### 1NC – AI “Arms Race” Kritik

#### There is no AI “Arms Race” – global spending is not enough to warrant the Arms Race title – it is just military modernization

Scharre 2021 – Director of the Technology and National Security Program at the Center for a New American Security [Paul, 6/28/21,https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/, “Debunking the AI Arms Race Theory”, 6/18/22, LND]

The scale of military AI spending, at least at present, is nowhere near large enough to warrant the title of “arms race.” Of course, AI can also be used for weapons. Militaries around the world are actively working to adopt AI to improve their military capabilities. Yet the militarization of AI does not, at present, meet the traditional definition of an arms race, despite the rhetorical urgency of many national leaders. Michael D. Wallace, in his 1979 article “Arms Races and Escalation,” defined an arms race as “involving simultaneous abnormal rates of growth in the military outlays of two or more nations” resulting from “the competitive pressure of the military itself, and not from domestic forces exogenous to this rivalry.” Wallace further stated that the concept of an arms race only applied “between nations whose foreign and defense policies are heavily interdependent” and who have “roughly comparable” capabilities.[11](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn11) AI is being adopted by many countries around the globe.[12](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn12) Arguably at least some of the dyads, such as the United States and China, meet Wallace’s definition in terms of being nations with “roughly comparable” capabilities, locked in competition, “whose foreign and defense policies are heavily interdependent.” However, AI fails the arms race test in the critical area of spending. Wallace distinguished arms races from the normal behavior of states to improve their military forces. A state that adopts a new technology and modernizes its military forces is not automatically in an arms race, under Wallace’s definition, even if the modernization is aimed at competition with another country. The decisive factor in qualifying as an arms race, according to Wallace, is the rate of growth in defense spending. Wallace characterized arms races as resulting in abnormally large growth rates in defense spending, beyond the historical average of 4 to 5 percent annual growth (in real dollars). In an arms race, annual growth rates are above 10 percent or even as high as 20 to 25 percent.[13](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn13) Other scholars define arms races using different quantitative thresholds — and some definitions lack clear quantitative thresholds at all — but the existence of rapid increases in defense spending or military forces above normal levels is a common criterion in the scholarly literature on arms races.[14](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn14) Arms races result in situations in which two or more countries are locked in spiraling defense spending, grabbing ever-greater shares of national treasure often with little to no net gain in relative advantage over the other. Classic historical examples include the Anglo-German naval arms race prior to World War I and the U.S.-Soviet nuclear arms race during the Cold War. Military AI spending today clearly does not meet these criteria of abnormally large growth rates in defense spending. AI defense spending is difficult to calculate due to the general-purpose nature of AI technology. Unlike ships or ballistic missiles, AI systems cannot be easily counted. Nevertheless, even crude estimates of defense spending show that military AI investments are nowhere near large enough to constitute an arms race. An independent estimate by Bloomberg Government of U.S. defense spending on AI identified $5 billion in AI-related research and development in fiscal year 2020, or roughly 0.7 percent of the Department of Defense’s over $700 billion budget.[15](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn15) The scale of military AI spending, at least at present, is nowhere near large enough to warrant the title of “arms race.” (Adding in private sector spending, which constitutes the bulk of AI investment, would lead to larger figures but would further belie the claim of an “arms” race since most private sector AI investment is not in weapons.)

#### The Affirmative reinforces the Security Dilemma they described in the 1AC – their discourse labelling AI as an “arms race” reinforces the perception of insecurity that they are “losing” a race that doesn’t exist. This increases the risk of conflict – hyperbolic rhetoric escalates rivalries.

Roff 2019 – Fellow in the Brookings Foreign Policy Program [Heather, 4/26/19, <https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836>, “The Frame problem: The Ai ‘Arms Race’ isn’t one’, 6/18/22, LND]

Often,[12](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) one hears the phrase “AI arms race,”[13](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) especially in regard to competition[14](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) between major powers. Yet an AI arms race seems a particularly unfortunate and misleading phrase. Since 1957,[15](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) myriad scholars have attempted to understand arms races, including how one can identify and measure[16](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) them and what the potential effects of one are. While there have certainly been academic and policy disputes over the last 62 years, there is one important consensus to note about arms races: looking at one particular dimension of a state’s behavior is not sufficient. Arms races deal with military build ups, arms expenditures, rivalry, alliances, territorial disputes, economic policies, and more. As yet, however, there has been no coherent or comprehensive discussion about the so-called AI arms race. For example: How is AI by itself a weapon? Or is the “race” merely military modernization efforts that include automation, autonomy, or AI enabled military systems? How would we even begin to find, label and disaggregate the numbers to claim that there is an arms race between rivals regarding only AI? Indeed, the discussion of an AI arms race is reminiscent of the hyperbolic and mislabeled rhetoric surrounding “cyber bombs”[17](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) in the battle again ISIS. Of course, there are quite spectacular claims about AI’s potential benefits and risks. Russian President Vladimir Putin[18](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) fanned that fire when he claimed that “whoever becomes the leader in this space [AI] will become the ruler of the world.” But talking about technological competition – in research, adoption, and deployment – in all sectors of multiple economies and in warfare is not really an arms race. Indeed, to frame this competition in military terms risks the adoption of policies or regulations that could escalate rivalry between states and increase the likelihood of actual conflict. More accurately stated, the current situation is one of AI competition, with variations of technological proliferation and diffusion. In some cases, countries may want to limit the amount and kinds of specific AI systems that proliferate to other countries or non-state actors. In these instances, it will more than likely be particular kinds of components or platforms that are at issue. The International Traffic in Arms Regulations (ITAR), the Export Administration Regulations (EAR), the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies, the Australia Group, or the Missile Technology Control Regime are but a few regimes that are meant to deal with such proliferation issues.

#### This turns the case – the security dilemma pressures states to push out AI before it is safe, which causes it to fail, risking unintentional escalation of conflicts

**Horowitz and Kahn, 2021 – Senior and Research Fellows at the Council on Foreign Relations** [Michael and Lauren, The Washington Quarterly 3-19-2021 “Leading in Artificial Intelligence through Confidence Building Measures”  [https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/0163660X.2021.2018794 acc on 6-21-2022](%20https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/0163660X.2021.2018794%20acc%20on%206-21-2022%20) TM]

Risks exist for AI uses across society, in civilian and military sectors alike.7 Survey research shows that many in AI and machine learning (ML) communities worry about whether militaries can be trusted to develop safe and reliable AI.8 Given the current geopolitical context, there is fear that competitive pressures to be first in deploying AI systems could overshadow safety and ethics efforts, incentivizing militaries to take “short cuts” that could increase the risk of lethal accidents, unintentional conflict (conflict between states that results from miscommunication or accidents), and inadvertent escalation (when states commit intentional actions that unintentionally cause escalation by an adversary). The Risk of Accidents First, military applications of AI may not work as intended due to flaws in the algorithms themselves. Inadequate training data, the algorithm’s complexity, biased data, biased coding, or intentional data sabotage or poisoning by adversaries can make accidents more likely when systems are deployed. For example, a malfunctioning AI-enabled targeting system in a conflict could attack friends instead of foes, or friends and foes alike. Or an algorithmic decision aid could derive a flawed estimate of the risk of a particular operational plan, leading to a use of force that either unnecessarily fails or succeeds at a greater cost than required. These risks are amplified when systems are employed outside their design context, which may be more likely due to competitive dynamics.9 The Risk of Unintentional Conflict Second, even if algorithms work as designed, they could unintentionally make conflict more likely. Uncertainty about how algorithms will work on the battlefield could create challenges for signaling adversaries through posture and deployments in a crisis or within a conflict. Actors might be uncertain about how A Ienabled systems deployed by an adversary will behave. They might not believe that AI-enabled autonomous systems are programmed as described because the black-box nature of algorithms could lead to increased skepticism of claims made about the systems. Even if a state is telling the “truth” about a specific system and how it was used, there might not be a way for a third party or another state to validate those claims. Mistrust due to great power competition could exacerbate the situation. There is still substantial uncertainty about the reliability of many AI methods, especially deep learning and related techniques when they generate opaque outputs, meaning there is not an available chain of logic which explains why the algorithm recommended or engaged in a particular action.10 Even with sufficient training data, hedges against biases, and protections from data poisoning and hacking, current DoD systems may not be prepared for testing, evaluation, validation, and verification (TEVV) of algorithmic systems, particularly AI-enabled autonomous systems that will continually learn while operating.11 Furthermore, in operating at machine speed, AI-enabled autonomous systems could cause adversaries in a conflict to fear losing a war so quickly that they feel compelled to escalate.12 For an adversary with nuclear weapons, this could create pressure for launch postures such as pre-delegation and launch on warning that increase the chance of nuclear use.

#### Reject their Rhetoric of an “Arms Race” – changing our discourse is necessary to head off constructed insecurity and escalation

Roff 2019 – Fellow in the Brookings Foreign Policy Program [Heather, 4/26/19, <https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836>, “The Frame problem: The Ai ‘Arms Race’ isn’t one’, 6/18/22, LND]

Diffusion, however, is a different animal. Widely available commercial off the shelf components, a widely available and open source knowledge base, and wide access to large amounts of data make limiting the diffusion of AI knowledge almost impossible. There are necessary ingredients for AI, including access to computing power and sufficient amounts of data. Some actors possess more of these ingredients than others, but that advantage does not preclude individuals, groups, companies, or states from obtaining access to and knowledge about AI. As greater emphasis is placed on the economic and security benefits of using AI systems, AI will become more diffused because the incentive structure rewards diffusion. Managing the risks of proliferation and diffusion of a knowledge base is an entirely different enterprise than restraining an arms race. In the case of artificial intelligence, rather than looking at what sorts of actions are required for deterrence, what balances may affect conflict onset or escalation, world leaders should turn their focus to how to foster responsible competition. Mitigating the risks associated with AI is not a single-shot activity. Certainly there are technological solutions, such as researching new ways of testing, verifying, and validating systems that include the technologies that fall under the AI umbrella. There even may be novel ways of constraining unwanted system behaviors by generating new architectures or safety controls. Ultimately, however, reducing the risks that AI will be abused requires a reframing of the way in which we think, talk, write about, and deploy AI. The problems of AI misuse are human problems; they are problems exhibited by all dual-use technologies, not just AI. Control of artificial intelligence lies with humans, because they are the moral agents responsible for the design, development, and deployment of AI.

#### Our alternative turns their impacts – only rejecting the “Arms Race” discourse allows global AI collaboration, which is essential its development.

Huang and Scott, 2018 - Chief Executive Officer and Chief Technology Officer at Malong Technologies [Dinglong and Matt July 21 World Economic Forum “Who will win the AI race? If countries work together, then the answer could be all of us” https://www.weforum.org/agenda/2018/06/ai-arms-race-global-collaboration/, BK]

As an artificial intelligence company with co-founders from China and the United States, we get this question a lot. The premise behind it is straightforward: many believe that China will soon challenge the current leader in AI, the United States. An arms race is imminent, or so the thinking goes, and the smart move is for each national government to fund its own AI programme to make sure its citizens don’t miss out. We recognize we might be shouting into the wind a little bit, but we want to challenge part of that thinking and suggest a way to look beyond competition among nation-states. The AI community is global. We do our best work when we work together across boundaries. It has been like that for a long time. Here are some quick examples: 1. The seminal paper on deep neural nets was published in 2009 by Geoff Hinton, a Brit working at the University of Toronto. One of his co-authors was Li Deng, who is Chinese and was working at Microsoft Research in Redmond. 2. Andrew Ng, who trained computers to recognize cats in videos for a research project at Google, was born in the United Kingdom to parents who were from Hong Kong. He spent much of his childhood in Singapore before studying in the US. 3. Another leading light in AI is Yann LeCun, from France, now working for Facebook and New York University. 4. And Microsoft Research’s Rick Rashid, from Iowa, brought us the first Chinese-English real-time translation demonstration in Tianjin in 2012 thanks to a team of experts from China, the US, the UK and Germany. At Malong Technologies, we’ve tried to reflect and extend that heritage of global collaboration. We’re co-founded by a Chinese national from Shenzhen and an American from New York City. We have offices and teams in China, the US, and Japan, and we have expansion plans that include South America and Europe in the near term. We are active in the Association of Asia-Pacific Universities, the Asia-Pacific Economic Cooperation, the G20 Young Entrepreneurs Alliance and other multinational groups along with our new membership in the World Economic Forum’s 2018 Technology Pioneers. Being global gives the AI community dynamism, creativity and accountability. It imposes broad obligations to present, share and defend our ideas and techniques against the best in the world. Irrespective of where we’re located, we have to be aware of one another’s work. If anyone tried to wall themselves off from the rest of the global AI community, keeping their work to themselves, their own work would slow down, wither and die. There’s a mutual interdependence based on transparency in pursuit of the best ideas for the field and ultimately, for humanity. That is what drives progress more than any competition among nation-states.

### --Extend No Arms Race

#### “Arms Race” claims are exaggerated – the AI adoption process is routine continuation of modernization

Horowitz and Scharre, 2021 - Director of the Emerging Capabilities Policy Office in the Office of the Under Secretary of Defense for Policy and  Vice President and Director of Studies at CNAS [Michael, Paul, January 12 2021, “AI and International Stability: Risks and Confidence- Building Measures”, <https://www.cnas.org/publications/reports/ai-and-international-stability-risks-and-confidence-building-measures>, Acc 6/18/22. M.A.]

AI is a general-purpose technology akin to computers or the internal combustion engine, not a discrete technology like missiles or aircraft. Thus, while concerns of an “AI arms race” are overblown, real risks exist.[2](https://www.cnas.org/publications/reports/ai-and-international-stability-risks-and-confidence-building-measures#fn2) Additionally, despite the rhetoric of many national leaders, military spending on AI is relatively modest to date. Rather than a fervent arms race, militaries’ pursuit of AI looks more like routine adoption of new technologies and a continuation of the multi-decade trend of adoption of computers, networking, and other information technologies. Nevertheless, the incorporation of AI into national security applications and warfare poses genuine risks. Recognizing the risks is not enough, however. Addressing them requires laying out suggestions for practical steps states can take to minimize risks stemming from military AI competition.[3](https://www.cnas.org/publications/reports/ai-and-international-stability-risks-and-confidence-building-measures#fn3) One approach states could take is adopting confidence-building measures (CBMs): unilateral, bilateral, and/or multilateral actions that states can take to build trust and prevent inadvertent military conflict. CBMs generally involve using transparency, notification, and monitoring to attempt to mitigate the risk of conflict.[4](https://www.cnas.org/publications/reports/ai-and-international-stability-risks-and-confidence-building-measures#fn4) There are challenges involved in CBM adoption due to differences in the character of international competition today versus during the Cold War, when CBMs became prominent as a concept. However, considering possibilities for CBMs and exploring ways to shape the dialogue about AI could make the adoption of stability-promoting CBMs more likely.

**There is no global sprint or arms race – “Arms Race” claims overexaggerate normal military behavior and ignore actual spending.**

**Perry and Scharre, 2020 - Project Coordinator at the Future of Life Institute and Director of the Technology and National Security Program at the Center for a New American Security** [Lucas and Paul; March 16 "AI Alignment Podcast: On Lethal Autonomous Weapons with Paul Scharre," <https://futureoflife.org/2020/03/16/on-lethal-autonomous-weapons-with-paul-scharre/?cn-reloaded=1> Acc 2/2/21 TA]

Paul Scharre: If there’s an arms race, it’s a very strange one because no one is building the weapons. We see militaries advancing in robotics and autonomy, but we don’t really see sort of this rush to build autonomous weapons. I struggle to point to any programs that I’m aware of in militaries around the globe that are clearly oriented to build fully autonomous weapons. I think there are lots of places where much like these incremental advancements of autonomy in cars, you can see more autonomous features in military vehicles and drones and robotic systems and missiles. They’re adding more autonomy. And one might be violently concerned about where that’s going. But it’s just simply not the case that militaries have declared their intention. We’re going to build autonomous weapons, and here they are, and here’s our program to build them. I would struggle to use the term arms race. It could happen, maybe worth a starting line of an arms race. But I don’t think we’re in one today by any means. It’s worth also asking, when we say arms race, what do we mean and why do we care? This is again, one of these terms, it’s often thrown around. You’ll hear about this, the concept of autonomous weapons or AI, people say we shouldn’t have an arms race. Okay. Why? Why is an arms race a bad thing? Militaries normally invest in new technologies to improve their national defense. That’s a normal activity. So if you say arms race, what do you mean by that? Is it beyond normal activity? And why would that be problematic? In the political science world, the specific definitions vary, but generally, an arms race is viewed as an increase in defense spending overall, or in a particular technology area above normal levels of modernizing militaries. Now, usually, this is problematic for a couple of reasons. One could be that it ends up just in a massive national expenditure, like during the case of the Cold War, nuclear weapons, that doesn’t really yield any military value or increase anyone’s defense or security, it just ends up net flushing a lot of money down the drain. That’s money that could be spent elsewhere for pre K education or healthcare or something else that might be societally beneficial instead of building all of these weapons. So that’s one concern. Another one might be that we end up in a world that the large number of these weapons or the type of their weapons makes it worse off. Are we really better off in a world where there are 10s of thousands of nuclear weapons on hair-trigger versus a few thousand weapons or a few hundred weapons? Well, if we ever have zero, all things being equal, probably fewer nuclear weapons is better than more of them. So that’s another kind of concern whether in terms of violence and destructiveness of war, if a war breakout or the likelihood of war and the stability of war. This is an A in an area where certainly we’re not in any way from a spending standpoint, in an arms race for autonomous weapons or AI today, when you look at actual expenditures, they’re a small fraction of what militaries are spending on, if you look at, say AI or autonomous features at large.

#### AI is different from other Arms Races – it is not exclusively military, which means there is less advantage to moving first

Horowitz, 2018 – Professor of Political Science at UPen**n** [Michael, September “The Algorithms of August: The AI arms race won't be like previous competitions, and both the United States and China could be left in the dust,” https://foreignpolicy.com/2018/09/12/will-the-united-states-lose-the-artificial-intelligence-arms-race/ 6/18/22 MD]

AN [ARTIFICIAL INTELLIGENCE](https://go-gale-com.proxy.lib.umich.edu/ps/i.do?p=AONE&u=umuser&id=GALE%7CA556838648&v=2.1&it=r) ARMS RACE IS COMING. It is Unlikely to play out in the way that the mainstream media suggest, however: as a faceoff between the United States and China. That's because AI differs from the technologies, such as nuclear [weapons](https://go-gale-com.proxy.lib.umich.edu/ps/i.do?p=AONE&u=umuser&id=GALE%7CA556838648&v=2.1&it=r) and battleships, that have been the subject of arms races in the past. After all, AI is software--not hardware. Because AI is a general purpose [technology](https://go-gale-com.proxy.lib.umich.edu/ps/i.do?p=AONE&u=umuser&id=GALE%7CA556838648&v=2.1&it=r)--more like the combustion engine or electricity than a weapon--the competition to develop it will be broad, and the line between its civilian and military uses will be blurry. There will not be one exclusively military AI arms race. There will instead be many AI arms races, as countries (and, sometimes, violent nonstate actors) develop new algorithms or apply private sector algorithms to help them accomplish particular tasks. In North America, the private sector invested some $15 billion to $23 billion in AI in 2016, according to a McKinsey Global Institute report. That's more than 10 times what the U.S. government spent on unclassified AI programs that same year. The largest share came from companies such as Google and Microsoft, as well as a number of smaller private firms, not from government-funded defense research. This reverses the dynamic from the Cold [War](https://go-gale-com.proxy.lib.umich.edu/ps/i.do?p=AONE&u=umuser&id=GALE%7CA556838648&v=2.1&it=r), when government investments led to private sector innovation and produced technologies such as GPS and the internet. China says it already holds more than 20 percent of patents in the field and plans to build its AI sector to be worth $150 billion by 2030. But while Beijing and Washington are the current leaders in this race, they are not the only competitors. Countries around the world with advanced technology sectors, from Canada to France to Singapore, also have the potential to make great strides in AI (or build on lower-level advances made by others). While this diffusion means that many more countries will have a stake in the regulation of AI, it also means that many more governments will have incentives to go it on their own. UNLIKE THE DEVELOPMENT of a Stealth bomber, which has only military applications, basic AI research has both military and civilian uses, which makes it much harder to keep research secret and thereby sustain a large first-mover advantage. The dual-use character of many developments in AI creates an incentive to promote their release and spread to the general public. That means companies can co-opt advances made by market leaders--especially lower-level advances that do not require significant computing hardware.

**Autonomous weapons won’t cause an Arms Race – just because countries develop them doesn’t mean that they are in a hostile race.**

**Horowitz, 2019 - Professor of Political Science, University of Pennsylvania** [Michael C. May 2“When Speed Kills: Autonomous Weapon Systems, Deterrence, and Stability” https://ssrn.com/abstract=3348356]

Arms Races or Proliferation? It is important to distinguish arms races from the proliferation of military technologies. The scientists in the example above compared an LAWS arms race to the spread of Kalashnikovs, but there was never an arms race in Kalashnikovs – they just spread rapidly because they were cheap, easy to produce, and useful.39 Huntington’s classic work on arms races distinguishes between proliferation and arms races. Countries can increase their arms acquisitions due to an “absolute need” that exists “regardless of the actions of other states”, or for economic reasons.40 Huntington argues that many things described as arms races are simply general buildups due to military necessity (or for economic reasons), rather than a specific buildup due to a particular disagreement between states.41 For example, after their debut in World War I, countries around the world acquired tanks in the 1920s and 1930s. Tanks then became a critical part of ground warfare in World War II and subsequent conventional ground combat operations. Yet few would call the spread of tanks in the 1920s and 1930s an arms race. It was simply proliferation that was not possible to stop, as large-caliber guns, caterpillar tracks, and the combustion engine were available to countries around the world.42 To the extent that those concerned about an arms race in autonomous weapon technologies are actually concerned with proliferation, some degree of proliferation may be inevitable simply due to the underlying factors involved in the production of LAWS. As Horowitz argues, military capabilities diffuse faster when, on the technology acquisition side, there is underlying commercial demand and the unit costs are low.43 Commercial markets are already driving the integration of artificial intelligence into several areas of the US and global economies, through deep learning and machine learning applications.44 From Google search to Macy’s shopping assistance for customers, artificial intelligence is increasingly embedded in commercial sectors of modern society.45 Narrow applications of AI could become increasingly integrated into most economic sectors, with many algorithms, once developed, now available to many actors.46 Export controls are unlikely to stop basic narrow AI capabilities from spreading, even if more advanced applications are beyond the capacity of most companies and governments; government regulations generally lag emerging technologies. Finally, AI innovation is occurring around the world, not just in the United States or even the West. Machine learning capabilities designed for commercial purposes could also have spillovers with useful applications to the military realm. This would reverse the Cold War dynamic in the West, where US civilian economic innovations such as GPS often spun out of military development programs.47 Artificial intelligence, as described above, is more an enabler such as the combustion engine than a weapon. It is therefore different than a platform like stealth technology, which really only has military purposes.

#### Framing AI as an arms race assumes that AI is only a weapon – it is beneficial in many other contexts

Scharre 2021 – Director of the Technology and National Security Program at the Center for a New American Security [Paul, 6/28/21,https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/, “Debunking the AI Arms Race Theory”, 6/18/22, LND]

As Heather Roff has written, the arms race framing “misrepresents the competition going on among countries.”[5](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn5) To begin with, AI is not a weapon. AI is a general-purpose enabling technology with myriad applications. It is not like a missile or a tank. It is more like electricity, the internal combustion engine, or computer networks.[6](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn6) General-purpose technologies like AI have applications across a range of industries. Wired magazine co-founder Kevin Kelly has argued that it “will enliven inert objects, much as electricity did more than a century ago. Everything that we formerly electrified we will now cognitize.”[7](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn7) Nations may very well be in a technology race to adopt AI across a range of industries. AI will help to improve economic productivity and, by extension, economic and military power. During the industrial revolution, early adopters of industrial technology significantly increased their national power. From 1830 to 1890, Britain and Germany, which were both early industrializers, more than doubled their per capita gross national product while Russia, which lagged in industrialization, increased its per capita gross national product by a mere 7 percent over that 60-year period.[8](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn8) These technological advantages led to increased economic and military power, most notably for Europe relative to the rest of the world. In 1790, Europe (collectively), China, and India (including what is now Pakistan and Bangladesh) held roughly the same shares of global manufacturing output, with Europe and India each holding about one-quarter of global manufacturing output and China holding roughly one-third. They all had approximately equivalent levels of per capita industrialization at that time. But the industrial revolution skyrocketed European economic productivity. By 1900, Europe collectively controlled 62 percent of global manufacturing output, while China held only six percent and India less than two percent. These economic advantages translated into military power. By 1914, Europeans occupied or controlled over 80 percent of the world’s land surface.[9](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn9) Being ahead of the curve in adopting AI is likely to lead to significant national advantages. Although AI can increase military capabilities, the more consequential advantages over the long term may come from non-military AI applications across society. Long-term benefits from AI could include increased productivity, improved healthcare outcomes, economic growth, and other indicators of national well-being. Increasing productivity is especially significant because it has a compounding effect on economic growth. Over the long term, technological progress is the main driver of economic growth.

### --Extend “Arms Race” Discourse Links

#### The Rhetoric of an AI Arms Race sparks a race to the bottom – states will deploy unsafe weapons to get them out before their competitors

Scharre, 2019 - Vice President and Director of Studies at CNAS[Paul, May-June, “Killer Apps: The Real Dangers of an AI Arms Race,” https://omnilogos.com/killer-apps-real-dangers-of-ai-arms-race/6/18/22 MD]

The nation that leads in the development of artificial intelligence will, Russian President Vladimir Putin proclaimed in 2017, "become the ruler of the world." That view has become commonplace in global capitals. Already, more than a dozen governments have announced national AI initiatives. In 2017, [China](https://go-gale-com.proxy.lib.umich.edu/ps/i.do?p=AONE&u=umuser&id=GALE|A585763278&v=2.1&it=r) set a goal of becoming the global leader in AI by 2030. Earlier this year, the White House released the American AI Initiative, and the U.S. Department of Defense rolled out an AI strategy. But the emerging narrative of an "AI [arms race](https://go-gale-com.proxy.lib.umich.edu/ps/i.do?p=AONE&u=umuser&id=GALE|A585763278&v=2.1&it=r)" reflects a mistaken view of the risks from AI--and introduces significant new risks as a result. For each country, the real danger is not that it will fall behind its competitors in AI but that the perception of a race will prompt everyone to rush to deploy unsafe AI systems. In their desire to win, countries risk endangering themselves just as much as their opponents. AI promises to bring both enormous benefits, in everything from health care to transportation, and huge risks. But those risks aren't something out of science fiction; there's no need to fear a robot uprising. The real threat will come from humans. Right now, AI systems are powerful but unreliable. Many of them are vulnerable to sophisticated attacks or fail when used outside the environment in which they were trained. Governments want their systems to work properly, but competition brings pressure to cut corners. Even if other countries aren't on the brink of major AI breakthroughs, the perception that they're rushing ahead could push others to do the same. And if a government deployed an untested AI weapons system or relied on a faulty AI system to launch cyberattacks, the result could be disaster for everyone involved.Policymakers should learn from the history of computer networks and make security a leading factor in AI design from the beginning. They should also ratchet down the rhetoric about an AI arms race and look for opportunities to cooperate with other countries to reduce the risks from AI.A race to the bottom on AI safety is a race no one would win.

#### “Arms Race” rhetoric creates a self-fulfilling prophecy by causing states to cut corners on AI development and testing

Scharre, 2019 - Vice President and Director of Studies at CNAS[Paul, May-June, “Killer Apps: The Real Dangers of an AI Arms Race,” https://omnilogos.com/killer-apps-real-dangers-of-ai-arms-race/6/18/22 MD]

When it comes to applying AI to national security, government agencies will have to reconsider their traditional approaches to testing new systems. Verifying that a system meets its design specifications isn't enough. Testers also need to ensure that it will continue to function properly in the real world when an adversary is trying to defeat it. In some cases, they can use computer simulations to tease out bugs, as manufacturers now do for autonomous cars. On top of that, the Departments of Defense and Homeland Security and the intelligence community should create red teams--groups that act as attackers to test a system's defenses--to ferret out vulnerabilities in AI systems so that developers can fix them before the systems go live. Government officials should also tone down their rhetoric about an AI arms race, since such talk could easily become self-fulfilling. At a conference in 2018, Michael Griffin, the chief Pentagon official for research and engineering, said, "There might be an artificial intelligence arms race, but we're not yet in it." Militaries are certainly going to adopt AI, but Griffin's statement was missing any concern for--or even awareness of--the risks that come with it. Talk of an arms race encourages adversaries to cut corners on safety. Government officials should emphasize not only the value of AI but also the importance of guaranteeing reliability and security.

### --Extend Security Dilemma Links

#### US AI deployment is driven by the fear that China will take the lead.

Scharre, 2019 - Vice President and Director of Studies at CNAS[Paul, May-June, “Killer Apps: The Real Dangers of an AI Arms Race,” https://omnilogos.com/killer-apps-real-dangers-of-ai-arms-race/6/18/22 MD]

WHAT AI WILL DO Whichever country takes the lead on AI will use it to gain economic and military advantages over its competitors. By 2030, AI is projected to add between $13 trillion and $15 trillion to the global economy. AI could also accelerate the rate of scientific discovery. In 2019, an artificial neural network significantly outperformed existing approaches in synthetic protein folding, a key task in biological research. AI is also set to revolutionize warfare. It will likely prove most useful in improving soldiers' situational awareness on the battlefield and commanders' ability to make decisions and communicate orders. AI systems can process more information than humans, and they can do it more quickly, making them valuable tools for assessing chaotic battles in real time. On the battlefield itself, machines can move faster and with greater precision and coordination than people. In the recent AI-versus-human StarCraft match, the AI system, AlphaStar, displayed superhuman abilities in rapidly processing large amounts of information, coordinating its units, and moving them quickly and precisely. In the real world, these advantages will allow AI systems to manage swarms of robots far more effectively than humans could by controlling them manually. Humans will retain their advantages in higher-level strategy, but AI will dominate on the ground. Washington's rush to develop AI is driven by a fear of falling behind China, which is already a global powerhouse in AI. The Chinese technology giants Alibaba, Baidu, and Tencent rank right alongside Amazon, Google, and Microsoft as leading AI companies. Five of the ten AI startups with the most funding last year were Chinese. Ten years ago, China's goal of becoming the global leader in AI by 2030 would have seemed fanciful; today, it's a real possibility.

#### US deployment of Autonomous Weapons is driven by the perception of “falling behind” in an AI arms race

Sosanya, 2022 - AI researcher and a policy analyst at the Day One Project [Andrew, Jan 3, Peace Review A Journal of Social Justice “Autonomous Weapons Are Here to Stay” <https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/10402659.2021.1998856> TM]

Great powers cannot afford to be idle in the face of technological innovation. Today, clear signs that leading militaries are preparing for the inevitable warfare of tomorrow exist: a future with autonomous weapons. With promising technology that is still in the research and development (R&D) phase, states act cautiously as the future has become doubly uncertain: they cannot predict their adversaries’ intentions, nor can they predict the usefulness of the weapon. In the United States, Department of Defense (DoD) leaders have indicated their willingness to deploy them. In 2017, Lieutenant General Jack Shanahan, the then-Director of DoD’s Joint AI Center, stated that he “does not want to see a future where our potential adversaries have a fully AI-enabled force and we do not.” The DoD has upstarted numerous programs in the last decade dedicated to autonomy, covering robotics, swarms, target recognition, machine learning, and more. Shanahan had cited China and Russia’s military AI R&D as a reason for the DoD’s increased focus on improving their own militarized artificial intelligence. Former Secretary of Defense Bob Work, who oversaw the 2017 revision of the DoD’s autonomous weapons policy, corroborated Shanahan’s thinking, that the United States would deploy autonomous weapons if their adversaries do first.

### --Extend “Arms Race” Turns Case

#### The global misperception of an “Arms Race” forces states to rush deployment which inevitably leads to accidents. There is no arms race currently

Scharre 2021 – Director of the Technology and National Security Program at the Center for a New American Security [Paul, 6/28/21,https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/, “Debunking the AI Arms Race Theory”, 6/18/22, LND]

In 2015, a group of prominent AI and robotics researchers signed an open letter warning of the dangers of autonomous weapons. “The key question for humanity today,” they wrote, “is whether to start a global AI arms race or to prevent it from starting. If any major military power pushes ahead with AI weapon development, a global arms race is virtually inevitable.”[1](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn1) Today, many nations are working to apply AI for military advantage, and the term “AI arms race” has become a catchphrase used by both critics and proponents of AI militarization. In 2018, then-Under Secretary of Defense Michael Griffin, calling for the United States to invest more in AI, stated, “There might be an artificial intelligence arms race, but we’re not yet in it.”[2](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn2) In a 2020 Wired article, Will Roper, then chief acquisition officer for the U.S. Air Force, warned of the risks of falling behind in a “digital arms race with China.”[3](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn3) The so-called AI arms race has become a common feature in news headlines,[4](https://tnsr.org/2021/06/debunking-the-ai-arms-race-theory/#_ftn4) but the arms race framing fails to match reality. While nations are clearly competing to develop and adopt AI technology for military use, the character of that competition does not meet the traditional definition of an arms race. Military AI competition nevertheless does pose risks. The widespread adoption of military AI could cause warfare to evolve in a manner that leads to less human control and to warfare becoming faster, more violent, and more challenging in terms of being able to manage escalation and bring a war to an end. Additionally, perceptions of a “race” to field AI systems before competitors do could cause nations to cut corners on testing, leading to the deployment of unsafe AI systems that are at risk of accidents that could cause unintended escalation or destruction. Even if fears of an “AI arms race” are overblown, military AI competition brings real risks to which nations should attend. There are concrete steps nations can take to mitigate some of these dangers.

#### “Arms Race” mentality pressures rapid deployment of weapons – militaries skip critical testing and evaluation.

Horowitz and Scharre 2021 - Director of the Emerging Capabilities Policy Office in the Office of the Under Secretary of Defense for Policy and  Vice President and Director of Studies at CNAS [Michael, Paul, January 12 2021, “AI and International Stability: Risks and Confidence- Building Measures”, <https://www.cnas.org/publications/reports/ai-and-international-stability-risks-and-confidence-building-measures>, Acc 6/18/22. M.A.]

An additional challenge stems from security dilemma dynamics. Competitive pressures could lead nations to shortcut test and evaluation (T&E) in a desire to field new AI capabilities ahead of adversaries. Similar competitive pressures to beat others to market appear to have played an exacerbating role in accident risk relating to AI systems in self-driving cars and commercial airplane autopilots.[23](https://www.cnas.org/publications/reports/ai-and-international-stability-risks-and-confidence-building-measures#fn23) Militaries evaluating an AI system of uncertain reliability could, not unjustifiably, feel pressure to hasten deployment if they believe others are taking similar measures. Historically, these pressures are highest immediately before and during wars, where the risk/reward equation surrounding new technologies can shift due to the very real lives on the line. For example, competitive pressures may have spurred the faster introduction of poison gas in World War I.[24](https://www.cnas.org/publications/reports/ai-and-international-stability-risks-and-confidence-building-measures#fn24) Similarly, in World War II, Germany diverted funds from proven technologies into jet engines, ballistic missiles, and helicopters, even though none of the technologies proved mature until after the war.[25](https://www.cnas.org/publications/reports/ai-and-international-stability-risks-and-confidence-building-measures#fn25) This dynamic risk might spark a self-fulfilling prophecy in which countries accelerate deployment of insufficiently tested AI systems out of the fear that others will deploy first.[26](https://www.cnas.org/publications/reports/ai-and-international-stability-risks-and-confidence-building-measures#fn26) The net effect is not an arms race but a “race to the bottom” on safety, leading to the deployment of unsafe AI systems and heightening the risk of accidents and instability.

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### --Extend “Arms Race” Impacts

#### The Arms Race mentality limits our thinking about AI – it prevents global collaboration, which is critical to get the most out of the technology

Huang and Scott, 2018 - Chief Executive Officer and Chief Technology Officer at Malong Technologies [Dinglong and Matt July 21 World Economic Forum “Who will win the AI race? If countries work together, then the answer could be all of us” https://www.weforum.org/agenda/2018/06/ai-arms-race-global-collaboration/, BK]

Why, then, the fixation? We suggest three reasons, starting with the most obvious: China’s 2017 declaration of support for AI as a national priority got the world’s attention, and other nations have followed suit. Second, the great places to work for the world’s best talent now include cities in China. We’re in Shenzhen, Beijing and Shanghai, and can observe our peer AI companies also thriving in these cities. Third, the amount of seed capital and venture capital investment available in China to support great companies is robust and according to some studies, exceeds that of the US for the first time. This need not be something to fear. The most promising near-term AI applications are those that are supported by globally relevant data, and will help people wherever they happen to live. Take medical technology. Everyone looks the same on the inside, and everyone can benefit from AI-enabled solutions that lead to faster, more accurate diagnoses and more effective treatment. Or take manufacturing and agriculture. AI-driven improvements and efficiencies will bring benefits where the factories and farms are. We aren’t arguing for nations to abandon homegrown efforts to support AI research, investment and entrepreneurship. In fact, we see them as something to celebrate and encourage. We expect great people, ideas and companies to continue to show up all over the world, with all the attendant benefits in terms of job creation and economic growth. There are indeed amazing things going on not only in the US and China, but also in Canada and Europe, Korea and Japan. It’s genuinely an international phenomenon. Problems come when we limit our thinking to nation-vs-nation competition. It bogs down our progress. There cannot be a Chinese AI vs an American AI vs a French AI, and so on. Instead, those national efforts must contribute to global cooperation and collaboration if AI is to advance and bring benefits to all communities worldwide. Let the companies do the competing.

#### Engaging in an AI arms race undermines US security and stability, and drains resources from more important causes.

Garcia, 2021 - Vice-chair of the International Committee for Robot Arms Control[Denise, May 13, 2021, Nature.com, “Stop the emerging AI cold war,” <https://www.nature.com/articles/d41586-021-01244-z#:~:text=Proliferating%20military%20artificial%20intelligence%20will,on%20ethics%20and%20global%20cooperation.&text=Denise%20Garcia%20is%20a%20professor,Committee%20for%20Robot%20Arms%20Control>., 6/18/22 MD]

A race to militarize artificial intelligence is gearing up. Two years ago, the US Congress created the [National Security](https://go-gale-com.proxy.lib.umich.edu/ps/i.do?p=ITOF&u=umuser&id=GALE|A661476451&v=2.1&it=r) Commission on Artificial Intelligence (NSCAI). This March, it recommended that the [United States](https://go-gale-com.proxy.lib.umich.edu/ps/i.do?p=ITOF&u=umuser&id=GALE|A661476451&v=2.1&it=r) must accelerate artificial-intelligence (AI) technologies to preserve national security and remain competitive with China and Russia. This will undermine the United States' ability to lead emerging global norms on AI. In April, the European Commission published the first international legal framework for making AI secure and ethical; in January, the European Parliament issued guidelines stating that military AI should not replace human decisions and oversight. By contrast, the NSCAI recommendations advocate "the integration of AI-enabled technologies into every facet of war-fighting". Enhancing AI war-fighting capacity will decrease security in a world where the biggest threats are instability -- political, social, economic and planetary. The NSCAI should heed the research community. Some 4,500 AI and [robotics](https://go-gale-com.proxy.lib.umich.edu/ps/i.do?p=ITOF&u=umuser&id=GALE|A661476451&v=2.1&it=r) researchers have declared that AI should not make the decision to take a human life -- aligning with the European Parliament guidelines and the European Union regulation. The NSCAI resurrected disastrous ideas from the cold war and framed its report in terms of winning a competition for AI-enabled warfare. During the cold war, the drive to stay ahead in the technological race led to the accumulation of 70,000 nuclear weapons and today's global arsenal of 13,100 warheads. This brought extortionate costs: US$70 billion is spent annually to maintain nuclear weapons globally. Other threats demand similar investments: in 2019, climate-induced natural disasters displaced 25 million people, and decentralized conflicts forced 8.6 million to move. Still more threats affect infrastructure, such as the ransomware attack on 8 May that shut down a 8,850-kilometre US fuel pipeline. The NSCAI does not prioritize international cooperation to create new regulations. Indeed, it speaks against a global ban on autonomous weapons, saying that other countries cannot be trusted to comply. But an AI-militarization race would be profoundly destabilizing. Unlike nuclear arms, AI is already ubiquitous in civilian spheres, so the dual-use risks of, say, flying drones or computer night [vision](https://go-gale-com.proxy.lib.umich.edu/ps/i.do?p=ITOF&u=umuser&id=GALE|A661476451&v=2.1&it=r) are much higher. Since 2014, I have been an observer and adviser at United Nations meetings, and I testified in 2017 as part of the International Panel on the Regulation of Autonomous Weapons. In my view, rather than focusing on counting weapons or on particular weapons systems, policies should specify human intention and human-machine interaction, obligating countries to maintain human control over military force. Other agreements could mitigate malicious uses of AI, such as using facial recognition to oppress citizens or biased data to guide decisions about employment or incarceration. The world's people need protection from cyberattacks to infrastructure -- such as those on US hospitals in 2020 or those that hit national electrical grids. The NSCAI report calls for international standards for AI-enabled and autonomous weapons systems, arguing that if these systems are properly tested and designed, humans can use them to make the decision to kill, consistent with international humanitarian law. This is misleading: it's difficult to make machine learning's 'black box' nature fully interpretable, or to ensure that AI systems perform as expected after deployment. These systems learn from their environment, and the real world is never as simple as the laboratory. The NSCAI argues that the United States should seek commitments from Russia and China against autonomous nuclear weapons, even as it argues against treaties regulating other autonomous and AI weapons. Instead, the United States should negotiate decreases in nuclear arsenals and establish standards to keep humans in meaningful control. The NSCAI is too dismissive by discounting cooperation. The Chemical Weapons Convention, the Biological Weapons Convention, the UN Sustainable Development Goals and the 1987 Montreal Protocol are examples of accountability on which all the major powers worked together. The United States and Russia established the International Space Station by cooperating closely. Most nations want governance that controls the use of AI in war. In June 2020, the Global Partnership on Artificial Intelligence was created by the Group of Seven industrialized countries (G7) and called for human-centric development and use of AI. The partnership brings scientific and research communities together with industry and government to facilitate international cooperation. This is the path that the United States should take -- with scientists, researchers and industry alike. The relentless pursuit of militarization does not protect us. It diverts resources and attention from nearer existential threats, such as extreme weather events. With the world reeling from COVID-19 -- the shock of the century -- now is not the moment to hasten towards worldwide confrontation. In 2019 alone, climate disasters displaced almost one million people in the United States. China, too, is extremely vulnerable to global warming. This common ground could pave the way to cooperation, including stopping the emerging AI cold war. This is no time to embark on an exorbitant and ineffective race.

### --Extend Reject “Arms Race” Rhetoric

#### Rejecting the Arms Race framing is essential to prevent the Abuse of the technology

Roff 2019 – Fellow in the Brookings Foreign Policy Program [Heather, 4/26/19, <https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836>, “The Frame problem: The Ai ‘Arms Race’ isn’t one’, 6/18/22, LND]

There needs to be a change in thinking about AI. Those dealing with AI must insist on greater clarity about its definition. If policy makers and other leaders are not clear about what the term means and entails, they cannot possibly formulate best practices and governance mechanisms. It would help matters if artificial intelligence discussions were framed in an “AI +” framework, because in many cases, AI is merely a tool included in a system involving other functions or capabilities. The news media should stop framing the global artificial intelligence competition as an “arms race.” This misrepresents the competition going on among countries. The policy community needs a clear-eyed appraisal of AI’s capabilities and limitations. Without that orientation, those who hope to steer research and development in positive directions will create more problems than they solve. Last year, colleagues and I in the “AI Safety” community published a paper[1](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) on the potential misuses of artificial intelligence and potential interventions to lessen the likelihood and impact of misuse. Because of the dual-use nature of artificial intelligence, its almost ubiquitous nature, and its potential to create threats – either new or in combination with previously existing threats – we recommended that policy makers and others involved in AI efforts begin to respond immediately. In many cases, my coauthors have done just that. For example, OpenAI – an organization that hopes to ensure artificial general intelligence benefits humanity and that includes some of my co-authors – recently refused[2](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) to publish the full model of its GPT-2 algorithm, which can generate synthetic natural language text – that is, articles, answers to reading comprehension questions, and other types of writing – of “unprecedented quality.” OpenAI realized that GPT-2 could help malicious actors generate disinformation and abusive content, increasing the likelihood of fraud based on impersonation. So they released only a smaller version of the GPT-2 code, dataset, and related information. That decision has been met with both derision[3](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) and applause.[4](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) Others[5](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) have also begun serious[6](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) and rigorous[7](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) work at the policy and technology nexus, pushing for responsible and ethical[8](https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/00963402.2019.1604836) design, development, and deployment of AI technologies. But there are other development and policy changes that could help head off potential abuses of AI. First, there needs to be a change in thinking about, and framing of, AI. In particular, those dealing with AI must insist on greater clarity about its definition. If policy makers and other leaders are not clear about what the term means and entails, they cannot possibly formulate best practices and governance mechanisms. Also, it would help matters if artificial intelligence discussions were framed in an “AI +” framework, because in many cases, AI is merely a tool included in a system involving other functions or capabilities – for example, artificial intelligence might be a part of a driverless vehicle that involves many technologies. Finally, I certainly hope that scholars, practitioners, policy makers, and especially the news media stop framing the global artificial intelligence competition as an “arms race.” This framing misrepresents the competition going on among countries. To address the risks of AI, the policy community needs a clear-eyed appraisal of its capabilities and limitations. Without that orientation, those who hope to steer AI research and development in positive directions will create more problems than they solve.