. This "highly transparent interface" symbolizing different categories, might have green for business, red for pornography, orange for entertainment, and so forth (Noble, 2018 p. 180).

John Scalzi would begin with "an intense emphasis on the value of curation," so that each of us would decide what we want to see, and our profiles would begin with the assumption that everyone and everything is blocked (Scalzi quoted by Newitze 2019) "Slow, human-curated media would be a better reflection of how in-person communication works in a functioning democratic society (Newitze 2019)." Lanier (2018) would have us stop using social media

altogether or force them to pay us for the data used with our permission. This would still allow for advertising where users did not pay for ad-free access.

During the 2020 presidential election when rival Joe Biden began to pull ahead in the vote count, President Trump attempted to stop the count with numerous false claims about fraudulent voting, and began filing lawsuits to subvert election (Roose, 2020). Most major news outlets cut off live coverage of the president immediately after he made false statements and explained the facts to their listeners. Social Media also exerted controls: Trump's Twitter statements were labeled with "potentially misleading" notices, as had first been done in May 2020, and his tweets were linked to factual information. For its part, Facebook removed a group page titled "Stop the Steal" that was spreading misinformation and calling for violence. Predictably, Trump responded that Twitter was "stifling FREE SPEECH," while supporters saw conspiracies afoot and became even more entrenched.

The problem of conspiratorial thinking, misinformation, blocked access, or autocratic regimes failing to adopt international safeguards is seemingly intractable. Without enforceable international agreements allowing everyone access to well-organized information, autocrats will continue to control internet access. This will continue to result in counter-efforts to circumvent the censors as part of the ongoing cyberwar between the democrats and the autocrats. Reducing tensions through diplomacy and resisting any attempts to block free access to accurate information could accelerate the long term trend toward global democratization. The task of democratization and ensuring human rights requires sophisticated information technology, while also creating new perils. Dinah PoKempner, General Counsel with Human Rights Watch (2019) fears that relying on big data and trusting algorithms to help or replace human decision-making could cost us to "lose faith in our own ability to discern the truth and assign responsibility for bad decisions." She believes it is nearly impossible to vindicate human rights without holding individuals to account.

One way to combine factual data with individual and collective wisdom is by creating ethically grounded, rules-based, independent, open source, not-for-profit, public policy wikis. With the acceleration of computing, such wikis might very soon become answer engines capable of interacting with any person in their own language. As a proof of concept, I began working in

2015 on two public policy wikis collectively known as LOGOS (Arth, 2015). Except for the home page (LogosWiki.org) and nascent articles that are still accessible, I had to shut it down to public access because it quickly became swamped with spam. Obviously, such a scheme would have to be well-funded, and tended by contributors and editors, as is the case with Wikipedia. Whether LOGOS becomes successful or not, I believe that something along this idea will eventually help us deal with policy questions and offer well-constructed, evidential solutions to a vast range of political problems.

There are already numerous fact-check sites that are being ignored by people who appear to be resentful and outraged that their truth claims are being debunked. The truth is nuanced, but the disenfranchised tend to look for simplistic narratives (Lewandowsky & Cook, 2020). Conspiracy theories help people cope with threats and uncertainty, explain unlikely events, and challenge mainstream politics. Orwell's dystopic vision of a totalitarian surveillance state, combined with the realities of authoritarianism and distrust of various individuals and institutions, has informed New World Order conspiracists who claim that a totalitarian world government, composed of power elites, is plotting behind the scenes (Fenster, 2008). Even health recommendations, regarding basic precautions such as masks and social distancing to prevent the spread of Covid-19, is being seen as tyrannical by many protestors. This occurs despite themselves having often been manipulated, encouraged, and organized by actual power elites and populists seeking to prematurely reopen the economy or challenge political rivals. Many conspiracy theories are entirely divorced from reality. Some anti-vaxxers, for example, believe that Bill Gates is promoting vaccines in order to implant digital tracking devices in people as part of a nefarious New World Order plot (Lynas, 2020). So any proposals to organize global governance, even if they are sincere and practical, will still be viewed with skepticism by many, and with outright paranoia by some. To counter such beliefs, the case has been made here for developing empathetic, problem-solving tools that could provide accurate information, debunk false stories, reduce political extremism, restore trust, and distribute power more equitably.

Harari (2017. p. 214) defines religion as a deal and spirituality as a journey: "Religion gives a complete description of the world, and offers us a well-defined contract with predetermined goals…If you obey God, you'll be admitted to heaven. If you disobey Him, you'll burn in hell. The very clarity of this deal allows society to define common norms and values that regulate

human behavior." Approached on these terms, but without the dogma, evidence-based governance offers both a deal and spirituality in a vast universe where meaning is something we create for ourselves. The deal is: if you use reason and evidence to seek the most compassionate and efficient way to solve problems and make rules, you will stand the best chance of helping to create heaven on earth. If not, get ready for purgatory, if not hell. The spiritual aspect is that our truth-and-justice-seeking enterprise is an individual and collective journey without a fixed script or predetermined destination, which is also the best chance we have for creative solutions, and self-fulfillment in the world we actually live in.

Ideologues and tyrants fear diminution of their power. But it will be difficult to criticize an independent, open-source, evidence-based organization that offers free expert advice shaped by an inclusive community of interested persons. As a result, policy proposals could be somewhat depoliticized, thus allowing discourse to become more rational and less emotionally charged. Presumably in a neutral environment, instead of fallacies and biases being marshaled by partisans trying to win over voters to their cause, good ideas could be more easily recognized for what they are. In our current political environment, a proposal's acceptance is dependent not only on how it is framed but also on which party proposed it. For example, environmentalism was once considered a frivolous, right-wing cause championed by the landed gentry not wanting their duck hunting or views of nature to be ruined (Pinker, 2018, p. 382-386). But today many Republicans disrespect science, and perform "spectacles of inanity," as exemplified by Senator James Inhofe of Oklahoma, chair of the Environment and Public Works Committee. In 2015, Inhofe conflated weather with climate by bringing a snowball from outside onto the Senate floor in an attempt to ridicule the fact of global warming.

Like self-driving cars, a tech-based system that improves on global politics would not be perfect at first, but with more data and contributors it will improve quickly, and its road test and upgrades can take place in full view of the public and its critics. Politics is a reflection of human behavior that can be quantified. It was shown by Paul Meehl in 1954 that simple actuarial formulas outperformed psychologists in "in predicting psychiatric classifications, suicide attempts, school and job performance, lies, crime, medical diagnoses and pretty much any other outcome in which accuracy can be judged at all." Furthermore, according to Pinker (Pinker, 2018, p. 403), "Meeh's work inspired Tversky and Kahneman's discoveries on cognitive biases

and Tetlock's forecasting tournaments, and his conclusion about the superiority of statistical to intuitive judgement is now recognized as one of the most robust findings in the history of psychology." Algorithms, coupled with human insight, could create a new form of greatly enhanced individual and collective self-awareness.

Lanier (2006) argues that Wikipedia or other attempts to collectivize wisdom through anonymous editors devalues and oppresses the individual. Wikipedia certainly has its weaknesses, but in matters of public policy a wiki that collects data and forms a point of view could provide both anonymous and non-anonymous portals where individuals can take responsibility for their viewpoints, or hide their identity where they feel revealing themselves might lead to persecution. A public policy wiki might be a way to further address the concern of engaged, relational social scientists who feel they have too little influence on evidence-based public policy. It might also appeal to those traditionalists who believe a boundary between academia and politics protects them from being corrupted in their search for the truth (King 2018, pp. 3, 8, 136, 142)). Such a platform could speed up the adoption of social scientific knowledge so that it does not bog down in academic backwaters or languish in ivory towers, while simultaneously weeding out misinformation. It could also allow knowledge to be accessible and comprehensible in everyday language to any curious person. It would involve the democratization, but not the commercialization or corruption of knowledge, thus making public policy decisions less contentious. The relational work of social scientists would be greatly simplified so they could "make a difference in the real world," and both political leaders and their constituents would have the knowledge they need to make consensual, clear-headed decisions about the rules that govern society. The reason to keep presenting information in a clear, honest, consistent fashion is that success in global politics depends on soft power (Nye, 2004).

There are already many reliable sources that verify information for anyone who cares to look. A public policy wiki could consolidate and link to sources. For example, The Media Manipulation Casebook (mediamanipulation.org) is a team of interdisciplinary researchers led by Joan Donovan, PhD. They link methods, theories, and practice in a digital research platform in order to detect, describe, document, and debunk misinformation. The fact-checking website, snopes.com, initially created in 1994 as the Urban Legends Reference Pages bills itself as "the

internet's go-to source for discerning what is true and what it total nonsense." In 2019, Snopes acquired the website OnTheIssues.org, which had extensive archives that provide information on the policy positions of various candidates. These sites even check each other's facts. FactCheck.org, for example reviewed Snopes in 2009 and pronounced it free of bias. There is also StraightDope.com, TruthOrFiction.com, and Wikipedia's "List of common misconceptions."

IBM's Think Policy at IBM.com has a government and regulatory affairs team which advocates for policies that drive growth and innovation in the digital economy. Their objective is "global consistency and local relevancy." Organizations of all types will seek to shape policy, but any time private interests are involved there is likely to be bias, advocacy, and lobbying. Watson Health, a commercial product created by IBM, potentially has more credence because it tackles artificial intelligence in healthcare, a topic that is based on medical science rather than politics. However, Eliza Strickland (2019) criticized Watson Health as being "a cautionary tale of hubris and hype…that overpromised and underdelivered" following a 2011 demonstration of Watson's natural-language processing abilities in defeating human players on *Jeopardy!* Nevertheless the idea that taking patients' symptoms and producing probabilistic and annotated diagnoses, coupled with any other observations that would exceed a doctor's ability to reasonably make, is likely to improve health care. In some areas, IBM's AI has already proved itself superior to humans in image analysis and genetic analysis.

In a reassessment of Huntington's *Political Order in Changing Societies,* Fukuyama (2011) criticized the Americanized version of modernization theory as "the sunny view that all good things went together: Economic growth, social mobilization, political institutions, and cultural values, all changed for the better in tandem." Modernization theory leaves out the crucial ingredient that could actually make all goods things go together: a way to check and balance all these elements in a coordinated and transparent system of information management. If we could find that balance, truth could then beat falsehood in the most important race of all.

4. CONCLUSION

We humans are a diverse yet cooperative species that has built an immensely complex web of power relationships famously defined by Lasswell (1936) as who gets what, when, and how. In a process that began in earnest during the industrial age, previously isolated and often warring cultures have been consolidating—in fits and starts—into an increasingly peaceful world. People everywhere now belong, to varying degrees, to a global culture where the Enlightenment values that define liberal democracy are widely respected, even as special interests and governments still attempt to subvert them. We have examined the various problems associated with human reasoning, cognitive, emotional and rhetorical biases, and the actions of some to manipulate and dominate others, both in social media and in politics. The Liberal International Order is breaking down in regards a number of factors, including corruption, increasing inequality, global warming, rising nationalism, populism, xenophobia, and overpopulation. The weaknesses that allow people to accept leaders and policies that are counter to their own objective self-interest can be overcome with the help of ethically applied algorithms. To accomplish this goal, avarice could be constrained with regulatory structures that incorporate knowledge and data in a constructive and comprehensible way so that consensus can be reached to determine the most judicious path forward.

Information technology and globalism are presenting unprecedented challenges as well as the opportunity to finally unite humanity. An information gap divides citizens from contextualized data and a cognitive gap prevents most people from understanding how to interpret it in a way that benefits humanity. Responsible journalists, academicians, fact-check websites, and even Wikipedia reflect the desire to bring evidence-based information to the public. In politics, such efforts rely on the electorate's willingness to critically evaluate the flood of competing voices and make informed choices. I believe that scaled-up wikis and answer engines that incorporate both anonymous and non-anonymous input could create an efficient accounting and advisory organization that can sort out for each person, each country, and all of us together, increasingly cogent policy decisions. Such a system could enhance each person's ability to participate, learn facts, practice critical thinking, and reap the rewards of evidential individual and collective decisions. As with Wikipedia, LOGOS would have its limitations and biases, and it would likely

replicate and reflect existing power structures to some extent. This would still not preclude it from being a useful advisory tool that could be improved upon with use, as is the goal with governance.

In any case, any efficient and responsive political system has to be based on the free flow of data accurately describing all aspects of society. LOGOS could rely on ordinary people, academics, specialists, and algorithms, presented in real time along with highly accurate, fine-grained surveys and data gleaned from everyone and everything everywhere. It could deliver accurate and tamper-proof election results. It could be the Internet-of-all-Things, but guided by evidence-based, informed opinion. Eventually such an organization might exhibit self-aware consciousness and represent Earth as a collective entity. But even before that happens, it could accomplish much with non-conscious algorithms and humans working together in a truth-seeking enterprise.

Some believe that liberalism will die with the rise of information technology, as control over the rules slips away from the majority and flows into the hands of the few who control the algorithms. But as long as algorithms are used to ensure that the highest human aspirations and qualities are used for the good of all, then a new kind of shared liberal order can arise that will loosen the Gordian knot of authoritarianism without resorting to the sword. Information technology regulated for the common good could be the very definition of aspirational soft power, consisting of free information and knowledge, allowing every person to hear and be heard. Though its objectivity, universality, inclusivity, and verisimilitude, people could work together by combining their boldest tool, information technology, with their scarcest resources—evidence, knowledge, humility and trust—in order to improve governance. In the process of applying observations and analysis laid out for all to see for themselves and constantly refine, we can increase the odds of reliably and consistently changing the world for the better.

BIBLIOGRAPHY

Altschuler, G. 2019. “A reality-based game for Trump watchers: ‘name that fallacy.’” The Hill, 16 May 2019

Arth, M.E. 2008. “UNICE” Consciousness Research Abstracts, Journal of Consciousness Studies, 2008, p. 151.

Arth. M.E. 2010. *Democracy and the Common Wealth: Breaking the Stranglehold of the Special Interests,* Golden Apples Media, pp. 429-439.

Arth, M.E. 2015. **“**UNICE Global Brain Project: Creating a global, independent, public-policy answer-engine”… http://unice.info/unice/UNICE-ARTICLE-Jan%202015.pdf

Blunden, H., et al. 2019. “Seeker beware: the interpersonal costs of ignoring advice,” Elsevier. 20 December 2019.

BBC News, 2017. “Google’s 'superhuman' DeepMind AI claims chess crown” 6 December 2017

Beeman, R., n.d. “Perspectives on the Constitution: a republic, if you can keep it.” National Constitution Center.

Boot, M. 2020. “Coronavirus lays bare all of the pathologies of the Trump administration,” The Washington Post, 26 February 2020.

Brosnan, S. 2013. “Justice-and-fairness-related behaviors in nonhuman primates.” PNAS. 18 June 2013. https://bit.ly/34UesCj

Burge, R. 2018. “Authority, Authoritarianism, and Religion” Online Publication Date: Nov 2018

Campbell, C., 21 Nov 2019, “‘The entire system is designed to suppress us.’ What the Chinese surveillance state means for the rest of the world.” Time Magazine.

Campbell, J. 1987. *The Power of Myth*, Interview with Bill Moyers. PBS television series. As quoted at https://pantheism.com/about/luminaries/joseph-campbell/]

Chait, J. 2020, “Trump, I was right, coronavirus cases ‘will go down to zero, ultimately.’ 28 April 2020.

Chotiner, I. 2020. “The real objective of mob violence against Muslims in India.” *The New Yorker*, 28 February 2020.

Cole, C. 2020. “Trump admits that easy voting would defeat Republicans. That’s because they’ve made their base white and Evangelical.” *Informed Comment,* 31 March 2020.

Commerce and Judiciary Hearing, 10 April 2018. “Hearing before the US Senate Committee on the Judiciary and US Senate Committee on Commerce, Science and Transportation.” https://bit.ly/3mz9QYh

Dennet, Daniel. 1991. *Consciousness Explained*. Little, Brown and Co.

Dorrier, J. 2015. “Infographic: Trillion-Fold Rise in Computing Puts a 1984 Supercomputer on our Wrists,” Singularity Hub. 25 May 2015.

Dunning, D. 2011. “The Dunning-Kruger Effect: On Being Ignorance of One’s Own Ignorance.” Advances in Experimental Social Psychology, Vol. 44, pp. 247-296.

Economist Magazine. 6 May 2017. “The world’s most valuable resource is no longer oil, but data.”

Economist Magazine, 18 April 2020. “The economic crisis will expose a decade’s worth of corporate fraud: Downturns are accounting crooks’ worst enemy”

Fenster, M. 2008. *Conspiracy Theories: Secrecy and Power in American Culture* (2nd ed.). University of Minnesota Press.

Fish, M. 2002. Islam and Authoritarianism. World Politics, 55(1), 4-37. doi:10.1353/wp.2003.0004

Freedom House. 2019. “Freedom on the Net survey” https://freedomhouse.org/report/freedom-net/2019/crisis-social-media

Fukuyama, F. 2011. “Samuel Huntington’s Legacy: Why his works on world order -- political and otherwise -- are still relevant today.” Foreign Policy, 6 January 2011.

Gander, K. 2019. “What do evangelical Christians really think about climate change?” Newsweek, 19 September 2019.

Gebrekidan, S. 2020, “For autocrats, and others, Coronavirus is a chance to grab even more power.” New York Times. 30 March 2020.

Good, I.J. 1965. “Speculations concerning the first ultraintelligent machine.” Advances in Computers, Volume 6. Academic Press, NY. Franz L. Alt and Morris Rubinoff, eds., 31-88, 1965, Academic Press.

Haass, R. 2020. “The Pandemic Will Accelerate History Rather Than Reshape It,” Foreign Affairs, 7 April 2020.

Hameroff, S. and Penrose, R., 2014. “Reply to criticism of the ‘Orch OR qubit’ – ‘Orchestrated objective reduction’ is scientifically justified”. *Physics of Life Reviews*. Elsevier. **11** (1): 94–100. March 2014.

Harris, T. 2017 “How a handful of tech companies control billions of minds every day,” TED2017, https://bit.ly/3kxqHKq.

Harari, Y.N. 2015. *Sapiens: A brief history of humankind*. Harper Collins.

Harari, Y.N. 2017. *Homo Deus: A brief history of tomorrow*. Vintage.

Harari, Y.N. 2018. *21 Lessons for the 21st Century*. Jonathan Cape (Vintage).

Heje, J. 2002. "Aldous Huxley," In Harris-Fain, Darren (ed.). *British Fantasy and Science-Fiction Writers*, 1918–1960. Detroit: *Gale Group*. p. 100.

Hruska, J. 16 April 2020. "Folding@Home now more powerful than all the supercomputers on Earth."

Human Rights Watch, 2019. "Israel and Palestine: Events of 2018." https://www.hrw.org/world-report/2019/country-chapters/israel/palestine

Huntington, S. 1968. "Political Order in Changing Societies," Yale University

Huxley, A. 1932. *Brave New World*, Chatto & Windus

Kahn, J. 2020. "How scientists could stop the next pandemic before it starts" New York Times. 21 April 2020.

King, J 2018, 'From Social Science Knowledge to Public Policy Making: The 'Relational' and 'Epistemic' Work of Academic Social Scientists', Ph.D., Royal Holloway, University of London.

Knock, T. 2019. *To End All Wars, New Edition: Woodrow Wilson and the Quest for a New World Order*. Princeton University Press.

Koch, Christof and Guiulio Tononi. 2008. "Can Machines Be Conscious?" IEEE Spectrum, Vol. 45, No. 6, pages 55–59; June 2008.

Lanier, J., May 2006, "Digital Maoism: The Hazards of the New Online Collectivism," Edge magazine.

Lenin, V.I. 1909, 1999. "The attitude of the Worker's Party to religion," Collected Works, vol. 15, p. 402-413. Lenin Internet Archive.

Krugman, Paul. 2009. *The conscience of a liberal.* Norton.

Krugman, P., 9 April 2020. "American democracy may be dying: authoritarian rule may be just around the corner,"

Kurzweil, Ray. 2005. *The Singularity is Near: When humans transcend biology*, Penguin Group.

Lanier, J. Jan 1998. "Taking stock: So, what's changed in the last five years?", Wired Magazine, p. 60

Lanier, J. 2018. *Ten Arguments for Deleting Your Social Media Right Now*. Henry Holt.

Lasswell, H. 1936. *Politics: Who Gets What, When, How*. New York: Whittlesey House

Lewandowsky, S., Cook, J. 2020, *The Conspiracy Theory Handbook,* http://sks.to/conspiracy

Linden, D. 2011. “The Singularity is Far: A Neuroscientist's View,” Boing Boing.

Lynas, M. 2020, “COVID: Top 10 current conspiracy theories,” *Cornell Alliance for Science*.

Mazower, M. 2012. *Governing the World: The History of an Idea*, Penguin Books.

Newitz, A., 30 Nov. 2019. “A Better Internet is Waiting for Us: My quest to imagine a different reality.” New York Times.

Newport, Frank, “In US, 42% Believe Creationist View of Human Origins,” Gallup, 2 June 2014

Nobel, S. 2018. *The Algorithms of Oppression*, New York University Press.

Nye, Joseph S. 2004. *Soft Power: The Means To Success In World Politics.* Hachette UK

Orlowski, J. 2020, *The Social Dilemma* (docudrama), directed by Jeff Orlowski, starring Tristan Harris, Shoshana Zuboff, Jaron Lanier and others. Netflix.

Oosterhoff et al., 15 January 2018. “Is that disgust I see? Political ideology and biased visual attention.” Behavioral Brain Research, volume 336, pp. 227-235.

Otlet, P. 1903. *The science of bibliography and documentation*. In W.B. Rayward (Editor and translator 1990) . The international organization and dissemination of knowledge: Selected essays. Amsterdam: Elsevier.

Otlet, P. 1934. *Traité de documentation: le livre sur le livre, théorie et pratique*. Editiones Mundaneum, Brussells. 1989 reprint, quoted in English by Hahn & Buckland. 1998. *Historical Studies in Information Science*. Information Today.

Palmer, J. 2016, “What China didn’t learn from the collapse of the Soviet Union.” Foreign Policy, 24 December 2016.

Pednault, E., et al., 2019. “Leveraging Secondary Storage to Simulate Deep 54-qubit Sycamore Circuits,” Cornell University, 22 October 2019, arXiv:1910.09534v2 [quant-ph]

Pew. 2010.“Jesus Christ’s Return to Earth,” Pew Research Center. 14 July 2010.

Pew, 2012. “The Global Religious Landscape,” 18 December 2012

Pew, 2013. “The World’s Muslims” Religion, Politics and Society,” 30 April 2013.

Pew, 2015. “Religion and Views on Climate and Energy Issues,” 22 October 2015.

Pew, 2018. “A Majority of Teens Have Experienced Some Form of Cyberbullying,” 27 September 2018.

Pew, 2020. “White evangelicals see Trump as fighting for their beliefs, though many have mixed feelings about his personal conduct.” 12 March 2020.

Piketty, Thomas. 2014. *Capital in the 21st Century*, Belknap Harvard.

Pinker, Steven. 2018. *Enlightenment Now.* Penguin Random House UK.

PoKempner, D. 2019.“Can algorithms save us from human error? Human judgement and responsibility in the age of technology.” *Human Rights Watch,* World Report 2019.

Polanyi, Karl. 2001. *The Great Transformation.* Beacon Press.

Pomerantsev, P. 2014, *Nothing is True and Everything is Possible.* Public Affairs. ISBN 978-1-61039-455-0

Ray, T., 2019, “What the Google vs. IBM debate over quantum supremacy means,” ZDNet. 30 October 2019.

Reich, R. 2015. *Saving Capitalism: for the many not the few*, Vintage.

Reich, R. 2018. *The Common Good,* Alfred A. Knopf.

Reporters Without Borders. 2020. “Joint op-ed: journalists are saving our lives, at a cost to their own.” 29 April 2020.

Repucci, S. 2020. “A leaderless struggle for democracy,” Freedom House.

Rieffer, Barbara Ann, “Religion and Nationalism: Understanding the Consequences of a Complex Relationship.” *Sage Journals.* Volume: 3 issue: 2, page(s): 215-242, June 1, 2003.

Roose, K., 5 Nov 2020. “On election day, Facebook and Twitter did better by making their products worse.” New York Times.

Saez, Emmanuel & Zucman, Gabriel Zucman (2019) *The Triumph of Injustice: How the Rich Dodge Taxes and How to Make Them Pay.* Norton.

Sanchez-Schmitz. G., et al., 2018. “Microphysiologic Human Tissue Constructs Reproduce Autologous Age-Specific BCG and HBV Primary Immunization in vitro,” *Frontiers in Immunology*. 20 November 2018.

Sheng, Y., n.d., “What is good governance?,” UNESCAP, United Nations, https://www.unescap.org/sites/default/files/good-governance.pdf

Soloman, S. 2015. *The Worm at the Core: On the Role of Death in Life.* Random House. New York

Springborg, R. 2007. The Middle East's Democracy Gap: Causes and Consequences. The Brown Journal of World Affairs, 13(2), 233-245. Retrieved April 6, 2020, from www.jstor.org/stable/24590583

Stafford, Tom. 26 Oct 2016. "How liars create the 'illusion of truth,'" *BBC FUTURE*.

Statista, 2018, "Volume of data/information created worldwide from 2010 to 2025."

Statista, Jan 2020, "Global digital population as of January 2020."

Stiglitz, Joseph. 2002. *Globalization and its discontents*," Penguin.

Strickland, E., 2 April 2019. "How IBM Watson Overpromised and Underdelivered on AI Health Care." IEEE Spectrum.

Suskind, R. 17 Oct 2004. "Faith, Certainty and the Presidency of George W. Bush," The New York Times Magazine.

Tainter, J. 1988. *The Collapse of Complex Societies*. Cambridge University Press.

Tasler, N. 28 March 2013, "Why we ignore good advice," *Psychology Today.*

Tegmark, M. 2017. *Life 3.0: Being human in the age of Artificial Intelligence*, Penguin Random House UK, 2017.

Ulam, S., May 1958, "Tribute to John von Neumann," Bulletin of the American Mathematical Society, vol. 64. no. 3, pp. 1-49.

United Nations, 1948. *The Universal Declaration of Human Rights.* https://www.un.org/en/universal-declaration-human-rights/

Velasquez-Manoff, 28 Aug, 2020. "The Brain Implants That Could Change Humanity." New York Times.

Vidal, C. et al. May 2020. "Social media use and depression in adolescents: a scoping review," Int Rev Psychiatry, 32(3): 235-253.

Vincent, J., 11 Dec 2017. "Former Facebook exec says social media is ripping apart society," The Verge.

Vinge, V. 1993. "Technological Singularity." https://bit.ly/3oGzRqy

Vosoughi, S., Roy, D., Aral, 2018. "The spread of true and false news online," Science, Vol. 359, Issue 6380, pp. 1146-1151. 09 March 2018.

Wang & Hernández. 2020. "Coronvirus crisis awakens a sleeping giant: China's youth" New York Times, 28 March 2020.

Warzel, C. “What We Pretend to Know About the Coronavirus Could Kills Us.” New York Times, 3 April 2020.

Wehner, P. 2020. “The President is unraveling.” *The Atlantic*. 5 May 2020

Wells, H.G. 1905. *A Modern Utopia*, Chapman & Hall

Wells, H.G. 1931. “Interview with H.G. Wells - sound,” British Movietone. 17 August 1931. https://www.youtube.com/watch?v=Z0CajpoApKM

Wells, H.G. 1933. *The Shape of Things to Come.* Hutchinson.

Wells, H.G. 1936. Lecture at the Royal Institution of Great Britain, Weekly Evening Meeting, 20 November 1936.

Wendt, A. 2015 *Quantum Mind and Social Science*. Cambridge University Press.

Wright, A. 2014. *Cataloguing the World: Paul Otlet and the Birth of the Information Age*. Oxford University Press.

Wright, Thomas. 2018. “The return to great-power rivalry was inevitable,” *The Atlantic*, 12 September 2018.

Zuboff, S. 2019, *The Age of Surveillance Capitalism: The fight for a human future at the nw frontier of power*, Hachette Book Group Inc.