

Catholic University Journal of Law and Technology

Volume 28
Issue 1 *Fall 2019*


Article 4

2019

ARTIFICIAL INTELLIGENCE IS HERE, GET READY!

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Recommended Citation

Jessica G. Martz, *ARTIFICIAL INTELLIGENCE IS HERE, GET READY!*, 28 Cath. U. J. L. & Tech 33 (2019).
Available at: <https://scholarship.law.edu/jlt/vol28/iss1/4>

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ARTIFICIAL INTELLIGENCE IS HERE, GET READY!

Jessica G. Martz*

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A Congressional Research Service primer defined artificial intelligence (“AI”) as “a computer system capable of human-level cognition.”¹ Many of us think of the robots from the *Terminator* series when we imagine machines that can think at our level or better. Some might hope that one day we will be able to upload our minds into computers and achieve some type of immortality. Regardless of where we enter the discussion of AI, it is undeniable that the role of AI in our world is expanding.² For example, in February 2019, online postings characterized an AI as a deity because the AI preached in a temple in Japan.³ In March 2019, Bloomberg reported that AI could help spot shoplifters before they steal.⁴ In the United States military, AI is being used in a variety of areas,

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¹ KELLEY M. SAYLER, CONG. RESEARCH SERV., IF11105, DEFENSE PRIMER: EMERGING TECHNOLOGIES 2 (2019).

² KAI-FU LEE, AI SUPERPOWERS: CHINA, SILICON VALLEY, AND THE NEW WORLD ORDER 107 (2018).

³ *Robot ‘GOD’: AI Version of Buddhist Deity to Preach in Japanese Temple*, END TIME HEADLINES (Feb. 25, 2019), <https://endtimeheadlines.org/2019/02/robot-god-ai-version-of-buddhist-deity-to-preach-in-japanese-temple/>.

⁴ Lisa Du & Ayaka Maki, *These Cameras Can Spot Shoplifters Even Before They Steal*, BLOOMBERG (Mar. 4, 2019), <https://www.bloomberg.com/news/articles/2019-03-04/the-ai->

“including intelligence, surveillance, and reconnaissance; logistics; defensive cyber operations; command and control; and semi-autonomous and autonomous vehicles.”⁵

The rise of AI in American life has gone largely unnoticed by American society since it emerged around fifteen years ago.⁶ Experts in the field of AI are unable to predict what the next twenty years of AI advancement will look like, and there is currently very little regulation of this emerging technology.⁷ What can be gleaned from the experts is that the race to be a leader in AI technology is underway, and, according to Vladimir Putin, “whoever becomes the leader in this field will rule the world.”⁸

Many questions remained unanswered about how AI will impact the global economy as well as when and how it will affect our existing laws, the job sector, national security, and life as we know it. Members of Congress introduced legislation in 2017 to respond to the uncertainty surrounding AI, but they were ultimately unsuccessful in getting it passed.⁹ Recently, the progression of AI garnered national attention when President Trump issued an executive order focused on AI development and implementation.¹⁰ Although it is significant that the president turned the federal government’s attention to AI, the order should only be the beginning of the conversation, not the final word. The executive order addresses the training and education of Americans, but does not offer a specific plan for the role of government when AI displaces a substantial portion of the job sector, leaving millions unemployed.¹¹ It seems the order is attempting to mitigate this future problem by encouraging Americans to move into the field of AI now.¹²

The executive order takes an important step in motivating the federal government to become a leader among other nation states in the research, development, and use of AI across multiple platforms and job sectors.¹³ There

cameras-that-can-spot-shoplifters-even-before-they-steal.

⁵ SAYLER, *supra* note 1, at 1.

⁶ LEE, *supra* note 2, at 107.

⁷ Jenny Gesley, *Regulation of Artificial Intelligence: Comparative Summary*, L. LIBR. CONGRESS, <https://www.loc.gov/law/help/artificial-intelligence/index.php> (last visited Sept. 28, 2019).

⁸ KELLEY M. SAYLER, CONG. RESEARCH SERV., R45178, ARTIFICIAL INTELLIGENCE AND NATIONAL SECURITY 4 (2019).

⁹ Alexandra Berge, *AI Legislation Languishes in Congress*, NAT’L DEF. MAG. (Jan. 16, 2019), <https://www.nationaldefensemagazine.org/articles/2019/1/16/ndia-policy-points-ai-legislation-languishes-in-congress>.

¹⁰ Exec. Order No. 13,859, 84 Fed. Reg. 3967 (Feb. 14, 2019).

¹¹ *Id.* at 3967, 3971.

¹² *Id.* at 3967.

¹³ Jim Baker, *President Trump’s Executive Order on Artificial Intelligence*, LAWFARE (Feb. 28, 2019), <https://www.lawfareblog.com/president-trumps-executive-order-artificial->

are many critiques of the order, but what is significant is that the United States is showing the world that it plans to take AI seriously.¹⁴ At least one critic, Jim Baker, argues that the executive order fails to deliver a definition of AI and does not do enough to address AI's future impact on the economy.¹⁵ He goes on to argue that the executive order fails to assuage concerns about the federal government protecting individual privacy in the age of developing and implementing AI.¹⁶ Finally, although the order directs federal funding to enable further progression in the field of AI technology, it is Congress, not the president, that needs to step in here.¹⁷ However, it is not surprising that the president leaves many questions unanswered in his executive order. Even those who have spent their respective adult lives exploring the definition of AI and what the future holds are unsure what the next few years will look like for AI.

Dr. Kai-Fu Lee and Dr. Max Tegmark share their expertise and insights in their recent publications by offering their own perspectives on the future of AI. Unfortunately, these authors do little to discuss the legal ramifications or to make suggestions for regulation in the field of AI. Dr. Lee offers his views on the future of AI based on his time in Silicon Valley and as a venture capitalist in China in *AI Superpowers: China, Silicon Valley, and the New World Order*.¹⁸ Dr. Tegmark explores the study of AI safety as the leader of the Future Life Institute and a physics professor in *Life 3.0: Being Human in the Age of Artificial Intelligence*.¹⁹ The two authors share a passion for exploring the future potential of AI. Both reach the conclusion that no "crystal ball" currently exists to show us what AI will do for humanity in the future and whether AI will help make humanity more successful or eliminate man altogether.²⁰ The authors also emphasize the importance of studying AI and ensuring that more people across the globe are involved in shaping how AI impacts humanity and the world.²¹

Dr. Lee characterizes the present as the age of "AI implementation"²² and then explains how his current belief that AI and humans can co-exist is based on humans loving each other more.²³ Dr. Tegmark seems less certain that

intelligence.

¹⁴ Winston Luo, *President Trump Issues Executive Order to Maintain American Leadership in Artificial Intelligence*, JOLT DIG. (Mar. 06, 2019), <https://jolt.law.harvard.edu/digest/president-trump-issues-executive-order-to-maintain-american-leadership-in-artificial-intelligence>.

¹⁵ Baker, *supra* note 13.

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ LEE, *supra* note 2, at ix.

¹⁹ MAX TEGMARK, *LIFE 3.0: BEING HUMAN IN THE AGE OF ARTIFICIAL INTELLIGENCE* (2017).

²⁰ LEE, *supra* note 2, at xi; TEGMARK, *supra* note 19, at 268.

²¹ LEE, *supra* note 2, at 200; TEGMARK, *supra* note 19, at 34, 38.

²² LEE, *supra* note 2, at 13, 25.

²³ *Id.* at 231-32.

autonomous AI will be beneficial to humankind, that is unless it has proper controls and goals; in fact, this seems to be one of the main points of his book.²⁴ Dr. Tegmark wants the reader to engage with the advantages and risks that could come as a result of the implementation and advancement of AI.²⁵ While Dr. Lee assumes autonomous AI is inevitable and we should simply embrace our fate,²⁶ Dr. Tegmark argues that we should control our own destiny by joining the conversation and being a part of the safety check.²⁷ Dr. Tegmark then explains that doing so will ensure we do not create something in the future that will either destroy us, be of little benefit to the universe, or both.²⁸

Part I of this Book Review examines Dr. Lee's claim that since China leads the world in AI implementation and the United States led the age of discovery, that the two superpowers will lead in AI together, with China being ahead of the United States in the age of implementation. Part II illustrates AI implementation and its potential impact according to Dr. Max Tegmark. Part III analyzes the legal and societal issues that flow from the topics discussed in both books as they relate to the existing framework outlined by President Trump in the executive order. This section then points to what is missing from the order. Finally, Part IV draws conclusions relating to the legal and social implications that stem from the two books and the executive order before ultimately making recommendations based on this analysis.

I. AI SUPERPOWERS: CHINA, SILICON VALLEY, AND THE NEW WORLD ORDER

Dr. Lee has a two-part approach to his book. In the first part of his book, he explains the history of the race between the United States and China currently taking place during the age of AI implementation.²⁹ This first section of the book compares the strengths and weaknesses of each country's AI development and implementation; Dr. Lee then uses this comparison to predict who will win the race.³⁰ The book claims that China will emerge as the leader in the age of implementation and that it will surpass the United States in this area within the next five years.³¹

Dr. Lee takes this position based on two main points. First, he argues that

²⁴ TEGMARK, *supra* note 19, at 260.

²⁵ *Id.* at 30-37, 42-45, 50, 52-55, 83-84, 92-95, 154-57, 202, 248, 260-63, 268-69.

²⁶ LEE, *supra* note 2, at 142.

²⁷ TEGMARK, *supra* note 19, at 268.

²⁸ *Id.* at 269.

²⁹ LEE, *supra* note 2, at 11-12, 82, 91, 106.

³⁰ *Id.* at 11-21, 55-68, 73, 77-116, 123-39.

³¹ *Id.* at 18, 128.

since China has more data than the United States and Europe combined, and because AI algorithms are fed by data, China has a distinct advantage.³² Second, Dr. Lee claims that the Chinese government takes a more heavy-handed approach in supporting technology companies in AI implementation than the United States, and as a result of this, Silicon Valley will no longer be the sole proprietor of AI innovation.³³

In the second part of his book, Dr. Lee predicts how AI implementation will influence the global economy, focusing on the United States as an example. He explains that AI will come in four waves across the globe and that once these waves hit, “they have the potential to wrench open ever greater economic divides between the haves and the have-nots.”³⁴ He reaches his conclusion based on the amount of money AI will generate for those involved in its development and deployment.³⁵ In this portion of the book, he also predicts that AI could replace 40-50 percent of the jobs in the United States between now and 2035.³⁶

In addition, Dr. Lee discusses the likelihood of autonomous AI, also known as artificial general intelligence (“AGI”), and admits that although some predict AGI will be developed by the year 2040, there is no guarantee it will ever be created according to current research and development.³⁷ This is good news for those concerned about *Terminator* robots. Still, Dr. Lee believes that as the four waves of AI sweep across the globe, people will be “displaced by machines” and will need to consider what it means to be a human in the age of AI.³⁸

As AI continues to be deployed and improved, we need to start preparing for the impacts it will have on each of our lives. In his book, Dr. Lee offers three approaches that countries can take to prevent societal unrest from unemployment and scarcity of jobs: “retraining workers, reducing work hours, [and] redistributing income.”³⁹ He explains the pros and cons of each and then proposes his own solution: that governments pay citizens who do work that involves caring for others and that as AI replaces a significant number of human workers, we, as a global community, start focusing on spending more time with the ones we love.⁴⁰ His experience beating cancer arguably colors his

³² *Id.* at 110, 124-25, 127.

³³ *Id.* at 77, 82, 100-01, 103.

³⁴ *Id.* at 145; John Naughton, *Technology May Not Create Inequality, but It Certainly Enables It to Thrive*, GUARDIAN (Aug. 4, 2019), <https://www.theguardian.com/commentisfree/2019/aug/04/technology-doesnt-cause-inequality-enables-it-to-thrive>.

³⁵ LEE, *supra* note 2, at 19.

³⁶ *Id.*

³⁷ *Id.* at 140; Nick Heath, *What Is Artificial General Intelligence? Everything You Need to Know About the Path to Creating an AI as Smart as a Human.*, ZDNET (Aug. 22, 2018), <https://www.zdnet.com/article/what-is-artificial-general-intelligence/>.

³⁸ LEE, *supra* note 2, at 147.

³⁹ *Id.* at 203.

⁴⁰ *Id.* at 229-31.

viewpoint.⁴¹ However, to those who lose their jobs, an “all you need is love”⁴² approach will not be enough to ward off poverty, hunger, or general discontent with a lack of self-worth. It is more important to join the discussion now and take steps to prepare for what seems to be the inevitable replacement of humans by AI across many job sectors.

II. LIFE 3.0: BEING HUMAN IN THE AGE OF ARTIFICIAL INTELLIGENCE

According to Dr. Max Tegmark, if Life 1.0 is the first life form, and humans represent Life 2.0, then Life 3.0 is life that is “a final upgrade ... finally fully free from its evolutionary shackles.”⁴³ Dr. Tegmark is invested in ensuring that AI will benefit humans rather than destroy or help destroy humanity, and he even started a nonprofit organization, the Future of Life Institute, to help more people to join in on this discussion.⁴⁴ His approach differs significantly from Dr. Lee’s because Dr. Tegmark is concerned with safety and preventing accidents from occurring as AI is implemented in our daily lives.⁴⁵ More specifically, he wants to see a proactive approach focused on investment in research that promotes safety and ensures that AI is bug free.⁴⁶ His belief is that this research will help protect us from accidents and prevent adversaries from hacking into our AI and using it to harm us.⁴⁷

In addition, Dr. Tegmark discusses at great length how the goals we set for AI and what intelligence we allow it to achieve are extremely important in terms of how we want AI to progress.⁴⁸ For example, he says that “the real risk of AGI isn’t malice but competence.”⁴⁹ Dr. Tegmark then elaborates on this point, warning that AGI “will be extremely good at accomplishing its goals, and if those goals aren’t aligned with ours, we’re in trouble.”⁵⁰ However, he warns against only focusing on goals, because even though AGI may be programmed

⁴¹ *Id.* at 176-77.

⁴² THE BEATLES, *ALL YOU NEED IS LOVE* (Capitol Records) (1967).

⁴³ TEGMARK, *supra* note 19, at 29.

⁴⁴ *Id.* at 34; FUTURE OF LIFE INST., <https://futureoflife.org> (last visited Sept. 27, 2019).

⁴⁵ TEGMARK, *supra* note 19, at 42, 94.

⁴⁶ *Id.* at 45.

⁴⁷ *Id.*; see also Michael Callier & Harly Callier, *Blame It on the Machine: A Socio-Legal Analysis of Liability in an AI World*, 14 WASH. J.L. TECH. & ARTS 49, 62-69 (2018) (discussing the risks of and theories of liability related to AI usage).

⁴⁸ TEGMARK, *supra* note 19, at 50, 260-69.

⁴⁹ *Id.* at 260.

⁵⁰ *Id.*; see also U.S. AIR FORCE, OFF. OF THE CHIEF SCIENTIST, AUTONOMOUS HORIZONS, SYSTEM AUTONOMY IN THE AIR FORCE 16-17 (2015), <https://www.af.mil/Portals/1/documents/SECAF/AutonomousHorizons.pdf?timestamp=1435068339702> (outlining the functional importance of aligning an AI’s goals with those of its programmer).

with certain goals, that does not mean the AGI “will necessarily adopt them.”⁵¹ His proposed solution is to dedicate “our best efforts to them now, long before any superintelligence is developed, to ensure that we’ll have the answers when we need them.”⁵² He illustrates this point with an analogy: humans control dangerous predators, such as tigers, not because of physical superiority, but because of superior intelligence.⁵³ He also expresses concern over who will be permitted to set these goals and calls for an agreement among world leaders focused on deterring the use of AI-related weapons to indiscriminately kill.⁵⁴

Dr. Tegmark shares some of Dr. Lee’s concerns with respect to AI displacing humans in the job market and widening the gap between the rich and the poor.⁵⁵ However, Dr. Tegmark differs in his approach to explaining the problem by mostly avoiding the conversation about AI races between nations, apart from warning against them.⁵⁶ Dr. Tegmark also admits to the reader that he has advised his children to pursue professions that require “interacting with people and using social intelligence,”⁵⁷ because these are actions that machines currently struggle with and seem relatively safe from being displaced by AI in the future.⁵⁸ Lastly, he advocates that as we, the readers, join the conversation about AI, we become more involved with setting safety standards and controlling them. He does so because he wants to ensure that as we continue to make advancements that could lead to AGI, we create AI or AGI that is beneficial to us and which will not seek to destroy or enslave us.⁵⁹

Compared to *AI Superpowers: China, Silicon Valley, and the New World Order*, *Life 3.0: Being Human in the Age of Artificial Intelligence* is much more persuasive in its warning for the future. It focuses on why everyone needs to be involved in how AI develops and is deployed. Dr. Tegmark is less focused on the AI race between China and the United States and more focused on a global collaboration to ensure that as AI reaches its maximum potential, humans are deciding how intelligent it becomes and what goals it should accomplish. From Dr. Tegmark’s point of view, this is one possible way to ensure AI benefits humanity and does not transform into *Terminator* robots that seek to annihilate the human race. Dr. Lee never takes his analysis beyond the AI race and the inevitability of AI replacing us in the work force, leaving the reader with a

⁵¹ TEGMARK, *supra* note 19, at 262.

⁵² *Id.* at 268.

⁵³ *Id.* at 44.

⁵⁴ *Id.* at 35, 114-16; *see generally* Kenneth W. Thompson, *Arms Control*, BRITANNICA (2010), <https://www.britannica.com/topic/arms-control/Recent-efforts>.

⁵⁵ TEGMARK, *supra* note 19, at 119-22, 126-29.

⁵⁶ *Id.* at 113-14.

⁵⁷ *Id.* at 121.

⁵⁸ *Id.*

⁵⁹ *Id.* at 32-38, 260-63, 267.

conclusory statement that love (and possibly government intervention through a universal basic income) will save us once the machines takeover. However, each book serves as an excellent introduction for those who want to enter the conversation on AI and speak about its current progress or where it is likely to make an impact.

III. THE EXECUTIVE ORDER ON ARTIFICIAL INTELLIGENCE

As both books recognize, AI will change American life and life across the globe more rapidly than the Industrial Revolution did over a hundred years ago.⁶⁰ The United States will need laws that prevent AI from overtaking fields of work too quickly.⁶¹ One solution is to grandfather in those who already serve in certain sectors of the job force and who have been there for so long it is unlikely they can learn a new job or compete for the few positions left in their own sector.⁶² This could be accomplished by periodically deploying AI to replace these workers as they retire.⁶³ This would also signal to members of future generations that they need to start considering other career options.⁶⁴ Finally, such a solution could help alleviate the problem of unemployment that the federal government would face. There is no feasible way that the government could sustain making unemployment payments to millions of suddenly unemployed Americans who are displaced by AI.⁶⁵

Another question these two books raise is what impact will AI have on the economy? Based on what Dr. Tegmark discusses in terms of AI and the military, it appears it will be cheaper to shift from ship building and tank making to AI making for national defense purposes.⁶⁶ For example, he makes the case that it is cheaper and easier to deploy drones to kill an enemy than to use traditional

⁶⁰ LEE, *supra* note 2, at 151; TEGMARK, *supra* note 19, at 37.

⁶¹ Stephan Talty, *What Will Our Society Look Like When Artificial Intelligence Is Everywhere?*, SMITHSONIAN MAG. (Apr. 2018), <https://www.smithsonianmag.com/innovation/artificial-intelligence-future-scenarios-180968403/>.

⁶² See generally TEGMARK, *supra* note 19, at 123-24.

⁶³ See generally Bernard Marr, *5 Important Artificial Intelligence Predictions (For 2019) Everyone Should Read*, FORBES (Dec. 3, 2018), <https://www.forbes.com/sites/bernardmarr/2018/12/03/5-important-artificial-intelligence-predictions-for-2019-everyone-should-read/#40f879ef319f>.

⁶⁴ See generally Mark Muro et. al, *Automation and Artificial Intelligence: How Machines Are Affecting People and Places*, BROOKINGS METROPOLITAN POL'Y PROGRAM (Jan. 2019), https://www.brookings.edu/wp-content/uploads/2019/01/2019.01_BrookingsMetro_Automation-AI_Report_Muro-Maxim-Whiton-FINAL-version.pdf.

⁶⁵ See generally Catherine Clifford, *Elon Musk: Robots Will Take Your Jobs, Government Will Have to Pay Your Wage*, MAKE IT (Nov. 4, 2016), <https://www.cnbc.com/2016/11/04/elon-musk-robots-will-take-your-jobs-government-will-have-to-pay-your-wage.html>.

⁶⁶ See generally TEGMARK, *supra* note 19, at 111.

military forces.⁶⁷ He further argues that this is alarming because it will provide our enemies with a cheaper and more effective tool to kill people.⁶⁸ Setting this alarming prediction aside, the more immediate concern for the United States is the change to the American job force an AI military will bring. According to the Department of Defense (“DoD”), the department is “America’s largest employer,” with 2.15 million service members currently serving in the military.⁶⁹ The Congressional Budget Office reports that the DoD requested \$718 billion for 2020, with a majority of the budget allocated to developing AI that can be implemented by the military in the near future.⁷⁰ If AI replaces servicemembers in the military, the effect on the economy will be substantial.⁷¹ For these reasons, it is imperative that the federal government look prospectively at how to safely and fairly implement AI in American society.

A. Five Guidelines

The Executive Order on “Maintaining American Leadership in Artificial Intelligence”⁷² is the Trump administration’s effort to focus the federal government on the importance of winning the race that Dr. Lee illustrates in his book. However, it is also intended to prepare the American workforce for the introduction of AI by encouraging citizens to enter the growing AI job sector through various programs. In the first section of the order, the president lays out five principles that will guide the federal government and the nation in America’s mission to become a world leader in AI research, development, and deployment.⁷³ The first guideline emphasizes the need for the United States to be the leader in AI development.⁷⁴ The second guideline states that the United States should create standards and “reduce barriers to the safe testing and deployment of AI.”⁷⁵ The third calls on the nation to train Americans in the field of AI to prepare them for the future changes that AI will bring to the economy.⁷⁶ The fourth guideline asks the United States to gain the confidence of the public with respect to this age of AI development and implementation by safeguarding

⁶⁷ *Id.* at 110.

⁶⁸ *Id.* at 117.

⁶⁹ *Our Story*, U.S. DEP’T OF DEF., <https://www.defense.gov/Our-Story/> (last visited Nov. 21, 2019).

⁷⁰ *Defense and National Security*, CONG. BUDGET OFF., <https://www.cbo.gov/topics/defense-and-national-security> (last visited Nov. 21, 2019).

⁷¹ DANIEL S. HOADLEY, CONG. RESEARCH SERV., R45178, ARTIFICIAL INTELLIGENCE AND NATIONAL SECURITY 27 (Kelley M. Saylor ed., 2019).

⁷² Exec. Order No. 13,859, 84 Fed. Reg. 3,967 (Feb. 11, 2019).

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Id.*

American values and the American way of life.⁷⁷ Lastly, in the fifth guideline, the president explains that the United States must engage with the international community in the implementation of its AI development but that the country must also ensure it safeguards its research and development against thefts perpetrated by other nations.⁷⁸

These guidelines are a response to many of the predicted challenges raised by Dr. Lee and Dr. Tegmark, but hopefully they are just the beginning of a national dialogue and actions undertaken during the age of AI implementation. The first guideline regarding leadership in AI development responds to what Dr. Lee implicitly characterizes as the race between China and the United States to become the leader in the age of AI implementation.⁷⁹ In his book, Dr. Lee discusses the significance of the Chinese premier highlighting the importance of AI in the Chinese economy in motivating the government to support private sector research and development of AI.⁸⁰ It is crucial for the United States to lead in this area so that American values, views on safe deployment of AI, and ethical concerns related to AI are also leading the race. Another reason why leadership in AI is so important is that, as Dr. Lee points out, China and the United States, the likely leaders in the global race to AI, stand to gain trillions of dollars for their respective economies.⁸¹ Undoubtedly, it is in the nation's best financial and political interests to lead in this race.

The second guideline of the executive order discusses the goal of driving the "development of appropriate technical standards."⁸² This guideline addresses the chief concern Dr. Tegmark expresses in his book: control over AI and safety standards.⁸³ However, the second guideline does call for reducing "barriers to the safe testing and deployment of AI technologies,"⁸⁴ which is not necessarily something that Dr. Tegmark and the Future of Life Institute endorse considering they are for promoting safety standards, not diminishing them.

One could interpret this guideline to mean that the president is asking agencies to review regulations that have a chilling effect on AI testing to ensure private sector entities acting in good faith have more freedom to test AI technologies, without fear of liability.⁸⁵ This interpretation is consistent with the theory behind

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*; see generally LEE, *supra* note 2, at 18.

⁸⁰ LEE, *supra* note 2, at 62, 64; Li Keqiang, *China Is Launching a "Self-Targeted Revolution,"* WORLD ECON. F. (Sept. 10, 2014), <https://www.weforum.org/agenda/2014/09/premier-li-keqiang-china-launching-self-targeted-revolution/>.

⁸¹ LEE, *supra* note 2, at 62, 64.

⁸² Exec. Order No. 13,859, 84 Fed. Reg. 3,967 (Feb. 11, 2019).

⁸³ TEGMARK, *supra* note 19, at 34.

⁸⁴ Exec. Order No. 13,859, 84 Fed. Reg. 3,967 (Feb. 11, 2019).

⁸⁵ See generally Caleb Watney, *Trump's Artificial Intelligence Strategy: Aspirations*

Congress passing the Cyber Information Sharing and Protection Act (“CISPA”).⁸⁶ Under CISPA, Congress cleared the way for the private sector to share cyber threat information with the federal government without fear of liability, notwithstanding other laws such as the Foreign Intelligence Surveillance Act (“FISA”), so long as the sharing was done consistent with CISPA and in good faith.⁸⁷ In addition, this could be President Trump’s attempt to incentivize technology companies to push their testing of AI to greater lengths in support of the first guideline.⁸⁸

The third guideline responds to the concerns raised by both Dr. Lee and Dr. Tegmark with respect to how AI will reduce the number of jobs available and very likely cause social unrest.⁸⁹ By focusing on training “current and future generations” and preparing both for the “economy and jobs of the future,” the president appears to be motivating the government, and arguably the American people, to prepare them for the potential problems regarding job displacement by AI.⁹⁰ Although the executive order does not describe how this guideline will specifically be accomplished, it represents an important step in preparing the government and American society for the changes to the job market and the economy, which seem inevitable within the next twenty years.

Arguably, no guideline embodies the American political landscape better than the fourth guideline. While some may claim that the language mentioning world leadership found in the first and fifth guidelines is the most American, this review argues that the reference to our willingness to safeguard our American values makes the fourth guideline the most important to the American people. Artificial intelligence could be used to create a surveillance state and negatively impact the privacy of American citizens in various other ways.⁹¹ The effect that technology has on the privacy rights of Americans under the Fourth Amendment is of great concern to the Supreme Court as demonstrated in its rulings in *United States v. Jones*,⁹² *Riley v. California*,⁹³ and *Carpenter v. United States*.⁹⁴ These rulings reflect a growing concern for and tension between protecting individual privacy and the extent to which law enforcement can use technology to combat

Without Teeth, LAWFARE (Feb. 20, 2019), <https://www.lawfareblog.com/trumps-artificial-intelligence-strategy-aspirations-without-teeth> (explaining general provisions and shortfalls of the Executive Order).

⁸⁶ H.R. REP. NO. 113-39 (2013) § 1104(b)(4).

⁸⁷ *Id.*

⁸⁸ Watney, *supra* note 85.

⁸⁹ LEE, *supra* note 2, at 21; TEGMARK, *supra* note 19, at 121-22.

⁹⁰ Exec. Order No. 13,859, 84 Fed. Reg. 3,967 (Feb. 11, 2019); *see generally* TEGMARK, *supra* note 19, at 123.

⁹¹ *See* TEGMARK, *supra* note 19, at 37.

⁹² *United States v. Jones*, 565 U.S. 400, 427 (2012).

⁹³ *Riley v. California*, 573 U.S. 373, 403 (2014).

⁹⁴ *Carpenter v. United States*, 138 S. Ct. 2206, 2222 (2018).

crime.⁹⁵ Both authors acknowledge that AI has the potential to greatly benefit society.⁹⁶ However, as Dr. Tegmark highlights, the United States does not want AI to be introduced in such a way that it controls its citizens or that the government can use it to control them.⁹⁷ Therefore, the idea of implementing AI while still protecting the constitutional liberties we hold dear is reflected in the fourth guideline and it is this idea that makes this guideline arguably the most important.

Finally, the fifth guideline, which concerns the protection of American AI technology from the nation's competitors and enemies and paves a path for the deployment of American AI internationally, speaks more to the themes in Dr. Lee's book. Dr. Lee shamelessly admits that Chinese technology companies have spent decades copying (and stealing) American research and development.⁹⁸ He argues that the Chinese took what they obtained from the Americans and made improvements to these acquisitions.⁹⁹ Dr. Lee also contends that one of the weaknesses of Silicon Valley companies is their inability to adapt to international markets.¹⁰⁰ He claims that these companies are guilty of selling products that are successful in the United States in the same, unaltered form across the globe.¹⁰¹ Dr. Lee then explains that this is where China outperforms the United States, since Chinese companies adapt their products to meet the demands of local markets.¹⁰² President Trump's fifth guideline responds to the accusations made against Silicon Valley by encouraging the development and deployment of AI technologies that meet the needs of the international market.

Overall, these guidelines are a good start to bringing the government and the American people into the age of AI implementation. What is missing from the executive order is a way of forcing the implementing agencies to take this order seriously and demand that Congress appropriate the necessary funds to make these guidelines a reality.¹⁰³ The government also needs to incentivize the

⁹⁵ TEGMARK, *supra* note 19, at 30-31.

⁹⁶ LEE, *supra* note 2, at 122-23; TEGMARK, *supra* note 19, at 95.

⁹⁷ See generally TEGMARK, *supra* note 19, at 260-69 (explaining three potential lapses in human control of AI technology include understanding, adopting, and retaining programmed goals).

⁹⁸ LEE, *supra* note 2, at 22-23; Clive Thompson, *China Is No Longer a Nation of Tech Copycats*, WIRED (Mar. 30, 2016), <https://www.wired.co.uk/article/china-tech-copycat-yy-meituan-xinchejian-zepp-labs>.

⁹⁹ LEE, *supra* note 2, at 40.

¹⁰⁰ *Id.* at 39.

¹⁰¹ *Id.*

¹⁰² *Id.* at 44-45; see Feng Li, *Why Western Firms Have Failed in China*, HARV. BUS. REV. (Aug. 14, 2018), <https://hbr.org/2018/08/why-western-digital-firms-have-failed-in-china>.

¹⁰³ See Jack Corrigan, *Guidance on Federal AI Regulations Coming Shortly, Federal CTO Says*, NEXTGOV (Sept. 17, 2019), <https://www.nextgov.com/emerging-tech/2019/09/>

private sector to work with these agencies in an effort to accomplish the safe deployment of AI that benefits the American people, not just the companies who develop the technology.¹⁰⁴ Finally, the president should not rely on the order alone to bring this issue to the forefront of American society. The president needs to use all available platforms, including television and social media, to raise the public's interest in entering "the conversation."¹⁰⁵

B. Six Strategic Objectives and Implementing the Executive Order

The executive order states that AI will "affect the missions of nearly all executive departments and agencies," and therefore, it issues six strategic objectives to the agencies responsible for executing the order.¹⁰⁶ The six strategic objectives echo the themes in the five guidelines but do not function in the same authoritative way. Instead, through these objectives the president instructs the implementing agencies to take steps to: (1) help entities inside the United States, as well as our allies, to fund research and development of AI; (2) boost the quantity and quality of the data that feeds AI; (3) strip away the regulations that chill further advancements in AI while keeping in mind American values; (4) develop standards to make AI safe and secure while keeping in mind American values; (5) prepare Americans through training and education on AI technology; and (6) develop a plan consistent with the "National Security Presidential Memorandum of February 11, 2019."¹⁰⁷ The order then assigns the coordination of the strategic objectives to the National Science and Technology Counsel's ("NSTC") Select Committee on Artificial Intelligence.¹⁰⁸

Charging the NSTC with the responsibility of coordinating the demands of the executive order reflects the importance the president places on the future of AI deployment in the United States. The NSTC is a "cabinet-level counsel" that is "chaired by the president" and includes the vice president, cabinet secretaries, and agency heads.¹⁰⁹ By assigning the NSTC the task of leading efforts in this area, it seems the president wants to be closely involved in the decision-making and strategic objective implementation process he imposed on certain agencies. These steps appear to disprove Dr. Lee's position that the Chinese government

guidance-federal-ai-regulations-coming-shortly-federal-cto-says/159953/.

¹⁰⁴Berge, *supra* note 9.

¹⁰⁵TEGMARK, *supra* note 19, at 38; see Joshua M. Scacco & Kevin Coe, *The Ubiquitous Presidency: Toward a New Paradigm for Studying Presidential Communication*, 10 INT'L J. COMM. 2014, 2016-17 (2016).

¹⁰⁶Exec. Order No. 13,859, 84 Fed. Reg. 3,967 (Feb 11, 2019).

¹⁰⁷*Id.*

¹⁰⁸*Id.*

¹⁰⁹*Office of Science and Technology Policy: NSTC*, WHITEHOUSE.GOV, <https://www.whitehouse.gov/ostp/nstc/> (last visited on Sept. 26, 2019).

is more supportive of AI development and deployment than the United States government.¹¹⁰

The executive order goes on to explain the roles of the implementing agencies in providing funding and resources for AI research and development.¹¹¹ In addition, it requires agencies to report on their findings as well as make recommendations on AI research and development and on regulations needed in the field of AI to protect and advance progress.¹¹² Finally, the president also requires leadership from within the implementing agencies to establish grants and programs that encourage Americans to become active members in AI development and implementation.¹¹³

With the stroke of a pen, the president responded to the main arguments advanced by Dr. Lee and Dr. Tegmark. The executive order addresses Dr. Tegmark's concern that more people need to be involved in discussing the safe and controlled implementation of AI.¹¹⁴ In addition, by the highest level of our government focusing on AI, this demonstrates to critics of the American political landscape, such as Dr. Lee, that AI is going to be part of American life and that we need more Americans involved in its development and deployment.¹¹⁵ However, the American people deserve more than one branch of government taking steps to introduce AI. Furthermore, they deserve protection against the potential abuse of their civil liberties and privacy. Therefore, Congress needs to get more involved and advance existing AI legislation while still considering the risks that Dr. Tegmark and others discuss with respect to safety and control in AI deployment.

IV. CONCLUSION AND RECOMMENDATIONS FOR THE FUTURE

Artificial intelligence is here and as it continues to be refined and it becomes more engrained in society, we need to start preparing for what is to come. There is little doubt that each of us needs to become more aware of how AI currently affects our lives and how it will continue to do so in the future. The two authors mentioned in this review are warning us to join the conversation because they

¹¹⁰*See generally* LEE, *supra* note 2, at 18, 62–63, 65 (explaining that the Chinese government is hands on, then citing examples of the Chinese government leading and investing in its technology industry).

¹¹¹Exec. Order No. 13,859, 84 Fed. Reg. 3,967 (Feb. 11, 2019).

¹¹²*Id.*

¹¹³*Id.*

¹¹⁴*See id.* (directing that heads of R&D agencies shall educate and train American workers, for those whose mission also involves education, and shall “explore opportunities for collaboration with non-federal entities”).

¹¹⁵*See* LEE, *supra* note 2, at 15 (explaining that the American climate around technology invention has stifled its growth compared to the innovation and competition in China).

fear that if we do not, we shall be among the hopeless masses likely to be unemployed and out of luck when AI replaces people in the workforce.¹¹⁶ In fact, Dr. Tegmark is even counseling his own children on professions they should consider based on which ones seem likely to be replaced by AI.¹¹⁷ Similarly, Dr. Lee has created quad charts predicting which jobs will be overtaken by AI in the near future and which will co-exist with AI.¹¹⁸

With the United States and China in an unofficial AI “arms race,” the progress made by those in the field will be rewarded handsomely, fueling an incentive to make developments faster than one’s competitors. The technology giants are positioned to make a significant amount of money off their progress in AI implementation. However, there still is very little discussion about how AI will be implemented in global society, particularly here in the United States. In fact, outside of the experts writing about AI and warning of the inevitable, it seems that few Americans understand how AI could impact them; for example, will AI replace them in the job market?¹¹⁹ Maybe AI will bring us great joy by enabling us to spend more time with each other like Dr. Lee hopes. However, it seems more realistic to take the position that when AI reaches the penultimate implementation phase (where it displaces truck drivers, taxi cab drivers, bus drivers, and so on), there will be many Americans without jobs and the training or skills needed to enter new career fields. This will undoubtedly lead to social unrest and millions of Americans will turn to the government for assistance. That is why teachers, parents, students, social workers, and all other Americans need to start having educated discussions about what this means for everyone, and these discussions need to start now.

This review recommends that Americans utilize this small window at the beginning of AI implementation to become a part of the discussion. The more of us who are aware of the potential benefits and harms that AI will bring to American life, the better we can plan for our self-preservation and formulate solutions to future challenges presented by AI. We should also seek opportunities to educate ourselves on how AI will impact our lives and what we can do to ensure that we do not become a society of haves and have-nots. An assumption that AI will not impact us directly would be foolhardy according to the authors. Therefore, it is time to join the conversation and act.

The next step after joining the conversation and becoming informed is demanding that American legislators do the same. Although not discussed substantively in the work of either author, there are several privacy and legal concerns surrounding the deployment of AI in people’s daily lives. AI currently

¹¹⁶LEE, *supra* note 2, at 145; TEGMARK, *supra* note 19, at 119–20.

¹¹⁷TEGMARK, *supra* note 19, at 121.

¹¹⁸LEE, *supra* note 2, at 155–56.

¹¹⁹See LEE, *supra* note 2, at 153–54; TEGMARK, *supra* note 19, at 30, 126–29.

tracks our searches online, looks at our posts on social media, and notes who we interact with over the web.¹²⁰ Private companies collect this information and sell it to advertisers who then target those interactions with advertisements.¹²¹ There is a growing concern that the government tracks this information as well.¹²² Surveillance of this kind can impact free speech and privacy rights under the First and Fourth Amendments.¹²³

In many ways, the AI that is already deployed on the internet is creating a caste system of privacy haves and have-nots.¹²⁴ Those who can afford to pay for services that encrypt their phone calls and emails are the ones who have greater privacy.¹²⁵ But not everyone can afford these services.¹²⁶ In addition, the same outcome can be expected with the deployment of more AI systems. For example, when vehicles become autonomous, those who can afford them could potentially buy a fleet of these vehicles; they could then increase their wealth significantly by renting them out as a sort of “driverless Uber” to those who are unable to afford such technology.¹²⁷ Incidentally, some are calling for regulations on AI technology that will take into consideration the “commercial, legal, and societal concerns” while not impeding advancements in AI development and deployment.¹²⁸ As Dr. Lee notes in his book, data feeds AI development and it is possible that the data being collected on the internet by American companies and the government could be useful in achieving leadership in the AI race. This is because China is using data collected on its citizens to fuel AI development in China and these efforts have proven to be greatly successful. The question then becomes whether winning the AI race is worth jeopardizing citizens’ constitutional protections and widening the gap between the wealthiest Americans and the rest of society.

Another question still left unanswered by the president’s executive order is how the introduction of AI will affect job markets. As AI displaces American workers, are these workers expected to cope with this change on their own? In 2018, the United States House of Representatives considered a bill titled the AI JOBS Act of 2018.¹²⁹ This act would have required the secretary of labor to

¹²⁰See Zachary Gold & Mark Latonero, *Robots Welcome? Ethical and Legal Considerations for Web Crawling and Scraping*, 13 WASH. J.L. TECH. & ARTS 275, 277, 282 (2018).

¹²¹See *id.* at 293, 300.

¹²²*Id.* at 282-84.

¹²³Michael Rosenberg, *The Price of Privacy: How Access to Digital Privacy is Slowly Becoming Divided by Class*, 20 UCLA J.L. & TECH. 1, 3 (2016).

¹²⁴*Id.* at 18-19.

¹²⁵*Id.* at 22.

¹²⁶*Id.*

¹²⁷TEGMARK, *supra* note 19, at 99.

¹²⁸Callier & Callier, *supra* note 47, at 69-70.

¹²⁹*Id.* at 63; see AI JOBS Act of 2018, H.R. 4829, 115th Cong. (2018); *H.R. 4829 (115th)*:

inform Congress of the predicted effects of AI on the job market in the United States.¹³⁰ It seems as though the federal government is finally taking seriously the problem of jobs being replaced by AI. The importance of having congressional attention on AI implementation in the United States stems from Dr. Lee's warning that 40-50 percent of American jobs could be replaced by AI sometime within the next fifteen years. Lawmakers need to act quickly to plan for this tremendous disruption in the job market; otherwise, societal unrest in the United States and across the world could be the result.

AI JOBS Act of 2018, GOVTRACK, <https://www.govtrack.us/congress/bills/115/hr4829> (last visited Nov. 16, 2019).

¹³⁰Callier & Callier, *supra* note 47, at 62-63.

