AI Arms Races: Implications for Global Stability

*By **Damián Tuset Varela***

Researcher at the University of Jaén. Tutor at the UOC. Head of Section at the Ministry of Foreign Affairs, European Union and Cooperation

DOI: 10.55662/JCIR.2021.1201

Abstract

This study explores the emerging impact of artificial intelligence (AI) technologies on global military dynamics, focusing on how the adoption of AI systems in the defense domain can catalyze new arms races. The implications of these trends for global stability are assessed, identifying specific risks associated with escalation, strategic instability, and the erosion of international norms. Finally, governance and arms control strategies designed to mitigate these risks in the context of international security are proposed.

The integration of artificial intelligence (AI) technologies into military arsenals has ushered in a new era of arms races, with profound implications for global stability. This article examines how the adoption of AI in military applications is redefining defense strategies, accelerating weapons competitions, and posing unique challenges to international security. Through multidisciplinary analysis, risks of escalation and strategic instability are explored, and a framework for governance and arms control adapted to the AI era is proposed.

Keywords: Artificial Intelligence, Arms Races, Global Stability, Arms Control, Military Ethics.

Introduction

Historically, arms races have represented periods of intense innovation and military competition between global powers, often culminating in conflict or the creation of precarious balances of power. The emergence of AI as a transformative technology introduces a new paradigm in this context, offering unprecedented capabilities but also presenting unique challenges for international security and stability. This article seeks to examine how the integration of AI into military systems is shaping the global security landscape and what measures can be taken to prevent escalation and foster lasting stability.

In the 21st century, the race for military superiority has taken on a new dimension with the development and integration of artificial intelligence into defense systems. This evolution represents not only a technological change but also a strategic shift that could alter the international balance of power. Global powers are investing significantly in military AI research and development, seeking to gain tactical and strategic advantages. This article aims

to unravel the complexities of this new era of AI arms races and its potential implications for global peace and security.

Theoretical framework

AI in the military context refers to the use of algorithms and systems capable of performing tasks that normally require human intelligence, such as decision making, pattern recognition and machine learning, applied to defense and combat contexts. Global stability, on the other hand, is understood as a state of international peace and security, where conflicts and crises are controlled or prevented through cooperation and governance mechanisms. In this framework, AI arms races represent an emerging challenge, driven by the desire of states to maintain or improve their strategic position through the adoption of advanced technologies.

Development and Military Applications of AI

The integration of AI into military applications ranges from non-lethal autonomous systems, such as surveillance drones, to potential lethal autonomous weapons systems (LAWS). Countries such as the United States, China and Russia lead research and development in this area, seeking to capitalize on the strategic advantages that AI can offer. However, the proliferation of these technologies raises significant questions about security, ethics, and global stability, especially in terms of rapid escalation and miscalculations in conflicts.

The application of AI in the military scope ranges from advanced surveillance and reconnaissance systems to autonomous combat platforms and battle management systems. These technologies promise to revolutionize the way military operations are planned and executed, offering information processing and decision-making capabilities at speeds and with precisions previously unattainable. However, this advance also introduces new ethical and strategic challenges, including the risk of unintended conflicts and the moral dilemma of delegating lethal decisions to machines.

Implications for Global Stability

The adoption of AI systems in the military carries with it significant risks of instability. The possibility of rapid escalation, where autonomous systems can act faster than human or diplomatic controls can handle, is a primary concern. Furthermore, the ambiguity in the attribution of cyber-attacks and the potential strategic instability that autonomous systems can introduce to the existing balance of power require careful and strategic consideration.

The potential for AI technologies to transform the art of war raises fundamental questions about strategic stability. The ability to execute operations at superhuman speeds could lead

to rapid escalations in conflicts, overcoming traditional war prevention and control mechanisms. Furthermore, the difficulty in attributing attacks carried out by autonomous systems complicates international relations and increases the risk of catastrophic misunderstandings. This segment of the article explores how these, and other issues related to military AI could affect global peace and what measures could be taken to mitigate such risks.

Governance and Arms Control in the Age of AI

To mitigate the risks associated with AI arms races, it is crucial to develop international governance frameworks and arms control agreements that adapt to the digital age. This includes updating existing agreements to address the unique capabilities and challenges of AI-based systems, as well as promoting transparency, international cooperation, and ethical research in the development of military AI technologies.

The need for international frameworks for the regulation of military AI is more critical than ever. This section proposes a multifaceted approach to the governance of AI in military applications, including transparency in the development and deployment of AI systems, the creation of international standards for their use and limitations, and the establishment of strategic dialogue channels to prevent escalation and build trust between nations. The role of international organizations, bilateral and multilateral agreements, and civil society in building an arms control regime adapted to the challenges of the digital age is analyzed.

Conclusion

AI arms races present complex challenges to global stability, with potential risks of escalation and conflict. However, through international cooperation and the development of governance frameworks adapted to contemporary technological realities, it is possible to mitigate these risks and foster a more stable international security environment. Collective action, diplomacy, and ethical regulation will be critical to navigating the future of global security in the age of AI.

References

1. Sarkin, J. J., & Sotoudehfar, S. (2024). Artificial intelligence and arms races in the Middle East: the evolution of technology and its implications for regional and international security. *Defense & Security Analysis*, 1-23.
2. Sandels, C. M. B. (2020). *The beginning of Artificial Intelligence arms race: A China-USA security dilemma case study* (master's thesis, Universidade de Évora).

3. Na'inna, A. M., & Anti-Dwanso, V. (2022). Arms race in the 21st century: consequences and mitigating measures. *Global Journal of Social Sciences*, *21*(2), 45-76.
4. Kühn, U. (2023). Strategic Stability in the 21st Century: An Introduction. *Journal for Peace and Nuclear Disarmament*, *6*(1), 1-8.
5. Steff, R. (2023). Artificial intelligence and the future of warfare: the USA, China, and strategic stability: by James Johnson, Manchester: Manchester University Press, 2021, $100.20, 240 pp., ISBN: 1526145057.
6. Steff, R. (2023). Artificial intelligence and the future of warfare: the USA, China, and strategic stability: by James Johnson, Manchester: Manchester University Press, 2021, $100.20, 240 pp., ISBN: 1526145057.
7. Carayannis, E. G., & Draper, J. (2023). Optimising peace through a Universal Global Peace Treaty to constrain the risk of war from a militarised artificial superintelligence. *AI & society*, *38*(6), 2679-2692.
8. Williams, H. (2021). Asymmetric arms control and strategic stability: Scenarios for limiting hypersonic glide vehicles. In *Emerging Technologies and International Stability* (pp. 195-219). Routledge.
9. Maas, M. M. (2019). Innovation-proof global governance for military artificial intelligence? How I learned to stop worrying, and love the bot. *Journal of International Humanitarian Legal Studies*, *10*(1), 129-157.
10. Rickli, J. M., & Mantellassi, F. (2023). Artificial intelligence in warfare: military uses of AI and their international security implications. In *The AI wave in defence innovation* (pp. 12-36). Routledge.
11. Scientists, A. (2018). 11. The destabilizing prospects of artificial intelligence for nuclear strategy, deterrence, and stability.
12. Bega, M. (2023). The New Arms Race between China and the US: A Comparative Analysis of AI-Powered Military and Economic Pursuits. *Europolity: Continuity & Change Eur. Governance*, *17*, 75.
13. Hunter, L. Y., Albert, C. D., Henningan, C., & Rutland, J. (2023). The military application of artificial intelligence technology in the United States, China, and Russia and the implications for global security. *Defense & Security Analysis*, *39*(2), 207-232.
14. Shahzad, K., Anwar, A., & Waqas, A. (2023). The Impact of Artificial Intelligence on Future Warfare and Its Implications for International Security. *Asian Innovative Journal of Social Sciences and Humanities*, *7*(3).
15. Dahab, G. O. (2019). The weaponization of artificial intelligence (AI) and its implications on the security dilemma between states: could it create a situation like" mutually assured destruction"(MAD).
16. Kramskyi, S., Guo, X., Chmutova, I., Kryvobok, K., & Lozova, T. (2024). The race for global leadership and its risks for world instability: Technologies of controlling and mitigation. *Research Journal in Advanced Humanities*, *5*(1), 178-191.
17. Isard, W. (1989). *Arms races, arms control, and conflict analysis: contributions from peace science and peace economics*. Cambridge University Press.

18. Harris, B. (2022). Making the World Safer for Competition: Racing Theory and Why States Engage in Arms Control.
19. Scharre, P. (2021). Debunking the AI arms race theory (Summer 2021).
20. Wright, N. (2019). Artificial Intelligence's Three Bundles of Challenges for the Global Order. *Artificial Intelligence, China, Russia, and the Global Order*.