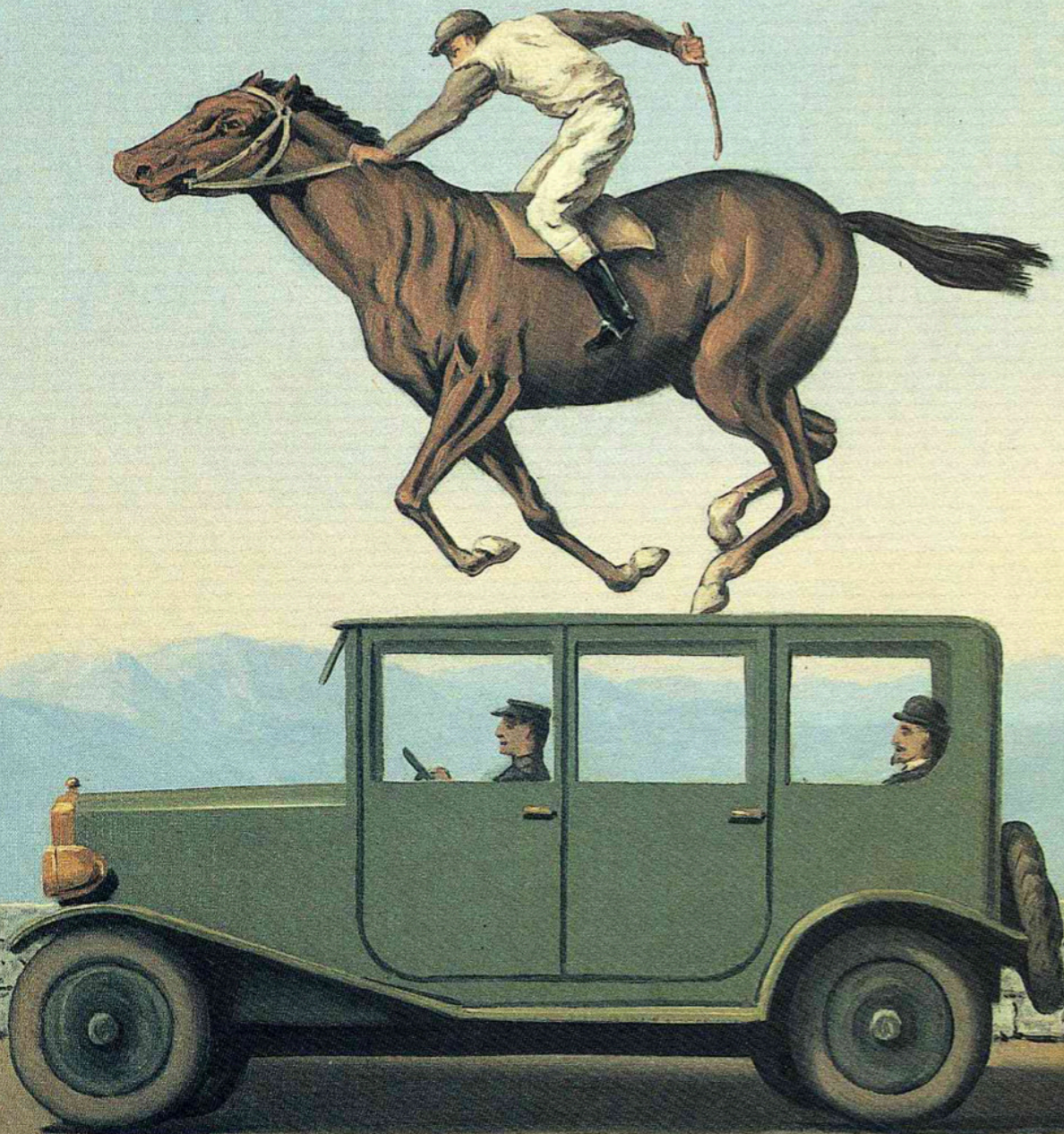


UNPACKING THE GEOPOLITICS OF TECHNOLOGY

How Second- and Third-Order Implications
of Emerging Tech are Changing the World

Mathew Burrows | Julian Mueller-Kaler | Kaisa Oksanen | Ossi Piironen





The Atlantic Council Geotech Center works to shape the global future of data and technology together.



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Cover: *The Anger of the Gods (La Colère des Dieux)* by René Magritte
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MAGRITTE (1898-1967) was a Belgian surrealist artist who is well known for his thought-provoking images that take the perceptions of painting into another realm of reality. His work often displays a collection of ordinary objects in unusual contexts, henceforth, creating an illusion of new meanings for familiar things and challenging the observers' preconditioned sensing of reality. Magritte's work has been exhibited throughout the world and he remains one of the most widely collected surrealist artist of his time.

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1. ON TECHNOLOGY-INDUCED SOCIETAL CHANGES

Developing new technologies used to be primarily an economic and commercial issue, but it is increasingly also about foreign and security policy. Emerging technologies in particular have become both an object and a driver of international cooperation and competition, shaping the global landscape in different and sometimes unexpected ways. To put it simple, high tech has come to signify high politics, too. Today, digital and tech advancements are geopolitical issues of the highest order, even more so with the second wave of digital innovations, which are more systemic in reach and will determine future economic and technological supremacy as well as respective security environments.

The development of cutting-edge artificial intelligence (AI) capabilities, for instance, has become the new playing field for great power competition between the United States and China, both striving for digital supremacy and spheres of economic influence. Such increasing bipolarity in the international system comes with a price tag for many countries around the globe. European states in particular are torn between their alignment in terms of values with the United States and their dependency on close economic ties with China for the sake of their own economic health. In worrying about an escalating rivalry, many countries and state conglomerates have started to pursue their own digital sovereignty, yet lag behind in the global race of tech development, innovation, and cyber capabilities.¹

The international debate concerning technological change also includes many ethical, social, and legal questions in fields such as human rights and individual freedoms, competition and market structure, consumer protection, or public health. Furthermore, the COVID-19 pandemic has raised significant questions about the role of technology in crisis management. Conversations around technological advances, new forms of work, and the change in skills needed have dominated the employment policy debate in many countries around the world. The platform economy, technological advances, and artificial intelligence are irrevocably changing economic structures, tasks, and ways of working, and even what we understand by “work.”

Europe, for example, is already a patchwork of highly varied local economies and markets. McKinsey Global Institute claims that by 2030, more than half of Europe’s workforce will face significant transitions. Automation will most likely require almost all workers to gain new skills. About ninety-four million employees may not need to change occupations altogether, but will need retraining, as

technology already handles 20 percent of their current activities.² While some workers in declining occupations might be able to find similar types of work, estimates indicate that some 21 million will need to change occupations by the end of this decade. Newly created jobs are going to require more sophisticated skills, which are already scarce today, and the potential social implications cannot be underestimated in scale.

Similar trends are becoming obvious in the United States, too. Having studied 702 occupational groupings, Oxford University researchers Carl Frey and Michael Osborne asserted already in 2013 that technology will inevitably transform many sectors of life: there is high probability, they estimated, that 47 percent of US workers will see their jobs automated within two decades.³ These fears have been subsequently echoed by similar studies inter alia from the European think tank Bruegel, the McKinsey Global Institute, and the Organisation for Economic Co-operation and Development (OECD), showing automation affecting between 14 and 54 percent of jobs in the “near future.”⁴ Furthermore, half (48%) of the 1,896 experts surveyed by the Pew Research Center in 2014 envisioned a future „in which robots and digital agents have displaced significant numbers of both blue- and white-collar workers—with many expressing concern that this will lead to vast increases in income inequality, masses of people who are effectively unemployable, and breakdowns in the social order.”⁵ The future is already here, and these effects and trends, in addition to the geopolitical competition over new technologies, will continue to transform our world significantly.

In this paper, authors from the Atlantic Council and the Ministry for Foreign Affairs of Finland examine the transformation of technology and work in a broader social and political context, look at strategies that different regions of the world employ, and evaluate the transition’s geopolitical impact. The change in the global division of labor as well as its impacts are already well known. Consequences of the transformation of work challenge the very basis of the well-being of society, which has traditionally relied on productivity growth to increase wealth and living standards across the board.⁶ By all means, the fourth industrial revolution challenges the traditional segmentation describing work, skills, income, and many of the operating principles of society as it is known today. However, even if technology is reshaping the modern workplace and working processes, and jobs are lost sometimes faster than new work can be created, these changes do not happen overnight and decision makers have time to react to them.

1.1 The Politics of Loss and the Rise of Populism

Case Study: Truckers

Despite the current shortage of qualified drivers, there are few industries in which the threat of displacement is more significant than for truckers. Self-driving trucks have already mastered routes throughout the United States and Europe, and even though investors and researchers disagree about the exact timing of the transition, there is little doubt that automation could potentially arrive in years, rather than decades.⁷ Ultimately, new technology could make more than a million US trucking jobs redundant and substantially reduce the average annual wage for whatever trucking jobs remain.⁸ It may reasonably be doubted that all truck drivers will suddenly become software engineers with the skillset to profit from technical advancement; their superfluosity will come with major social implications. For decades, trucking was, and still is, the largest employment sector in more than half of the fifty US states.⁹ As a matter of fact, there is a strong overlap between Trump's electoral map, rising economic populism, and an illustration of states where truck driving is the most common job today.

Even if the job ramifications derived from increasing automation in both Europe and the United States lie at the lower end of the range of predicted disruptions, emerging technologies will accelerate trends already well underway—and with major political consequences. A recent Brookings Institution study indicates that since 2010, for example, the fifty-three largest US metropolitan areas accounted for two-thirds of growth in economic output and almost three-quarters of job growth, despite making up just fifty-six percent of the country's population.¹⁰ Since then, this economic and job-growth pattern has intensified: small-town areas saw their share of the nation's economic output shrink by 6.5 percent between 2010 and 2016.¹¹ According to another Brookings study, Biden's winning base of 509 counties in the 2020 presidential election encompassed a staggering 71% of America's economic activity, while Trump's losing base of 2,547 counties represented just short of 29% of the economy.¹²

Undoubtedly, the transformation from a production- to a service-based economy has shifted the geography of economic growth dramatically, and technical advancement will most likely further expedite this process. Such geographic divisions become a particular problem once people no longer move to more economically vibrant areas, as it is increasingly the case in the United States, for example.¹³ Given the number of citizens that already suffer from a strong sense of economic decline and their specific location in rural, politically overrepresented areas, it should have come as no surprise that the current order has brought economic and social cleavages that continue to spawn frightening externalities. The experience of entrenched poverty, the existing lack of economic opportunity, and the devastating opioid crisis have deepened small-town resentment of coastal, cosmopolitan elites, and caused rust-belt Americans to elect Donald Trump as president in 2016.¹⁴ Even before the pandemic, the Census Bureau reported that full-time male workers' median income is lower in real, inflation-adjusted terms than it was forty-two years ago. As Josef Stieglitz subsequently noted, real wages at the bottom are pretty much comparable to sixty years ago.¹⁵ Remarkably enough, life expectancy declined in the United States for the fifth year in a row, and not just since the COVID-19 pandemic. Trumpism may as well be regarded as a prelude to the political upheaval that will come from the economic and social implications of unregulated automation.

Similar trends are obvious in European countries, too. Despite record high employment rates before the pandemic, long-term unemployment remained fairly steady, and the number of people labeled as „working poor“ has risen. In the United Kingdom, for example, the number of workers in poverty increased faster in recent years than the number of people in employment, resulting in workers being increasingly likely to find themselves in precarious economic circumstances despite having a job.¹⁶ In Germany, the working poor tally has doubled from 2004 to 2014, accounting for more than three million people in 2018 with too little money to live, despite working on a part- or full-time basis.¹⁷ Even though this increase is largely driven by a rise in low-wage and/or part-time jobs held by workers who were previously unemployed or economically



inactive, the greater incidence of precarious employment challenges the notion of fairness and human dignity.

An unregulated, increased use of emerging technologies and its social implications do not bode well for the future, particularly if one believes that the rise of populism mainly derives from rising economic inequality, a perception of unfairness, the partial corruption of the political establishment, and declining faith in the problem-solving capacity of democratic institutions. People feel threatened when their jobs are at risk, and research indicates that “economic distress is often perceived as a loss of identity.”¹⁸ If opportunities for economic success, good health, and justice are taken away from people, they usually get very angry. After all, wrath is a big driver in political chaos, revolt, or even revolution.

The connection between economic prosperity and economic well-being on the one hand, and sociopolitical stability on the other, seems to be well understood by the Chinese Communist Party (CCP). Deriving its legitimacy mostly from the promise of increasing living standards and economic participation, the Chinese government creates more than fifteen million artificial jobs annually to guarantee an inclusive job market that delivers on the Chinese dream.¹⁹ To what extent such market distortions will work in the long run remains to be seen, but these efforts point to an additional layer of great power competition. Ultimately, the fate of each system will depend on more than innovation and efficiency increases, with the ability to mitigate the negative externalities that come with each new industrial revolution also defining destiny.

Due to wide-ranging automation, jobs are just no longer where they used to be. The high-tech industries that are powering today’s economies have little desire to change their economic models—and why should they? Most economic hubs simply don’t need the amount of cheap labor that contributed to building wealth in the industrial age. The availability and search for highly educated workers is centered around prosperous, big, and thriving metropolitan areas, reinforcing the vicious cycle of agglomeration in many democracies, while China is facing its own problems of surplus production, ghosts cities, and staggering market inefficiencies.²⁰

Case Study: Finland and the Nordic Well-being Society

The Finnish Government has addressed the alternating world of work in light of the Nordic well-being society and its changes.²¹ The message is as follows: the forms of work and employment relationships are more diverse, which require changes in, for example, legislation and social security. Work is no longer tied to time and place, but the change is not equally strong or synchronous in all sectors. Technological transformation is global, and more work is being done on global platforms and in mobile and virtual networks, and without the traditional employer-employee relationship. Flexibility is required in the labor market and in working life, and at the same time, the precarity of livelihood is a growing concern both for workers as well as the government. Within the education sector, continuous learning is emphasized, and many countries aim for a high-quality model for life-long learning for all population groups. However, complex and long-term phenomena such as the transformation of technology and work are not easily converted into clear policy actions. In addition, regulatory solutions and efforts to benefit from technology development should be made in multilateral settings. Foresight and future work scenarios provide tools for the needed societal dialogue about the changes and challenges ahead, but also about the changing values of work. Responsibility for launching this dialogue rests with decision makers.

Year	Candidate	Counties won	Total votes	Percent of Popular Vote	Aggregate share of US GDP
2016	Hillary Rodham Clinton	472	65,853,514	48.18 %	64 %
	Donald J. Trump	2,584	62,984,828	46.09 %	36 %
2020	Joseph R. Biden Jr.	520	81,268,924	51.31 %	71 %
	Donald J. Trump	2,564	74,216,154	46.86 %	29 %

Data from the Bureau of Economic Analysis, the Metropolitan Policy Program at Brookings, Dave Leip’s Atlas of U.S. Presidential Elections, The New York Times, and Moody’s Analytics.



1.2 Democracy on Defense

Over the past ten years, these economic factors have contributed to a steep decline of democracy in the world. According to the Varieties in Democracy (V-Dem) Project, “the level of democracy enjoyed by the average global citizen in 2020 is down to levels last found around 1990.”²² With India’s democratic decline, around two-third of the world’s population now lives in electoral autocracies. Consequently, the overall number of liberal democracies has dropped from forty-one countries to thirty-two during the same time period: “In North America, and Western and Eastern Europe, no country has advanced in democracy in the past ten years while Hungary, Poland, Serbia, Slovenia, and the United States of America have declined substantially.”²³

Autocratization in the modern world rarely occurs in a revolutionary manner, but proceeds in steps over time. Typically, “[r]uling governments first attack the media and civil society, and polarize societies by disrespecting opponents and spreading false information, only to then undermine formal institutions.”²⁴ According to the same report, deterioration of the freedom of expression, including the media, took place in thirty-two countries during 2020, while media censorship occurred in forty-two countries.

1.3 Emerging Technology and Declining Democracy

Of course, there are various dependent and independent causes for the global decline of democracy. Nevertheless, a 2019 Pew survey of technology innovators, developers, business and policy leaders, researchers, and activists revealed that about half (49%) of the respondents thought technology would weaken core aspects of democracy and representation by 2030, while some 33 percent gave the opposite answer.²⁵

A number of hypotheses point to the role of emerging technologies in projections of democratic decline. The first argument, laid out above, alludes to the ongoing transformation of working life and increased risk of losing one’s job because of automation and digitalization. The second argument links the decline of democracy with the expansion of information and communications technology (ICT), and the transformation of the information landscape. With the Internet, competition between (often multinational) media corporations has intensified. Traditional media outlets increasingly profit from advertising revenue rather than subscriptions, which leaves little room for high-quality journalism. Social media trends and click-bait define what most people read and see, while serious content is increasingly accessible only for those willing and able to pay for it—dividing audiences into distinct information bubbles.

From a democratic point of view, the Web and social media outlets are both a double-edged sword. On the one hand, new platforms

give everyone a voice, support freedom of expression, and open up access to diverse sets of information. For authoritarian leaders, ICT expansion can be a menace by providing digital tools for citizens to mobilize against the regime. On the other hand, new tech platforms gave birth to information bubbles and subsequent polarization, increase the effectiveness of mis- and disinformation, and promote nonconsensual cultures of debate. Hate speech and conspiracy theories are an increasing threat to the civic trust and democratic political order. In democracies, extreme populist parties have been able to capitalize on this side of technological progress, exploiting public grievances with targeted messages. Through the all-encompassing digitalization in entertainment, trade, and service delivery, the virtually universal ownership of mobile devices, and the unstoppable spread of the Internet of Things (IoT), technologies have revolutionized the amount of data collection and transfer during the past two decades. Increasingly rapid data processing, cloud computing, and advances in applying machine learning all contribute in the vastly improved accuracy and usability of data analytics. While new technologies offer new possibilities for democratic participation, they also allow powerful manipulation and surveillance by both corporate and state entities.

Commercially acquired personal data—or profiles constructed from such data—have already been used to manipulate democratic processes. Illegitimate manipulation can be attributed to, depending on the case, either domestic political rivalries or foreign adversarities. Western democracies have responded by legislative measures to govern data collection, transfer, and usage. The European Union (EU), for example, has been especially active in promoting new regulation. The idea of strengthening legal control is generally accepted in Western societies, but when it comes to actual policies, consensus abates: tech companies oppose measures that clash with their business models, and national governments are concerned about undercutting innovation and competitiveness. The main question is how to balance potentially conflicting objectives.

Privacy concerns restrict autocratic countries to a much lesser extent. The Chinese government, for instance, has exploited personal data and AI to enable a comprehensive surveillance scheme, which it uses to restrict the freedom of speech, identify dissidents, and suppress any type of political opposition. Close links between Chinese tech giants and the government—the obligation to hand over consumer data to the authorities—has figured in some Western decision making cycles to restrict the deployment of Chinese technology in core communication infrastructure. Nevertheless, the ongoing US campaign against Chinese tech firms goes much beyond just espionage and privacy issues. Motivations range from pure geopolitics to asymmetries in trade and unfair industrial practices, but also reflect a genuine concern about the export of solutions aligned with the authoritarian societal model.

Interestingly enough, China recently updated its data protection rules with the new Personal Information Protection Law (PIPL).²⁶ While the main objective is most likely to rein in the growing power of tech giants like Alibaba and Tencent, the legislation improves citizens' privacy rights vis-à-vis private companies. The law also applies to foreign companies processing the personal information of individuals located within China and is likely to limit cross-border transfer of personal data.²⁷ Furthermore, it is also an effort to keep pace with a global trend toward strengthened data protection regulation. The EU General Data Protection Regulation (GDPR), for instance, is a normative power asset. With regulatory frameworks of its own, China may try to boost its efforts to build up its international trustworthiness and promote its values and solutions in various types of international negotiations on standards and norms.²⁸

What does statistical research say about the effect of the ICT upon the prospects for democracy? According to Pelle Ahlin, a V-Dem Institute researcher, “the key to understanding the effect of ICT on democratization is the interplay between the technical literacy of the population, and the technical literacy of the regime.”²⁹ Accordingly, if an authoritarian regime has a higher level of technical literacy than its population, democratic transition is significantly less likely to occur. Conversely, regimes with lower technical literacy than their populations are more likely to experience democratic transitions. China, Iran, and Russia are examples of states using their technical capacities to suppress popular demands and stay in power, while democracy attempts during the Arab Spring are instances of the latter.

Overall, the challenges facing governments today are more complex due to technological and cultural changes. Similarly, public actors trying to cope with the changes have several limitations. For example, there are substantial inherent structural barriers, as “limited investment for innovation, and deeper cultural barriers blocking disruptive thinking. In addition, the open use of public data and knowledge remains challenging in many places.”³⁰ Questions about reforming either local or global governance systems include how to make the most of technology, how to work with citizens and draw on the abilities of society to address needs, and how to rapidly test new approaches and ways of working in a fast-changing world.

In terms of public administration, the European answer most often culminates in acting as a platform regulator. In some cases, it is possible to move from the direct regulation of people to the regulation of the platforms where commerce, work, and many other aspects of life take place.³¹ Although the main players in the platform economy are multinational, they can be steered by both country-by-country collaborative measures and rule-making in line with EU regulations.

2: THE EVOLVING GEOPOLITICS OF TECHNOLOGY

To understand how countries and regions react to these described changes more specifically, an examination of the technology landscape in the United States, China, and Europe is inevitable. It shows the ever increasing great power rivalry, China's growing tech ambitions, and Europe's struggle to not fall behind, which puts at risk the EU's bid for digital sovereignty and a global role in shaping a democratic and secure tech future.

2.1 A Look at the United States: Biden Puts His Faith in US Tech Revival

The Biden administration is committed to boosting the US potential for tech innovation for a number of reasons: to outcompete China; ensure the United States leads in combatting climate change and erecting a green economy; and build a more tech-skilled, inclusive workforce. The latter two objections were absent from the Trump administration's goals, which were focused exclusively on stunting China's rise as a tech leader and luring manufacturing, which included high-tech industries, back to the United States.

It's early days yet. The administration has only been able to legislate a part of its overall funding package, which would help in realizing goals two and three, and it's unclear to what degree, even with a full program enacted, the Biden administration will succeed in spreading tech skills and innovation to disadvantaged communities, including rural areas. Moreover, the administration has not fully laid out a strategy vis-à-vis China's bid to be a tech leader. In part, Biden wants to do so with allies and it remains unclear whether the EU would go along with a highly aggressive set of punitive measures against Beijing. Furthermore, US businesses have been voicing their concerns about pushing China too hard for fear they would further limit market access for American firms.

Holding China Accountable for Its Unfair Practices

Broadly speaking, Biden is largely continuing the China-and-technology focus that Trump started four years ago. The vigorous and public accusations made against China by Secretary of State Blinken and National Security Advisor Jake Sullivan at the Alaska meeting with Chinese counterparts have been interpreted as the opening salvo in a stepped-up competition across the board, but particularly on technology. Sullivan has appointed a deputy on technology in addition to the traditional senior director for the topic on the staff of the National Security Council (NSC). There is a practical political side to heaping opprobrium onto the Chinese government. Democratic strategists see it as a way to create consensus in an otherwise fractious political environment as well as to get the Republicans and the public behind Biden's ambitious spending

plans. The administration can point to China's increasing research and development (R&D) expenditures in recent years while US federal spending, which usually favors basic research (as distinct from the private sector's more commercially motivated R&D), has languished. While there is increasing support across the partisan divide for the view that China is the United States' big challenge, so far Republicans are not buying into the full price tag for Biden's spending plans. Federal R&D will likely increase, but Biden wants increased domestic spending targeted at boosting tech innovation in disadvantaged areas, which adds to a cost already making Republicans wary. Support for free community college for all eligible applicants has already been dropped from the second part of the funding package yet to be passed by the Senate.

Western critics condemn China's use of technology such as facial recognition, and see the nation's development of new technology as too wedded to regime efforts to tighten social control and suppress criticism. Showing that Chinese technology equals authoritarianism helps with Biden's argument that China's rise as a technological player is a threat to the foundations of the Western liberal order. Administration officials make use of democracy frequently in their speeches, calling for its protection, in part by prohibiting others from adopting Chinese technology. No doubt Biden is sincere, but the argument also serves as justification for calling on allied and democratic partners to help the United States in its fight against China and for supremacy.³²

Biden's desire to work alongside allies and partners is a striking difference with Trump, whose instincts were unilateralist. What remains unclear is the extent to which US allies and partners in Europe and Asia want to be thrust into a Cold War-type situation with the Asian giant. Many are repelled by China's more aggressive tactics and share Biden's concern about the country's use of technology to buttress authoritarian rule. Nevertheless, they depend on the country for economic trade and investment. Europeans have adopted a compete, cooperate, and confront approach to dealing with China, which allows for working with Beijing on issues where interests overlap, but also competing with and confronting the Chinese government where they do not.³³ Worries about the relationship vary among EU members. While EU leaders signed an investment treaty with China over US objections, its ratification is currently on hold in the European Parliament. Brussels as well as individual member states are making more efforts to closely oversee and, if necessary, block any unwanted takeovers of European companies by Chinese firms and investors.

Throughout the world, the United States has been trying to cajole and sometimes arm-twist countries into blacklisting Huawei Technologies. Ecuador, for example, negotiated a deal whereby the US International Development Finance Corporation will help Quito repay billions of dollars in loans to China in exchange for barring Huawei from its communications plans.³⁴ Trump convinced Brazil's President Jair Bolsonaro to also join the US Clean Network Initiative banning Huawei, but the Brazilian leader later decided not to limit



President Joe Biden signs bills into law at the South Court Auditorium of The White House in Washington, DC. November 2021. (Photo by Oliver Contreras/Sipa USA).

Huawei's role in what is seen as an effort to avoid delays in the delivery of Chinese-made COVID-19 vaccines.³⁵ Paraguay, too, is working with Huawei on a 5G rollout, largely because of the lower price. These US efforts to force Huawei out of markets has the potential to divide South America, making it more difficult for regional cooperation in areas involving new communications technology. Regional splits reproduced elsewhere could have serious economic implications for the developing world. For many, Huawei offers a cheap entrance fee for 5G cellular networks.

At home, Biden's administration has so far been more interested in soliciting company views than Trump's. Many US corporations don't want to be pushed out of the expanding Chinese market, even though they support US government efforts to combat state subsidies and intellectual property theft. While there appears to be growing US public acceptance of the need for some decoupling on critical goods or sensitive technologies, Qualcomm, for example, has tried to make the case that US firms will be hurt economically by being unable to deal with Chinese tech companies like Huawei. So far, the Biden administration has not made a definitive decision on retaining those Trump restrictions, making it clear the White House wants to hear US industry views.

Building a Green Economy: A Lot More Difficult than Biden Lets On

The Biden administration's focus on technology as the solution to climate change was apparent in the White House-organized 2021 Leaders' Summit on Climate in April. The expert consensus suggests much of the needed technology is yet to be invented and/or scaled. International Energy Agency head Fatih Birol, for example, said at the summit that "reaching net-zero emissions by 2050 would depend in large part on the use of technologies that were not yet ready to be used at scale, such as carbon capture and storage, and the use of clean hydrogen as fuel."³⁶ Make no mistake, he said, this is a Herculean task.

Trying to undo the widely held view that a transition to a green economy will involve a weakening of Western competitiveness and loss of jobs, Biden went out of his way at the summit to put the creation of new, high-quality jobs at the heart of his green energy push. He has been criticized by many for sugar-coating what is likely to be a difficult transition, particularly for many workers having to move out of fossil fuel-dependent industries. Whatever the challenges, the Biden administration is ready to invest resources in the effort to solve climate change and generate new middle-class jobs, being well aware about the potential social implications should efforts fail. Furthermore, Biden wants to win the electric vehicle market globally and has made a down payment with his recently enacted infrastructure measure, which includes \$7.5 billion for zero- and low-emission buses and ferries, aiming to deliver thousands of electric school buses to districts across the country, according to the White House.³⁷

The law also includes \$65 billion to “reenergize America’s power infrastructure.”³⁸ There will be spending on protection against historic super storms, floods, wildfires, and droughts. Some of that will involve making the nation’s fragmented power grid more secure and efficient. More uniform broadband Internet access could empower greater telework and less commuting, which would lessen carbon emissions.

There are various estimates for new, high-paying jobs that have been promised. Robert Pollin, economics professor and co-director of the Political Economy Research Institute at the University of Massachusetts Amherst, in April 2021, estimated job creation of between one million and 1.2 million positions per year in the energy efficiency and renewable energy space, according to CNBC reporting. The new jobs would be in wind and solar energy, heightened energy efficiency in industrial buildings, and high-efficiency cars, experts say.³⁹

Moody’s Analytics Chief Economist Mark Zandi’s estimates paint a far less optimistic picture of job growth. This summer, he forecast that 2.2 million jobs would be created by 2031—if both the bipartisan infrastructure bill (which has passed) and the larger, (as of this writing) still-pending reconciliation package, then structured as a \$3.5 trillion plan, are enacted.⁴⁰ Since Zandi’s July 2021 report, the \$3.5 trillion price tag has been pared back significantly, and Zandi has said a smaller package would yield a smaller number of new jobs, too.⁴¹

The Biden administration wants to further revive the Obama-era clean energy loan program that was criticized for wasteful spending under the earlier president. Department of Energy Secretary Janet Granholm recently announced that up to \$40 billion in guarantees will be made available for a variety of clean-energy projects, including wind, solar, and hydro power, advanced vehicles, geothermal, and even nuclear energy.⁴² The plans for boosting government-funded basic R&D (described more fully in the next section) would also contain provisions for green energy.

The infrastructure bill that passed does not contain any measures, such as a carbon tax or clean energy standards, which would force power companies to move away from fossil fuels.⁴³ The administration has promised that the companion spending bill will contain the largest investment ever made by the United States in a clean energy economy and hopes it will be passed intact in 2021. The House of Representatives approved it on November 19, but it still faces significant challenges in the Senate. Any compromise would probably involve scaling it back further, not killing it entirely. Most climate change experts say that even if Biden gets everything he asks for from Congress, it’s still too little, too late.

An Inclusive, Highly Tech-Skilled Workforce and More Diffusion of Innovation

Like other critics of the tech industry, Biden bemoans its concentration in a select number of coastal areas, reducing the opportunities for the broad mass of the middle class to get training and high paying jobs. His administration is well aware that that half of the jobs in high-growth, high-wage sectors are concentrated in just forty-one

counties in the country. Many of these jobs are in the tech area or depend on high-tech skills. Biden had originally proposed funding for schools and community colleges to help build human capital, but much of the original proposed funding was cut as the infrastructure bill had been pared down to overcome Republican and moderate Democratic opposition.

2.2 A Look at China: The Rising Country’s Tech Ambitions

Chinese Premier Li Keqiang announced last March that China will significantly increase its R&D spending over the next five years in a push to make “major breakthroughs” in technology. The comments came during a speech at China’s annual parliamentary “Two Sessions” meeting, as Beijing laid out its priorities for the coming years. Accordingly, China’s R&D spending will increase by more than seven percent per year between now and 2025. R&D will subsequently account for a higher percentage of gross domestic product (GDP) than in the previous five years.⁴⁴

China’s far reaching ambitions are driven by several factors. Without major advances in innovation, China is likely to be stuck in the middle-income trap. After the rapid advances of the past three decades, any slowdown would result in a plateau in household incomes, making it harder for China to achieve its goal of reaching Western living standards for the bulk of its population by the hundredth anniversary of Communist Party rule in 2049. While few rapidly developing countries avoid such a trap, becoming a world innovation leader would allow for many more well-paid jobs to replace the low-skilled ones that have characterized the Chinese economy for so long.

The country also faces a demographic crunch that makes innovation imperative. Having benefited from the large bulge in working-age population during the last three decades, China now faces a sharp drop-off in the proportion of workers by the mid-2020s and a rapidly aging population. Boosting its productivity rate therefore is vital for maintaining growth. Being on the cutting edge of innovation means that it can be a world leader, reaping material advantage along with prestige. China saw how US computing and Internet prowess boosted its innovation, temporarily lifting its share of world GDP in the 1990s. No doubt, China wants to replicate that first-mover advantage for itself in the area of new emerging technologies, first and foremost artificial intelligence.

Cutthroat Commercial and Geopolitical Contest

More recently, Beijing’s added push to speed up its innovation capacity is motivated by fears of the United States stopping the country in its tracks, preventing it from becoming an innovation leader. Since 2016, those fears are more than illusory, as the former Trump administration blacklisted Chinese firms, cutting off supplies of vital goods and services to China and waging an international campaign against countries adopting communications equipment from Chinese companies, most notably Huawei.⁴⁵

Alarmed by the speed at which China has mastered and become a leader in some technologies, the United States believes it still holds a large advantage in computer chips, which could slow China's tech dominance. At this point in time, the country still lacks chip-makers that can compete with the likes of Intel Corp. and Taiwan Semiconductor Manufacturing Co., although it is pouring gigantic resources into building up its own. "Every US market leader in the computer chip industry now has a Chinese 'doppelgänger' that is being positioned to take its place as a vendor," according to the Financial Times.⁴⁶

Furthermore, China has launched an intensified effort to "de-Americanize" its supply chains. For many in the leadership who always wanted to make China less dependent on others, the US trade war and Huawei sanctions have arguably given decision-makers in Beijing the necessary cover for something it has long desired.⁴⁷ US-Chinese tensions have consolidated domestic industry support for "localizing production." There is a countrywide consensus that China must build a viable semi-conductor. Chinese companies used to prefer US products because they were seen as superior; increasingly, however, aspiring local chipmakers are working with Chinese firms to perfect their inputs. This homegrown industry has the potential to hurt US companies in the medium and long term. China accounts for at least 25 percent of the sales of most US chip-makers, which is why US companies such as Qualcomm are lobbying the Biden administration to weaken restrictions on sales to China. Few in Beijing's decision-making circles believe 100 percent de-Americanization is a realistic goal in the near future, but the rapid growth of Chinese start-ups in recent years shows the potential for them to become semiconductor leaders, threatening US market share in China and elsewhere in the world.

The country is becoming more competitive in other technologies as well. Chinese cloud service providers are gaining speed rapidly, benefiting from government efforts to prioritize local companies. Yet China's cloud service providers are expanding beyond the home market. Their lower cost is a key factor in their expansion in Europe and Australia, while cultural similarities are an attraction for the Southeast Asian market. China's Belt and Road project and its related Digital Silk Road also create opportunities.

Some internal factors have influenced the rapid pace of China's advances. A report by the US National Security Commission on Artificial Intelligence projects that "within the next decade, China could surpass the United States as the world's AI superpower,"⁴⁸ and notes that AI entrepreneurs in China benefit from a ready supply of data to test their algorithms in an environment where the public is less skeptical than in the West about embracing new innovations, such as mobile payment platforms that provide ample data on consumer habits.⁴⁹ While Chinese consumers are becoming more concerned about how the leading tech companies use their data, they are more trusting of the government. The country has turned into "a surprise leader in Asia on data privacy rules," according to the Financial Times, but the rules on data protection apply only to tech companies and not the government.⁵⁰ The recently established social credit system uses "big data" gathered on everybody's movements, buying habits, and opinions as voiced on social media to determine trustworthiness. Apparently, "the goal is to construct a high-trust society which rewards individuals and companies for following the law."⁵¹ Notwithstanding regional variations, there are distinct social credit systems for citizens, businesses, and government officials. Such a surveillance state—repugnant to Westerners—is tolerated by most Chinese because it reduces crime, while the government uses it for social control and stability.



Chinese President Xi Jinping arrives for the second plenary session of the National People's Congress (NPC) at the Great Hall of the People in Beijing, China. March, 2021. REUTERS/Yew Lun Tian

Case Study: China Is Becoming More Capable in Biotech and Genomics

China's biotechnology industry has logged double-digit growth. The country has basically gone from being one of the slowest to one of the fastest nations in the adoption of new technologies in the biosphere. The sector is seen in China and internationally as a core area of national scientific and economic development. China's healthcare industry overtook Japan in 2016 to become the world's second biggest and is expected to surpass the US healthcare industry within three years. Pharmaceutical spending in China totaled \$137 billion in 2018 and will reach \$140 billion to \$170 billion by 2023. Under the "Made in China 2025 strategy", which is designed to advance the country's technology and manufacturing goals, Beijing has set targets for domestic drug companies to make progress on innovation and has streamlined the respective approval process. In one important area of biotech—namely geonomics—China is thought to be ahead of the United States and other countries, particularly in the use of CRISPR gene-editing technology. US scientists are concerned because genomics will be increasingly important for biotech breakthroughs and more individualistic healthcare, and will transform materials and manufacturing. The life code-based global economy could account for more than 25 percent of global GDP by 2030, and close to 40 percent by 2040, including healthcare and medicine, agriculture, food, materials, energy, and cosmetics.

The Unresolved US-China Competition

A more thorough study would be needed to catalogue just how close China is to leading on other emerging technologies. The fact that the country has made so much progress in such a short amount of time on key issues like AI and genomics suggests, however, that it is unlikely to be deterred by the sanctions and tariffs that are being levied by others, especially the United States. There are risks, too, for everybody, especially if the race gets out of hand and feeds into a broader dispute that erupts into a hot conflict. Technologically, China and the West could diverge, bringing about a fragmentation of the world economy, and along with it, subsequently lowering growth for everyone. Alternatively, a new modus operandi could be established which favors cooperation except on military-specific technology, pares the West's tariffs and sanctions by respective cooperation offers, and provides Chinese market access across all sectors. Joint Sino-Western tech projects might be announced to overcome global challenges such as climate change, poverty, and disease. For Western firms, it is a chance to reenter the world's biggest and soon-to-be richest market. However, reality appears to be moving toward quite the opposite dynamic and many observers warn of a new Cold War on technology.

2.3 A Look at the “Old” Continent: Europe Aims for a Global Role in Shaping a Democratic and Secure Tech Future

In the middle of this great power competition, the EU actively promotes its human-centric vision for technology development and its role as a trusted standard-setter, market regulator, and advocate for democratic values. In the coming years, the European focus is most likely to be on strengthening the EU’s position in global discussions on technological and digital issues, and to avoid falling behind in the global AI race.

Generally speaking, confidence in the EU governing structures also collapsed during the COVID-19 pandemic.⁵² In this year’s State of the Union speech, European Commission President Ursula von der Leyen spoke to the EU’s struggles in achieving its goals and projecting its values.⁵³ With the increased understanding of the challenges and opportunities ahead for the EU, there is correspondingly more political attention directed to how technology affects Europe’s role in the world and how it could inform policy adjustments. How do emerging technologies, in particular, impact the EU’s policies and what is the role of diplomacy in amplifying Europe’s digital agenda? At the heart of it is the quest to understand how power and influence are shaped at the intersection of technology and geopolitics.

The EU is pursuing technological development and autonomy from a position of relative weakness given the scarcity of homegrown big tech companies, while US and Chinese giants occupy critical network nodes.⁵⁴ Similarly, Europe’s research and innovation performance has been falling behind. Especially in the fields of biotechnology, software, and the Internet, the United States has many more companies than Europe (8.6 times more in biotechnology and 8.8 times more in software and the Internet); significantly higher R&D investments (€34.3 billion vs €2.6 billion in biotechnology, respectively; and more investments in software and the Internet (€92.7 billion vs €7.5 billion, respectively).⁵⁵ The gap is especially wide in late-stage innovation, and in Europe, there is a strong underlying imbalance between early- and late-stage financing.⁵⁶ The EU’s R&D investment performance compared to its global competitors is creating concerns over future technological dependencies. Lately, von der Leyen has further nudged member states toward greater military independence from the United States and less reliance on Asia for computer chips for similar reasons.⁵⁷

In the end, R&D and innovation are still key drivers that will define Europe’s future and performance regarding the key technologies to match the Continent’s green and digital ambitions, support European competitiveness, and safeguard the security and health of individuals. Currently the EU is developing a record number of bills and legal initiatives trying to limit the power of global tech companies. The European Commission’s current strategy is structured around two key ideas: creating free movement of data to keep business rolling, and rules of the game that protect against abuse.⁵⁸ At the core of the strategy is establishing coalitions of like-minded partners, and these informal groupings have even begun to dominate the EU’s foreign policy priorities.

The EU Struggle to Achieve Its Goals

Despite the emphasis on technology in the foreign policy sphere and strategically oriented initiatives, the EU and its member states still lack a comprehensive and coordinated digital and technological foreign policy. Sure, the need for such a digital foreign policy has been identified and decision makers are aware that its absence inhibits the EU’s ability to unleash potential in shaping the global technological future and project its influence on global rules and norms. As pointed out, technology is a central component of the strategic competition between the United States and China. In this geopolitical and technological rivalry, Europe has not, however, found its own role. Until now, the EU has taken the lead on responsible digitalization by addressing challenges of the tech industry through regulation, but to elevate these efforts globally, it must build further on its role as a standard-setter to have a much stronger voice outside the Union’s borders. Making Europe fit for the digital age is not only necessary for advancing the Continent’s interests, but also for European states having the capacity to ensure that the technological future belongs to all citizens, everywhere. Many long-term questions remain, such as addressing the taxation of the digital economy.

Playing a diminishing role in the technology field is deeply challenging for Europe. Currently, with the European Chips Act and other digital initiatives, the European Commission is sending geopolitical and economic signals about a stronger tech sovereignty. However, many long-term questions remain concerning, for example, the management of dependencies on foreign technology and balancing amid US-China competition.



Case Study: Ethics and Emerging Technology

Many radical and emerging technologies lack societal impact at this point. Both artificial intelligence and biotechnology, and especially the combination of digital technologies and biotechnology, are in the core of anticipated societal transformations. DNA reading and writing, biotechnical meat and meat imitations, neural networks and deep learning, robotic farming, and autonomous logistics—the potential effects of such technology advancements in the field are untold and beyond the scope of this work. As seen in the section on China, this rising nation is fast becoming more and more capable in biotech and genomics. A development that underscores an important point: innovation around biotechnology has expanded beyond the traditional biotechnology leaders, such as the United States and Japan, to include other countries, with China standing as the most important new major player in this space. In the global biotechnology market, Europe now comes after the United States and the Asia-Pacific area (with China and Japan at the forefront). At this stage of the COVID-19 pandemic, research and development budgets have been squeezed, especially in Europe, and recovery is slower.

European policy and budgetary negotiations tend to highlight the opportunities and responsibilities to initiate and drive ethical debates within technology development and in the quest to solve global challenges.⁵⁹ Decision makers aim to shape the discourse on global governance of technology at an early stage, including themes such as global justice or democratic deliberation in the process. For example, the EU has just proposed new rules and actions aiming to turn Europe into the global hub for trustworthy artificial intelligence,⁶⁰ and is continually advancing its cyber-deterrence posture to prevent and respond to malicious activities. When it comes to ethical questions, however, it is less about making a perfect set of rules for machines or biotechnology, and more about reasonable disagreement, plurality of perspectives, conflicting moral values, and images of human beings and conceptions of a good life. There are questions about the role of humans in nature, but in the end, it is about how societies choose wisely and justify their choices.

3. IMAGINING ALTERNATIVE FUTURES

To better understand the geopolitics of technology during the next five to ten years, the authors present three scenarios describing possible future developments. The projections portray a “not-so-distant future,” in which technological transformation shapes a postpandemic world.

The first scenario, Postpandemic Letdown and Western Disarray (The Local Picture), uncovers the digital divides and inequalities within automated working life and COVID-19 aftershocks. The second scenario, Europe in a Bipolar Tech World (The Global Picture), reflects deepening US-China tensions and a drifting toward a transatlantic split. The third scenario, Counting the Costs of Technonationalism and the Balkanization of Cyberspace (The Regional Picture), depicts regulation and global governance efforts gone wrong. Together they broaden the horizon and underscore the importance of good decision-making today.

3.1 Postpandemic Letdown and Western Disarray (The Local Picture)

Hopes were high in the middle of 2021 that the West would pull out of the pandemic and see accelerated growth and a return to relative normalcy after a year of deep recession. Yet after a spurt of inclusive growth, in which most segments saw gains, all the prepandemic structural problems resurfaced, particularly the inequalities that had grown worse under the pandemic.

Believing it is best not to depend too much on the vagaries of human employment, employers raced to automate as much of their business as possible. For the unskilled and semiskilled, whom everyone depended on for basic services during the pandemic, it was a double whammy. Initially, their wages had grown as employers had no choice but to hike pay to attract any workers. Then, without the necessary tech skills, they soon learned they were expendable when firms began to automate their operations. Despite central banks’ monetary-easing efforts, there was no return to prepandemic full employment. Worker participation rates dropped in the advanced economies as many of the low-skilled workers grew frustrated in the search for good-paying jobs. Over time, many of the unskilled and semiskilled dropped out of the workforce or retired early.

The more tech-savvy workers had largely done well and saw their wages improve in the aftermath of the pandemic. That initial improvement was not, however, replicated year after year. Automation was now also impacting the more complex work processes that formerly required skilled humans to operate. Although not all their jobs were made redundant, there was enough disruption that even retained skilled workers felt the pervasive, growing sense of job insecurity. The prepandemic pattern of capital being remunerated much more than labor resumed. Business leaders made the case that productivity gains from automation had boosted GDP in advanced economies above prepandemic levels and government revenues as well, which helped with increased social welfare demands.

Moreover, automation was helping firms deal with China, which was increasingly unfriendly to Western businesses. After being the other large economy that didn’t suffer a severe recession during the pandemic, China’s growth sputtered in the years following the initial outbreak of the coronavirus. Continuing outbreaks from different variants, such as delta or omicron, crippled parts of Chinese industry. Xi Jinping’s data security reforms also hit China’s tech firms hard. Beijing’s efforts to de-Americanize China’s supply chains—part of the Made in China plan—caused more disruption. With tensions increasing, US and Chinese firms sought to avoid any dealings. European businesses were caught in the crosshairs, and some bowed out of the Chinese market for fear of US secondary sanctions while others concentrated on doing business with China and sold off their US interests. With the contraction of global supply chains, US and European firms saw an opportunity to eliminate jobs through advanced automation technologies. Chinese businesses were more constrained in investing in automation technologies as the government was worried about higher unemployment. Robotics and 3D printing also took off in the labor-saving effort by Western businesses.

Workers’ Rights and Reforms

Smaller countries fared better than larger ones in stanching the growing societal divisions that grew out of rapid technology changes. To begin with, the income disparities were not as high in the many smaller European countries that had invested in expensive social welfare efforts. There was an understanding that automation could not be stopped—and shouldn’t be for the sake of improved efficiencies and all-around productivity. After all, automation was a godsend for Western societies with low birth rates and rapidly aging societies. Instead, the unskilled should be incentivized to learn new skills. Indeed, the educational systems would have to be completely remade. Everyone had a right to periodic sabbaticals for months of learning new skills. Just as there was a right to health-care and retirement, all workers had opportunities for lifelong learning. Businesses could see the benefits.

Larger European countries had a harder time coming around to revamping the whole educational system, despite the benefits these smaller countries were achieving. There was pushback by businesses against another set of enhanced worker rights which the private sector would have to shoulder. In these bigger societies, reform had been more difficult for some time, adding to the challenge undertaking these reforms. In France, for example, where the reelected Macron government had been trying to lessen the burdens on employers, there was worry that enhancing the existing training programs and relatively generous social welfare would be too costly. Critics cited the low educational standards in job-deprived and socioeconomically disadvantaged areas as the real culprit for workers not being able to easily upgrade their skills.

In the United States, deep political partisanship combined with a decentralized educational system slowed any reforms. Americans

had seen sagging educational standards for some time, which federal government officials felt increasingly powerless to reverse given much of the authority for the educational sector rested with local and state officials. Conservatives decried the growing role of government in the economy and saw the new proposed training-voucher scheme as pushing the country toward socialism and higher taxes.

The growing numbers of college and high-school dropouts fueled populism at both ends of the political spectrum—left and right—leading to a political crisis. When the unemployed staged a million-person march on Washington, the National Guard was called out to protect the protesters from armed right-wing militant groups. As it was, the battles between protesters and the radicals resulted in several hundred dead and much of downtown Washington vandalized. Similar riots broke out across the country. At the congressional midterm elections, lawmakers calling for increased training programs and a top-to-bottom reform of the US education system were elected. Businesses also saw that they had gone too far with automation and promised to retrain existing workers for new jobs instead of just firing them.

New Social Model Evolving

Aided by the lessening of fears of a super-competitive China, Western leaders felt they had some maneuvering room to develop a new social model countering what was the fragmenting effect of the new technologies. Just as World War II had been important for spurring a new social peace buttressed with healthcare and pension benefits for all, the postpandemic era ended up redefining social welfare. Educational excellence would no longer be reserved for the privileged who could pay for it. Everyone had a right to having their abilities fully developed with no one being left behind. For decades, teachers in many Western societies had been poorly paid.

That changed along with the importance of providing a good education to everyone. Several big corporate CEOs took the lead in trying to regain the trust of their employees by offering more social benefits—paying for educational and retraining programs—and promising new employment to those whose jobs were eliminated through automation.

With personal dignity being so connected with employment, the concept of work was expanded. Volunteerism was honored and treated as equivalent to paid work. Moreover, with the rapid expansion of the educational sector, many jobs were created that did not exist before. Small and medium-size businesses—not just the big ones—became more adept at retraining and finding new opportunities for their workers. Where young workers once planned to spend only a few years with an employer, they now found the advantages of staying and benefiting from retraining so enticing that many ended up, like their grandparents, staying with one firm for their whole careers.

At times it had looked like some Western societies would be pulled apart and there was no hope of finding a solution to inequalities. Yet there was a deep, popular well of support for inclusiveness. The pandemic had been an eye-opener for many of the deep divisions in society. For the more tech-savvy, younger, and coming-of-age generation, it was intolerable that the unskilled and semiskilled should be “losers” in the latest technological revolution. Older generations—increasingly victims of automation—also began seeing the benefits of a better social safety net. Over time, the fears fueling populism dissipated and centrist politics came back with the maintenance of a social consensus, a broad-based popular expectation for political leaders.



3.2 Europe in a Bipolar Tech World (The Global Picture)

In the run-up to the 2020 presidential election, Biden promised to turn the clock back on Trump's policy changes. When it came to China, however, Biden piled onto Trump's hostility toward Beijing. US tariffs on Chinese imports have stayed in place despite Beijing's call for them to be reduced. The Biden administration, in coordination with the EU, has sanctioned China for its ruthless repression of Uighurs in Xinjiang and taken additional measures to punish the country for cyber hacking. Sino-US tensions continued to build in the South China Sea and over Taiwan. With no sign of Beijing backing down, the US administration lays out a strategy for restructuring NATO to be targeted on Russia and China, combining its allies from Asia and Europe into an enlarged, redefined alliance. Neither European nor Asian allies are keen on these US ideas, but temper their criticism to avoid offending the still predominant superpower.

Squeezed by Sino-US Escalating Tensions

With both Asians and Europeans less than enthusiastic, Washington puts the enlarged NATO idea on the back burner. Yet Europeans are less able to fend off Washington's idea of resurrecting the Cold War-era Coordinating Committee for Multilateral Export Controls (CoCom), which was used to embargo exports of sensitive materials to communist countries. The US administration believes the competition over emerging technologies is at the heart of the conflict with China. Many in Washington subscribe to the belief that the Asian country has only become the leading tech competitor through its theft of US intellectual property. Besides export controls of cutting-edge tech, decision makers seek to wean Europe off China's

tech exports. Denying the country's tech giants market access to Europe and the United States would, American strategists believe, curb Chinese innovation.

Increased US extraterritorial measures mean that the EU finds it hard to proceed with its goal of "strategic autonomy" and finding a "third way" without European businesses incurring restrictions on access to US markets. The US administration says it will offset any harsh anti-Chinese measures by offering greater support to the Europeans against Russia. Northern European export-dependent economies are likely to be conflicted and divided in their reactions to such an anti-Chinese push by Washington. The Baltic states, ever mindful of the Russian threat, are an exception and welcome the increased US commitment. At the same time, the Baltic states have been part of the 16+1 format with China, a platform initiated by Beijing to foster cooperation; although they lack deep ties with China, most of them have been hoping (like other Eastern Europeans) for more Chinese investment and trade. Under pressure from Washington, the countries of the region sign on to the US offer, sacrificing the possibility of strong economic ties with the Asian giant.

By contrast, the Scandinavian nations and Germany find the increased hostility toward China under Biden or any other subsequent US president very unwelcome. Berlin's most important trading partner is China; Finland is the biggest EU investor in China in proportion to the size of its economy, and China is Sweden's largest trading partner in Asia. Overall, the EU has become the country's biggest trading partner and the two sides—EU and China—recently signed an upgraded trade deal, expanding the one that was signed and then halted in 2021. Squeezed between the United States and China, the Europeans—particularly Nordic nations and Germany—would pay a stiff economic price for going along with any US strictures against China and would use their diplomatic power to argue for a course change in US foreign policy.

Other EU countries are less economically dependent on China, but resent US interference and push back against US extraterritorial measures while professing their commitment to strong transatlantic ties. The EU tries to walk a fine line and neither offend Beijing nor Washington, finding it increasingly hard to defy American decision-makers on sanctions and tariffs against China without endangering US/NATO security guarantees.

All European Governments on Edge

At home, the European social model is under increasing pressure. Like the United States, many EU member states instituted new taxes on the wealthy to cover budget shortfalls. While subsidizing during the first waves of the coronavirus, populism is on the upsurge again. After the initial economic surge, European economies slow, giving populism a new lease on life. The EU and immigrants are targets for the renewed surges, and nationalists are gaining election victories in multiple member states. There is a growing sentiment in favor of protectionism and the establishment of more border controls. Eastern Europeans even begin refusing entry to European citizens with immigrant backgrounds.

European Split on a Single Foreign Policy

Despite initial efforts to find a united middle ground, Europe splits and wavers in the face of US pressure. France and the Baltic, one or two of the Nordic, and several East European states try to temper growing US antagonism, but share Washington's worries about a "hyperpuissance" in the East. Since Brexit, the United Kingdom has been trying to open new markets in Asia, including in China, but sees no real alternative to the United States remaining its closest ally. London remains the first to always accede to US pressure.

The Baltic and East European governments worry that Russia will take advantage of Western weakness and intervene in their countries. Moscow's strong ties with China are seen as giving Putin more self-confidence despite Russia playing a junior role to Beijing. Germany and some of the Nordic states become even more adamant in their belief that China is their economic lifeline. With Western markets slowing, Asia looks to be the only outlet. Italy and some of the Eastern European states like Hungary are also eager for new Chinese investments, and hedge their bets.

Out with Strategic Autonomy, in with Hedging

The growing split and mutual attacks by the two internal camps paralyze the EU. The initial rescue package that many observers saw as a step toward greater integration is never repeated. The idea of strategic autonomy is forgotten. Enlargement is at a standstill despite renewed calls from Ukraine, Georgia, and others seeking entry. China's deteriorating human rights record and saber-rattling against Taiwan angers many European publics, sparking a growing popular movement throughout Europe opposed to China. Germany seeks to mediate, going along with some punitive measures against Beijing and Moscow, but diluting others. Berlin and Paris publicly object to US interference in EU affairs.

Europeans in both camps secretly welcome Chinese efforts to invest in developing countries, hoping the economic assistance can help stimulate economic activity and temper migration even though they fear the Chinese efforts will end up bolstering authoritarianism throughout the world. Yet European countries don't have the means to engage even in their traditional backyards. Paris has given up its fight against terrorism in the Sahel. Europe watches as Russia and China increasingly call the shots in Africa and the Middle East. Focused on battling China in East Asia, the US administration puts the blame on Europe for these failures, without wanting to intervene itself. The only united effort that all member states can still agree on is beefing up maritime patrols in the Mediterranean to close the EU's external southern border.

In Washington, there is finger-pointing over who lost Europe. There's a growing realization that the United States overreached despite its initial effort to rally the West. While in Europe, there is a worry about the future of the European project. Both the United States and the EU seek to paper over differences, but for China, the transatlantic split is further evidence of Western decline, feeding the hardliners' appetite for more aggressive actions to expand Chinese influence in the region and beyond.



3.3 Counting the Costs of Technationalism and the Balkanization of Cyberspace (The Regional Picture)

Two trends come together: digital sovereignty and fighting disinformation. At one time, Western democracies were committed to an open, free Internet with minimal government involvement. That was, however, before the social media channels became the arena for hatred and disinformation. The Europeans got angry when the big US tech giants did such a poor job policing it. In the United States, Republican politicians accused the tech companies of being biased, banning Trump and other conservatives from Twitter as well as other outlets. At the same time, many moderate politicians, like their European counterparts, thought Facebook, Google, and others could do a better job eliminating hate speech. Worldwide, “Internet sovereignty” was catching on. Already in 2019, thirty-three governments shut down the Internet 213 times, up from the previous year. Whereas “Internet sovereignty” was once associated just with China’s “Great Firewall” of censorship, it became popular with other governments, such as India, Russia, Turkey, and Indonesia, too.

While there were varying degrees of government control over the Internet, the trend line became clearer and darker as democracies moved in the direction of authoritarianism, believing that liberal markets were no model for the digital age. While they still decried

China’s growing repression and use of social media to target dissidents, the Internet was seen as a threat to democracy, too, rather than a bulwark—the way it was originally portrayed. For Western elites, the unregulated digital space was a conveyor belt of disinformation, making it virtually impossible to govern. The French post-pandemic presidential election, for instance, was marred by widespread disinformation campaigns both by domestic as well as international foes of President Macron. The newly elected president blamed his near-defeat (it was only on the recount that he emerged victorious) on the disinformation coming from right-wing extremists. Anti-immigrant groups throughout Europe were active in trying to defeat him and other liberal forces.

The right-wing, Trump-supported attack on the Capitol on January 6, 2021, had been pivotal in persuading lawmakers that there had to be more oversight of social media. For many progressives in the Democratic Party, the tech companies were too big and monopolistic anyway and should be broken up. It was only a half step for them to call for more regulation of the companies to prevent the spread of domestic radicalism. The United States also instituted curbs on Chinese technology, including their apps. The government in Beijing moved to tightly regulate China’s tech companies’ operations abroad, convincing US regulators that those companies could not be trusted with data gathered in the United States. Over time, US tech companies saw their market share dwindle in China and Asia, as more and more US government regulatory curbs encouraged Chinese tech companies to leave the US market, too.

While it started as a well-meaning effort to prevent disinformation and propagation of violent extremism, the increasing regulation began to fracture the Internet into at least three largely separate regimes, reinforcing the forces of technonationalism and protectionism. Because of security fears, the United States and China became highly protected tech markets; Europe has less of a choice, not having tech champions of its own, so both US and Chinese tech companies operated there, but under EU regulatory control. The economic costs of such a fractionalizing of the Internet were staggering. Before all the new regulation, a report by Japan's Ministry of Economy, Trade, and Industry (METI) had estimated that at least half of all trade in services is ICT-enabled (between 50 and 56 percent); digital commerce would account for 25 percent of global trade by 2025; and that this percentage would likely accelerate by an order of magnitude over the coming decade.⁶¹

Efforts to negotiate globally agreed standards governing the use of software codes, data sharing, and/or commercialization of private content and storage of data, as well as minimally accepted standards on privacy—vital for the continuing flow of data—broke down or became too complex in view of the proliferation of national requirements. Digital commerce depends on open commercial, scientific, and academic data flows. Without such flows, joint research efforts also ceased to exist. Increasingly, scientists were only working with counterparts in their own country, not those outside. In particular, the number of Chinese students and researchers in the United States began to dwindle significantly.

The medical and other supply chain shocks from COVID-19, combined with the growing US distrust of China, lent support to the increasing protectionism and breakdown in flows of information and people. In addition, the United States sought to export its standards. Even before the recent regulatory-driven breakup, the American decision-makers had tried to mobilize support for anti-China “clean networks” banning Huawei infrastructure. It wasn't always successful, however. China offered too many economic enticements for countries even in the United States' own backyard—Latin America—for all countries in the region to fall in line with Washington's dictates.

Europeans Decide to Fight Back

Europeans began to worry about their own ability to trade—not just with China but other countries in China's orbit—and stayed out of the US clean networks program themselves, even though they followed many of the guidelines for their domestic systems due to worries, for example, about the security of data running over Huawei-built infrastructure. Brussels therefore began efforts to counterbalance the fractionalizing of cyberspace, calling on Washington and Beijing to support an international effort to map the future of the world's climate, using the latest breakthroughs in quantum computing. Taking a leaf out of its own history, EU leaders thought cooperation on climate—a pressing interest for all, like the establishment of the European Coal and Steel Community after WWII—could decrease the centrifugal dynamics of technonationalism.

At first, Washington was wary, but when it saw Brussels sign an agreement with Beijing for a joint research effort, it wanted in. The EU said there would be no proprietary information. The detailed output—a mapping of likely effects of climate change over the next hundred years—would be a free good for countries participating in the project. Such data would be the basis for policy decided by the next UN Climate Conference, which the Europeans were scheduled to host. Any country not participating would be at a disadvantage. The fruits of an international brain trust using the latest quantum computing could demonstrate how cooperation was much more powerful than competition and conflict, curbing for a time at least the growing US-China hostility. Without more international cooperation on climate change, decision makers risked incalculable harm to everyone's future. Were Americans really ready to balkanize the Internet if it meant undermining prospects for global innovation that could help save the planet? Moreover, EU leaders were confident that young people everywhere would side with them, putting pressure on Washington and Beijing to limit their competition and explore avenues for an era of great power cooperation.

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