

GlobalAsia

- HOME
- ABOUT US
- LATEST ISSUE
- FORUMS
- ARCHIVE/SEARCH
- SUBSCRIBE
- CONTACT US

ARCHIVE/SEARCH > Articles

Articles

Techno-Nationalism vs. the Fourth Industrial Revolution

By Robert A. Manning

Technology is on the cusp of the next major revolution. This will involve a convergence of artificial intelligence, Big Data, the Internet of Things, advanced robotics, nanotechnology, 5G and other cutting-edge innovations that promise to radically transform the very way we live. But at the same time, a seeming relic of the past, nationalism, is vigorously reasserting itself. Indeed, the world appears to be sliding from globalism into techno-nationalism. The US, China and the EU must work together to find common rules and standards for this Brave New World in order to reap the benefits and avoid conflict, writes Robert A. Manning.

Published: Mar 28, 2019

About the author

Robert A. Manning is a senior fellow of the Brent Scowcroft Center for Strategy and Security at the Atlantic Council and its Foresight, Strategy and Risks Initiative. He is co-author of *The Global Innovation Sweepstakes: A*

What is the impact of techno-nationalism on global innovation? Does it advance, protect or impede it? Over the coming two decades, the answers may determine the economic success, competitiveness and geostrategic position not only of Asian nations but much of the world.

We are at a historical inflection point. The international rules-based economic order is under great strain and facing an uncertain future while populist nationalism is on the rise. At the same time, the world is on the threshold of an unprecedented, disruptive technological transformation. Dubbed the Fourth Industrial Revolution, the convergence and synergy of artificial intelligence and Big Data, robotics, biotech, 3D printing, advanced manufacturing, new materials, the Internet of Things, nano-engineering and nano-manufacturing all merge the digital with the physical economy. This second era of the digital revolution will be substantially more transformational than the rise of the Internet and app economy that started in the 1990s. It will transform business models, transportation, healthcare, finance, manufacturing, agriculture, warfare and the very nature of work itself.

In the coming decades, these technologies will drive economic growth, accelerating in the 2020s as they are deployed. For example, using AI, powered by superfast 5G networks — which are 10 to 100 times faster than the current 4G — the Internet of Things (IoT) will monitor “precise agriculture” on farms, performance in factories and smart cities. The increased productivity of IT-connected sensors will warn of factory equipment needing maintenance; monitor energy use in buildings; give farmers real-time information on soil conditions; maintain and operate driverless vehicles; optimize energy-grid performance; and remotely monitor and diagnose our health. This technology may engineer the demise of malaria-carrying mosquitos, and perhaps, with well-regulated gene-editing, erase hereditary rare diseases.¹ In the national-security realm, these technologies portend radical changes from logistics and inventory management to surveillance and reconnaissance, with air and undersea drones of all sizes having autonomous capabilities.

The Logic of Techno-Nationalism

If history is any guide, the deployment of the coming torrent of new technologies will not be linear. While the next wave is expected in the 2020-2025 timeframe, it will likely come in bursts, with the commercialization of these dizzying technologies not evenly distributed but geographically clustered. The hierarchy of nations in the 21st century will be largely measured by their respective capacity to innovate and/or to adapt and absorb emerging technologies — see the panel story on the next page. The

Most Read

Security Pluralism in the Asia-Pacific: Reshaping Regional Order

Limited Options: Trump and the North Korea Conundrum

Reflections on Inequality in Asia

The East Asian Peace: How Did It Happen? How Deep Is It?

Co-operative Security 2.0: Introduction



Discover Asia in WORLD HISTORY

Download for your mobile device at <http://bit.ly/asiaApplications>

Association for Asian Studies



IN THE 19TH CENTURY, THE INHABITANTS ON THE RIM OF THE WEST PACIFIC OCEAN BARELY KNEW ONE ANOTHER. DURING THE 20TH CENTURY THEY MET, SOMETIMES VIOLENTLY, BUT WHEN THE HISTORY OF THE 21ST CENTURY IS WRITTEN, IT WILL BE THE 19TH CENTURY THAT WILL BE MOST RELEVANT. THE 19TH CENTURY WAS A PERIOD OF GREAT CHANGE AND TRANSFORMATION FOR THE WORLD AND THE PACIFIC. THE PACIFIC OCEAN WAS THE CENTER OF THE WORLD'S TRADE AND ECONOMIC ACTIVITY. THE PACIFIC OCEAN WAS THE CENTER OF THE WORLD'S CULTURE AND SOCIETY. THE PACIFIC OCEAN WAS THE CENTER OF THE WORLD'S HISTORY.

LEARN MORE. VISIT: WWW.PACIFICCENTURYINST.ORG

Quest to Win the Future,
Atlantic Council, 2018.
Twitter: @Rmanning4

Reader tools

-  Print this article
-  Email this article
-  Comment
-  Share on Facebook
-  Share on Twitter
-  Share on Google+
-  Share another way

Download print PDF



Related articles

Short Reviews *John Delury, Taehwan Kim, Nayan Chanda, John Nilsson-Wright*

Redrawing Korea's Industrial Map *Sung-Chul Shin*

Regulators Join Tech Rivalry with National-Security Blocks on Cross-Border Investment *Vinod K. Aggarwal, Andrew W. Reddie*

From Abe to Outer Space, Can Japan's Military Techno-Nationalism Survive? *Christopher W. Hughes*

Data, Rivalry and Government Power: Machine Learning Is Changing Everything *Steven Weber, Gabriel Nicholas*

degree of success will be the key indicator of their economic growth prospects, their relative weight in the global economic system and geopolitical clout. China and the US loom at the top, with nations like Germany, Japan and South Korea in the first tier. Because the burgeoning knowledge economy is fundamentally about data, not geography, size is not a decisive factor. Thus, small states such as Singapore, Sweden and Israel are leading global innovators.

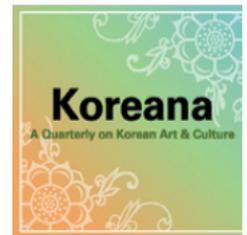
Against this backdrop, what is the impact of techno-nationalism? Governments, of course, have very important roles to play, from funding basic R&D to pursuing education policies that facilitate a science, technology, engineering and mathematics (STEM) workforce to creating a nurturing regulatory environment. They must also forge conducive trade and financial policies and incentivize innovation. It should be recalled that it was the creation of the Internet — itself a result of the US Department of Defense's legendary research arm, DARPA — that spurred globalization, the free flow of ideas, commerce and communication. DARPA funding for R&D on semiconductors sparked the emergence of PCs and Silicon Valley in the 1970s. This catalyzed interchange among scientists, researchers and technologists around the globe instantaneously, facilitating the rapid exchange of ideas and underpinning private sector innovation.

Yet it seems many have forgotten why it is called the World Wide Web. There is a clear global trend toward techno-nationalism (as opposed to techno-globalism), a set of industrial policies aimed at self-sufficiency, cultivating “national champions” in tech sectors while curbing foreign competition just as a new era of advanced technology is unfolding. Beijing's Made in China 2025 policy is a classic example, as are its foreign direct investment (FDI) policies that use coercion to force technology transfer as part of the terms of investment. Additional informal mercantilist tactics include using administrative and regulatory measures to disadvantage foreign competitors in China and other countries.

Under Donald Trump, the US has become more defensive, nationalist and less open. Some of these tendencies preceded Trump. The stunning, unexpected pace of China's growth, from an economy of US\$1.2 trillion in 2000 to one of US\$11.2 trillion by 2016, disrupted the global economic system.² This was a major factor in the hollowing out of employment in the US manufacturing base, and it flattened the growth of the US middle class as the Chinese middle class grew. That, in turn, has led to growing sentiment against globalization in the US and elsewhere, largely blamed on trade. Trump skillfully tapped into that anger and frustration in the 2016 US presidential election campaign with his “America First” slogan.

Seeking to correct that economic imbalance has been a hallmark of Trump's trade and investment policies. But trade policy under Trump is best understood as a device seeking to force relocation of manufacturing to the US in a mistaken hope that it will create new jobs in an era of robots and automation.³ That is a key reason why Trump calls himself “Tariff Man.” His rejection of the Trans-Pacific Partnership trade accord during his first week in office, his demands to renegotiate the North American Free Trade Agreement (NAFTA), the South Korea-US Free Trade Agreement (KORUS) and the full-scale assault on what are widely viewed as China's unfair trade and investment practices, all reflect this view. As a result, the Section 232 “national security” provision in US trade law has been misused to impose sanctions on US allies as well as China. By what logic is steel and aluminum from two close US allies, Canada and Japan (and perhaps next, autos from the EU and Japan), a threat to US national security? Similarly, growing skepticism about Chinese big tech companies such as Alibaba, Baidu, and Tencent acquiring tech startups in the US has led to new laws tightening scrutiny and screening of prospective FDI in sensitive sectors.⁴

Well, as White House trade advisor Peter Navarro explains, it is about the US “manufacturing and defense industrial base,” because, as the US National Security Strategy says, a “vibrant domestic manufacturing sector and a robust and resilient defense industrial base are national strategic priorities.”⁵ Navarro explains: “To be



strong and secure our nation must be able to rely on US companies to manufacture products needed for our national defense. [Trump] understands that we must never become dependent on foreign nations to design, produce and maintain the aircraft, ground combat vehicles, ships, munitions, components of our nuclear arsenal and space capabilities that are critically important to our nation's defense."⁶ This reflects a Hobbesian view of the world, a struggle of all against all. As two top White House officials put it in an op-ed piece, "The world is not a 'global community' but an arena where nations, non-governmental actors and businesses engage and compete for advantage."⁷

It is sensible, if not imperative, for a great power to want a strong defense industrial base. China is no different. But in a world of global supply chains, with hundreds of patents and licenses held by global firms for autos, airplanes and electronics there are limits to self-sufficiency. Where do you draw the line? Complete autarchy? This is where Trump's dismissive disregard for allies is deeply flawed. Nations do pursue self-interest. But those interests, if not values, can and do overlap, creating a basis for collaboration on shared goals, from open trade and investment to global peacekeeping. A robust, unrivaled, global network of alliances and partners has been one of the secrets of US success in building and sustaining a rules-based order and for its pre-eminence. Relying on Japan or Germany for components or computerized machine tools, or Canada for steel and aluminum, is hardly a threat to US national security. And of course, this logic of self-reliance is mirrored — albeit taken to further extremes — by China's mercantilist industrial policies. The risk of this mindset is a fragmentation, if not an unraveling, of the rules-based trade and investment regimes that have been the foundation of global growth and prosperity for the past 70 years.



What Will the Rules of the Road Be?

We are at a pivotal moment not only for sustaining the world economic order, but for updating it, because there is a large deficit of rules/norms/standards for the suite of emerging technologies outlined above that will drive economic growth in the 2020s and 2030s. The two most portentous near-term examples of this are digital commerce and the coming explosion of 5G and IoT.

The digital economy, now a mature technological sector, is a prime example of how even established technologies can get ahead of governance. By some estimates, global data flows grew 45 times from 2005 to 2014, exponentially faster than flows in trade or finance.⁸ The US Department of Commerce found that in 2014, more than half of US trade in services was digitally delivered, and a Japanese Ministry of Economy, Trade and Industry report assesses that 50-56 percent of all trade in services is IT-enabled.⁹ Digital commerce already accounts for roughly 20 percent of global trade and is projected to rise to 25 percent by 2025.¹⁰ This is not the end point, but more likely the beginning of a substantial increase. Consider the explosion of e-payments, the downloading of music, games, books, and the billions of devices to be connected by IoT, or the impact of 3D printing, where computer designs will be widely downloaded and actual products will be printed — in other words, made locally — by consumers.¹¹

Yet the world lacks a comprehensive international framework of trade rules governing digital commerce. World Trade Organization (WTO) agreements covering services (financial, legal, etc.) and various remedies on IP rights (e.g. trademarks, copyrights, legal protections and remedies in the digital environment) offer only a partial framework.¹² There are numerous gaps in digital governance, as well as new challenges from evolving technologies, such as the growth of the cloud and cloud-based AI services.

At the same time, digital protectionism (e.g. data localization requirements that mean businesses cannot export into more efficient global data bases and must store their data in a particular country to operate there. This trend is rising while the Internet is becoming fragmented, with nations blocking out apps or websites that they object to, ostensibly on moral or national security grounds.¹³ Digital commerce depends on open and transparent global data flows. The EU's recently implemented General Data Protection Regulation (GDPR) is an important effort to create a global standard. But unfortunately, the three key global actors, the US, EU and China are evolving into separate and not entirely compatible digital regimes. This imperils cross-border data flows, the future of digital commerce, and hence, global trade. There is ample room for national differences with regard to personal privacy, but some minimal baseline understandings are needed.

The US and the EU differ over many tech issues, as the EU has moved ahead in developing standards and rules, while the US has no comprehensive national framework, but rather a mix of national and state laws and regulations. And China, the third digital superpower, is adopting policies and restrictions at odds with the other two. In the case of China, its "Great Firewall" is getting higher, imposing web censorship and restricting the presence of US tech firms — Google and Facebook among them. Such treatment has meant that Amazon has only 1.3 percent of China's e-commerce market and is unable to appeal to Chinese consumers and compete with the dominant players, Alibaba and JD.com.¹⁴

In its National Trade Estimate, the US Trade Representative (USTR) highlights some of China's barriers to digital trade, citing data localization requirements and local computer facilities requirements, restrictions on the use of secure lines and networks, restrictions on FDI in cloud computing services and "extensive blocking" of Internet content. Nevertheless, China is not alone. The USTR cites data localization requirements and Internet content restrictions in multiple other countries.¹⁵ In addition to Russia, a number of major Asian nations — India, Indonesia, Vietnam — are adopting or considering adopting Chinese-type data restrictions.¹⁶ Yet, by some estimates, digital protectionism may reduce annual GDP by 0.5 percent or more.¹⁷

There is a compelling need, at the least, to minimize real or potential negative consequences of this discordant situation and seek to make the digital regimes of the three key actors compatible. This is a critical foundation without which global digital norms will be at risk, jeopardizing digital commerce, soon to expand exponentially with the launch of 5G and the expansion of IoT and AI.

The most important effort to date is a comprehensive set of e-commerce rules and norms. They are in the digital commerce section of the Trans-Pacific Partnership (TPP). This section establishes nondiscriminatory treatment as the default norm. It will reduce all manner of barriers and prohibitions on digital commerce, for instance the prohibition of customs duties for electronic transmissions, banning data localization laws, preventing FDI in cloud services, and it will require that states proactively create consumer data protections and endorse equal Internet access (net neutrality).¹⁸ Such provisions — some of which have been suspended in hope of US re-entry — are a precedent for regional and global standards. The renegotiated NAFTA (now called the US-Mexico-Canada Agreement, or USMCA) adopted many of the TPP provisions, and a 76-nation working group in the WTO, including China, has begun negotiations to establish a global e-commerce regime. Importantly, Japanese Prime Minister Shinzo Abe has made digital commerce a priority issue for the June G-20 meeting.

5G and the Internet of Things

The next wave of widely applied emerging technology over the coming 2-5 years will be 5G, the next generation of wireless technology, which is up to 100 times faster than current 4G networks. Unlike previous mobile systems, 5G will use extremely high-frequency bands of the spectrum, called "millimeter bands." This requires

substantial infrastructure investment in hundreds of thousands of cellular radio antennas and other infrastructure.¹⁹ It will be a foundational enabler, the next milestone in Industry 4.0.

Because AI will power much of the promise behind 5G, it will, in turn, spur the growth of IoT. But no less important, IoT, which will connect together billions of sensors and billions of devices, will create massive amounts of data, which is what makes AI more intelligent. US, European and Asian wireless carriers are beginning to deploy early versions of 5G. Superfast and with low latency (delay), 5G will respond in real-time, driving the Internet of Things that will have a transformational impact on advanced manufacturing (sensors, robotics), consumers and national security — from self-driving vehicles, remote surgery and finance to smart grids and cities; from precision agriculture to autonomous robots and weapon systems in the 2020s. McKinsey forecasts that 5G and IoT will add US\$3.9 trillion to US\$11.1 trillion in value by 2025.²⁰

Thus far, public/private-sector co-operation among all stakeholders has led to agreed global technical and engineering standards. Intense US-China competition for an important “first mover” advantage, however, risks fragmentation, with both economic and national security consequences. For China, 5G geo-economics are part of its “Digital Silk Road” ambitions to connect the Eurasian landmass. Huawei and other Chinese firms are actively seeking to export digital infrastructure around the globe but there is a risk that as the technology evolves, conflicting standards of 5G technology will emerge.

Conclusions

Digital commerce and 5G/IoT are among a panoply of new and emerging technologies for which there is a deficit of rules and norms, and for which techno-nationalism has become a complicating factor. The explosion of the use of drones and robots for both military and civilian purposes, biotech, 3D printing, new materials, and not least AI, are key sectors that urgently require agreed upon governance. Science-fiction fears of the Terminator, robots dominating humans, loom in the background.

Ideally, reducing this governance deficit should be part of the current debate on reforming the WTO. These are complex issues, involving not just commerce, but ethics and new rules for war. In the controversy over whether autonomous weapons should be banned, government experts at the UN Convention on Certain Conventional Weapons have been meeting in Geneva since 2014 and still have not agreed on a definition of what an autonomous weapon is. Yet drones and some semi-autonomous missiles are already widely deployed. Similarly, new CRISPR gene-editing, allowing us to “play God” by inserting or deleting human DNA, is a transformational technology requiring careful ethical and governance deliberation.²¹ A recent statement signed by the world’s leading CRISPR scientists and researchers calls for a moratorium on gene-editing and the creation of an international governance board to devise a guiding set of rules.²²

The experience of R&D and tech innovation strongly suggests that openness, transparency and collaboration have all been critical to developing new technologies, however cutthroat the business competition. As Paul Scharre points out in his invaluable book on autonomous weapons, *Army of None*, an example is AI, perhaps the most consequential and competitive of emerging technologies. There are several open-source websites; one prominent one, TensorFlow, allows leading researchers from top tech firms such as Google to not only post their latest algorithms, but download neural networks and software with tutorials showing techniques for building your own.²³

The resurgence of great-power competition, and with it, growing techno-nationalism, may be a two-edged sword regarding innovation. On one level, it injects urgency into R&D efforts; on another level, it impedes co-operation and risks

fragmentation of markets and potential incompatible standards and norms with major economic and strategic consequences. The challenges and dangers of the technology revolution highlight the difference between knowledge and wisdom. Techno-nationalism does not inspire confidence that the difference between them will be well understood.

Notes

1 All of these applications are discussed in James Manyika et al., *The Internet of Things: Mapping the Value Beyond the Hype* (McKinsey Global Institute, June 2015), www.mckinsey.com/business-functions/digital-mckinsey/our-insights/the-internet-of-things-the-value-of-digitizing-the-physical-world

2 tradingeconomics.com/china/gdp

3 In reality, US manufacturing as a percentage of real GDP has been stable: www.stlouisfed.org/on-the-economy/2017/april/us-manufacturing-really-declining

4 www.reuters.com/article/us-venture-china-regulation-insight/chinese-tech-investors-flee-silicon-valley-as-trump-tightens-scrutiny-idUSKCN1P10CB

5 www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf

6 www.whitehouse.gov/articles/team-trump-protecting-americas-vital-manufacturing-defense-industrial-base-big-risks/

7 www.wsj.com/articles/america-first-doesnt-mean-america-alone-1496187426

8 Rachel Fefer, Shayerah Akhtar, Wayne Morrison, "Digital Trade and US Trade Policy," Congressional Research Service, June 6, 2017, Summary page, fas.org/sgp/crs/misc/R44565.pdf; Manyika et al., "Digital Globalization: The New Era of Global Flows," McKinsey Global Institute, March 2016, www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows

9 Hosuk Lee-Makiyama, "Expanding digital protectionism & Impact on business," European Centre for International Political Economy, Undated, ecipe.org/app/uploads/2017/07/ECIPE-for-METI-JETRO-3.pdf

10 Manyika et al., "Digital globalization: The new era of global flows." See also "Retail e-commerce sales in the United States from 2016 to 2022 (in million US dollars)," *Statista*, Undated, www.statista.com/statistics/272391/us-retail-e-commerce-sales-forecast/

11 Fefer, Akhtar, and Morrison, 2017, 5-7. See also Manyika et al., "Digital Globalization: The New Era of Global Flows."

12 Fefer, Akhtar, and Morrison, 2017, 13.

13 www.ft.com/content/6f0f41e4-47de-11e8-8ee8-cae73aab7ccb

14 Daniel Keyes, "Amazon is struggling to find its place in China," *Business Insider UK*, Aug. 30, 2017, uk.businessinsider.com/amazon-is-struggling-to-find-its-place-china-2017-8?r=US&IR=T

15 Office of the United States Trade Representative, "2018 Fact Sheet: Key Barriers to Digital Trade," March 2018, ustr.gov/about-us/policy-offices/press-office/fact-sheets/2018/march/2018-fact-sheet-key-barriers-digital

16 hbr.org/2018/08/the-dangers-of-digital-protectionism

17 www.ft.com/content/6f0f41e4-47de-11e8-8ee8-cae73aab7ccb

18 Chapter 14 in "Trans Pacific Partnership Final Text," Office of the United States Trade Representative, ustr.gov/sites/default/files/TPP-Final-Text-Electronic-Commerce.pdf; See also David Fidler, "The TPP's Electronic Commerce Chapter: Strategic, Political, and Legal Implications," *Council on Foreign Relations* (Nov. 9, 2015), www.cfr.org/blog/tpps-electronic-commerce-chapter-strategic-political-and-legal-implications

19 For an excellent and detailed discussion of 5G and policy implications, see: Doug Brake, "5G and Next Generation Wireless: Implications for Policy and Competition," *Information Technology & Innovation Foundation*, June 30, 2016, itif.org/publications/2016/06/30/5g-and-next-generation-wireless-implications-policy-and-competition

20 www.mckinsey.com/business-functions/digital-mckinsey/our-insights/the-internet-of-things-the-value-of-digitizing-the-physical-world

21 www.americanscientist.org/article/the-gene-editing-conversation

22

www.washingtonpost.com/science/2019/03/13/nih-top-scientists-call-moratorium-gene-edited-babies/?noredirect=on&utm_term=.2ebca625ccf

23 www.barnesandnoble.com/w/army-of-none-paul-scharre/1126570829#

[Back to Issue](#)

♥ (18)

List

No Reply

[About Us](#) [Latest Issue](#) [Back Issues](#) [Article Search](#) [How to Subscribe](#) [Advertise with Us](#) [Submit an Article](#) [Forum](#) [Privacy Policy](#)



Global Asia, The East Asia Foundation,
4th Fl, 116 Pirundae-ro, Jongno-gu,
Seoul, Korea 03035
Business Registration Number: 105-82-14071
Representative: Ro-myung Gong
Tel. +82 2 325 2604

General: info@globalasia.org
Editorial: editorial@globalasia.org
Subscribe: subscriptions@globalasia.org
Advertising: ads@globalasia.org

This website
© 2016 by the
East Asia Foundation.
All rights reserved.

