# Neg

### Inherency Resps

#### NATO has already adopted ethical principles for cooperation on AI – Recent meetings and strategies prove

NATO Press Release, 2021 [Oct 22, “NATO releases first-ever strategy for Artificial Intelligence” <https://www.nato.int/cps/en/natohq/news_187934.htm> LMSi]

NATO Defence Ministers agreed to NATOs first-ever strategy for Artificial Intelligence (AI). The strategy outlines how AI can be applied to defence and security in a protected and ethical way. As such, it sets standards of responsible use of AI technologies, in accordance with international law and NATOs values. It also addresses the threats posed by the use of AI by adversaries and how to establish trusted cooperation with the innovation community on AI. Artificial Intelligence is one of the seven technological areas which NATO Allies have prioritized for their relevance to defence and security. These include quantum-enabled technologies, data and computing, autonomy, biotechnology and human enhancements, hypersonic technologies, and space. Of all these dual-use technologies, Artificial Intelligence is known to be the most pervasive, especially when combined with others like big data, autonomy, or biotechnology. To address this complex challenge, NATO Defence Ministers also approved NATOs first policy on data exploitation. Individual strategies will be developed for all priority areas, following the same ethical approach as that adopted for Artificial Intelligence.

### AI Leadership Adv Resps

**No solvency – DOD bureaucracy, outdated acquisitions and culture all block AI innovation.**

**Nurkin and Konaev, 2022 - senior fellows at the Center for Strategy and Security at the Atlantic Council** [Tate and Margarita, 5-25-2022, “Eye to eye in AI: Developing artificial intelligence for national security and defense” Atlantic Council <https://www.atlanticcouncil.org/in-depth-research-reports/report/eye-to-eye-in-ai/> ARD]

To accelerate AI adoption, the Pentagon must confront its demons: a siloed bureaucracy that frustrates efficient data-management efforts and thwarts the technical infrastructure needed to leverage DoD data at scale; antiquated acquisition and contracting processes that inhibit the DoD’s ability to bring in external innovation and transition successful AI technology prototypes to production and deployment; and a risk-averse culture at odds with the type of openness, experimentation, and tolerance for failure known to fuel innovation.8 Several efforts are under way to tackle some of these problems. Reporting directly to the under secretary of defense, the chief data and artificial intelligence officer (CDAO) role was recently announced to consolidate the office of the chief data officer, the Joint Artificial Intelligence Center (JAIC), and the Defense Digital Service (DDS). This reorganization brings the DoD’s data and AI efforts under one roof to deconflict overlapping authorities that have made it difficult to plan and execute AI projects.9 Expanding use of alternative acquisition methods, organizations like the Defense Innovation Unit (DIU) and the Air Force’s AFWERX are bridging the gap with the commercial technology sector, particularly startups and nontraditional vendors. Still, some tech leaders believe these efforts are falling short, warning that “time is running out.”10

**No solvency – it is too late to win the AI arms race – China has Already won – experts admit.**

**Faulconbridge, 2021 – Reuters staff writer** [Guy Oct 11, Reuters, “China has won AI battle with U.S., Pentagon's ex-software chief says” https://www.reuters.com/technology/united-states-has-lost-ai-battle-china-pentagons-ex-software-chief-says-2021-10-11/, BK]

LONDON, Oct 11 (Reuters) - China has won the artificial intelligence battle with the United States and is heading towards global dominance because of its technological advances, the Pentagon's former software chief told the Financial Times. China, the world’s second largest economy, is likely to dominate many of the key emerging technologies, particularly artificial intelligence, synthetic biology and genetics within a decade or so, according to Western intelligence assessments. Nicolas Chaillan, the Pentagon's first chief software officer who resigned in protest against the slow pace of technological transformation in the U.S. military, said the failure to respond was putting the United States at risk. "We have no competing fighting chance against China in 15 to 20 years. Right now, it’s already a done deal; it is already over in my opinion," he told the newspaper. "Whether it takes a war or not is kind of anecdotal." China was set to dominate the future of the world, controlling everything from media narratives to geopolitics, he said. Chaillan blamed sluggish innovation, the reluctance of U.S. companies such as Google (GOOGL.O) to work with the state on AI and extensive ethical debates over the technology. Google was not immediately available for comment outside business hours. Chinese companies, Chaillan said, were obliged to work with their government and were making "massive investment" in AI without regard to ethics. He said U.S. cyber defences in some government departments were at "kindergarten level".

**No solvency – the DOD will not enhance JAIC authority to solve the case – empirically, they have fragmented acquisitions.**

**Tarraf, Shelton, Parker 2019 - Senior Information Scientist, Senior Engineer, and physical Scientist at the RAND Corporation** [ Danielle C., William, Edward, et al RAND Cooperation, “The Department of Defense Posture for Artificial Intelligence”, <file:///Users/MiraAgarwal/Downloads/RAND_RR4229%20(2).pdf>, Acc 6/18/22, M.A.]

What DoD needs to do now is continue on that path by providing the requisite high-level support, visibility, and authorities (including directive and budget authorities) to enable the JAIC to enact change. Doing so would ensure that the JAIC has a chance of succeeding at its mandate of scaling AI and its impact across DoD. It would also ensure that DoD’s intent, messaging, and actions are all consistent. Having said that, we recognize that this option runs counter to DoD history and precedents, particularly because of the recent reform leading to the dissolution of the USD for Acquisition, Technology, and Logistics, and subsequent creation of the USD(R&E) and USD(A&S) 3 The DMAG is the primary civilian-military management forum that supports the Secretary of Defense and addresses top DoD issues that have resource, management, and broad strategic and/or policy implications. The DMAG’s primary mission is to produce advice for the DSD in a collaborative environment and to ensure that the DMAG execution aligns with the Secretary of Defense’s priorities and the planning and programming schedule. The DMAG is cochaired by the DSD and Vice Chairman of the Joint Chiefs of Staff, with secretaries of the military departments, chiefs of the military services, and DoD principal staff assistants holding standing invitations. See U.S. Department of Defense, Chief Management Officer, “Deputy’s Management Action Group (DMAG),” webpage, undated. 68 The Department of Defense Posture for Artificial Intelligence that took effect in February 2018. By enacting this reform, Congress intentionally weakened the directive authorities that OSD principals had over the services, and devolved significant procurement and acquisition authorities back to the services. We also recognize that it might not be entirely appropriate to compare DoD with a large company but rather to a large conglomerate because of the historical role and independence of the services.

**No solvency – Alternate causalities – AI acquisition bureaucracy will keep the US behind China and Russia.**

**Knapp, 2018 – Journalist specializing in emerging technologies** [Brandon, 10 April, 2018, C4isrNet, “DoD official: US not part of AI arms race,” <https://www.c4isrnet.com/it-networks/2018/04/10/dod-official-us-not-part-of-ai-arms-race/>, 6/22/22 MD]

One of the Pentagon’s top acquisition officials believes that the United States military is currently on the sidelines of an ongoing [artificial intelligence arms race](https://www.c4isrnet.com/it-networks/2018/04/04/how-artificial-intelligence-went-from-an-advantage-to-a-worldwide-threat/) between global powers such as Russia and China. “There might be an artificial intelligence arms race, but we’re not yet in it,” Dr. Michael Griffin, the under secretary of defense for research and engineering, said April 9 at the Future Wars conference held in Washington, D.C. “Our adversaries understand very well the possible future utility of machine learning,” Griffin continued. “I think it’s time we did as well.” Griffin’s comments echo some of the language written into the new [National Defense Strategy](https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf) revealed earlier this year. The strategy prioritizes maintaining a military advantage over Russia and China and calls for the Pentagon to increase investment in emerging technologies such as artificial intelligence. The National Defense Strategy also calls for reforming the business and acquisition practices within the Defense Department, which Griffin described at the conference as outdated. When the current acquisition system was designed, the United States’ technological advantage was largely uncontested, Griffin said. This allowed the Pentagon to engage in a lengthy acquisition process with no risk of a serious challenge from adversaries. However, those defense acquisition practices now put the country at a serious disadvantage. “If the decision is [between] how can I be fair to everyone rather than [do] what’s best, we’ll always be behind,” Griffin said. “We can either maintain this process or maintain preeminence, but we probably can’t do both.” Fueling these concerns is the fact that China’s government, [unconstrained by such bureaucratic processes](https://www.c4isrnet.com/home/2018/03/15/how-is-china-developing-ai-technology-so-much-faster-than-the-us/), has been particularly focused on developing artificial intelligence. The Chinese state council recently issued a well-funded [national strategy](https://www.newamerica.org/cybersecurity-initiative/blog/chinas-plan-lead-ai-purpose-prospects-and-problems/) designed to harness the power of artificial intelligence with the goal of making the nation “the world’s primary AI innovation center” by 2030.

**No Solvency – The DOD lacks an AI workforce due to slow hiring and low pay**

**Tarraf et. al 2019 - Senior Information Scientist at the RAND Corporation** [Danielle with William Shelton, Edward Parker, Brien Alkire, Diana Gehlhaus, Justin Grana, Alexis Levedahl, Jasmin Léveillé, Jared Mondschein, James Ryseff, “The Department of Defense Posture for Artificial Intelligence: Assessment and Recommendations”, LMSi]

DoD struggles to grow and cultivate AI talent. Our interviews suggest a mixed appreciation for what technical AI talent consists of and which AI talent is needed. Several entities we interviewed, such as the service labs, had a clear sense of AI talent needs, but the majority were still in the beginning stages of such considerations and were more likely to emphasize contracting out for technical talent. Moreover, for those that were clear on AI talent needs, it was a challenge to define the exact knowledge, skills, and abilities they perceived that were required. Ultimately, the AI talent needs of DoD (type,38 quantity, and mix) will depend on the broader strategy pursued for scaling AI, and the extent to which scaling AI will rely on the development of products in-house as opposed to through contracting and outsourcing. The skill sets needed for development of products in-house are significantly different from those needed for contracting and outsourcing, though all AI talent (technical or managerial) is difficult to access in the present market. Nonetheless, the consensus is that DoD faces stiff competition for AI skills and expertise, as evidenced by our interviews across academia, industry, and DoD.39 Many of our DoD interviewees discussed the challenges related to attracting and recruiting technical talent more generally, and expressed the belief that AI talent would be no different. In that spirit, we point to a recent RAND study on career paths for data scientists within the Defense Intelligence Agency.40 Interviews across DoD cited intense competition with the private sector, the limited ability to compete on salary, and long hiring processes. At the same ML developers (see section “Industry: Talent” in Appendix C), that approach will not lead to the development of ML experts. 38 Our industry interviews highlighted four types of AI talent: experts, ML developers, application developers, and project or program managers (see section “Industry: Talent” in Appendix C). 39 Reasons for such stiff competition include salaries and inability to hire at competitive speed.

**Solvency is too late - China will inevitably win the AI arms race – we have already lost**

**Nurkin and Konaev, 2022 - senior fellows at the Center for Strategy and Security at the Atlantic Council** [Tate and Margarita, 5-25-2022, “Eye to eye in AI: Developing artificial intelligence for national security and defense” Atlantic Council <https://www.atlanticcouncil.org/in-depth-research-reports/report/eye-to-eye-in-ai/> ARD]

In September 2021, the Air Force’s first chief software officer, Nicolas Chaillan, resigned in protest of the bureaucratic and cultural challenges that have slowed technology adoption and hindered the DoD from moving fast enough to effectively compete with China. In Chaillan’s view, in twenty years, the United States and its allies “will have no chance competing in a world where China has the drastic advantage in population.”41 Later, he added that China has essentially already won, saying, “Right now, it’s already a done deal.”42 Chaillan’s assessment of the United States engaged in a futile competition with China is certainly not shared across the DoD, but it reflects what many see as a lack of urgency within the risk-averse and ponderous culture of the department.

**US cannot be an AI leader – our most important AI project failed due to data security and interoperability problems**

**Nurkin and Konaev, 2022 - senior fellows at the Center for Strategy and Security at the Atlantic Council** [Tate and Margarita, 5-25-2022, “Eye to eye in AI: Developing artificial intelligence for national security and defense” Atlantic Council <https://www.atlanticcouncil.org/in-depth-research-reports/report/eye-to-eye-in-ai/> ARD]

Among the Pentagon’s most important modernization priorities is the Joint All-Domain Command and Control (JADC2) program, described as a “concept to connect sensors from all the military services…into a single network.”46 According to the Congressional Research Service, “JADC2 intends to enable commanders to make better decisions by collecting data from numerous sensors, processing the data using AI algorithms to identify targets, then recommending the optimal weapon—both kinetic and non-kinetic—to engage the target.”47 If successful, JADC2 holds the potential to eliminate silos between service C2 networks that previously slowed the transfer of relevant information across the force and, as a result, generate more comprehensive situational awareness upon which commanders can make better and faster decisions. Figure 5. The JADC2 Placemat reflects the complexity and ambition associated with the Department of Defense’s JADC2 Implementation Plan. Source: US Department of Defense. AI is essential to this effort, and the DoD is exploring how best to safely integrate it into the JADC2 program.48 In December 2021, reports emerged that the JADC2 cross-functional team (CTF) would start up an “AI for C2” working group, which will examine how to leverage responsible AI to enhance and accelerate command and control, reinforcing the centrality of responsible AI to the project.49 In March 2022, the DoD released an unclassified version of its JADC2 Implementation Plan, a move that represented, in the words of General Mark Milley, chairman of the Joint Chiefs of Staff, “irreversible momentum toward implementing” JADC2.50 However, observers have highlighted several persistent challenges to implementing JADC2 along the urgent timelines required to maintain (or regain advantage in perception, processing, and cognition, especially vis-à-vis China. Data security and cybersecurity, data-governance and sharing issues, interoperability with allies, and issues associated with integrating the service’s networks have all been cited as challenges with recognizing the ambitious promise of JADC2’s approach. Some have also highlighted that allencompassing ambition as a challenge as well. The Hudson Institute’s Bryan Clark and Dan Patt argue that “the urgency of today’s threats and the opportunities emerging from new technologies demand that Pentagon leaders flip JADC2’s focus from what the US military services want to what warfighters need.”51

**The DOD cannot implement an AI policy because there is no precise definition of AI to guide programs.**

**Tarraf, Shelton, Parker 2019 - Senior Information Scientist, Senior Engineer, and physical Scientist at the RAND Corporation** [ Danielle C., William, Edward, et al RAND Cooperation, “The Department of Defense Posture for Artificial Intelligence”, <file:///Users/MiraAgarwal/Downloads/RAND_RR4229%20(2).pdf>, Acc 6/18/22, M.A.]

Currently, it can catalogue these activities, but it is unclear how doing so would help scale AI across DoD. Of course, that assumes that what constitutes an AI activity is known. However, it is not currently clear how the determination of what constitutes an AI initiative or activity is made, by whom, and whether that determination is consistent across DoD.8 The JAIC lacks a five-year strategic road map, and a precise objective allowing it to formulate one. Our industry interviews (see section “Industry: Organization in Appendix C) and relevant literature highlight the need for five-year strategic road maps to execute organizational transformation,9 particularly a transformation of the magnitude envisioned in the DoD AI strategy and that the JAIC has been tasked with executing. In that context, our industry interviews also emphasized the need for an objective articulated in precise-enough terms to enable the formulation of such a strategic road map (see section “Industry: Organization” in Appendix C). DoD experience with technology also highlights the importance of clearly defined, measurable goals in 8 We touched upon this point earlier in Chapter Three while discussing the definition of AI. Although it is not clear that enforcing a DoD-wide definition of AI is either feasible or helpful, the question of how DoD identifies and tracks AI activities or programs remains an important open question. 9 John M. Bryson, Lauren Hamilton Edwards, and David M. Van Slyke, “Getting Strategic About Strategic Planning Research,” Public Management Review, Vol. 20, No. 3, 2018. 48 The Department of Defense Posture for Artificial Intelligence enhancing success (see section “Adoption and Scaling of Unmanned Aircraft Systems” in Appendix D). The JAIC’s mission, which we have distilled to scale AI and its impact across DoD, is too vague to serve as a five-year objective for the purpose of this road map. The JAIC needs a refined objective that is precise, ambitious, and potentially feasible in the time frame, and that can serve to guide the development of an agile, strategic road map to include shorter-term (one-year) goals and metrics to assess progress along these goals. The existence of a five-year strategic road map would also help focus the selection of NMIs and justify their relevance to the overall objective (see “Organization: At OSD Level” in Appendix B).

**Alternate causality – America’s computer industry refuses to cooperate with the military on AI**

**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]

Equally alarming for U.S. policymakers is the sharp divide between Washington and Silicon Valley over the military use of AI. Employees at Google and Microsoft have objected to their companies' contracts with the Pentagon, leading Google to discontinue work on a project using AI to analyze video footage. China's authoritarian regime doesn't permit this kind of open dissent. Its model of "military-civil fusion" means that Chinese technology innovations will translate more easily into military gains. Even if the United States keeps the lead in AI, it could lose its military advantage. The logical response to the threat of another country winning the AI race is to double down on one's own investments in AI. The problem is that AI technology poses risks not just to those who lose the race but also to those who win it.

**Lack of formalized communication between AI builders and users limits openness and trust necessary for successful AI adoption**

**Tarraf, Shelton, Parker 2019 - Senior Information Scientist, Senior Engineer, and physical Scientist at the RAND Corporation** [ Danielle C., William, Edward, et al RAND Cooperation, “The Department of Defense Posture for Artificial Intelligence”, <file:///Users/MiraAgarwal/Downloads/RAND_RR4229%20(2).pdf>, Acc 6/18/22, M.A.]

Communication channels among the builders—and users— of AI within DoD are sparse. For example, one of the takeaways from our interviews is that communication among the research organizations appears to be limited, and when it does occur, it is driven primarily by personal connections among program managers or researchers (see section “Advancement and Adoption” in Appendix B). This sparsity of communication is inconsistent with the culture of openness and sharing that was emphasized by our academic and industry interviewees as a driver of success (see section “Industry: Innovation” in Appendix C, and section “Academia: Advancement and Adoption” in Appendix C).24 Likewise, we noted AI RDT&E activities throughout the services, but our takeaway from the interviews was that visibility into these activities is limited, both within and across the services and from OSD. Finally, mechanisms of interactions between the developers 23 Isaac R. Porche, III, Shawn McKay, Megan McKernan, Robert Warren Button, Bob Murphy, Katheryn Giglio, and Elliot Axelband, Rapid Acquisition and Fielding for Information Assurance and Cyber Security in the Navy, Santa Monica, Calif.: RAND Corporation, TR-1294-NAVY, 2012. 24 We should emphasize here that the sparsity of communication appeared to be driven by the lack of formalized communication channels rather than an unwillingness to communicate. 54 The Department of Defense Posture for Artificial Intelligence (e.g., research entities) and users (e.g., warfighters, analytics officers) of AI are limited or nonexistent.25 There are many potential impediments to users adopting AI technologies. Those include an inherent resistance to change— including in roles and TTPs; concerns about the potential loss of an individual’s value to the organization as a result of the adoption of AI capabilities; and lacking trust in the technologies.26 These perceived impediments are not unique to DoD; our interviews in industry and academia highlighted similar concerns (Appendix C). Nonetheless, these are serious concerns, and ones that DoD needs to address to effectively scale AI. There is a lack of consensus on the delineation of AI investments within DoD. This finding points to a set of practical questions that DoD needs to answer: For the purpose of accounting for AI investments, what counts as an AI activity and what does not? As is also the case with software, DoD budgets do not account for AI when it is a small part of a larger platform, making it hard to track overall spending on AI. We note here that adopting a DoD-wide definition of AI does not necessarily provide an answer to these practical problems.27

**JAIC fails – lack of long term funding certainty undermines industry support**

**Tarraf, Shelton, Parker 2019 - Senior Information Scientist, Senior Engineer, and physical Scientist at the RAND Corporation** [ Danielle C., William, Edward, et al RAND Cooperation, “The Department of Defense Posture for Artificial Intelligence”, <file:///Users/MiraAgarwal/Downloads/RAND_RR4229%20(2).pdf>, Acc 6/18/22, M.A.]

The lack of longer-term budget commitments might hinder the JAIC’s success. This observation is not just about the amount of funding for the JAIC—for which we have no basis to judge at present— but also the horizon, certainty (or lack thereof), and general trends of funding commitments. Our insights gleaned from industry indicate that a sizable, long-term funding commitment, generally ramping up to accompany the five-year strategic road map, is critical to ensuring success in organizational transformations to enable scaling of AI (see section “Industry: Organization” in Appendix C). Based on our interactions with the JAIC, we were unable to determine whether the JAIC is able to submit budget requests through the programming, planning, budgeting and execution (PPBE) system as an independent entity, allowing it to request funds for the Future Years Defense Plan (FYDP) and also allowing high-level leadership to demonstrate support for the JAIC’s mission by prioritizing these budget requests.

**The US will lose the AI competition – we lack a coordinating council and a workforce. We depend on foreign semiconductors and we don’t have a national AI infrastructure.**

**Schmidt 2021 – Chairman of the National Security Commission on Artificial Intelligence** [Eric, March 12, “House Armed Services Subcommittee on Cyber, Innovative Technologies and Information Systems and House Oversight and Reform Subcommittee on National Security Hold Joint Hearing on AI and the National Security Commission”, https://congressional-proquest-com.proxy.lib.umich.edu/congressional/result/congressional/congdocumentview?accountid=14667&groupid=95663&parmId=180DE199B78&rsId=180DE197DA6]

We reached a number of overarching judgments, the first is that the government is not organized, nor resourced to win the technology competition against a committed competitor and it's not prepared to defend against AI enabled threats and we strongly believe that our nation needs to be AI ready by 2025, to defend and compete in the coming era of AI accelerated competition and conflict. So we put the report into two parts, the first part is Part I: Defending America In the AI Era, and it's fundamentally how the U.S. government can use AI technologies to protect the American people and our interests. It focuses on the implications of applications of AI for defense and security. The second part is Winning the Technology Competition and its obvious, by the way, that we--we should win that, recommends government actions to promote AI innovation, promote national competitiveness and protect critical U.S. advantages in the larger strategic competition in China. In the idea of simplifying what we need to get done, we came up with four priorities area--priority with a great many details that you'll hear about. The first one is leadership, the--the government isn't quite ready for this fight, it's not organized in the right way. We need organizational structures that accelerate the government's integration of AI and the promotion of AI across the country. There needs to be something at the White House, we're proposing a Technology Competitiveness Council reporting into the vice-president that would precisely monitor and drive this transformation that we need and by the way, it's not just the government it's also in private sector. Talent as you've identified, a number of you have--in your opening comments, there's a huge talent deficit in the government. We need to build new digital talent pipelines and expand existing programs; we need to cultivate AI talent nation-wide and ensure the best technologists come to the U.S. and stay in the U.S. and don't go to our competitors. It seems sort of obvious, but incredibly important to emphasize. In hardware, the AI systems are critically dependent upon powerful hardware and we as a country, are too dependent on semiconductor manufacturing in East Asia and Taiwan, in particular. Most cutting-edge plants are produced in a specific plant that's 110 miles from China. That's gotta be an issue. We must revitalize U.S. cutting edge semiconductor fabs, and implement a national microelectronics strategy. We state very clearly in our report that the objective is to stay two generations ahead of the Chinese effort, it could not be clearer in our view. And the fourth of course, is innovation. AI research is very expensive. We need the government to help set the conditions for broad-based innovation across the country, we need for example a national AI research infrastructure, so more than the top five companies have the resources to innovate and in particular, startups and universities need this facility. And we also need to add, we think, over five, six, seven years up to $40 billion dollars in annual funding in the next five years to cover AI R&D for defense and non-defense purposes. And as you highlighted, Mr. Chairman in your comments, there are other things that are crossing edge. the first is partnerships.

### Arms Race Adv Resps

**The military will not become prematurely automated – the importance of judgement with available data will ensure human machine teaming**

**Goldfarb and Lindsay, 2022 – Chair in AI and health care at the Univ of Toronto, Prof of Cybersecurity at the Georgia Tech** [Avi, Jon, 2/25/22, <https://doi.org/10.1162/isec_a_00425>, “Prediction and Judgement: Why Artificial Intelligence Increases the Importance of Humans in War” 6/18/22, LND]

We have argued that the strategic environment shapes the quality of data, and organizational institutions shape the difficulty of judgment, which gives rise to four different categories of AI performance in military tasks. Quality data and clear judgment enable “automated decision-making,” which is most feasible for bureaucratically constrained administration and logistics tasks. Low-quality data and difficult judgments, which are common in strategy and command tasks, necessitate “human decision-making.” Clear judgments applied to low-quality data create risks of “premature automation,” especially when AI systems are authorized to execute fire and maneuver tasks. Quality data and difficult judgments can be combined in “human-machine teaming,” which can be used to improve intelligence and planning tasks. We expect that many, if not most, practical military applications of AI are likely to fall into this last category. Even highly bureaucratized tasks that seem to fit in the “automated decision-making” category can require human judgment, especially when budget and personnel decisions are at stake or when resource scarcity creates difficult operational trade-offs. Likewise, highly nuanced command tasks that seem to fit in the “human decision-making” category can usually be broken down into a subset of tasks that might benefit from AI decision aids. Most practitioners who implement military AI systems are aware of the risks of “premature automation” in fire and maneuver, in part due to widespread apprehension about “killer robots.”[126](javascript:;) To determine the appropriate division of labor between humans and machines, therefore, humans must decide what to predict, and they must create data policies and AI learning plans that detail who should do what with such predictions.[127](javascript:;) The dynamic circumstances of military operations will require ongoing finessing of the human-machine teaming relationship.

### Solvency Extensions

### --Extend – Human Control Fails

#### Humans in the loop cannot prevent accidents – they can only hope to limit the damage after the fact.

Scharre, 2016 -- Vice President and Director of Studies at CNAS [Paul, Feb 2016, Center for New American Security, “Autonomous weapons and operational risk”, https://s3.us-east-1.amazonaws.com/files.cnas.org/documents/CNAS\_Autonomous-weapons-operational-risk.pdf?mtime=20160906080515&focal=none, Acc 6/21/22, M. A.]

Autonomous Weapons and Operational Risk 11 have a higher inherent hazard than one on a closed track, the type of human control over the car could significantly change the damage potential. A self-driving car that is equipped with a steering wheel and brake to allow the human operator to take control and stop the vehicle (humansupervised autonomy) has, in principle, lower damage potential than a fully autonomous car where the human is merely a passenger along for the ride. The speed of interactions matters significantly, however. Giving the human operator the ability to grab the wheel of an autonomous vehicle traveling at highway speeds in dense traffic, particularly if the operator is not paying attention, is merely the illusion of control. Conversely, a brake and steering wheel on an autonomous car moving slowly under the supervision of an attentive human operator might add real value by allowing the human to function as an additional fail-safe. The driver may not be able to prevent all accidents (after all, humans are not great drivers even when directly in control of the vehicle), but he or she could prevent an autonomous car from running rampant, senselessly mowing down pedestrians. An unfortunate reality of both supervised autonomous and even semi-autonomous operation is that the human operator may not become aware that the system is failing until after a failure occurs. A human in the loop or on the loop will not necessarily prevent failures from occurring. However, the ability of a human to undertake corrective action can help limit the damage potential of a system if it fails. Thus, in these circumstances, the human functions as a fail-safe. The human operator cannot necessarily prevent failure, but he or she can help ensure that if or when the system fails, the damage is limited.

**No solvency – there is no agreed upon standard for Human Control yet.**

**Amoroso and Tamburrini, 2021 - Prof of International Law at the University of Cagliari and Prof of Philosophy of Science and Technology at the University of Naples Federico** [Daniele and Guglielmo, Feb Italian Journal of International Affairs “In Search of the ‘Human Element’: International Debates on Regulating Autonomous Weapons Systems” <https://www-tandfonline-com.proxy.lib.umich.edu/doi/full/10.1080/03932729.2020.1864995> TM]

The ‘weaponisation’ of AI and robotics, especially their convergence in autonomous weapons systems (AWS), is undoubtedly a matter of international concern. AWS academic and diplomatic debates have revolved around AWS’ distinguishing features and why their destructive force is especially troublesome from ethical and legal standpoints. Discussions about steps the international community can take to allay these normative concerns effectively have progressively been zooming in on the distinctive role the ‘human element’ plays in the use of force. Indeed, there is broad agreement that the identification of normatively acceptable human-weapon interactions must constitute the keystone of any future regulation of AWS. Both the Campaign and an increasing number of states maintain that a ruling should be established under international law that any weapons system must be subject to meaningful human control (MHC). This, however, is exactly where international consensus stops; it is far from clear, even among those favouring an MHC requirement, exactly what its actual content should be or, to put it more accurately, what is normatively demanded to make human control over weapon systems truly ‘meaningful’.

#### Human control is ambiguous because the human in control is constantly changing their role.

Goldfarb and Lindsay, 2022 – Chair in AI and health care at the Univ of Toronto, Prof of Cybersecurity at the Georgia Tech [Avi, Jon, 2/25/22, <https://doi.org/10.1162/isec_a_00425>, “Prediction and Judgement: Why Artificial Intelligence Increases the Importance of Humans in War” 6/18/22, LND]

Human-machine teaming often entails not only task performance (i.e., balancing the cognitive load across people and AI) but also task design (i.e., adjusting the load as circumstances change). Viewed at a more granular level, a task that falls into the human-machine teaming category in our framework might be disaggregated into subtasks that fall into two of the framework's other categories. That is, human practitioners will have to partition a complex decision task into either fully automated or fully human decision-making subtasks. This subdivision requires making mindful decisions about monitoring and controlling the risks of premature automation. For example, human-machine teaming in drone operations involves having both the drone and the drone operators perform certain tasks autonomously. The drone might automatically perform flying tasks (i.e., maintaining course and bearing or reacquiring a lost datalink), while human drone operators might deliberate over legal targeting criteria. The overall partition (i.e., the location of the human in the loop) should be adjusted over time as conditions change, which will require humans to be mindful of how the division of labor between humans and machines relates to the task environment and the organizational mission. This balance will be further complicated by interdependencies across tasks and organizations, data access, interpretability, and interoperability issues, as well as competing priorities such as speed, safety, secrecy, efficiency, effectiveness, legality, cybersecurity, stability, adaptability, and so on. Importantly, as [figure 1](javascript:;) shows, the organizational and political institutions that are exogenous to decision-making tasks establish the priorities for these different objectives. Humans are the ultimate source of judgment in all AI systems.

#### Human control fails – our soldiers are not adequately trained for human/machine teams

Goldfarb and Lindsay, 2022 – Chair in AI and health care at the Univ of Toronto, Prof of Cybersecurity at the Georgia Tech [Avi, Jon, 2/25/22, <https://doi.org/10.1162/isec_a_00425>, “Prediction and Judgement: Why Artificial Intelligence Increases the Importance of Humans in War” 6/18/22, LND]

A fundamental organizational challenge is to recruit, train, and retain the human talent required for human-machine teaming. We anticipate that AI systems will increase the influence of junior personnel, giving more leverage to their judgment and decisions. Yet, we also expect that the junior officers, noncommissioned officers, civilian employees, and government contractors who maintain and operate AI systems will struggle to understand the consequences of their actions in complex political situations. Gen. Charles Krulak highlights the role of “the strategic corporal” on twenty-first-century battlefields.[112](javascript:;) Krulak argues that operational complexity makes tactical actions more strategically consequential, for better or worse, which places a premium on the character and leadership ability of junior personnel. AI will further increase the burden of judgment on them. Forward personnel will have to see the predictions from AI systems, assess whether the data that created the predictions are reliable, and make value judgments about how and why automated systems can advance the mission. Furthermore, AI systems will require constant reconfiguration and repair as the context of human-machine teaming changes during actual operations. Military personnel have long engaged in field-expedient, bottom-up innovation.[113](javascript:;) We expect personnel will likewise hack AI systems to improve mission performance, as they understand it, even as unauthorized modifications put them into conflict with system configuration managers elsewhere in the bureaucracy.[114](javascript:;) It is important to emphasize the human capital requirements of combining a sophisticated understanding of the politico-military situation with the technical savvy to engineer AI in the field. The strategic corporal in the AI era must be not only a Clausewitzian genius but also a talented hacker. This may not be a realistic requirement. The importance of human-machine teaming is increasingly appreciated in organizations that implement AI systems. Amid all the hype about AI and war, plenty of thoughtful work seeks to discern the relative advantages of humans and machines and to devise methods of pairing them together in order to improve decision-making.[115](javascript:;) As the U.S. Department of Defense AI strategy states, “The women and men in the U.S. armed forces remain our enduring source of strength; we will use AI-enabled information, tools, and systems to empower, not replace, those who serve.”[116](javascript:;) Yet, the strategy's stated goal of “creating a common foundation of shared data, reusable tools, frameworks and standards, and cloud and edge services” is more of a description of the magnitude of the problem than a blueprint for a solution.[117](javascript:;) As AI creates potential for large-scale efficiency improvements, it also creates potential for large-scale collective action problems. New military staff specialties are sure to emerge to manage data and judgment resources, creating new institutional equities and integration challenges. Perhaps even more challenging is the problem of nurturing trust among all the engineers, administrators, analysts, operators, and lawyers involved in designing, using, and repairing AI systems.[118](javascript:;) As cheap prediction makes human judgment more vital in a wide variety of tasks, and as more judgment is needed to coordinate human-machine teaming, we anticipate that military bureaucracies will face complicated command decisions about why, and how, to conjoin humans and machines. Commercial firms that embrace AI often adjust their boundaries and business models by contracting out tasks involving data, prediction, and action (e.g., manufacturing, transportation, advertising, and service provision) while developing in-house judgment capacities that are too difficult to outsource.[119](javascript:;) Military organizations, likewise, may find it advantageous to share specialized resources (sensors, shooters, intelligence products, and logistics) across a decentralized network of units, even as they struggle to make sense of it all. AI is thus part of a broader historical trend that has been described with terms like “networkcentric warfare,” “joint force operations,” “integrated multi-domain operations,” and “interagency cross-functional teams.” The whole is more than the sum of its parts, but each part must exercise excellent judgment in how it leverages shared assets. Historical experience suggests that military interoperability and shared sensemaking are difficult, but not necessarily impossible, to achieve.[120](javascript:;) We thus expect military and political judgment will become even more difficult, diffused, and geographically distributed. Indeed, the ongoing involvement of the “strategic corporal” in conversations about politico-military ends could end up politicizing the military. In the United States, as Risa Brooks argues, the normative separation of political ends from military means has some paradoxically adverse consequences: it enables service parochialism, undermines civilian oversight, and degrades strategic deliberation.[121](javascript:;) Greater reliance on AI could exacerbate all these problems, precisely because AI is a force multiplier that requires military personnel to exercise greater judgment. Brooks's argument implies that an AI-intensive defense bureaucracy could become both more powerful and more politically savvy. If machines perform the bulk of data gathering, prediction, and tactical warfighting, then the judgments of human engineers, managers, and operators will be highly consequential, even as ethical questions of accountability become harder to answer. Some military personnel may be unable to perform at such a high level of excellence, as attested by the many scandals during the wars in Iraq and Afghanistan (from targeting errors to prisoner abuse). Increasing reliance on AI will magnify the importance of leadership throughout the chain of command, from civilian elites to enlisted service members.

#### Human control cannot solve for instability – adversaries can never know if the system’s behavior followed human intentions or AI

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.]

Finally, autonomous systems raise novel challenges of signaling in contested areas because of ambiguity about whether their behavior was intended by human commanders. Even if the system performs as intended, adversaries may not know whether an autonomous system’s behavior was consistent with human intent because of the aforementioned command-and-control issues. This can create ambiguity in a crisis situation about how to interpret an autonomous system’s behavior. For example, if an autonomous system fired on a country’s forces, should that be interpreted as an intentional signal by the commanding nation’s political leaders, or an accident? This, again, is not a novel problem; a similar challenge exists with human-commanded military forces. Nations may not know whether the actions of an adversary’s deployed forces are fully in line with their political leadership’s guidance. Autonomous systems could complicate this dynamic due to uncertainty about whether the actions of an autonomous system are consistent with any human’s intended action.

#### Human control cannot solve all risks – delay in response times increases the chance of mistakes

Scharre, 2016 -- Vice President and Director of Studies at CNAS [Paul, Feb 2016, Center for New American Security, “Autonomous weapons and operational risk”, https://s3.us-east-1.amazonaws.com/files.cnas.org/documents/CNAS\_Autonomous-weapons-operational-risk.pdf?mtime=20160906080515&focal=none, Acc 6/21/22, M. A.]

In a semi-autonomous system, after each task the machine stops and waits for human approval before continuing. Under this control type, the human operator has the ability to observe the machine’s actions in the environment and confirm that the behavior is appropriate before continuing.7 In supervised autonomous operation, in principle the human operator has the ability to intervene if necessary. In practice, there is likely to be some time delay between when a failure occurs and when the human is able to actually correct the behavior of the system. This could occur because of a time delay in communications or because it may take the human some period of time to understand that the system is performing inappropriately and determine the appropriate corrective action. For fully autonomous systems, the human operator lacks the ability to observe the autonomous system’s behavior and undertake corrective action in sufficient time if the system fails to perform appropriately. Presumably at some point in time the human operator will become aware of how the system performed. For example, a household thermostat is operating “fully autonomously” while one is away from the home. Once one returns home, one discovers whether the thermostat was performing as one intended or not.8 Thus a key element of risk in autonomous systems is the time between when a system begins failing (performing in a manner other than what the human operator intended) and when the human operator can undertake corrective action. Even in fully autonomous systems, presumably the system ceases operation at a certain point in time once the task is complete and the results of its actions can be observed. The damage potential of a system depends on its inherent hazard and the time from failure to corrective action When it comes to risk, we are concerned with an autonomous system’s damage potential. Damage potential is the amount of damage an autonomous system could do, if it failed to perform appropriately, before a human operator could take corrective action. Damage potential depends upon the inherent hazard of the system—the type of task being performed and the environment in which it is operating—as well as the control type. For supervised autonomous systems, the speed of the system’s operation and any potential time delays also are significant factors. A system that in principle has a human on the loop to intervene in the event of system failure might in practice still have a high damage potential if the system performs tasks much more rapidly than human operators can react.

### --Extend – No Definition of Autonomous Weapons

#### There is no agreed upon definition of Autonomous Weapons

Scharre, 2016 -- Vice President and Director of Studies at CNAS [Paul, Feb 2016, Center for New American Security, “Autonomous weapons and operational risk”, https://s3.us-east-1.amazonaws.com/files.cnas.org/documents/CNAS\_Autonomous-weapons-operational-risk.pdf?mtime=20160906080515&focal=none, Acc 6/21/22, M. A.]

The term autonomous is sometimes reserved for systems that exhibit some degree of learning, adaptation, or evolutionary behavior. Others, however, might use the term “autonomous” to refer to complex rule-based systems that exhibit goal-oriented behavior, systems that some might call “automated.” Examples of learning systems include robots that teach themselves how to move around their environment or the Nest “learning thermostat.”9 • Finally, we sometimes refer to autonomous systems that are capable of human-level cognitive tasks, at least for narrow problems, as “intelligent.”

#### No solvency-- we cannot develop proper AI without first defining AI, which we have not yet done

Roff, 2019 - research fellow at the Centre for the Future of Intelligence at Cambridge[Heather M., 29 April “The frame problem: The AI “arms race” isn’t one,” <https://thebulletin.org/2019/04/the-frame-problem-the-ai-arms-race-isnt-one/>, 6/22/22, MD]

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.

### --Extend – Civilian Deaths Links

**Military AI reduces civilian casualties – it can be used to avoid accidentally attacking hospitals**

**Lewis 2019 - project lead for the DOD’s Joint Lessons Learned studies** [Larry, “AI Safety: Charting out the High Road”, War on the Rocks Dec 19, https://warontherocks.com/2019/12/ai-safety-charting-out-the-high-road/ LMSi]

That last commitment, made in both the strategy and in U.S. government position papers, is probably the one that draws the most skepticism. When Hollywood portrays AI and autonomous systems and the use of force, it is often to show machines running amok and killing innocents, such as seen in the Terminator series of movies. But using AI for good in war is not a fanciful notion: At CNA, our analysis of real-world incidents shows specific areas where AI can be used for this purpose. We have worked with the U.S. military and others to better understand the reasons that civilian casualties occur and what measures can be taken to avoid them. Based on analysis of underlying causes of over 1,000 incidents, AI technologies could be used to better avoid civilian harm in ways including: Monitoring targeted areas for potential changes in the estimated collateral damage in order to avoid civilian casualties; Mining military and open source data to better identify and reduce the risk to civilian infrastructure (e.g., power, water) in conflict areas, helping to avoid longer-term humanitarian impact from the use of force; Using image processing techniques to better identify hospitals and avoid inadvertent attacks; and Using AI-driven adaptive learning to improve military training for civilian harm mitigation. These are just some examples of concrete applications of AI to promote civilian protection in conflict. The Department of Defense could be a leader in this area, and it is easy to imagine other countries following a U.S. lead. For example, many countries lament the frequency of military attacks on hospitals in recent operations, with a UN Security Council Resolution passed unanimously to promote protection of medical care in conflict in 2016. If the United States were to announce it was leading an effort to use AI to better protect hospitals, it is likely there would be interest from other countries in cooperating with such an effort.

### Cybernetics K Links

#### Focusing on Human Control ignores the distancing caused by merged human/machine intelligence – it hides the violence in Human Control, and the inability of regulation to resolve our fears.

Kalpozos, 2020 - Prof of Law at Harvard [Ioannis 3-16-2020, , Leiden Journal of International Law, “Double elevation: Autonomous weapons and the search for an irreducible law of war", https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3545332 accessed on 6-18-2022]

The major stance in opposition to technological escalation towards full autonomy is centring on the taboo of delegating life/death decisions to machines and the innate inability of machines to properly apply law. A public expression of this position is that of the Campaign to Ban Killer Robots.144 The campaign is notable in resisting both superficial techno-optimism and dangerously instrumental pragmatism. The potential power of mobilization of public opposition notwithstanding, the position presents some analytical, strategic and conceptual shortcomings. Firstly, the Campaign’s approach starts from an assumption of a fundamental ‘change of paradigm’.145 This does not always appreciate the continuing role of technology in war and its function in the double elevation described here. Indeed, I have argued that the escalation towards full autonomy and merged heteronomy represents a continuation of an existing trajectory of distancing through the elevation above one’s enemy and above oneself, albeit with a perhaps justified presentiment of an ‘avalanche’, a violent acceleration of pace, out of control. Secondly, present practice does not suggest that a prospect of successful imposition of a ban or moratorium is realistic. This is due both to the anticipated military advantage and the inscription of this process in socioeconomic structures and expectations, as reflected in the evidence of enthusiastic investment in the acceleration of this trajectory. Instead, as the analysis above has suggested, while the absolute of full autonomy (combining kinetic and cognitive elements) is kept at bay, the ground is constantly prepared. Thirdly, the primary focus on preventing full autonomy or, inevitably anthropomorphized, ‘killer robots’ is in danger of missing the target. Autonomy is complemented by increasingly merged heteronomy. As discussed in Section 2.1 above, merged heteronomy addresses the logistical limitations of spatially spread human/machine networks. Crucially, while presenting itself as respecting the moral taboo of life-and-death delegation, merged heteronomy advances the mechanization of judgement in pursuit of double elevation. To the extent that the maintenance of ‘meaningful human control’ is primarily focused on ‘keeping humans in the loop’, it is in danger of ignoring the gradual change in the nature and function of that very loop. As reliance on artificial intelligence increases, it is humans who are becoming the ‘killer robots’. Finally, to the extent that the position relies on the incompatibility of autonomous weapons with international humanitarian law, it may be vulnerable to the complicity, discussed in Section 3.3, of certain strands of legal thinking with an understanding of knowledge as ‘a large store of neutral data’146 and the promise of the piece-meal resolution of technical legal problems. It also allows one’s intuitive angst to be assuaged by promises of, or indeed steps towards, the panacea of global regulation.147 As important as such regulation may be in structuring the ambitions of both state and private actors, it would not, per se, address the most fundamental dangers of the mechanization of judgement. Law will neither ban nor regulate away what causes our angst. To the contrary, it may be adapted to serve mechanized judgement. If we are to oppose double elevation and the mechanization of judgement, and hope to use law to this effect, we need legal thinking to serve this purpose. Otherwise, all we can do is surrender to the stance of agnostic abeyance, until the code is engineered.

#### Autonomous weapons reinforce the idea of perfection through technology that will elevate us above our enemies. This elevation is always accompanied by Imperial violence.

Kalpozos, 2020 - Prof of Law at Harvard [Ioannis 3-16-2020, , Leiden Journal of International Law, “Double elevation: Autonomous weapons and the search for an irreducible law of war", https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3545332 accessed on 6-18-2022]

3. Double elevation and the distancing of judgement Technology is not neutral.68 Assuming the neutrality of technology – and attaching to it the assumed neutrality of law – precludes any critical understanding of either. Technology, its development and use, reflects both theoretical and practical commitments: it ‘is covert philosophy’.69 It exists in a relationship of co-production with culture, politics, and law.70 As Paul Edwards put it in a seminal study of Cold War weapons technology, ‘we can make sense of the history of computers as tools only when we simultaneously grasp their roles as metaphors in … the period’s … science, politics and culture’.71 In this section, I argue that the promise of technological progress and automation in war, as in general, is a promise of civilization, a promise of improvement. It entails a double elevation: above one’s enemy and above one’s self. At the centre of it there is a paradoxical assumption, namely that the non-human can be more humane than the human. The elevation above one’s enemy combines military distance with a perception of civilizational and moral superiority. The elevation above oneself aims at creating a distance from human features perceived as weak or unreliable. Both full autonomy and merged heteronomy require the increasing mechanization of human judgement. What we have learned to understand as the civilization of war-fighting rests on and pursues its mechanization. 3.1. Rising above one’s enemy Technological distancing aims at developing asymmetry and invulnerability and elevating oneself above one’s enemy in both strictly speaking military and broader civilizational terms. The latter type of elevation allows not simply a geographical distance but also a moral distance with significant consequences for the role of law and judgement in killing. Military technology is central to early imperialist expansion72 and its concomitant civilizational pretension, culminating in the steep military and moral asymmetry achieved in nineteenth century colonial warfare. Churchill’s description in the context of the Boer war of the British infantry ‘steadily and solidly’ firing against the Sudanese Dervishes in ‘the most signal triumph ever gained by the arms of science over barbarians’, while ‘the mere physical act became tedious’,73 is illustrative. Technology allows military superiority, guaranteeing the physical safety and invulnerability of one’s forces; the asymmetry achieved reflects an already assumed civilizational distance which allows a moral dissociation from the act of killing, expressed in the ennui of physical exertion; the civilization of the technologically advanced party is enforced.74 The role of military technology in the elevation above one’s enemy is most closely associated with the growth of air power and the aspirations of invulnerability associated with it. Air power, especially in situations of colonial asymmetry, constituted a relationship of vertical distance, allowing the surveillance and policing of one’s inferior enemy, both at initial conquest and through the protracted practice of colonial administration and pacification.75 That colonial relationship achieved new technological heights in the context of the Cold War. Towards the end of the 1960s, the Vietnam impasse pushed for the assertion of asymmetry through the development of an automated battlefield to improve targeting capacity and protect American soldiers. Operation Igloo White attempted the surveillance of the Ho Chi Minh Trail in Laos through the use of camouflaged sensors designed to detect different types of human activity, including body heat, vehicle noise or the smell of human urine,76 or sweat.77 When picked up, such activities appeared on the screens in the headquarters’ terminals in Thailand and fed into the targeting system of military aircraft. A ‘kill box’78 was constructed and targeted. The operation’s centralized, computerized, automated method of ‘interdiction’ relied on an active global defence and aspirations for the full automation of the battlefield. These are set out by General William Westmoreland, the Chief of Staff of the US Army at the time, in a tenor strongly evocative of our present debate: On the battlefield of the future, enemy forces will be located, tracked, and targeted almost instantaneously through the use of data links, computer assisted intelligence evaluation, and automated fire control. … I see battlefields on which we can destroy anything we locate through instant communications and the almost instantaneous application of highly lethal firepower. … [A]n improved communicative system … would permit commanders to be continually aware of the entire battlefield panorama down to squad and platoon level … I am confident the American people expect this country to take full advantage of its technology - to welcome and applaud the developments that will replace wherever possible the man with the machine … With cooperative effort, no more than 10 years should separate us from the automated battlefield.79 As it turns out, Operation Igloo White was a complete failure.80 And yet the technological ambition remained. In 1973 the New Scientist echoed General Westmoreland’s technological/military optimism. There was ‘at present, great interest in the development of remotely piloted vehicles (RPV’s) for missions such as reconnaissance, electronic warfare, ground attack and air-to-air combat’.81 Increasingly, to these purposes was added another: targeted assassination. The ambition of the precision of a self-sustaining intelligence/targeting loop in drone warfare illustrates the confluence of offensive and defensive imperatives in elevating oneself above one’s enemy. Markus Gunneflo has shown how the practice of and legal justification for targeted killings was developed in Israeli and US policy as a means of constitutional protection of the citizens to be distinguished from unlawful assassination.82 In such ‘active defence’, especially when exercised globally, we see the merging of the offensive distance of air power, seeking to impose a vertical relationship of war, and the defensive distance of integrated human/machine surveillance systems. This vision is reflected in the prioritization in the 1990s of drone research.83 Drones, both the surveillance and the targeting kind, have been seen as symbolizing a ‘change of paradigm’ in the conduct of war.84 They, however, follow the trajectory discussed – that of achieving an elevation above one’s enemy, associated with geographical distancing and the moral/civilizational distance associated with governing through war from above.85 The present ambition, of both escalated weapon emancipation and human/machine merging, follows that same path. However autonomous, further distancing remains the goal.86 This is not a paradigm change.87 However, to the extent that there is a rapid acceleration of technological development we could, perhaps, refer to an ‘avalanche’: ‘when conditions are ripe, individual events, even small ones, can trigger a massive, downward rush’.88 This metaphor may serve to describe a well-established trajectory combined with the feeling that things may be spiralling out of control. From colonial asymmetry to the post-Cold War fighting of ‘terror’, the elevation above one’s enemy through weapons technology guarantees physical and moral distance; it also denotes, and imposes, the pretention of a higher civilization. As we will see, the promise of precision, professionalization, optimization of decision making – with humans involved, but assisted by technology – underlines another kind of elevation: one that supposedly saves humans from themselves.

#### The Affirmative relies on dehumanizing assumptions – the argument that laws can be established to prevent AI is based on the same assumption that LAWs can perfect human warfare. Both rely on enlightened rationalist ideas of progress, ignoring how this perfection numbs us to dehumanizing violence.

Kalpozos, 2020 - Prof of Law at Harvard [Ioannis 3-16-2020, , Leiden Journal of International Law, “Double elevation: Autonomous weapons and the search for an irreducible law of war", https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3545332 accessed on 6-18-2022]

This article intervenes in a rather crowded debate. Why is there such a flurry of current interest in autonomous weapons and their legal regulation? A visceral reaction to the idea of mechanized killing, combined with the perception of the acceleration of artificial intelligence research,12 may be a sufficient answer. The anticipation of incoming practical problems to-be-solved, questions posed by powerful interested parties, may also be an incentive for lawyers to place their analyses in the marketplace of ideas. But I believe there is more to it. The present is the time to imagine the future, especially when one is both propelled by and unmoored from the past. The mix of artificial intelligence, war, and law draws some of its headiness from a specific historical moment – a culmination of and a departure from enlightenment rationalism; the apex of progress and the moment when we fear it will get out of hand. ‘The end of the end of history’13 marks a daunting beginning. The law of war carries this tension, with respect to both the articulation of rules and their enforcement. The legal institution of war rests on the survival of a soldier’s individual sense of humanity at the time when his life is laid out for the collective. So does individual (criminal) liability: without that assumption – without that fiction – it makes no sense. I argue that the increasing mechanization of warfare pursues the creation of distance from our enemies and from ourselves and reduces the knowledge and intelligence of the law and its application through individual judgement. I further argue that legal research on new weapons technology should focus less on questions of compatibility between given legal rules and the algorithmic and kinetic features of new weapons, as most current scholarship does, and more on an understanding of law as non-reducible to algorithmic engineering. I start, in Section 2, by reviewing the state of the art-in-the-making. Rather than providing an exhaustive taxonomy I aim to highlight the teleological nature of artificial intelligence research and the industry’s investment in the dialectic of increasing machine autonomy and human/machine merging, or ‘merged heteronomy’. I then see, in Section 3, this relationship between technology and war in some historical perspective, with a view to discerning functions relevant to law. I argue that the role of technology in war entails a double elevation: above one’s enemy and above oneself. The elevation above one’s enemy, discussed in Section 3.1, serves a both offensive and defensive impetus and aspires to both spatial and moral/civilizational distance. The elevation above oneself, discussed in Section 3.2, is for self-perfection. It is often associated with a certain understanding of Cartesian dualism and a belief in rational improvement that may see humanity as the cause of inhumanity and de-humanization as our best chance for humanization. It seeks to mechanize judgement and therefore establish a distance from human failings. It is served by war as governance from a distance and by the increasing physical and cognitive merging of humans and machines. Both physically and, to some extent, in moral and civilizational terms, technology and automation promise such improvement through establishing a distance from the human – our human enemy and our human self. The establishment of this distance entails a decreasing role for human judgement and the weakening of responsibility for such judgement. I further argue, in Section 3.3, that law, or certain strands of mainstream jurisprudence, are complicit in such mechanization, to the extent that law is treated as logic even conceivably reducible to algorithm. And that the reaction against this process of distancing and de-humanization, to the extent that it idealizes the proscriptive or regulatory role of law, is bound to disappoint.

#### Requiring Human Control is a trap – it stops our resistance to the Distancing and Elevation of modern warfare.

Kalpozos, 2020 - Prof of Law at Harvard [Ioannis 3-16-2020, , Leiden Journal of International Law, “Double elevation: Autonomous weapons and the search for an irreducible law of war", https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3545332 accessed on 6-18-2022]

‘Fully autonomous systems’ then, in relation to war-fighting, are systems that, once deployed, are able to adapt, receive, and process feedback, and display a level of functional autonomy that effectively does not distinguish them from human decision makers.24 If anything, in fact – and that is really the point – such systems may be capable of a higher level of tactical or even strategic decision-making (cognitive) and war-fighting (kinetic) capacity. This seems to be a shared understanding among states and NGOs, otherwise holding different positions in the autonomous weapons debate. Accordingly, the US Department of Defense refers to ‘[a] weapons system that, once activated, can select and engage targets without further intervention by a human operator’.25 Human Rights Watch, while setting out its position against autonomous weapons systems, defines them as ‘[r]obots that are capable of selecting targets and delivering force without any human input or interaction’.26 Other states27 and organizations28 provide similar definitions. These functions of autonomy, and their escalation, entail both physical and cognitive distancing from human agents in the overall process of targeting. Although the concept and image of autonomy dominates the discourse in a way that influences, as we will see in the next section, much of the scientific research and development, it only partially describes technological escalation. In fact, the artificial intelligence of war-fighting complements increasing autonomy with what has been called ‘merged heteronomy’. Increasing cognitive autonomy, and distance, coexists with increasingly close physical proximity. This serves pragmatic aims: Technological limitations in the fragmented development of different aspects of autonomy, the continuing necessity of human input, and the fragility of human/machine networks mean that the individual’s continuing presence in the loop remains an operational necessity. This also means that a full-on confrontation with social and political resistance to the reality of distinct killer robots is placed in abeyance. Continuous, if vague, assurances of the human remaining in the loop and retaining meaningful control are thereby facilitated. And yet, the abeyance is a trap and our presence ‘in the loop’ is no guarantee. To the extent that ‘full autonomy’ is understood to require the separate physical existence of an, often anthropomorphized, robot other, it obscures the crucial role that increasing cognitive autonomy plays in a nominally heteronomous decision-making process. Cognitively, as well as physically and kinetically, humans and machines become decreasingly separate, less and less other. Their understanding of the rules, the nomos, is merging, as is their physical existence. Increasing autonomy and merged heteronomy serve the same purpose, the same teleology of mechanization. ‘The loop’, itself, is changing, increasingly relying on artificial intelligence.

### Logistics AI Solvency Resps

#### AI assisted Logistics break down in practice – the political and bureaucratic conflicts and fog of war make “low hanging fruit” an illusion.

Goldfarb and Lindsay, 2022 – Chair in AI and health care at the Univ of Toronto, Prof of Cybersecurity at the Georgia Tech [Avi, Jon, 2/25/22, <https://doi.org/10.1162/isec_a_00425>, “Prediction and Judgement: Why Artificial Intelligence Increases the Importance of Humans in War” 6/18/22, LND]

We expect automation to improve the efficiency and scale of routinized activities that entail filling in missing information, measuring technical performance, tracking personnel, and anticipating future needs. Indeed, AI may enhance many routine tasks associated with developing budgets, recruiting and training personnel, identifying leadership potential, scheduling unit rosters, designing and procuring weapon systems, planning and evaluating exercises, caring for the morale and welfare of service members and their families, and providing health care to service members and veterans.[66](javascript:;) At the same time, it is important to recognize that seemingly trivial procedures can become politicized when budgets and authorities are implicated.[67](javascript:;) Even in the absence of parochialism, the complexity of administrative systems introduces interpretive challenges for personnel. These internal frictions undermine the conditions for successful administrative automation. Logistics supply chains may also be good candidates for automation. Indeed, firms like DHL and FedEx have leveraged AI to streamline their delivery networks. Standardized parts, consumption rates, repetitive transactions, and preventive maintenance schedules generate abundant data about defined tasks. Using historical performance data, predictive maintenance systems can monitor consumption rates and automatically order replacement parts before a weapon or platform breaks. For example, one U.S. Air Force system uses a predictive algorithm to decide when mechanics should perform an inspection, which allows them to tailor the maintenance and repairs for individual aircraft rather than adhere to generic schedules.[68](javascript:;) But we contend that the prediction of supply and demand for just-in-time delivery will be more difficult in war. While bureaucrats may be insulated from the turmoil of the battlefield, supply lines are more exposed. The enemy can interdict or sabotage logistics. As wartime attrition consumes spare parts, units may squabble about which ones should be resupplied. Friendly units may resort to using platforms and parts in unconventional ways. All this turbulence will cause predictions to fail, which essentially shifts AI into the category of premature automation, discussed below. The classical military solution to such problems is to stockpile an excess of supplies, precisely because wartime consumption is so hard to predict.[69](javascript:;) If organizations eliminate slack resources with AI systems in pursuit of efficiency, however, then they may sacrifice effectiveness when systems encounter unforeseen circumstances.[70](javascript:;) In sum, we expect AI to be most useful for automating routine tasks that are bureaucratically insulated from battlefield turbulence. Administration and logistics tasks that are repetitious and standardized are more likely to have both quality data and clear goals. Humans still provide judgment to define those clear goals, but this happens in advance. Although these conditions are ideal for automation, they can be elusive in practice, especially if there are contested resources and personnel decisions. As a result, even the low-hanging fruit applications will often fall into the other three categories in [table 2](javascript:;), particularly human-machine teaming.

#### Incremental US AI development speeds up the Arms Race – allies will lose trust, and competitors will see an opportunity

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]

It's also possible, though unlikely, that AI will propel emerging powers and smaller countries to the forefront of defense innovation while leaving old superpowers behind. Washington's current focus on U.S.-Chinese competition in AI misses an even more important trend. There is a risk that the United States, like many leading powers in the past, could take an excessively cautious approach to the adoption of AI capabilities because it currently feels secure in its conventional military superiority. That could prove to be a dangerous form of complacency, especially if relations between the United States and many of its current [allies](https://go-gale-com.proxy.lib.umich.edu/ps/i.do?p=AONE&u=umuser&id=GALE%7CA556838648&v=2.1&it=r) and partners continue to fray over time. Faced with a less reliable United States, shunned NATO partners would, for example, have even more incentives to invest in alternatives, such as experimenting more with how AI can bolster their capabilities in a world without clear superpower leadership. If these countries decide to strike out on their own, while China and Russia continue to invest in capabilities with the explicit goal of disrupting U.S. military superiority, and parts of the U.S. tech industry remain reluctant to work with the Defense Department, the U.S. military could even find itself in a position it has not faced for more than 75 years: playing catch-up when it comes to deploying cutting-edge technology on the battlefield.