The More Dismal Science: Perspectives from International Relations on Military Automation

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Major powers like China and the United States are investing heavily in military automation. Professional military journals are filled with articles about how automation and drones are already changing battlefield operations in Ukraine and the Levant. The AI revolution thus seems poised to reinvent war as much as the advent of rifles and warplanes.

But the gunpowder and aviation revolutions required major systemic transformations in military doctrine and defense industries.[1] Not every nation was successful in implementing these transformations, and those that were did not always win their wars. Political actors with great military strength may not be willing or able to use it. Actors weak in military power may be strong in resolve. The failure of the highly advanced U.S. military to win decisively in Vietnam, Afghanistan, and Iraq should give pause to anyone who expects advances in AI to deliver victory. Improvements in tactics do not necessarily improve strategy.

Popular accounts of military AI tend to focus on technical inputs such as data, computing power, and algorithms. Technical AI expertise and governance institutions are often seen as important supplements as well.[2] Improvements in these inputs are assumed to improve military power. Autonomous drone swarms and targeting intelligence systems will enhance the speed, scope, scale, precision, and lethality of battlefield operations.[3] Nations that best harness AI inputs, therefore, will gain a major competitive advantage in great power politics.[4] It is a short jump to the conclusion that China is on the cusp of gaining a major military advantage, unless its inputs can be controlled.

This view is plausible but incomplete. Military power is not a simple production function. AI may improve the technical efficiency of prediction, but this does not simply translate into improvements in military effectiveness. AI systems and concepts developed in the commercial world may not perform as well in the very different "business" of warfare.[5] Economic commerce relies on institutionalized currencies, contracts, and courts, while war in political anarchy traffics in uncertainty, coercion, and violence.

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[1] Roland 2016.
[2] Scharre 2023.
[3] Singer 2009; Scharre 2018.
[4] Schmidt 2023; Milley and Schmidt 2024.
[5] Lindsay 2023.

Put simply, the economics of AI must consider the politics of war. There is a large literature in international relations on the causes, conduct, and consequences of war.[6] An overarching theme in this literature is that military-technical factors do not uniquely determine the onset, escalation, or termination of war. Technology does not determine military outcomes,[7] except perhaps in the very general sense of encouraging more complex arms races.[8] War is not just a military contest but a political process. Therefore, it is important to understand how AI both affects and is affected by this process. It turns out that the implications of AI are extremely ambiguous, or underdetermined.

The Prussian strategist Carl von Clausewitz gives three distinct definitions of war in the first book of *On War*. He begins by likening war to a duel in which each side tries to disarm the other or compel surrender. This is a pure military contest of strength. The input theory of military AI often stops here: better AI provides more power to win this contest, often conceived as a set piece battle or a wargame. But why might an actor be motivated to fight any given battle or start a war in the first place? Clausewitz goes on to make his famous observation that war is "a continuation of political intercourse, carried on with other means."[9] Actors use war to pursue their interests, and different interests lead to different types of war. While the duel tends toward large-scale violence ("absolute war"), politics and operations create limits in practice ("real war"). The input theory of AI says little about how the AI means of war achieve its political object, let alone how the absolute advantages of AI at scale might be limited by strategic realities. Clausewitz then concludes by redefining war as a "paradoxical trinity" that combines a government's political strategy, a military's management of violence, and a nation's unpredictable passions.[10] Information technologies like AI are more likely to be determined by this chaotic interaction than vice versa.[11]

The Clausewitzian intuition that war is politics by other means is captured in mainstream international relations by the bargaining model of war.[12] In its simplest version, two actors bargain over a contested resource like territory. Each has the outside option of going to war, but war is costly in blood and treasure and destroys some of the bargaining surplus. Actors who are rational and well informed, therefore, even if they are nominally more powerful, should always prefer a peaceful deal over a costly war. Yet because they each want to capture more of the surplus in the bargaining range, they have incentives to misrepresent their strength in peacetime to gain a coercive bargaining advantage, and for the same reason to suspect that threats are just cheap talk. The root cause of war in this model is uncertainty about the true balance of power, costs of war, or willingness to commit to an agreement.[13] Actors can attempt to resolve uncertainty and improve credibility through costly signaling, for instance by tying hands (tripwires) or sinking costs (mobilizations).[14]

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[6] Horowitz 2020.
[7] Biddle 2004; Talmadge 2015; Grauer 2016; Lindsay 2020.
[8] Dafoe 2015.
[9] Clausewitz 1976, 87.
[10] Ibid., 89.
[11] Beyerchen 1992.
[12] Blainey 1988; Fearon 1995; Powell 2002.
[13] Gartzke 1999; Ramsay 2017. Indivisible stakes are also a rational cause of war but are often offset by side payments in practice.
[14] Schelling 2008; Jervis 1970; Fearon 1997.

Assume for now the input theory of military AI that better automation produces better fighting and the rationalist foundations of the bargaining model of war. Both assumptions are suspect in practice due to the messy realities of human organizations, battlefield operations, and multipolar politics. But we do not have to go that far to find the political problems in military AI. The simplest bargaining model of war has just four main components: the power to win a war, the costs of war, the bargaining demand, and uncertainty about any of these factors. To ask how AI might affect the politics of war, therefore, is to ask how AI might affect any of these factors. It turns out that AI can affect them all, in different ways and to different degrees. Let us take each in turn.

By stipulation, AI might improve military power. AI systems might improve the efficiency of administration and logistics, the collection and analysis of intelligence, the planning and coordination of forces, and the employment of lethal autonomous weapon systems. In principle, the improvement of military power can shift the bargaining range so that more favorable outcomes are mutually desirable in lieu of war. A rational actor facing an AI-enabled military, all things being equal, should be more willing to make concessions rather than go to war, in effect making war less likely while making coercive revision more likely.

But this assumes that there is mutual knowledge about the shift in power. Many concepts of operations for military AI depend on speed, stealth, maneuver, and surprise. Military capabilities that depend on secrecy for warfighting efficacy cannot be revealed for credible coercion (or deterrence) since the act of communicating the threat enables an actor to take countermeasures to disarm it.[15] This is one reason why deterrence is not very useful in cyber operations, which rely on hidden exploits. If the adoption of AI improves power without reducing uncertainty, then deterrence failure and miscalculation become more likely. Indeed, interactions and outcomes with automated forces are likely to be highly chaotic and uncertain, which is bad news for credible deterrence.[16]

AI might also shift the costs of war. Most obviously, AI reduces exposure for friendly forces by automating "the pointy end of the spear." If AI reduces costs for both sides, the bargaining range must shrink as war becomes less costly and potentially more attractive. Yet AI also increases the ability to impose costs by efficiently destroying enemy forces. In principle this could open up the bargaining range and create credible options for coercion through punishment that is asymmetrically costly for the target and costless for the punisher.[17]

But credible coercion is as much about displaying a willingness to pay costs as to inflict them. Automated forces literally have no skin in the game. Low-cost punishment thus introduces another information problem. The target cannot tell if the punisher is relying on AI because it is the most effective way to impose costs or because it is averse to suffering any costs itself. Because AI-enabled forces pool with low-resolve actors, the target has reason to doubt the resolve of the punisher and seek out more informative strategies. Instead of fighting back against robots, therefore, a target might opt to draw blood from civilians. Sadly, there is empirical evidence

[15] Gartzke and Lindsay 2018; Green and Long 2020.
[16] Horowitz 2019; Johnson 2020.
[17] Zegart 2018.

consistent with this mechanism that militants subjected to drone attacks tend to conduct more terrorist attacks against civilians.[18]

In practice it is very unlikely that AI-enabled warfare will be costless. The war in Ukraine demonstrates that both sides of a war can use drones in attrition warfare, exacerbating rather than relieving contests of pain and endurance. Better prediction and information does not necessarily substitute for mass but can rather require greater reliance on massed effects in protracted conflicts.[19] Furthermore, military AI is making human beings more important, not less. As cheaper prediction increases the value of data and judgment—the complements of AI—military institutions and operations tend to become more complex.[20] This is part of a larger historical trend whereby increasing exposure to technological lethality encourages greater dispersion of forces and more complex force employment doctrine.[21] Combined arms coordination in conditions of extreme fog and friction is very difficult, and AI is likely to amplify rather than reduce coordination problems—an important disanalogy from well controlled business or wargaming cases.

The pinnacle of judgment in national security strategy is deciding what is worth killing and dying for, and how much risk to accept in coercive diplomacy. These are hard judgments that AI cannot make, even as AI might help to evaluate intelligence and scenarios to support strategic decision making. Actors who want more influence over the status quo will likely have to accept greater risk of war. Actors who prize strategic stability will likely have to cede some influence in order to reassure and accommodate allies and adversaries alike.

Yet AI also has the potential to exacerbate judgment problems by expanding the number of things to bargain over. If AI inputs improve military power, then influencing those inputs (e.g., access to chips, data, and talent) becomes important. Key nodes in the AI supply chain (like Taiwan's TSMC) might even change the stakes of the conflict by making Taiwan more important to the United States. In the bargaining model of war, judgment determines the demands.

In even the simple bargaining model of war, there is tremendous complexity. Each actor wants to increase its expected gain, but there are many ways to do this, by maximizing power, minimizing costs, maximizing influence, or minimizing uncertainty. These are all desirable goals, but they cannot be achieved at the same time, to the same degree. Preferences about which to prioritize, moreover, are exogenous to the model. Judgments about whether to prioritize power, efficiency, influence, or stability affect in turn the attractiveness of strategies of warfare, intelligence, coercion, or accommodation.[22]

The impact of AI on national security is profoundly indeterminant because AI, as we have seen, can affect power, costs, demands, and uncertainty in different ways, and different actors may make different judgments about how and why to do so. AI is not simply an input to politics, moreover, but politics also shapes the inputs to AI. Precisely because AI has implications for important political

[18] Gartzke and Walsh 2022.
[19] Horowitz 2024.
[20] Goldfarb and Lindsay 2022.
[21] Biddle 2004.
[22] Lindsay and Gartzke 2022; Gartzke and Lindsay 2024.

factors like power, costs, and strategic stability, the technical inputs of AI like data, computing infrastructure, algorithms, and even personnel must become contested as well.

The good news, perhaps, is that simple scenarios of AI robot wars or Chinese military dominance can probably be discounted. But the bad news is that the future of humanity will probably still look a lot like its past: full of violence, exploitation, manipulation, and confusion. If the economics of AI is a dismal science, the politics of AI is even more dismal.

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