Beyond Digital Competition: US-China Relations in a Planetary Governance Ecosphere
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Abstract: The endgame framing of US-China competition for AI dominance rehearses Cold War "space race" tropes that have intranational persuasive utility while resting on false zero-sum premises regarding international relations that block global coordination on AI and data governance. This paper outlines the likely results of such a competition: "checkmate," or global governance uniformity; and "stalemate," or global governance balkanization. It then offers an ecopolitical alternative to the geopolitical endgame narrative: coordination-enriching governance diversity. This ecopolitical alternative stresses the importance of rethinking data and the datasphere as a global "relational commons," and recognizing the chronopolitical—and not simply geopolitical—nature of AI competition. The paper concludes by suggesting how institutionalizing three basic human data rights might create bridge conditions between geopolitical competition and ecopolitical coordination in the planetary realist development of humane AI.

Intelligent technology and the Fourth Industrial Revolution are increasingly seen as setting the stage for endgame competition between the United States and China. Three decades after the Soviet Union splintered and Francis Fukuyama (1992) announced the terminal collapse of ideological competition and the "end of history," the character and future of the world order seem once again to be in play.

Whether this situation signals crisis or opportunity is seemingly a matter of perspective. China's leader, Xi Jinping, has optimistically stated in numerous foreign policy addresses over the last half decade that the world is undergoing "great changes unseen in a century,"[1] and all evidence suggests that China is "preparing to shape the twenty-first century, much as the U.S. shaped the twentieth" (Osnos 2020). This prospect is framed in official Chinese discourse as part of national "rejuvenation" and a rightful restoration of China's historically central role in world affairs. The digital transformation is an opportunity to displace US influence and orchestrate the consolidation of a new, China-centered global "community of common destiny."

As seen from within dominant policy circles in the US, China's late twentieth-century rise was adventitiously buoyed by the globalization of supply chains and manufacturing, and by the competitive advantage afforded by a low-wage and rights-poor labor force that was larger than those of North America and Europe combined. China became the world's factory, as well as a global sink for industrial pollution. And if the terms of its participation in that arrangement enabled the Party to lift hundreds of millions out of poverty and modernize at a globally unprecedented rate, those terms were acceptable.

But when China launched its Belt and Road Initiative, including the Digital Silk Road, and proclaimed its determination to be the global leader in AI by 2030, it signaled a readiness to "stand up" to the US and subvert—if not supplant—the liberal world order. From an American perspective, that proclamation is far from acceptable. Even if China's lofty ambitions are mostly

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[1] See, e.g., "Xi Jinping Delivered an Important Speech at the Opening Ceremony of the Seminar on Learning and Implementing the Spirit of the Fifth Plenary Session of the 19th Central Committee of the Party" [习近平在省部级主要领导干部学习贯彻党的十九届五中全会精神专题研讨班开班式上发表重要讲话], Xinhua [新华], January 11, 2021

rhetorical "hot air" and at odds with many on-the-ground practical and policy realities (see, e.g., Toner et al. 2023), China's claims to global leadership pose an unwelcome threat to the rhetorical house of cards that the US has constructed in support of its presumptively hegemonic role in maintaining a just and equitably prosperous global order.[2]

Yet as diametrically opposed as their perspectives may be on any number of global policy issues, the US and China are in apparently entrenched agreement that their competition is both zero-sum and existential—a competition that is as threatening to the "American way of life" as it is to the "China dream." That mindset is unfortunate. Neither the US nor China nor the rest of the world will benefit by framing the US-China relationship as a finite game in which the tactics and strategies of both sides are premised on competing as geographically individual and sovereign nations.

An alternative to the geopolitical endgame framing is a narrative that stresses coordination-enriching governance diversity and the importance of rethinking data and the datasphere as a global relational commons. Rooted in a critical appreciation of the distinctive predictive and productive powers of intelligent technology as a relational medium, this alternative narrative points toward an ecopolitical path beyond the equally undesirable "checkmate" and "stalemate" outcomes of geopolitical endgame competition and the optimization traps and benefits caps to which they are liable. Movement onto and along this path will depend, however, on institutionalizing three basic human data rights to create the bridge conditions between geopolitical competition and ecopolitical coordination, and to foster robust planetary realist commitments to the evolution of truly humane AI.

The Finite Game of US-China Geopolitical Competition

The causes and conditions for intensifying competition between the US and China in relation to AI and digital governance are both novel and complex. Yet the overarching logic for a zero-sum framing of that competition can be concisely summarized: 1] data constitutes a new factor of production; 2] the digital infrastructure of the fourth Industrial Revolution is disrupting existing hierarchies, both geopolitical and economic, and is laying the foundations of a new kind of power; 3] China's advantages with respect to both data generation and control afford it significant advantage in shaping—if not always successfully engineering—those foundations; and 4] if any nation were to get a sufficient competitive jump on others, the power law dynamics of network growth would quickly and perhaps irreversibly lock out others and ensure that nation's unassailable dominance in determining the character of the global order.

For the US, the current situation recalls the 1957 "Sputnik moment" of awakening to the potentially game-changing geopolitical advantages of controlling the strategic "high ground" of Earth orbit. Framed as an ideological faceoff, the subsequent "space race" vastly accelerated basic scientific and technological research in the US and USSR, and arguably ended because of America's competitive advantage in commercializing the results of that research. China's "Sputnik moment" occurred in 2017 with the defeat of world champion Go player Ke Jie by the deep learning system, AlphaGo. I It was long presumed that the mastery of Go, a territory-securing game with 10^{360} possible moves, requires strategic creativity of a kind that is

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[2] The complexity and deepening significance of this threat are succinctly illustrated by Ikenberry (2021) and Wang (2021).

unattainable by computational means. When AlphaGo proved otherwise, it revealed a new strategic high ground—one accessible and controllable by digital and algorithmic means.

Although the analogy with the US-USSR space race is not perfect, US-China competition for the digital high ground is being perceived by both as no less decisive historically. Even if the competition for technological advantage and the power to set global governance norms for the datasphere is best framed as a security dilemma rather than an "arms race" (Roff 2019; Scharre 2021), there is no doubt that China is intent on transforming itself from a norm-taker to a norm-shaker and -maker (Cheng & Zeng, 2022). And it is now clear to the US that this intention is not simply Party rhetoric. China has very realistic prospects of achieving its goal of becoming the global leader in AI applications by 2030, and that could be a geopolitical game-breaker.[3]

The seriousness with which these prospects are being viewed from the American side is readily apparent in the National Bureau of Asian Research report *China's Digital Ambitions: A Global Strategy to Supplant the Liberal Order* (de La Bruyere et al. 2022). The report builds a strong case, based on Chinese documents, that China is "deliberately capitalizing on the digital revolution as an opportunity to define and exert control over international resources, markets, and governance" (ibid. 3), and recommends mounting a concerted and multi-front effort to block China's ambitions across scales from the level of physical and technical infrastructure to that of governance superstructure. This conclusion is boldly underscored by the Final Report of the National Security Commission on Artificial Intelligence (2021), which details over much of its eight hundred pages why China's digital ambitions constitute the single greatest and most immediate security threat to the US.[4]

These concerns are not entirely misplaced. In contrast with the US, where fears of runaway AI and visceral popular distrust of "big government" constrain the competitive imagination of the state, China's central government is popularly regarded as beneficial and trustworthy.[5] Civil-military fusion and public-private partnerships are generally regarded as necessary bulwarks against Western attempts to throttle China's rise. And AI and data-driven public administration are widely embraced for their pragmatic and perhaps even utopian potentials. China is thus freer than the US to pursue research aimed at developing "general artificial intelligence" that achieves cognitive flexibility in ways that need not be explainable to humans: AI systems that adapt autonomously and effectively to novel circumstances in ways that may be beyond human comprehension.

The strategic promise of general artificial intelligence—rather than artificial general intelligence (of a recognizably human type)—is that it would make possible machine designed, "next generation" forms of nonhuman intelligence, thus functioning as an unpredictable and yet practically useful technology enabler and accelerator (Hannas et.al. 2022). Whereas machine autonomy is viewed in the US and Europe as inherently risky and artificial superintelligence is widely regarded as an existential threat to humanity (see, e.g., Bostrom 2014), China's pragmatic approach to AI and the relative weakness of fears that intelligent machines might alter human nature are conducive to free exploration of both human-machine synthesis and the development

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[3] Consider, for example, that Chinese manufacturers use twelve times more robots than expected when compared to US manufacturers (Atkinson 2023). If a comparable use over expectation ratio were achieved in China for the adoption of AI applications, the goal of global leadership by 2030 is certainly plausible.

[4] The report is available online: https://reports.nscai.gov/final-report/table-of-contents/

[5] The demographic reality of the popularity of China's central government should not be construed as inconsistent with the presence of significant dissent regarding specific governmental policies—for example, the handling of the 2019–20 democracy protests in Hong Kong or the treatment of Uighur Muslim and Tibetan Buddhist minorities.

of evolutionary alternatives to human intelligence and consciousness.[6] So while China acknowledges the need for AI ethics, its intuitions about when to apply ethical brakes are sufficiently different from those in the US and European Union to constitute a distinctive source of competitive advantage—one that makes the timetable of competition a matter of heightening strategic uncertainty.

From Geopolitics to a New Chronopolitics

This account of the status and stakes of endgame competition over digital norm-setting power is, I think, geopolitically accurate. But its accuracy and completeness are limited in much the same way that the accuracy and completeness of classical Newtonian mechanics are when applied at subatomic and cosmic scales. As a description of meso-scale events, classical physics works fine. But it fails to accurately predict or causally account for many experimentally observed micro- and macroscale phenomena, for which quantum and relativity theory are needed. Similarly, while the endgame framing of competition for the digital high ground works fine at the scale of interstate relations, it fails to accurately account for the full scope of the transformations occurring with the competition-accelerated emergence of intelligent technology at the micro and macro extremes of the personal and the global.

  The shortcomings of endgame framing are due in part to its insufficiently complex account of the temporality of the digital transformation. The internet-mediated transformations of material, social, economic, and political dynamics cannot be adequately explained by appeal to merely linear sequences of events but must also include their interleaving with cyclic and rhythmic temporalities (Karpf 2020). In addition, the geopolitical endgame framing—like the framing of rational choice decision-making in terms of single iteration prisoner's dilemmas (see, e.g., Amadae 2016, 25 ff.)—fails to account for the fact that the grounds and stakes of US-China competition are themselves subject to continual alteration and thus neglects the evolutionary temporality of the human-technology-world relation. Much more is at stake in the US-China competition for digital dominance than spatially defined geopolitical hegemony. It is progress toward global chronopolitical hegemony in which dominance in temporal relations trumps dominance over spatial relations.[7]

The Strategic Primacy of Time

Geopolitics is premised on competition over spheres of influence—a premise that smuggles in a geometric bias toward seeing the stakes of competition as fundamentally spatial. Although time cannot be factored entirely out of the competitive equation, spatial extension is primary. Area gained is what matters most. Seen geopolitically, the Cold War space race was a competition over access to the orbital "high ground" and potentially to claims on extraterrestrial resources—a competition conducted tactically to develop aerospace capabilities as quickly as possible. Time is of tactical, not strategic importance.

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[6] Such variation in how AI and its futures are imagined globally is brought out clearly and convincingly in Cave & Dihal, eds (2023).

[7] The dominance of the chronopolitical was incisively argued by Paul Virilio (2006) in his 1977 book, *Speed and Politics*, which placed an emphasis on the logistical bias of modern technologies of war and warfare.

Yet the Cold War space race was not ultimately about delivery hardware for material payloads like satellites or weapons systems, and the current competition for strategic advantage in the datasphere is not about digital delivery capabilities. In both cases, winning the race is ultimately about developing and deploying essentially temporal—and increasingly refined and responsive—control systems. The Cold War space race was about controlling *delivery completion* through near-Earth space, including the delivery of ballistic missiles from launch sites to targets, and between satellite-linked message senders and receivers. The current US-China race is about capacities for steering the *dynamics of digital connectivity* among information seekers and providers, goods and services buyers and sellers, and opinion shapers and their publics, including national military and intelligence units and the digitally engaged citizens of adversary states. In both cases, the strategic advantage of enhanced control capability is not fundamentally spatial; it is temporal.

The competitive advantages afforded both by astronautical control over deliveries through orbital space and by cybernetic control of digital connectivity are a function of decreasing time differentials in the control process—a capacity for compressing the observe-orient-decide-act cycle to better adapt to environmental dynamics and maintain desired flows of outcomes and opportunities. In the context of colonial and Cold War *geo*political competitions, however, the technologically attained strategic advantage had to do with closing in (albeit asymptotically) on the simultaneity of situational awareness and response across planetary distances. This characterization is roughly consonant with the "end of geography" theorized by Virilio (2006) in his exposition of chronopolitics. The competition for control over the dynamics of digital connectivity, however, is differently chronopolitical—and not only because, as Ian Klinke (2013) has argued, grand geopolitical strategies encompass equally grand temporal narratives.

Light-speed digital connectivity has made near simultaneity a given. The strategic advantage that is being sought digitally is a function of *temporal density*—a fundamentally spatiotemporal advantage in exerting dynamically complex control over the relational textures of daily life and lived time (Hershock 2021, 94). The strategic advantage of current 5G and future 6G wireless transmission is not that they make possible faster download times and lag-free connectivity worldwide. It is their capacity for vastly amplifying the *temporal detail* at which it is possible to map currents of attention and influence and thus the epistemic resolution at which it is possible to affect the dynamics of *relational currency*. What is at stake in the US-China competition for digital dominance are real-time orientational comprehension and steerage capacities: the power to continuously affect the dynamics of the global attention economy and to thereby influence the enactive compass of human intentions.

The data gathered by and generated through digital connectivity is making possible a mapping of human interests and actions at previously unimaginable levels of detail. Yet the same systems of algorithmic agency that enable platform giants like Google, Amazon, Facebook (Meta), Weibo, WeChat, and Alibaba to anticipate what individuals want and will like or dislike based on their distinct patterns of attention can also be used to influence their desires, opinions, emotions, and actions in ways that are not only increasingly *immediate* but also imperceptibly *intimate*. Competition between the US and China to set digital governance norms and to determine the reach and character of the data-generating attention economy is thus ultimately a competition over epistemological and ontological powers: a competition for future-shaping *predictive* and *productive* power.

The Evolutionary Nature of Technological Change

There is no doubt that a significant ideological gap exists between the digital governance norms that the US and China apparently aim to materialize. In keeping with its (at least rhetorical) championing of liberal democratic ideals, the US takes an explicitly neutral stance on the nature of the "good life," affirming the sacrosanct autonomy of the individual citizen and allowing the scope and nature of data regulation and norms to be determined by fair and constitutionally protected competition among contending views—a "market" approach to governance. The contrasting Chinese model of "managerial" governance assumes that the state can and should play a crucial role in articulating the meaning and appropriate means of ensuring the "best life" for all in society.[8] This model is consistent with the use of AI to "scrub" the web of politically sensitive exchanges, as well as to surveil and autocratically intervene in the dynamics of Uighur and Tibetan communities, and in public expressions of dissent like those surrounding the 2019–2020 democracy demonstrations in Hong Kong. In short, for China autonomy pertains first and foremost to the state, not the individual citizen.[10]

There is also no doubt that framing the US-China relation geopolitically as a confrontation between great powers is effective for engendering nationalist solidarity, recalibrating risk assessments, and abbreviating the research, development, demonstration, and deployment sequence. It is effective, in other words, for both mobilizing the pursuit of independence as a national ideal and reinforcing the supposition that interdependence is a contingent—rather than constitutive—fact of relations among sovereign states in an era of global markets and supply chains. Unfortunately, in addition to being based on a shakily positivist/essentialist ontology of the state, it is a framing that is premised on a fundamental misunderstanding of the nonlinear temporality of technological change.[11]

In the "great power" framing, the US and China have embarked on a race in which intelligent technology is used to gain strategic advantage. The underlying assumption is that when machine learning tools are developed and deployed to gain commercial, military, or political advantage, the value of doing so is measurable in terms of task-specific utility. The utility of replacing humans with autonomous weapons, for example, is tactically linear: shrinking the "observe, orient, decide, and act" cycle from seconds or minutes to milliseconds, thereby gaining potentially unassailable battlefield advantage.

Technologies and tools, however, exist at distinct ontological registers (Hershock 2021, 64 ff.). *Tools* are *things*: localizable artifacts like smartphones, web servers, and electricity grids that are designed and manufactured to extend or augment human capacities for carrying out specific kinds of work. Tools are thus aptly evaluated in terms of their task-specific utilities, and with respect to them we enjoy clear "exit rights": we can choose whether, when, and how to use them. *Technologies* are *relational media*: nonlocalizable, values-embodying systems of material and conceptual practices that qualitatively transform how we relate to the world and with one

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[8] A more general discussion of this contrast between liberal and illiberal governance practices is undertaken in Hershock (2012, 244-47).

[10] This inversion of emphasis is the rhetorical thread running through the PRC's Ministry of Foreign Affairs, September 2023 statement on the reform and development of global governance. Available online at: https://www.fmprc.gov.cn/eng/wjbxw/202309/t20230913_11142010.html

[11] For a wide-ranging consideration of the need for an ontological reboot of IR theory, see Derian and Wendt, eds (2022).

another. Communications technology thus includes everything from mining trace minerals to manufacturing cellphones, building cell towers, laying fiberoptic cables, placing satellites in orbit, developing new laws and standards, and transforming communicative norms and social dynamics. We do not, in fact, either *build* or *use* technologies. We *participate* in them.

Technologies emerge from, inform, and structure our conduct much as natural ecosystems emerge from and then dynamically inform and structure species relationships. Thus, technologies cannot be evaluated in terms of task-specific utilities, and our exit rights from them are at best limited. By scaling and structuring human values and intentions, technologies both materially condition our *motions* and immaterially condition our *motivations*—not only altering *how* we do things but also recursively transforming *what* we do and *why*. Thus, technologies can only be evaluated *ethically* in terms of how they mediate and qualitatively affect human-human and human-world relational dynamics.[12]

This conception of technology implies that our relations with technology are not merely external and contingent relations of weak interdependence, but rather internal and constitutive relations of strong interdependence. Through our technologies we implicate ourselves in remaking both our worlds and ourselves, and through participating in the emergence of new technologies we are participating in the emergence of new norms for being or becoming human.[13]

This means that, in a competitive digital capabilities and governance race, it is not only the rivalry between the competitors that will be transformed, but also the rivals themselves (Farrell et al. 2022). Digital environments today are holding up to humanity a mirror of our aggregated likes, dislikes, desires, hopes, and fears. At the same time, digital content moderation is personalizing the compass and scope of our intentional horizons. This combination is conducive to exaggerating topographies of social and political difference—a caricaturing of identities, including national identities. The danger of endgame competition for digital dominance is that the US and China will heighten their differences from each other in ways that are ultimately beneficial to neither, setting off a digital race to the bottom, with machine learning reinforcement bringing out the worst rather than the best of each.

Contrary Governance Scenarios: Unity and Variety

As was the case in the space race between the US and the USSR, the US and China have embarked on a winner-takes-all race to gain strategic advantage technologically. And as was the case in the Cold War, the prize sought is clear: uncontestable power to configure the world order. Yet the emergence of intelligent technology as an active medium of algorithmically predicted and produced relations substantially changes the nature of ostensibly *geo*political competition.

Although the terms "artificial intelligence" and "machine intelligence" have become customary, given that the capabilities of these new intelligences are a function of recognizing patterns in attention-transmitted data about human intelligence in action, they are more accurately referred to as evolving species of "synthetic intelligence." Intelligent technology thus introduces a topologically peculiar twist on the evolutionary dynamics of the human-technology

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[12] This conception of technology implies that theories of technological determinism and theories of the social construction of technology are both correct, but each only part of the time and in certain contexts.
[13] This way of understanding technology resonates with the perspectives explored in Rosenberger & Verbeek, eds (2015) and Stigler (2009).

relationship. Like the apparently different sides and edges of a Möbius strip—a three-dimensional object that strangely has only one side and one edge—the independence of humanity and technology is only apparent. The US and China are competing for control over the evolutionary dynamics of the human-technology-world relation.

Played as a finite game to determine who governs the digital transformation, with the US and China each presuming itself to be an essentially independent nation-state, the US-China relation features outcomes that would seem to be the same as in the Cold War space and nuclear arms races: checkmate and stalemate. Either the game ends definitively with one side "winning" and the other "losing" or play continues indefinitely with neither side "winning" or "losing." In the first instance, the result would be a global governance system: digital norms unity. In the second, what would result is a balkanization of governance systems: digital norms variety. Neither outcome is favorable in evolutionary terms.

Governance Unity: One Digital World

The one-world scenario has some appeal. A single global governance system would prevent exploitative use of the gaps between governance systems to avoid legal and ethical oversight (Beck 2016), and if the winning system were to exemplify truly enlightened design principles and values, the result might be the best of all possible digital worlds. Unfortunately, as David Harvey (2000) has observed, while utopian thinking is crucial to every emancipatory movement, all attempts to build utopian societies have ended in one or another form of ironic disaster. The reason is simple. A perfect society would leave no place for either error or hope. Since it is human both to err and to hope, a utopian society would ultimately be both inhuman and inhumane. A digital utopia would be prone to reducing optimization to the instrumental pursuit of what Hubert Dreyfus and Charles Taylor (2015) have termed "*success conditions*," rather than an open-ended, creative exploration of "*improvement conditions*."

Given their apparent realpolitik commitments, it does not seem that either the US or China is competing for digital dominance with blindly ironic utopian intentions. But that is scant consolation. Based on current trends, a world made digitally safe for the recursive amplification of American governance principles and values would likely be a world of intensifying populism, post-truth fractiousness, militarism, and reality deferral in a free-thinking libertarian celebration of market individualism. Alternatively, a world made safe for realizing Chinese governance principles and values would likely be one of engineered harmony and hierarchy consistent with the Party's sustained power to confer reality as needed to entrain conduct and imagination with the objectives of the managerial state and centrally authenticated right-thinking.

These outcomes should not be misunderstood as signaling any essential flaws in either American or Chinese ways of life or governance ideals. Rather, they are a function of the kinds of tactical moves the US and China would have to make to gain digital dominance—moves that would accentuate how much each differs *from* the other in the absence of countervailing moves aimed at differing *for* one another in pursuit of shared aims. As each differentiates itself from the other with zealous, winner-takes-all competitiveness, cooperation reduces to the calculated exercise of self-interest. The conditions needed for mutually beneficial coordination become subject to accelerating erosion. And the relational strengths needed for realizing more equitable and resilient forms of interdependence and interpenetration are forfeited in favor of individually

exercised determinative power.[14] Recursively and innovatively amplified by intelligent technology and its variant syntheses of human and machine intelligences, the result in both cases is most likely to be a slippery slope slide into "engineered determinism" (Frischmann & Selinger 2018): a slide into blissfully ignorant freedom from acting on diversity-securing global ecopolitical needs to differ coherently or "hold together" productively and resiliently.

If all evolution is coevolutionary, either version of the one-world scenario yields an evolutionary cul-de-sac or dead end. If the human-technology-world relation that is evolving with the emergence of intelligent technology is not only going to permit but also nurture the conditions for human flourishing, then the goal of "seamless continuity" that is prized by exponents of global governance unity must be abandoned in favor of ensuring "semantic discontinuity" (Cohen 2012). Otherwise, predictive power eventually devolves into self-fulfilling prophecy.

Governance Variety: Many Worlds Balkanization

Minimally, global "semantic discontinuity" might be achieved by means of ensuring—for example, by way of digital firewalls—the continued existence of digital governance variety. Unfortunately, this would amount to simply scaling down the scope of governance unity. Ensuring that nations—or other political entities like the European Union or African Union—are free to function as ideally independent digital sovereignties would do nothing to enable humanity to reap the ecological dividends of governance diversity. Indeed, in addition to the opportunity spaces that digital governance variety would open for avoiding legal and ethical oversight, a balkanization of digital infrastructure would have three serious shortcomings.

The first is what might be called *optimization traps*. One of the liabilities of machine learning systems is that, while creative in the limited sense of being able to learn how to better produce results that are consistent with their designed objective functions, they cannot alter those objective functions and cannot experiment with counterfactual speculations. They are bound by their designed purposes and by the data to which they have access. Under conditions of digital sovereignty—especially when values are centrally determined and baked into the digital architecture—the algorithmic learning curve loops into a spiral. The more thoroughly digital technology is deployed under these conditions, the greater the tendency for the human-technology-world relation to become perfectly reproductive: to cease being truly evolutionary as the meanings of coherence and permissible difference become increasingly concentrated and less open to change. The conditions for improvement are reduced to equivalence with more comprehensive and fundamentally predetermined conditions for success.

Secondly, a balkanization of digital governance is conducive to *decoherence traps*, or materializing conditions for the progressive isolation of values systems and histories. As values systems decohere internationally, the result is a compromise of global capacities for engaging in the predicament-resolving deliberations required to generate the depths and breadth of shared commitments needed to address such global challenges as climate change. But perhaps more importantly, global decoherence would also work against realizing the shared historical experiences needed for ecological relations to emerge among digital sovereignties—relations of mutual benefit conducive to spurring and sustaining patterns of differentiation consistent with

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[14] A fuller discussion of the contrasts between competition, cooperation and coordination is offered in Hershock (2012, 278-283).

realizing new and more humanely coherent and resilient systems of human presence. If resilience is achieved as a function of continuously monitoring the outcomes of conduct in ways that enable and foster rapid learning and adaptation, then balkanized digital governance would be a practically brittle evolutionary dead end.

Finally, by limiting (or, in extreme cases, curtailing) cross-border data sharing, balkanized digital governance would prevent the fullest possible realization of the problem-solving potentials of intelligent technology. It would impose *benefits caps* on the digital transformation. For humanity to benefit as fully as possible from the digital transformation, the entirety of the datasphere must be open to access by all. The balkanization of health data, for example, seriously compromises the capacities of AI systems both to monitor the spread of a new disease like Covid-19 and to contribute to developing and effectively deploying vaccine and treatment regimens.

Arguments against an open access datasphere are often premised on concerns about individual data privacy risks, threats to corporate profitability, and weakened national security. While these are undoubtedly important concerns, policy decisions about how to address them are typically informed by metaphorically encapsulated misunderstandings of data and its role in the digital transformation—misunderstandings that effectively "naturalize" benefits caps.

It has been suggested, for example, that data be understood as the "new oil" that will generate the new "electricity" of the Fourth Industrial Revolution: artificial intelligence (Lee 2018). But, in fact, data is not anything like oil. Oil is a natural resource that is intrinsically scarce because there are limited reserves of it on the planet and because it is used up whenever it is burned to generate energy. By contrast, the same data can be used repeatedly for differing purposes, without loss and without compromising its quality. It has been suggested, alternatively, that data be seen as the "new water" (Feigenbaum & Nelson, eds 2022). Although this metaphor has the advantage of emphasizing how data can flow without change or diminution through any number of machine learning systems, it still supports treating data as if it were an objectively present, quantifiable, and potentially scarce form of matter.

Reimagining Data and the Datasphere

Data is not *matter*. Data consists of observational traces of measured values for specified variables. That is, data is the evidentiary product of determinations of *what matters*. The datasphere is not like a container of water. It is an immaterial space of yet-to-be-determined resonances among events that humanity has deemed worthy of attention, recollection, and reflection: a boundless space of significance potentials. The datasphere thus more closely resembles a language or universe of discourse than it does a repository of some depletable resource—a universe of limitless expressibility. Balkanizing the governance of the datasphere constrains what can be related through it.

Granted that intelligent technology cannot benefit humanity fully unless the datasphere is accessible by all, it has been proposed that the datasphere should be governed in ways that are analogous to the governance of a global commons or resource pool (Taylor 2016; Mazzucato 2018). Yet, as already noted, the datasphere is not subject to overuse or excess extraction and thus differs fundamentally from natural resource commons. Indeed, a peculiarity of the datasphere is that accessing and analyzing data not only yields patterns of significance among existing data but also generates more data. As the datasphere is more deeply and extensively

explored, the patterns of significance it is possible to discover therein become comparably denser and more extensive. Intensifying data usage thus reveals increasingly fine and detailed textures of relevance.

In short, the datasphere functions as a *relational commons*—a connectivity-qualifying, significance-compounding commons that yields ever more differentiated patterns of coherence the more widely and frequently it is drawn upon. As such, it is also a recursively amplifying expression of what has mattered and continues to matter most for humanity.[15]

In the contexts of geopolitical competition among sovereign nations for digital dominance and of commercial competition among corporations seeking to maximize attention share and secure digital market and platform dominance, there is considerable resistance to governing the datasphere as a medium of open-access relational coordination rather than as a repository of proprietary resources. This resistance is not without merit. Algorithmic tools are subject to real and significant risks of both accidents of design and misuse by design. Arguably, making all data freely available to all would amplify those risks.

Yet invoking these risks and the need to protect individual privacy and data rights often amounts to conceptual sleight of hand. It directs attention toward narrow considerations of how individual citizens and consumers might be harmed and away from those who are commercially and politically empowered by designing and using machine learning *tools*, as well as from how humanity might benefit more extensively and equitably through open participation in intelligent *technology*. This sleight of hand is especially troubling because the privacy and sovereignty risks of open access to the datasphere can be minimized or dissolved by already available technical means like federated learning, data exchanges, and data cooperatives (Hardjono et al., eds 2019).

Governance Diversity: Toward a Digital Ecosphere

The preceding overview of the checkmate and stalemate outcomes of a "great power" competition to govern the digital transformation underscores the cautions that Amartya Sen (1999) raised a quarter century ago, regarding appeals to both "grand universalism" and "national particularism" in the pursuit of justice in a world of multiple actors and interests and fluidly interpenetrating "plural affiliations." But if neither global governance unity nor global governance variety will ensure digital justice, what will?

Following the model of current evolutionary theory, the most just digital governance arrangement would be one that promotes the coherent differentiation and global coordination of approaches to orienting and governing the data-facilitated synthesis of human and machine intelligences. For the US and China, this arrangement will mean a strategic shift from seeing their relations as short-term and contingent to seeing them as long-term and constitutive. Instead of engaging each other geopolitically in a *finite game* played to win, they will need to do so ecopolitically in an *infinite game* played to improve the quality of their play—a shift from a competitive relational paradigm to a fundamentally coordinative one.[16]

Such a strategic turnabout would clearly violate the dictates of realpolitik decision making. Beliefs in national integrity and the competitive right to survival of only the fittest states

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[15] An argument for the ethical importance of the concept of a global relational commons is forwarded in Hershock (2012, 227-233).

[16] The distinction made here between finite and infinite games is an elaboration of that introduced by James Carse (1987).

run deep in geopolitical circles. Yet, while fitness plays an important role in natural selection, natural selection is not the only, or necessarily the most important, evolutionary process. The great turning point in human evolution occurred with the communication-accelerated emergence and evolution of culture and the materialization of interpersonal and multigenerational patterns of intentional differentiation and coherence—a vast and qualitative expansion of the horizons of human consciousness. With intelligent technology emerging as a new and active ecological medium of human evolution, subordinating competition to coordination merits consideration as a means of furthering and accelerating political evolution.

Coordination entails differing *coherently*—that is, differing in ways that "hold together" because they are mutually beneficial. In the context of digital governance, subordinating competition to coordination involves reallocating competitive energies from international to intranational relations. Instead of serving as a selection mechanism for international dominance, competition becomes primarily a means of ensuring ongoing and creative intranational differentiation in data and AI applications, expanding participation in intelligent technology in continuously improving alignment with nationally shared values. Intranational improvement is prerequisite for enhancing international coordination, including ecopolitical coherence regarding the evolution of the human-technology-world relation.

It is essential to the evolution of a global digital governance ecology that national differences are conserved. Thus, there is no doubt that—much like the competition in ecotones or zones of interfusion between neighboring ecosystems—competition between the US and China in zones of digital governance norms and platform interfusion will continue. Yet, just as ecotones or zones of ecosystem overlap foster greater species diversity, such zones of norm and platform interfusion promise governance diversity (and thus higher quality play) through the treatment of international relations as an infinite game that will carry world politics beyond both governance unity (checkmate) and governance variety (stalemate).

Unlike *variety*, which entails simple plurality and is a quantitative measure of the range of coexisting entities or events, *diversity* is a qualitative index of the degree to which differences serve as resources for mutual contribution to sustainably shared flourishing. In short, diversity entails coordination-enriching interdependence—the presence of things that differ *from* each other, but that also make meaningful differences *for* one another. Thus, while healthy ecosystems foster species diversity, even the best zoos exhibit only species variety; the animals in them make no meaningful difference to or for each other.[17]

Finite games have specified success conditions, and winning them is a means of demonstrating and determining the distribution of power—including the power to change the success conditions or the rules of the game. Infinite games are played to enhance the quality of play and are thus premised on keeping all players differently—but wholly, attentively, and intentionally—engaged. Infinite games are characterized by their distinctive and ever-evolving improvement conditions. Free from predetermined success conditions, the character of infinite play is not determined by the individual *power* of those playing—that is, their capacities for determining outcomes. It is a function of the players' relational *strength*—their capacities for responding as needed to open opportunities for play that are conducive to setting new creative and performative standards. In short, the quality of play in infinite games is a function of the sustained *relational virtuosity* of those involved.

This ecopolitical conception of global digital governance informs Jessica Chen Weiss's (2022) plea for a relational reframing of US-China, in which she argues that "the lodestar for a

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[17] An extended discussion of the variety-diversity distinction is offered in Hershock (2012, 47-64).

better approach must be the world that the United States seeks: what it wants, rather than what it fears." Moreover, its policies "should be judged on the basis of whether they further progress toward that world" by enacting "a positive-sum vision of a reformed international system that includes China and meets the existential need to tackle shared challenges." A similar reorientation of US-China relations toward articulating a robustly shared future would, of course, also need to be undertaken in China, where there is already significant interest in a post-Westphalian conception of global political relations (see, e.g., Zhao 2009; Qin 2016).

From Anarchy and Hierarchy to a Global Politics of Planetary Evolutionary Realism

An ecopolitical framing of international relations offers a relationally distinct alternative to both anarchic and hierarchic approaches to world politics and global governance. Such an alternative is critically important for understanding both the nature of governance and its evolutionary importance in the context of the digital transformation and intelligent technology.

Briefly, anarchic theories address world politics as a function of inter-state relations in which sovereignty is taken to be a given, and in which individual states are presumed to operate as essentially self-interested equals within the system of their interactions. Although it remains a default characterization of much of mainstream international relations, this anarchic framing is at odds with historical evidence for the porosity and contingency of state sovereignty and does not support either theorizing or empirically analyzing world politics as a *global system*.

Hierarchic approaches offer a corrective, challenging both the presupposition that sovereignty is the defining characteristic of the primary units in world politics and the counterfactual stipulation that these units exist as equals in the system of inter-state relations. Instead, relations of super- and subordination are affirmed as constitutive of world politics. Theorized hierarchically, world politics are predicated on the fundamental existence and analytical importance of power dynamics and structures of inequality in a global system that is "intersubjectively" and "mutually" constituted, and that includes not only states but also nonstate actors of various kinds.[18]

The anarchic and hierarchic approaches capture important and distinct dimensions of world politics. But their value in thinking through the global governance of the digital transformation is limited by their inadequate characterization of the ontology of world politics in an era of intelligent technology. Although the interests of individual state and nonstate actors continue to matter, their relations are increasingly subject to influence by nonlocalizable and nonhuman agencies. Moreover, although anarchic and hierarchic structures are subject to change, their respective biases toward horizontal and vertical relations—even in combination—do not adequately capture the recursive complexity of the agential relations that are emerging with intelligent technology.

Ecological relations encompass, but also offer an alternative to, horizontal and vertical relations. In any ecosystem, there are horizontal (intraspecies) and vertical (interspecies) relational dynamics among both individual lifeforms and populations, including energy flows. In addition, there are oblique relations through environmentally propagated and shaped flows of influence that play out at varying timescales. Seen in evolutionary perspective, ecological

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[18] A useful review of hierarchic approaches to world politics is Mattern and Zarakol (2016).

relations emerge through recursively interacting patterns of coherent differentiation within and among organisms and their environments.

Ecopolitics is not a politics of environmental conservation, though it is certainly consistent with such a politics. Ecopolitics is based on emulating and creatively extending the structural logic of ecologically realized diversity and its materialization of the value of differing coherently. It is an evolutionary, planetary realist politics freed from both ideological fealty and utopian teleology.

Bridge Conditions: Human Data Rights

The challenge for both the US and China is to envision pathways for differing coherently in the shared pursuit of more humane, resilient, and diversity-enhancing futures—pathways to a global ecopolitics rooted in both planetary and evolutionary realism. A bridge must be built from conditions in which each nation presumes itself to be paradoxically both free and compelled to engage in power-seeking and power-wielding geopolitics to conditions in which they are induced to engage and excel in strength- and resilience-fostering ecopolitics.

I would maintain that three *human data rights* are needed to serve as cantilever-supporting piers for building bridges from the rapidly decohering practices of geopolitics by the US and China to shared ground on which to materialize evolutionary coordination in global digital governance.

The first is a basic and inviolable *right to retain the data one generates.* If the data generated through our participation in digital connectivity and intelligent technology is a selective record of our personal patterns of attention, intention, and action—a record of our own unique intelligence being enacted in a range of relational environments, including social, economic, and political environments—then our data is not best theorized as representing us digitally, but rather as extending us. That is, our data belongs to us much as our bodies belong to us—as a "genetic" record of what has mattered to and for us over time. The right to retain our own data should be as fundamental as our right to control our own bodies and genes. This implies that while personal data can and should be used, it should not be copied or shared.

Operationalizing this right to retain ownership of our personal data, while at the same time supporting open access to the datasphere as a global relational commons, will require a new institutional infrastructure—a global ecosystem of data cooperatives—through which to secure a second data right: *the right to control the purposes for which one's data is accessed.* Like trade and credit unions, data cooperatives are collective institutions that have a fiduciary responsibility to represent the data rights and interests of their members. Data cooperatives enable collective bargaining and decision-making about which machine learning algorithms are given access to their members' data. This is only possible, however, if that data does not move and remains securely encrypted in data cooperative repositories. In effect, data cooperatives engage in "algorithm passport control"—the ability to determine which algorithms can access and explore the sovereign domain of their members' data. A global ecosystem of data cooperatives would function institutionally as a system for ensuring that data does not circulate, that algorithms move to the data, that algorithms are vetted to ensure compliance with member interests, and that the exported results of algorithmic explorations are aggregated by default and leave member data safe.[19]

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[19] For a description of this ecosystem, see Pentland, Lipton & Hardjono (2021, 265-276).

Securing the conditions of emergence for a global ecosystem of data cooperatives, however, will require a third basic human data right: *the right to "deposit" one's data wherever one wants, for as long as one wants.* If data cooperatives are responsible for algorithmic vetting or "algorithmic passport control," the right to freely deposit (and withdraw) one's data is analogous to being able to enjoy "global data citizenship."

All three human data rights are needed to secure conditions for the emergence of global data governance diversity. Of course, these data rights—along with others that might be formalized, for example, in a UN Declaration of Human Data Rights—would significantly alter the "playing field" of US-China competition for strategic advantage in setting data governance norms.[20] Data would cease to be either a freely tradeable market commodity, as it now is in the US, or state-owned property, as it is in China. Citizen-consumers would be empowered to determine who would be able to access their data and for what purposes. That is, they would be empowered to collectively determine whether and to what extent their personally generated data would be accessible to any given state, as well as for what purposes and for how long. They would be able to "vote" with their data in ways that would impact the efficacy of any given state's algorithmic tools, but that would also affect that state's placement in the global "environment" of intelligent technology and its contributions to the evolution of the human-technology-world relation.

Conclusion

Is it naïve to propose a suite of human data rights, a global ecosystem of purpose-defined data cooperatives, the abandoning of finite geopolitical games and zero-sum "great power" strategies, and the embrace of a generations-spanning ecopolitical vision of resilience and equity enhancing data governance diversity? Perhaps. It may well be that such a proposal has no more chance of success today than the proverbial ice cube has of surviving in hell.

Then again, if enough ice were to hail down on hell, its climate might very well change. Although the digital retooling of politics has not yet fundamentally transformed political action at either the national or grassroots levels (Jungherr, Rivero & Gayo-Avello 2020), the digital transformation has fundamentally altered the communicative structure of politics. It has mediated a transition from one-to-many connectivity to many-to-many (and potentially many-to-one) connectivity. Digital connectivity has thus made it possible to take many different routes—each with different relational affordances—to the "same" political destination. Opportunities for values-coordinated and intention-amplifying collective agency have never been greater.

Opportunities can, of course, be squandered. The digital transformation could be allowed to proceed in ways premised counterfactually on the zero-sum nature and existential stakes of US-China competition. The dangers of realpolitik decision-making in the face of optimization traps, decoherence traps, and benefits caps can be dismissed or purposely ignored. Doing so, however, would be a tragedy of the digital relational commons. Humanity deserves better.

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[20] The UN now has a comprehensive data strategy for fostering the use of UN data to benefit all with insight, impact, and integrity, but not yet a formalization of basic human data rights. See: UN Secretary-General's Data Strategy 2020-22

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