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PUBLIC INTEREST COMMENT

PREPARING FOR THE FUTURE OF ARTIFICIAL INTELLIGENCE

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The Office of Science and Technology Policy (OSTP) has requested comments pertaining to the governance of artificial intelligence (AI) technologies.[1]

The Technology Policy Program of the Mercatus Center at George Mason University is dedicated to advancing knowledge of the impact of regulation on society. It conducts careful and independent analyses employing contemporary economic scholarship to assess policy issues from the perspective of the public interest.

We write here to comment on the appropriate policy framework for artificial intelligence (AI) technologies at this nascent stage of their development and to make the case for prudence, patience, and a continuing embrace of "permissionless innovation." Permissionless innovation refers to the idea that "experimentation with new technologies and business models should

1. Ed Felten, "How to Prepare for the Future of Artificial Intelligence," White House blog, June 27, 2016.

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generally be permitted by default. Unless a compelling case can be made that a new invention will bring serious harm to society, innovation should be allowed to continue unabated and problems, if they develop at all, can be addressed later."[2]

Policymakers may be tempted to preemptively restrict AI technologies out of an abundance of caution for the perceived risks these new innovations might seem to pose. However, an examination of the history of US technology policy demonstrates that these concerns can be adequately addressed without quashing a potentially revolutionary new industry.

Specifically, as policymakers consider the governance of AI, they would be wise to consider the lessons that can be drawn from our recent experience with the Internet. The United States made permissionless innovation the basis of Internet policy beginning in the early 1990s, and it soon became the "secret sauce" that propelled the rise of the modern digital revolution.[3]

If policymakers wish to replicate America's success with the Internet, they need to adopt a similar "light-touch" approach for the governance of AI technologies. To highlight the benefits of permissionless innovation, the Mercatus Center at George Mason University has recently published a book,[4] a series of law review articles, and several agency filings that explain what this policy vision entails for different technologies and sectors.[5] A summary of the major insights from these studies can be found in a recent Mercatus Center paper called "Permissionless Innovation and Public Policy: A 10-Point Blueprint."[6]

If one's sole conception of a technology comes from Hollywood depictions of dystopian science fiction or killer robotic systems run amok, it is understandable that one might want to use the force of regulation to clamp down decisively on these "threats." But these fictional representations are just that: fictional. AI technologies are both much more benign and fantastic in reality.

The economic benefits of AI are projected to be enormous. One recent study used benchmarks derived from methodologically conservative studies of broadband Internet, mobile phones, and industrial robotics to estimate that the economic impact of AI could be between $1.49 trillion and $2.95 trillion over the next ten years.[7] With less strict assumptions, the economic benefits could be greater still.

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2. Adam Thierer, *Permissionless Innovation: The Continuing Case for Comprehensive Technological Freedom* (Arlington, VA: Mercatus Center at George Mason University, 2016).
3. Adam Thierer, "Embracing a Culture of Permissionless Innovation," *Cato Online Forum*, November 2014.
4. Adam Thierer, *Permissionless Innovation*.
5. Subjects include the Internet of Things, wearable devices, smart cars, commercial drones, cryptocurrency, 3D printing, robotics, the sharing economy, and advanced medical devices. Our research can be accessed at permissionlessinnovation.org.
6. Adam Thierer and Michael Wilt, "Permissionless Innovation: A 10-Point Checklist for Public Policymakers," Economic Perspectives, Mercatus Center at George Mason University, March 31, 2016.
7. Nicholas Chen et al., "Global Economic Impacts Associated with Artificial Intelligence" (Study, Analysis Group, Boston, MA, February 25, 2016), "Growth in AI producing sectors could lead to increased revenues, and employment within these existing firms, as well as the potential creation of entirely new economic activity. Productivity improvements in existing sectors could be realized through faster and more efficient processes and decision making as well as increased knowledge and access to information."

However, some skeptics are already making the case for a preemptive regulation of AI technologies. The rationales for control are varied, including concerns ranging from deindustrialization to dehumanization,[8] as well as worries about the "fairness" of the algorithms behind AI systems.[9]

Due to these anxieties associated with AI, some academics argue that policymakers should "legislate early and often" to "get ahead of" these hypothetical problems.[10] Specifics are often in short supply, with some critics simply hinting that "something must be done" to address amorphous concerns.

Other scholars have provided more concrete regulatory blueprints, however. They propose, among other things, the passage of broad-based legislation[11] such as an "Artificial Intelligence Development Act,"[12] as well as the creation of a federal AI agency[13] or possibly a "Federal Robotics Commission"[14] or "National Algorithmic Technology Safety Administration."[15] These proposed laws and agencies would establish a certification process requiring innovators to subject their technologies to regulatory review to "ensure the safety and security of their A.I."[16] Or, at a minimum, such agencies would advise other federal, state, and local officials and organizations on how to craft policy for AI and robotics.

Such proposals are based on "precautionary principle" reasoning. The precautionary principle refers to the belief that new innovations should be curtailed or disallowed until their developers can prove that they will not cause any harms to individuals, groups, specific entities, cultural norms, or various existing laws, norms, or traditions.

It is certainly true that AI technologies might give rise to some of the problems that critics suggest. And we should continue to look for constructive solutions to the potentially thorny problems that some of these critics discuss. That does not mean that top-down, technocratic regulation is sensible, however.

Traditional administrative regulatory systems have a tendency to be overly rigid, bureaucratic, and slow to adapt to new realities. This is particularly problematic as it pertains to the governance of new, fast-moving technologies.

8. Nicholas Carr, *The Glass Cage: Automation and Us* (New York: W. W. Norton & Company, 2014); Jerry Kaplan, *Humans Need Not Apply: A Guide to Wealth and Work in the Age of Artificial Intelligence* (New Haven, CT: Yale University Press, 2015), 7. (Kaplan suggests that AI systems "can wreak havoc on an unimaginable scale in the blink of an eye.")
9. Frank Pasquale, *The Black Box Society: The Secret Algorithms That Control Money and Information* (Cambridge, MA: Harvard University Press, 2015).
10. John Frank Weaver, "We Need to Pass Legislation on Artificial Intelligence Early and Often," *Slate*, September 12, 2014.
11. Alex Rosenblat, Tamara Kneese, and danah boyd, "Understanding Intelligent Systems" (Data & Society Working Paper, Data & Society Research Institute, October 8, 2014), 11.
12. Matthew U. Scherer, "Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies," *Harvard Journal of Law and Technology* 29, no. 2 (2016): 43–45. Also see Weaver, "We Need to Pass Legislation."
13. Matthew U. Scherer, "Regulating Artificial Intelligence Systems," 45–47.
14. Ryan Calo, "The Case for a Federal Robotics Commission" (Report, Brookings Institution, Washington, DC, September 2014).
15. Andrew Tutt, "An FDA for Algorithms" (working paper, 2016), available through SSRN at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2747994.
16. Scherer, "Regulating Artificial Intelligence Systems," 43.

Prior restraints on innovative activities are a recipe for stagnation. By focusing on preemptive remedies that aim to predict hypothetical problems that may not ever come about, regulators run the risk of making bad bets based on overconfidence in their ability to predict the future.[17] Worse yet, by preempting beneficial experiments that yield new and better ways of doing things, administrative regulation stifles the sort of creative, organic, bottom-up solutions that will be needed to solve problems that may be unforeseeable today.[18]

This risk is perhaps more pronounced when dealing with AI technologies. *How* "artificial intelligence" is regulated makes little sense until policymakers define *what* it actually entails. The boundaries of AI are amorphous and ever changing. AI technologies are already all around us—examples include voice-recognition software, automated fraud detection systems, and medical diagnostic technologies—and new systems are constantly emerging and evolving rapidly.[19] Policymakers should keep in mind the rich and distinct variety of opportunities presented by AI technologies, lest regulations more appropriate for one kind of application inadvertently stymie the development of another.[20]

Toward that end, we suggest that a different policy approach for AI is needed, one that is rooted in humility and a recognition that we possess limited knowledge about the future.[21]

This does not mean there is no role for government as it pertains to AI technologies. But it does mean that policymakers should first seek out less restrictive remedies to complex social and economic problems before resorting to top-down proposals that are preemptive and proscriptive.

Policymakers must carefully ensure they have a full understanding of the boundaries and promises of all of the technologies they address. Many AI technologies pose little or no risks to safety, fair market competition, or consumer welfare. These applications should not be stymied due to an inappropriate regulatory scheme that seeks to address an entirely separate technology. They should be distinguished and exempted from regulations as appropriate.

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17. Thierer, *Permissionless Innovation*, 82. ("Trying to preemptively plan for every hypothetical worst-case scenario means that many best-case scenarios will never come about.")
18. Aaron Wildavsky, *Searching for Safety* (New Brunswick, CT: Transaction Books, 1988), 183. ("Regulation, because it deals with the general rather than with the particular, necessarily results in forbidding some actions that might be beneficial. Regulators cannot devise specifications sufficiently broad to serve as guidelines for every contingency without also limiting some actions that might increase safety. Because regulation is anticipatory, regulators frequently guess wrong about which things are dangerous; therefore, they compensate by blanket prohibitions.")
19. AJ Agrawal, "7 Ways Artificial Intelligence Is Improving Consumer Experiences," *Customer Think*, July 14, 2016.
20. Robert D. Atkinson, "'It's Going to Kill Us!' and Other Myths about the Future of Artificial Intelligence" (Report, Information Technology and Innovation Foundation, June 2016), 10. ("If we want progress—an increase in economic growth, improved health, a better environment, etc.—then it is time to regain our sense of optimism about the promise of technological innovation," argues Robert Atkinson of ITIF. "In particular, when it comes to AI, we should be enthusiastic and excited, not fearful and cautious.")
21. Maureen K. Ohlhausen, "The Internet of Things and the FTC: Does Innovation Require Intervention?" (Remarks before the US Chamber of Commerce, Federal Trade Commission, Washington, DC, October 18, 2013). ("It is . . . vital that government officials, like myself, approach new technologies with a dose of regulatory humility, by working hard to educate ourselves and others about the innovation, understand its effects on consumers and the marketplace, identify benefits and likely harms, and, if harms do arise, consider whether existing laws and regulations are sufficient to address them, before assuming that new rules are required.")

Other AI technologies may warrant more regulatory consideration if they generate substantial risks to public welfare. Still, regulators should proceed cautiously.

To the extent that policymakers wish to spur the development of a wide array of new life-enriching technologies, while also looking to devise sensible solutions to complex challenges, policymakers should consider a more flexible, bottom-up, permissionless innovation approach as the basis of America's policy regime for AI technologies.