Institute for International Economic Policy Working Paper Series
Elliott School of International Affairs
The George Washington University

America's uneven approach to AI and its consequences
IIEP-WP-2020-7

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April 2020

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A man looks at a demonstration of human motion analysis software at the stall of the artificial intelligence solutions maker Horizon Robotics during the Security China 2018 exhibition on public safety and security in Beijing, China, October 24, 2018. (REUTERS/THOMAS PETER)

The world's oceans are in trouble. Global warming is causing sea levels to rise and reducing the supply of food in the oceans. The ecological balance of the ocean has been disturbed by invasive species and cholera. Many pesticides and nutrients used in agriculture end up in the coastal waters, resulting in oxygen depletion that kills marine plants and shellfish. Meanwhile the supply of fish is declining due to overfishing. Yet to flourish, humankind requires healthy oceans; the oceans generate half of the oxygen we breathe, and, at any given moment, they contain more than 97% of the world's water. Oceans provide at least a sixth of the animal protein people eat. Living oceans absorb carbon dioxide from the atmosphere and reduce climate change impacts.

Many civil society groups (NGOs) are trying to protect this shared resource. As example, OceanMind uses satellite data and artificial intelligence (AI) to analyze the movements of vessels and compare their activities to historical patterns. The NGO can thus identify damaging behavior such as overfishing.

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The decline of the world's oceans is what scholars call a wicked problem—one so complex that it will require innovative, cost effective, and global solutions. Many executives, business leaders, and policymakers, among others, hope that AI such as that utilized by OceanMind could provide insights and, ultimately, solutions to such difficult problems.

One can describe AI as a "global public good" because of its potential to help humankind address such problems. Global public goods are goods with **benefits and/or costs** that potentially extend to all countries, people, and generations. Although most AI is provided by private firms, market mechanisms alone cannot distribute AI (or AI capacity) equally throughout the world. AI is far from a perfect technology: current variants of AI can be biased or incorrect. Moreover, humans may become too trusting of AI. Given these problems, AI is most likely to meet its potential as a public good if data is as diverse and correct as possible, and if researchers from around the world compete to develop and produce to AI.

As of October 2019, some 30 industrialized and middle-income countries have developed plans, incentives, and policies to stimulate national, rather than international, AI research and adoption. In general these countries have firms developing AI systems as well as rules governing the use of some types of data such as personal data. (See Table 1) But most countries are in the early stages of learning how to govern data, let alone data-driven technologies. Nonetheless, the people of the world won't be able to reap the benefits of AI unless policymakers work at the national and international levels to create an effective enabling and regulatory environment for AI.

Nations differ as to what an effective enabling environment should include, but in general, Western nations are calling for ethical AI, internationally shared AI research, an internationally accepted system of norms to govern both data and AI, and the adoption of policies to discourage unethical and anti-competitive behaviour by firms providing/using AI services. Meanwhile, governments such as India and South Africa are less willing to share their citizens' data until they firm up strategies to utilize and govern data. As example, in March 2019, India issued a draft national e-commerce policy that said that India should be the prime beneficiary of the data of Indians. These national perspectives make it hard to find a unified approach to developing and governing AI.

The U.S. should play a major role in encouraging international development and dissemination of AI because it has so much at stake: it holds the largest share of the global market for AI services. Moreover, if integrated properly, AI would not only benefit the U.S. economy but also government operations and, thereby, citizen/taxpayer welfare.

But the U.S. is sending mixed signals about how it views AI as well as its willingness to work with other states to govern AI. American policymakers recognize that AI is a general purpose technology—one that can contribute to productivity and economic growth in many other sectors. As example, Lt. General Jack Shanahan, who directs the Joint AI Center at the U.S. Department of Defense noted, "A.I. is an enabler, much more like electricity than a gadget, a widget or a weapons system."

General purpose technologies tend to yield economic and social turbulence, as society and jobs adapt to their direct and indirect effects on employment, on society, and on democracy. These technologies often have social, political and economic spillovers that transcend borders. Accordingly, nations *must* cooperate to address these effects.

On one hand, the U.S. has cooperated with other countries in building AI. In its 2017 National Security Strategy, the Trump administration promised, "We will nurture a healthy innovation economy that collaborates with allies." On the other hand, the Trump administration has also made it clear that it intends to develop strategies that will allow the U.S. economy to dominate global AI markets. In the same National Security Strategy cited above, the Trump administration stated that, "To maintain our competitive advantage, the United States will prioritize emerging technologies critical to economic growth and security such as data science, encryption, autonomous technologies…and artificial intelligence. Moreover, because AI is an essential component of tools such as drones and robotics relied upon by the U.S. military, U.S. policymakers have concluded that the U.S. must maintain a competitive edge in AI for national security reasons. As a result, the Trump administration has taken a nationalistic, protectionist, and insular approach to AI. It has proposed export

Table 1 G-20 AI plans as of August 2019	
Argentina	No strategy
Australia	No strategy
Brazil	No strategy
Canada	2017
China	2017
France	2018
Germany	2019
India	2018
Indonesia	No strategy
Italy	2018
Japan	2017
Mexico	2018
Rep. of Korea	2017
South Africa	No strategy
Russia	No strategy
Saudi Arabia	No strategy
Turkey	No strategy
UK	2018
U.S.	2019
EU	2018

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! Before you read, download the companion **Glossary** that includes definitions, a guide to acronyms and abbreviations used in the article, and other material. Go to **www.great decisions.org** and select a topic in the Resources section on the right-hand side of the page.

controls on AI, dramatically limited work and educational visas, and alienated close scientific partners such as Canada, France, and Japan. With these policies, the U.S. could slow the progress of AI as a tool to address some of the world's problems.

If policymakers want American AI to be effective, rooted in trust, and produced and utilized internationally, they should think about AI as a global public good. The Trump administration has put forward an approach to AI with some thoughtful components, but its approach could also undermine AI because it reduces the openness needed to attract the best researchers and produce the most effective AI systems.

Definitions and consequences

AI is a broad term that is used to describe computer systems that can sense their environment, think, learn, and act in ways that humans do. Organizations use AI in digital assistants such as Apple's Siri, chatbots such as H&M's chat bot assistant, and machine learning applications such as Waze, which can direct users through traffic jams. Governments also increasingly rely on AI to save time, money, and find new solutions. The U.S. military has used AI to predict component failure on tanks, while Kansas City developed a machine learning algorithm to help forecast when potholes will form on city streets. AI applications use computational analysis of data to uncover patterns and draw inferences. These applications in turn depend on machine learning technologies that must ingest huge volumes of data.

Effective AI requires high-quality, up-to-date, complete and correct data to ensure accurate predictions and avoid discrimination and bias. To build AI or machine learning systems, engineers need lots of data (data volume), variety of data (data variety), and good data that is correct (data quality and veracity). AI systems are not able to distinguish between reliable and unreliable data. If the algorithms are built on incorrect, unreliable data, these systems will come up with incorrect,

discriminatory, unethical, or misleading results.

Because training data must be broad, high-quality, and correct, most AI firms require lots of data. And because these applications require lots of data – and that demand may change over time as applications and training strategies evolve – no nation alone can govern AI, or any other data driven sector. Policymakers will need to develop internationally accepted, interoperable principles, rules, and strategies to govern AI. Most have focused on using trade agreements to advance the free flow of data and to create large pools or sources of data.

But not every AI firm or government has access to lots of data because the data-driven economy is built on information asymmetries. Firms that have significant computing power are better positioned to extract and utilize data to create new products and services than firms that do not have such computing access. In addition, because data-driven firms must make large capital investments to exploit big datasets, information asymmetry also applies across firms. These big firms (such as Google, Amazon, Alibaba, and Tencent) already have an advantage. The more data they have, the more easily they can use algorithms to transform raw data into new value-added data products. They can then sell these products along with existing products. Moreover, these new products and services generate even more data, which, in turn, further perpetuates the market power of these firms.

Information asymmetry also applies across countries. Of the 30 largest internet companies by market capitalization, the U.S. has 18; China has 6; Australia, Argentina, Canada and Japan have 1 each; and the EU has none. In its 2016 annual development report, the World Bank stated that, despite the widespread dissemination of digital technologies, many countries, including many middle-income and developing countries have not yet been able to benefit. To a great extent, developing countries do not have the expertise, capital, or infrastructure to

nurture data-driven firms. Most of the firms transitioning to this new data-driven economy are in middle-income and wealthy countries. While there is no clear data on firms developing and selling AI services, most of these firms have operations in a few nations (Australia, Canada, China, France, Germany, India, Israel, the U.S.). These nations have excellent universities, significant AI expertise, and access to a broad and growing supply of data to consistently improve AI.

Moreover, according to Jack Clark, Policy Director for Open AI, many types of AI are still in an early phase of development. These relatively early-stage AI systems have achieved good enough results to inspire a large number of actors (business and government) to invest. However, these early-stage AI systems are not always accurate (e.g. they can lead to discrimination or imperfect solutions). He warns, "we can expect the technical weakness of AI systems to 'scale up' with the amount of computational power poured into them unless we develop smarter algorithms and better systems of governance," for the organizations both developing and deploying them. These AI systems could make major mistakes with significant social consequences, another reason why governance of AI is so important.

Finally, the research sphere, like the internet and the world's oceans, is a "commons"—a place where many people share resources and services. Individual users could destroy the commons if they act only according to their own self-interest. But the commons can thrive if it is governed effectively, by individuals, firms, and governments.

Thus, if we want to improve AI, we should want to encourage international research collaborations and competition. Research in sectors such as AI is likely to be more effective with an international feedback loop, where many people at many different levels contribute to research. Scientists need a free and open environment to provide such feedback. Yet, the U.S. Government is increasingly taking steps to shelter and isolate U.S.-made AI instead of fostering multinational collaborations.

The U.S. Approach to AI

America has long been a leader in AI. According to Michael Kratsios, Chief Technology Officer and Deputy Assistant to the President at the White House Office of Science and Technology Policy, "America has roughly 2,000 AI companies, more than double our closest global competitor. We boast more AI unicorns, those being startups valued over $1 billion, than any other nation. Of the 32 AI unicorns, the United States has 17." Kratsios is asserting that the U.S. is dominating AI. Other analysts agree that the U.S. leads in talent, research, development and hardware related to AI. Many even contend that the U.S. has significant comparative advantage in AI.

But Kratsios is clearly nervous about America's ability to continue its dominance of AI research and markets for AI. In that same September 2019 speech described above, Kratsios noted, "the uniquely American ecosystem must do everything in its collective power to keep America's lead in the AI race and build on our successes . . . for the benefit of the American people. We start from a position of great strength, and we have a plan to keep winning."

Kratsios is not alone--policymakers, business leaders and others see that advantage as under threat from Chinese competition. They argue that China uses government funds to subsidize its AI companies and it mandates close cooperation between tech firms and government. I argue that while Chinese innovation may reduce America's lead, it also invigorates American researchers.

Trump administration steps that could promote AI as a global public good

a. Plans and ethics

The Obama administration first articulated a National Artificial Intelligence Research and Development Strategic Plan in 2016. The Research and Development Strategic Plan promised that the U.S. Government would make long-term investments in AI research, develop effective methods for human-AI collaboration, understand and address the ethical, legal and societal implications of AI, ensure the safety and security of AI systems, develop shared public datasets and environments for AI training, and test, measure and evaluate AI technologies through standards and benchmarks.

The Trump administration expanded on that plan, when President Trump launched the American AI Initiative in February 2019. The Executive Order that contained the Initiative made it clear that as under Obama, AI research would be a priority. But the Trump administration AI strategy had a more select audience—business. The administration would help businesses and educators develop an AI-ready workforce. The Order claimed that Trump administration officials were ready to engage with researchers, businesses, and governments in other countries. But by engagement, the Trump administration did not always mean cooperation.

Like previous administrations, the Trump administration sought public comment on America's AI strategy. However, the administration did not involve civil society groups in the development of these AI plans. The American AI Initiative had a section on AI and workers and another on AI and ethics, but it did not invite ethicists or workers associations to the AI outreach events. As example, in May 2019, The White House hosted the Artificial Intelligence for American Industry Summit to discuss both the promise of AI and the policies needed to maintain U.S. leadership in the age of AI. Not surprisingly, some observers have condemned the administration for focusing too much on business needs and involvement and ignoring the broader research potential of AI.

To its credit, the administration has taken several steps to build an international consensus on the ethical use of AI. In May 2019, the U.S. joined with 41 other countries at the OECD to announce an international agreement for building trustworthy artificial intelligence. Moreover, the Department of State has asked the public to comment as to whether computer systems that can be used for the monitoring, interception, collection, preservation and/or retention of information can be freely exported or should be tightly controlled. These technologies include many built on AI, including: non-co-

Michael Kratsios, CTO of The United States, on center stage during the final day of Web Summit 2019 at the Altice Arena in Lisbon, Portugal, November 7, 2019. (PHOTO BY SAM BARNES/SPORTSFILE FOR WEB SUMMIT VIA GETTY IMAGES)

operative location tracking (products that can be used for ongoing tracking of individuals' locations without their knowledge and consent), drones and unmanned aerial vehicles, facial recognition software, automated biometric systems, social media analytics software, and gait analysis software. The U.S. has taken a leadership role in deciding which uses of AI are not ethical and which countries should benefit from open access to certain AI systems. But the U.S. did not engage with other nations on the export question regarding these types of AI.

b. Approach to research

The Trump administration has taken other important steps to facilitate the development of AI for the world at large. Despite its general inclination to cut non-defense budgets, it proposed increasing taxpayer funding for AI research. It sought to continue the leading research organization—the National Science Foundation's work on AI. NSF is also encouraging and coordinating AI research and adoption among other USG agencies.

But as noted above, the Trump administration wants taxpayer dollars to yield applied research by focusing on public-private partnerships. For example, the National Science Foundation (NSF) created an NSF-Amazon collaboration on fairness in AI. That program calls for an initial $7.6 million to be awarded to researchers in the form of three-year grants ranging from $750,000 to $1.2 million. Amazon provided half the money for the grants but has no say in which research projects get the money.

c. Competition policy and the regulation of business

Trump administration officials are caught in a conundrum. On one hand, they want to maintain and even strengthen America's data giants to facilitate global competition in AI. On the other hand, these same officials are under significant domestic and global pressure to rein in the predatory practices of some of the largest American firms that research, utilize and sell AI

services, specifically Amazon, Alphabet (Google), and Facebook. But if the U.S. government regulates how these firms operate, their costs will rise and over time, they could have less funding and expertise to compete with firms from other countries on AI services.

Despite a wide range of scandals involving these firms, USG officials moved slowly to investigate the business practices of the data-giants. As public sentiment in the U.S. has become more supportive of breaking up or regulating these data giants, members of Congress and regulators have become more determined to build an effective antitrust case. Federal officials are examining if any of the big data firms engaged in anti-competitive practices, and the Federasl Trade Commission (FTC) has imposed fines against some of these firms.

Meanwhile, the U.S. is taking other steps to ensure that markets for AI are competitive. Increasingly AI firms make their algorithms open source so individuals can comment on and improve them. But many also patent their AI. In 2019, the U.S. Patent Office called for public comment on whether AI should be patentable. U.S. laws state that an invention must contain patent-eligible subject matter in order to receive patent protection. Abstract ideas, laws of nature, and natural phenomena are excluded from patentable subject matter. Moreover, only a human can hold a patent. But the patent official has already received applications generated by AI, with human and computer systems contributions.

d. Domestic and international data governance

Without direct intent, the Trump administration has promoted AI as an international public good. It has led efforts at the domestic and international levels to make public data more useable for data analytics. Trump officials followed Obama administration policy designed to ensure that Federal public data (data collected and held by government) be provided openly online and where possible available in a form computer systems can easily utilize

(machine readable format). The U.S. government sought public comment on a Federal Data Strategy to govern and leverage the Federal Government's data and in so doing improve the use of data for decisionmaking and accountability for the U.S. Government, including for policymaking, innovation, oversight, and learning.

The Trump administration was also the first nation to place language on public data in trade agreements. Trade policymakers have included language in the U.S./Mexico/ Canada trade agreement and the U.S./Japan digital economy agreement signed in October 2019 to encourage both the free flow of data and to encourage policymakers to provide public data in a machine-readable format. The trade agreement language is voluntary. In U.S.-Japan, it states, "to the extent that a Party chooses to make government information available to the public, it shall endeavor to ensure that the government information is in a machine-readable and open format and can be searched, retrieved, used, reused, and redistributed." But the motivation is clear—researchers in business and government will benefit if they can use data from public, proprietary and personal sources to solve problems or provide more effective services.

e. Some support for the protection of personal data in trade agreements

Researchers need lots of data to make AI effective. Firms can obtain access to that data through internationally accepted rules governing cross-border data flows. Its most recent trade agreement, between the U.S. and Japan, states, "Each Party shall adopt or maintain a legal framework that provides for the protection of the personal information of the users of digital trade." This language is binding, but it does not require that personal data be protected, only that countries have a framework. Moreover, the U.S. does not require that regimes among signatories be interoperable. Instead it encourages interoperability with language noting "Recognizing that the Parties may take

different legal approaches to protecting personal information, each Party should encourage the development of mechanisms to promote interoperability between these different regimes." Thus, while the U.S. says its approach to AI is designed to build trust, its approach to personal data protection provides a floor, which may be insufficient to sustain trust in AI.

Steps designed to advance AI that could undermine AI as a global public good.

While taking important steps that advance AI for the world, the Trump administration has also taken many steps that undermine an international approach to AI.

a. A view of AI as essential to national security and a military technology

The U.S. has promoted a nationalist conception of AI, over-emphasizing its role as a military technology and its importance to national security . As of 2019, almost every branch of the U.S. military has an AI arm. The head of the Joint Artificial Intelligence Center for the military, Lt. General Shanahan noted that the military needs AI to better understand the world it operates in, and it needs to excel at AI if it is to have influence. He also sees a competition among nations to advance AI. "At its core, we are in a contest for the character of the international order in the digital age. Along with our allies and partners, we want to lead and ensure that that character reflects the values and interests of free and democratic societies. I do not see China or Russia placing the same kind of emphasis in these areas."

b. Limiting foreign investment in U.S. AI and proposing AI export controls

The U.S. has long supported an open climate for investment, except when such investment could impair national security. But receptiveness to international investment has changed in the wake of fears of Chinese competition in high tech sectors such as AI. In 2018, Congress passed a law, the Foreign In-

vestment Risk Review Modernization Act, which expanded the power of a committee of senior government officials to block transactions on national security grounds; these proposals reflect such concerns. The Committee would look for "red flags," where transactions involve critical technology or companies that collect sensitive personal data.

These officials took other steps that could undermine rather than encourage U.S. AI competitiveness. In January 2019, the Commerce Department asked for public comment on export controls related to emerging technologies such as AI. Should the administration adopt such controls, firms would find it harder to work with firms in other countries. They could also increase costs, and thereby make it harder for U.S. firms to compete overseas. Finally, such controls, if adopted, could reduce U.S. interaction and competition with other firms, which could affect the pace of innovation in AI. Firms have already reduced their willingness to sell sensitive technologies overseas.

Moreover, the Department of Commerce bypassed traditional strategies for developing regulations in the U.S. Most of the time, policymakers devise such export controls under a regular public notice and comment process and then, depending on such comments, additional sectors could be added to lists of goods that have both civilian and military uses that are agreed upon by larger groups of countries. However, in September 2019, Commerce Department officials said that some of the export restrictions will be developed under a regulation that allows controls to be applied on an emergency basis and bypasses a public comment process. The strategy appears to contradict America's commitment to democratic governance of AI.

c. Restricting immigration and the AI talent pool

The Trump administration has also restricted work and student visas, reducing the already limited pool of AI researchers in the U.S. Restricting foreign students could undermine

America's tech system and reduce employment. America's AI talent pool includes not only individuals born within the 50 states and territories, but also individuals who choose to study and then to work in the U.S. The number of foreign students attending U.S. universities have been declining over the last few years for a multitude of reasons. However, potential students increasingly feel unwelcome in the U.S.

Meanwhile, Trump officials have warned universities that they could lose research funding if they work with foreign students or benefit from foreign funding. In May 2019, the White House Office of Science and Technology Policy (OSTP) launched through the National Science and Technology Council the Joint Committee on Research Environments (JCORE) to bring a "whole of government" approach to address the most pressing challenges facing the U.S. research and scientific community. It created a Subcommittee on Research Security "to protect America's researchers from undue foreign influence without compromising our values or our ability to maintain the openness and integrity of our innovation ecosystem." Researchers and universities are finding themselves in between a rock and a hard place—choosing between U.S. and international investment.

China has responded with anger in response to these strategies. Chinese scientists have warned that new U.S. research restrictions will hinder collaboration and threaten Chinese funding for joint projects. If these policies continue, they could gradually and collectively undermine the basic research necessary to facilitate AI competitiveness, reducing the public good nature of AI. Finally, they could also prod China to focus more on its own innovation.

d. Alienating Chinese research partners

The U.S. is also punishing Chinese AI companies, accusing them of selling technologies that enable Chinese repression of minorities and human rights activists. Human rights groups and journalists have reported that the Chinese government has detained

more than a million ethic Uighurs, Turkish-speaking Muslims, in reeducation camps in China. Chinese officials deny that the Uighurs are imprisoned in these camps and maintain that what they call vocational training centers do not infringe on Uighurs' human rights. No foreign journalists or government officials have been allowed to visit the camps. Instead of working with U.S. allies on a unified strategy, in October 2019, the Trump administration blacklisted (which means Americans can't work with) eight companies that allegedly used AI services to monitor Uighurs within China. The firms blacklisted included: Megvii, an image recognition software developer sometimes referred to as being the world's most valuable AI start-up; iFlytek, a voice recognition specialist; Hikvision , one of the world's biggest CCTV systems manufacturers; SenseTime, a start-up that makes AI services for use in smart city, transport and education applications; and Yitu, a developer of machine vision and voice recognition tools. These firms are reliant on U.S.-based know-how, but U.S. firms are also reliant on these companies as customers and competitors. Several of these companies work closely with U.S. AI companies and universities, including MIT.

With this action the U.S. became the first nation to punish Chinese companies for misuse of AI, a reiteration of its commitment to human rights. But in doing so, the U.S. also signaled that it was not willing to encourage and possibly allow international collaboration on variants of AI using facial recognition. There are positive uses of such technologies. Moreover, the step could inspire China to devote more resources to separating its firms from U.S. firms, researchers, and capital. Almost every data giant has an AI research lab in China. The *Wall Street Journal* reported that many of these firms not only collaborate on research with U.S. universities but are dependent on advanced U.S. chips: "In the long term, the move could spell an end to partnerships with U.S. companies and institutions that go back years and limit access to top overseas talent, experts said."

(From L) EU Commission President Jean-Claude Juncker, Britain's Prime Minister Theresa May, Norway's Prime Minister Erna Solberg, Senegal's President Macky Sall, New Zealand's Prime Minister Jacinda Ardern and French President Emmanuel Macron attend a launching ceremony for the 'Christchurch callin Paris, on May 15, 2019. (CHARLES PLATIAU/ AFP VIA GETTY IMAGES)

e. Alienating allies by not addressing disinformation and hate speech

Meanwhile, the administration has not cooperated consistently with its traditional allies on several issues that concern democratic nations: online terrorism and hateful speech, misinformation and disinformation, and protection of personal data.

While citizens and policymakers alike have long promulgated hateful speech, lies and propaganda, the sheer volume of such speech has made it a threat to democracy. AI and social media platforms play a leading role in perpetuating this threat, as governments and individuals use bots powered by AI to disseminate disinformation. AI systems could also mitigate the threat by monitoring dissemination online.

The Trump administration has done little to regulate social media platforms that use AI to determine content and to remove untruthful, fake, or malicious content. The U.S. has moved slowly for two reasons: first, America's longstanding commitment to freedom of expression, and second, because of a key U.S. law, Section 230 of the Communications Decency Act. In the early days of the internet, Congress decided that the internet could not thrive without protecting content providers. It delineated

that these firms are not publishers and should not be held to account for what users place on their platforms. Democrats and Republicans alike have long seen this law as essential to the success of the American internet.

Moreover, the Trump administration has also tried to encourage other countries to adopt a similar approach. In the U.S./Mexico/Canada FTA (USMCA or NAFTA 2.0) says, "no Party shall adopt or maintain measures that treat a supplier or user of an interactive computer service as an information content provider in determining liability for harms related to information stored, processed, transmitted, distributed, or made available by the service, except to the extent the supplier or user has, in whole or in part, created, or developed the information." While this language does not inhibit the ability of a signatory to regulate such services, the U.S. is signaling that these protections are essential for social platforms. Others may read these signals as saying that such protections are more essential than protecting the public from harmful content. Interestingly, in October 2019, some Republican members of Congress criticized the inclusion of section 230-like language, noting it was an issue under debate in the U.S.

Moreover, citing first Amendment

concerns, the Trump administration has refused to sign the Christchurch Call, a commitment by 17 governments, the EU, and tech companies to take steps to eliminate terrorist and violent extremist content online. The call acknowledges that "respect for freedom of expression is fundamental. However, no one has the right to create and share terrorist and violent extremist content online." Content moderation is hard; yet, the U.S. has so far has taken no steps to punish companies that carry such content.

f. Regulation of personal and public data

Some argue that America's failure to enact an online data protection law is not only a problem for the U.S.; it puts the data protection of citizens of other countries at risk. Because of the huge amounts of data needed for AI and the dominance of U.S. companies in providing AI services, strong data protection is essential to the provision of AI so people feel safe using and relying on these services. But, the U.S. does not have a unified data protection law, although 3 states (most importantly California) have passed such laws and 12 are considering as of June 2019. Critics such as Access (an international NGO working on digital rights) noted that the U.S. regulatory agency, the FTC, has barely instituted cases or demanded sizeable fines. Hence, they argue that U.S. data protection is ineffective not just for Americans but the world's people. As evidence that America's approach is ineffective, the FTC fined Facebook only $5 billion for the Cambridge Analytica Scandal, where this data analytics company harvested the personal data of millions of peoples' Facebook profiles without their consent and used it for political targeting. Analysts saw the fine as too small to prod the company to actually do an effective job of protecting personal data.

Taken in sum, the U.S. has put forward a comprehensive AI strategy that advances AI in the U.S. and internationally. However, it is also acting in ways that undermine AI as a global public good.

What is the EU doing?

The EU has made clear it wants global leadership in "developing and deploying cutting-edge, ethical and secure AI." Policymakers in the EU insist that AI can be developed and utilized in an ethical manner that is respectful of human rights.

Like the U.S., the EU has also put forward a detailed plan for ethical AI, which the EU terms "trustworthy and human-centric AI." The 27 nations of the EU have increased funding and published a roadmap to achieve trustworthy AI. But as in the United states, EU policymakers struggle to regulate AI and data effectively.

Some EU member states, such as the UK, Germany, France, and Spain, have many competitive AI firms. Yet these firms are much smaller than their U.S. counterparts and do not have access to the large data pools of the U.S. or Chinese data giants. EU ministries have challenged some of the practices of the large data firms such as Facebook, Google and Amazon. European agencies have levied heavy fines against firms that engage in uncompetitive business practices and individual EU member states, particularly France and Germany, have worked hard to counter disinformation. European policymakers have also focused on the costs of disinformation and hate speech to democracy. In October 2019, Europe's highest court, the European Court of Justice, ruled that it could require Facebook and other social platforms to take down hateful speech and disinformation. But human rights groups noted that the decision raised significant questions about how companies should behave if hateful speech was legal in one nation but not another. Moreover, the court did not explain how Facebook and other such companies can delete posts, without going through the posts of all its users, a significant violation of their online privacy. Finally, it raised questions of how to reconcile this ruling with freedom of expression, another human right.

The EU, like the U.S., uses trade agreements to promote the free flow of data, which allows its researchers and firms to gain access to larger pools of personal and public data. But the EU approach rests on its commitment to strong regulation of the General Data Protection Regulation (GDPR), which protects personal data of EU citizens. Perhaps most importantly, the EU adopted regulations that grant users greater control over their data and ban firms from using AI as a sole decisionmaker in choices that can undermine human rights and freedoms.

The EU's approach to protecting personal data used in AI and other data services has gained international converts. Other countries, including Brazil, Mexico, Thailand, India, Indonesia, and Hong Kong have built on the EU model. Meanwhile, the EU has recognized 12 countries as having equivalent (adequate) levels of personal data protection, and many more are striving to become adequate so that they can freely trade data with and from EU citizens.

Most recently, the EU has designed a senior official, the former Commissioner for Competition, Margrethe Vestager, as Executive Vice President-designate of a Europe fit for the Digital Age. If she is approved by the EU Parliament, her job would be to coordinate tax, competition and industrial policies related to data-driven sectors. Her elevation reveals that the EU views trust and competitive markets as equally important as innovation.

The EU has been more open than the U.S. to foreign investment in AI and to allowing collaborative research in AI. As example, France and Canada have established a panel to support and guide the responsible development of artificial intelligence that is grounded in human rights, inclusion, diversity, innovation, and economic growth.

Nonetheless, the EU approach is

not without problems. Several EU laws such as the Copyright Directive, designed to advance some human rights undermine others, such as freedom of expression. EU efforts to prevent disinformation may also give firms powers to regulate content that governments should maintain. Meanwhile, the EU also wants to encourage innovation, but it is also raising costs to innovators through regulation such as GDPR, which mandates that firms make AI algorithms explainable if an individual believes an algorithm was used in a discriminatory manner.

Taken in sum, the EU wants AI to benefit European economic growth, but it is also working to ensure that AI benefits the broader public. Like the U.S., it struggles to balance public demands for regulation with the need to innovate. But in contrast with the U.S., the EU is open to international collaboration.

Findings and recommendations

AI has great potential. By combining and analyzing big datasets, policymakers could make economies more efficient and government more effective. Moreover, researchers could use AI to address complex problems. But the Trump administration has not developed coherent policies that could advance AI globally. While it has many thoughtful aspects, the Trump administration has also put forward strategies on immigration, work visas, export controls, access to public data, encryption, and competition policy that will reduce the competitiveness of U.S. firms and the credibility and flexibility of U.S. AI research. These policies could also alienate longstanding research allies and trade partners.

Recommendation 1: The U.S. should limit restrictions on AI research collaboration only to those areas that pose an identified threat to national security.

As the world's AI leader, the U.S. should rethink its AI strategy, building out from the concept that AI is a global public good. Moreover, U.S. (and international) policymakers should stop thinking of AI development as a race or a zero-sum game, where only one country (and its firms) lead. Instead the U.S. should do more to disseminate AI and data governance expertise so that AI can meet its potential.

Recommendation 2: The U.S. should demand greater transparency from the companies that provide us with AI regarding how they use data, when they use AI and provide

AI services to consumers, and how they invest in AI.

America needs to adopt a different approach to its data behemoths. These companies hoard the data we give them, mixing them over time to build new innovative services. These firms require huge computing resources, lots of capital, thousands of computer chips, and tons of energy to power their mammoth servers. The data giants may be crowding out these assets and making them too expensive for smaller companies as well as universities. Mandated transparency offers a way to hold the data giants to account without depriving them of significant funds to innovate.

With greater transparency, we will have a greater ability to effectively regulate the data giants (and the AI they produce). Moreover, the public will be better informed about how often they interact with AI.

Recommendation 3: The U.S. should work with international organizations such as the World Bank, ITU, UNCTAD, the OECD and others to encourage states to develop plans for the regulation and exchange of different types of data.

The U.S. needs to do more to help developing countries produce and utilize AI. The U.S. government should help other nationsd develop a strategy for how public and personal data is to be used and exchanged across borders (a national data plan). The plan should focus on ensuring that public data is open and personal data, especially personally identifiable data is adequately protected. Personally identifiable information is information that can be used to identify, contact or locate a single person, or to identify an individual in context.

Such a plan should address issues of ownership, control, portability, equity (is the data developed and analyzed in an even-handed manner?) and monetization of data (who can earn money for data and how). Policy makers will also have to address issues related to the cloud and data transfer — how a country can control the transfer of data that might include personally identifiable information or data that is important for national security. Such plans should also address how firms can mix various types of data while protecting personal data and metadata, as well as address questions of what entities can monetize the results of the mixture of personal, proprietary and public data. Each country will need to evolve strategies that allow policy makers to maintain trust online consistent with their norms for governance.

But developing countries do not have data-driven sectors (such as AI) and may struggle to regulate data. Moreover, they must choose between devoting resources to governing data and investing in public health or education. The U.S. has a responsibility to help these nations.

Conclusion

These days the U.S. is building walls rather than bridges. But if policymakers want AI to reach its potential, the U.S. should help other countries use this technology to address some of the problems that bedevil the world's people.

discussion questions

1. If the U.S. closes itself off from the world—is it stronger and safer or weaker and more prone to hacking?

2. Will the advance of AI have as profound an effect on the economy as the computer revolution?

3. AI is more about Big Data. Is it a stretch to expect a global agreement on Ethics and AI? What might a unified data protection law include? What exactly needs to be regulated and how?

4. What is the level of privacy an individual can expect living in a modern society? Is privacy, as a concpet, going to become alien in the future?

5. If AI is a "global public good" than what are it's associated negative "externalities"? (Such as the weakening of democracy, the rise of populism and the loss of privacy.)

6. Should the U.S. hold big data companies accountable for spreading users personal information? (Similar to how the EU has gone after Facebook and Google.) Would that have a negative effect on the growth of AI?

suggested readings

Coleman, Flynn. **A Human Algorithm: How Artificial Intelligence is Redefining Who We Are.** 335 pp. Berkeley, CA: Counterpoint, 2019. *A Human Algorithm: How Artificial Intelligence Is Redefining Who We Are* examines the immense impact intelligent technology will have on humanity. These machines, while challenging our personal beliefs and our socioeconomic world order, also have the potential to transform our health and well-being, alleviate poverty and suffering, and reveal the mysteries of intelligence and consciousness.

Furst, Keith and Wagner, Daniel. **AI Supremacy: Winning in the Era of Machine Learning.**. 524 pp. Scott Valley, CA: CreateSpace, 2018. Artificial Intelligence (AI) is having a profound impact on individuals, businesses, and governments, but what is required to get ahead and stay ahead of the curve AI is not well understood.

Lee, Kai-Fu. **AI Super Powers: China, Silicon Valley and the New World Order.** 272 pp. Boston,MA: Houghton Mifflin Harcourt, 2018. In *AI Superpowers*, Kai-fu Lee argues powerfully that because of these unprecedented developments in AI, dramatic changes will be happening much sooner than many of us expected.

Borders, Max. **The Social Singularity.** 208 pp. CMM Institute for Personal and Social Evolution, 2018. Although the technological singularity fast approaches, Borders argues, a parallel process of human reorganization will allow us to reap enormous benefits. The paradox? Our billion little acts of subversion will help us lead richer, healthier lives—and avoid the robot apocalypse.

O'Neil, Cathy. **Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy.** 288 pp. New York, NY: Broadway Books, 2017. Tracing the arc of a person's life, O'Neil exposes the black box models that shape our future, both as individuals and as a society. These "weapons of math destruction" score teachers and students, sort résumés, grant (or deny) loans, evaluate workers, target voters, set parole, and monitor our health.

Stephens-Davidowitz, Seth. **Everybody Lies: Big Data, New Data, and What the Internet Can Tell Us About Who We Really Are.** New York, NY: Dey Street Books, 2018. *Everybody Lies* offers fascinating, surprising, and sometimes laugh-out-loud insights into everything from economics to ethics to sports to race to sex, gender and more, all drawn from the world of big data.

To access web links to these readings, as well as links to additional, shorter readings and suggested web sites, GO TO www.fpa.org/great_decisions and click on the topic under Resources, on the right-hand side of the page.