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Governance In The Time Of The Technological Singularity

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Unless one is a security geek or a defense contractor, the public reports and analyses produced by military and security establishments are usually dull, boring, and quotidian – often deliberately so. This was not the case, however, with the 2021 report from the U.S. National Intelligence Council, *Global Trends 2040*. The massively disruptive impact of technologies on, well, everything is called out (at 2): “Novel technologies will appear and diffuse faster and faster, disrupting jobs, industries, communities, the nature of power, and what it means to be human”. Current institutions totter and fail (at 3): “Within states and societies, there is likely to be a persistent and growing gap between what people demand and what governments and corporations can deliver . . . old orders—from institutions to norms to types of governance—are strained and in some cases, eroding.” And good-bye Westphalian world order, because it isn’t just jostling among states anymore: “actors at every level are struggling to agree on new models for how to structure civilization.” Corrosive identity politics leaches away at the structure of the state itself (at 8):

“People are gravitating to familiar and like-minded groups for community and security, including ethnic, religious, and cultural identities as well as groupings around interests and causes, such as environmentalism. The combination of newly prominent and diverse identity allegiances and a more siloed information environment is exposing and aggravating fault lines within states, undermining civic nationalism, and increasing volatility.”

Well, then. All this angst leads to an obvious question: are current governance institutions still functional, and, if they are fading, can we speculate about what might replace them? It is this question I will explore in this and several subsequent blogs.

Core to any such inquiry is an understanding of the impacts foundational, accelerating change across the entire technological frontier is having on governance, institutions, society, and even individual psychologies. This is not new territory; indeed, this is really the concept of the “technological singularity” (TS) raising its head. Perhaps the interesting question here might be: if the TS were to be beginning, how would you recognize it, and how should people, and their institutions, respond?

Of course, the reality, or lack thereof, of such a singularity is debated, and as with all speculations about the future, it is best to regard the singularity as a scenario (“if this were to happen, then . . .”) rather than a prediction (“this is going to actually happen . . .”). But, if even the uberanalytical national security types are talking publicly about institutional and civic failure in a world of chaos, complexity, and technological surprise, some consideration of such a scenario might nonetheless be useful.

About that TS . . . While John von Neumann, the brilliant mathematician, physicist, computer scientist, engineer and polymath, appears to have been the first to mention a looming technological

singularity, the surge of current interest in the term really began with Vernor Vinge's 1993 essay "[The Coming Technological Singularity: How to Survive in the Post-Human Era](#)". Vinge, a professor of mathematics and computer science at San Diego State University, postulated that technological evolution, especially in the information sphere, would create a technological singularity, a hypothetical point at which autocatalyzed technological evolution becomes instantaneous, uncontrollable, and irreversible, and beyond which the future of human institutions and civilizations becomes entirely unpredictable. More recently, Ray Kurzweil has provided a slightly modified, more data driven, vision of such a singularity as technological evolution explodes in complexity and power. This is a helpful framing, in that it includes a ramp up period as technological progress shifts modalities from slow, linear growth to exponential growth.

So one might reframe the question: suppose we are entering the ramp up to the TS . . . how would we recognize it, and what are the implications for governance and practical geopolitics?

Well, to begin with one might be concerned when even the secretive intelligence community observes change at a scale that threatens existing institutions, identities, and social and national cohesion – and civilization itself. It need not be the classic singularity scenario for change to occur so rapidly, and so systemically, that most existing institutions, communities, and states fail. But this may be what the singularity looks like in the real world, such as it is these days.

Moreover, it is worth noting that, among many other functions, humans, their institutions, their societies, their governments, and their cultures and civilizations are information processing mechanisms. And it is notable that many of the critical technologies that are most obviously going exponential in capability, from chips and communications pipes to 5G, AI/big data/analytics, and networked information storage and sensing resources such as servers and sensors, are related to information processing and manipulation. And this technological evolution is mirrored by concomitant institutional change, ranging from social media to geopolitical weaponized narrative, which could not begin to emerge until the underlying technologies integrated and reached a critical threshold of power.¹ Whether the tsunami of information that characterizes this evolution constitutes a singularity may be open to interpretation; it is undeniably, however, substantial (Figure 1).²

¹ For more on the emerging cognitive ecosystem, see B. R. Allenby, 2021, "World wide weird: Rise of the cognitive ecosystem," *Issues in Science and Technology* Spring 2021, pp. 34 et. seq.

² Figure from T. Mestl, O. Cerrato, J. Ølnes, P. Myrseth, and I. Gustavsen, "Time Challenges – Challenging Times for Future Information Search," *D-Lib Magazine*, May/June 2009, Volume 15 Number 5/6, <http://www.dlib.org/dlib/may09/mestl/05mestl.html>, accessed September 2021. There are many similar images; what they all have in common is an exponential increase in information starting with the information revolution.

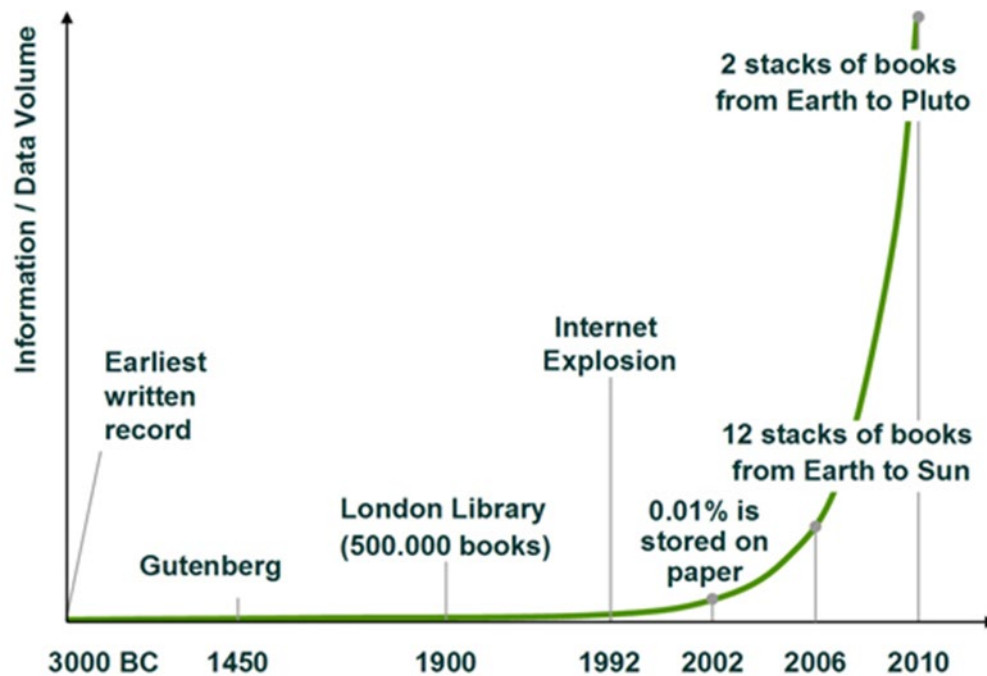


Figure 1: Information volume

Minds, disciplines, institutions, societies and cultures that have known nothing through their evolutionary history but linear progression in the information they need to process in the normal course of events are, not surprisingly, overwhelmed. They break.

Individuals are pushed away from Voltaire to Rousseau, away from rational, slow, deliberate thinking and decision-making, which is time and energy intensive, towards a different cognitive strategy that relies on fast, automatic and intuitive thinking based on heuristics, emotions, and other cognitive shortcuts.³ Increasingly they rely on, and become captive to, peer sentiment, tribal narratives and conspiracy theories, often shaped by foreign and domestic interests for their own ends using bot armies, sock puppet sites, and other information warfare tools. Media also reinforce these tendencies – and not just social media, which is powerful in shaping and maintaining tribal identities, but so-called mainstream media, from Breitbart and Fox News on the far right to the Washington Post and New York Times with their “moral clarity” on the left. While it is still common to read elegies about the mainstream media, that puts the cart before the horse: there is no mainstream media because there is no mainstream anymore. Fox News and the Washington Post serve their tribes as Walter Cronkite used to serve the United States. And it is important to recognize that people become tribal in psychological self-defense, not because they’re dumb or illiterate or evil, but overwhelmed by the information tsunami. And, of course, geopolitical adversaries are quickly learning to use information weapons, such as the weaponized narrative the Russians used to bias the Brexit vote in June of 2016, and the American

³ Those who are familiar with behavioral economics will recognize these cognitive patterns as System 2 thinking (slow, deliberate, energy intensive, and applied rationality) versus System 1 thinking (fast, automatic, intuitive thinking). All individuals have limited time and energy, and so favor System 1 thinking whenever possible. See, e.g., D. Kahneman, 2011, *Thinking Fast and Slow* (Farrar, Straus and Giroux, New York).

2016 Presidential election, to exacerbate the deleterious impacts of information overload on their targets.

The governance implications of the information tsunami are much broader than just undermining the Enlightenment idea of the rational voter or citizen, the basis of Enlightenment pluralistic governance systems. Consider, for example, freedom of speech. The Constitutional formulation of free speech is concise; unfortunately it is also obsolete and increasingly dysfunctional. Today, of course, one can scream all one wants in one's yard: if one is banned from social media, no one hears you. So operationally free speech isn't a matter of Constitutional law anymore, but a matter of the terms and conditions of service of the various social media platforms. The First Amendment also was designed for a period when national government, not private firms like Facebook, or Twitter mobs cancelling anyone they disagree with, were the powers that needed to be limited to protect free speech. Moreover, the First Amendment reflects a time when communication was slow and information sparse, the opposite of today's information and communication environment. It also reflects a period when we didn't know nearly as much about human cognition and how to manipulate it with information feeds, as can be seen by the success of Russian weaponized narratives in the Brexit vote and 2016 American election. Indeed, the First Amendment may well be dysfunctional under such conditions: direct Russian interference in U.S. elections is illegal, but once Russian narratives, scripts, and memes are embraced by domestic American tribes on the far right and the far left, it arguably becomes protected political speech. Concomitantly, the ability to precisely target small groups of individuals with custom messaging designed for their narrative and tribal identities in order to manipulate their behavior means that some of the classic mechanisms assumed by free speech adherents, such as the ability of dialog and rational discourse to help uncover "truth," are simply fantasies today. There can be no dialog when no one except a few know what is actually being said on social media. Arguably, the information tsunami has shifted the source of much socially accepted "truth" away from dialog resulting in general social agreement, to tribal narrative. Tribes become the fundamental foundation of governance as the singularity – or at least a chaotic semblance thereof – is approached.

So to our original question: how might one recognize the initial stages of the singularity? Accelerating and increasingly auto-catalyzing technological evolution across the entire frontier of technology, especially information technology? Check. Concomitant breakdown of institutions and practices which have been effective since the beginning of the Enlightenment and the Industrial and Scientific Revolutions? Check. Significant psychological stress, leading to retreat to simplistic narratives and an explosion of confirmation bias as defense mechanisms? Check. Failure of even the most competent and competitive institutions in the world, from the U.S. military to the Chinese Communist Party, to fully engage with a world that has gotten complex beyond even their extraordinary capabilities? Check. Retreat to policies based on fantasy, from European initiatives to "protect" a privacy that no longer exists to U.S. initiatives to resurrect a 1950's economy by applying obsolete antitrust laws to global information powers such as Google or Facebook (and in China by determined moves to bring their high technology firms such as Alibaba and Didi under centralized direction)? Check. The increasingly obvious obsolescence of existing governance institutions as the implicit assumptions underlying them become increasingly contingent. Check.

This begs the question we will address in the next blog: what is a nation-state, or for that matter a high technology behemoth such as those spawned by the U.S. and China, to do?