

PROBLEMS OF APPLYING MODERN MILITARY TECHNOLOGIES IN CHINA, INDIA, RUSSIA AND NATO

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Abstract: This article analyzes the pressing challenges of implementing modern digital technologies (artificial intelligence, cybersecurity, drones) in the armed forces. Using the cases of China, India, Russia, and the NATO bloc, it examines technological limitations, strategic competition, legal frameworks, and ethical concerns. The study systematically highlights the main issues faced by each state or alliance in integrating digital technologies into their military structures.

Keywords: artificial intelligence, cybersecurity, drones, military strategy, legal and ethical challenges.

Introduction

The 21st century is characterized by the extensive adoption of digital technologies in the military domain. Artificial Intelligence (AI), cybersecurity systems, and Unmanned Aerial Vehicles (UAVs or drones) are fundamentally reshaping the profile of armed forces. However, this process brings not only new opportunities but also strategic, technological, and legal challenges. Therefore, this article analyzes the principal problems associated with the military application of contemporary digital technologies, taking the experiences of China, India, Russia, and the NATO bloc as illustrative cases.

There is a substantial body of research on modern military technologies. Sources such as the RAND Corporation, SIPRI, and NATO Review examine the influence of digital technologies on military strategy. Analyses from Chatham House and the Carnegie Endowment place particular emphasis on the implications of artificial intelligence for global security. Publications addressing the experiences of India and China highlight the capacities of national defence industries and issues of technological dependency. Overall, the existing literature indicates that alongside technical advancement, digital military transformation raises significant ethical and legal concerns.

Modern digital technologies (artificial intelligence, cybersecurity tools, drones, and others) are driving revolutionary change in the military sphere. At the same time, states such as China, India, and Russia, as well as military alliances like NATO, face a range of problems when integrating these technologies into their armed forces. These challenges span technological, strategic, legal, and ethical dimensions. Below, the main problems in these areas are briefly outlined for each country or alliance.

Methods and Discussion

We studied the problems of the application of military technologies of the Republic of China:

Technological Challenges: China faces significant uncertainty in assessing the expected effectiveness and scope of Artificial Intelligence (AI) integration within its military. The unpredictable pace and direction of AI development make it difficult to accurately evaluate potential outcomes. Therefore, it is essential to ensure the proper integration of these technologies into the structure and doctrine of the People's Liberation Army (PLA). Without such alignment, achieving the anticipated advantages of AI adoption will remain difficult [1].

Strategic Challenges: China's rapid progress in AI has raised concerns about triggering a regional arms race. Competition for leadership in military AI could, in the near future, result in a new type of arms race centered around intelligent technologies. Moreover, the absence of comprehensive international agreements regulating the control of autonomous weapons introduces uncertainty in maintaining strategic stability—some analysts argue these technologies may increase tensions, while others see them as potential stabilizing factors [2].

Legal Challenges: The insufficient development of an international legal framework for limiting autonomous weapons poses a critical issue for China as well. For instance, in 2018, China proposed within the United Nations to prohibit only the use of lethal autonomous weapons systems (LAWS), while refraining from supporting restrictions on their development and production. This demonstrates China's cautious stance regarding the analysis and regulation of such weapon systems [3].

Ethical Challenges: Chinese military analysts actively discuss ethical dilemmas associated with AI use—particularly accountability issues when autonomous weapons cause harm. However, since the PLA operates directly under the control of the Chinese Communist Party (CCP), the key challenge lies in maximizing the military benefits of AI while preserving absolute political control by the CCP. Consequently, the ethics of AI use in China's military context are closely linked to political loyalty principles, and skepticism remains regarding

whether AI systems can ever be “reliably autonomous” without compromising central authority [4].

We studied the problems of the application of military technologies of the Republic of India:

Technological Challenges: India encounters multiple barriers to integrating AI and unmanned technologies into its armed forces. A major obstacle is the country’s continued dependence on foreign suppliers for advanced military technologies, which constrains the development of indigenous AI capabilities. Domestic research and development remain limited, and effective collaboration between the private sector and military research institutions is still underdeveloped [5]. As a result, the creation of a robust local ecosystem for AI-based defense products and drones progresses slowly [5].

Strategic Challenges: India also faces the strategic challenge of keeping pace with its regional rivals—China and Pakistan—in the race for digital military superiority. China’s advancements in AI-driven defense and drone technologies, coupled with Pakistan’s acquisition of new weaponry with Chinese assistance, have raised concerns in New Delhi. To maintain competitiveness, India must continuously innovate within its defense sector. This involves not only strengthening domestic technological capacity but also expanding international partnerships [6].

Legal Challenges: Adherence to legal norms in the deployment of AI-based weapons remains a priority for the Indian military. As AI technologies are introduced into combat operations, ensuring compliance with international humanitarian law becomes essential. One unresolved issue is determining who bears legal responsibility for decisions made by AI systems in lethal engagements. Although India strives to comply with international legal standards, its national legislation specifically regulating the use of AI weapons is still in the formative stage [7].

Ethical Challenges: India also recognizes the ethical risks associated with AI-based weapon systems. Public concern has grown over the possibility of autonomous systems making life-and-death decisions without human intervention and the potential for such technologies to fall into the hands of terrorist groups. Consequently, Indian government officials emphasize the need to employ AI in defense and national security “in accordance with ethical principles,” insisting that human oversight and moral accountability must be preserved in every decision involving AI-enabled weaponry [8].

We studied the problems of the application of military technologies of the Russian Federation:

Technological Challenges: Russia's advancement in digital military technologies faces significant obstacles due to external sanctions and resource shortages. Western sanctions have restricted Russia's access to advanced microchips and electronic components, while a notable outflow of highly qualified IT specialists has further exacerbated the issue [9]. These factors undermine Russia's long-term competitiveness in the field of artificial intelligence. As a result of such technological constraints, Russia encounters serious difficulties in the large-scale deployment of AI and drones in its armed forces—particularly due to its continued dependence on foreign components.

Strategic Challenges: Russia perceives artificial intelligence as a strategic instrument capable of “equalizing the global military balance.” President Vladimir Putin's well-known statement in 2017—“Whoever becomes the leader in AI will rule the world”—reflects this outlook [10][11]. Consequently, Moscow has been allocating substantial resources to AI and autonomous weapons development, while firmly opposing any form of international restriction in this domain. Even when other countries have proposed bans on lethal autonomous weapons systems (LAWS), Russia has declined to support them. This approach indicates its strategic intent to maintain or restore military parity with rival powers, particularly the United States.

Legal Challenges: Russia's legal stance on AI-based weaponry diverges considerably from that of the broader international community. Moscow argues that existing international humanitarian law (IHL) provisions—namely, the laws of armed conflict—are sufficient to regulate AI-enabled weapons. Therefore, it sees no need for new international treaties. For example, when several states at the United Nations proposed a total ban on autonomous weapons, Russia and certain other major powers refused to endorse the initiative. As a result, no global prohibition on LAWS currently exists [12]. At the national level, Russia also lacks strict legal constraints on the development or deployment of such weapons.

Ethical Challenges: From an ethical standpoint, the Russian military establishment tends to place less emphasis on transparency and human oversight in the use of AI for combat purposes. Rather than prioritizing the ethical monitoring of AI systems, Russia focuses more on their practical battlefield effectiveness. For instance, there is a growing tendency to grant autonomous drones and robotic systems a degree of operational independence in performing combat missions. Although this raises serious ethical concerns—such as accountability for

machine errors or unintended casualties—the Russian leadership appears more inclined to test and operationalize these technologies in practice rather than restrict their development.

We studied the problems of the application of military technologies of the NATO:

Technological Challenges: One of the main challenges within the NATO alliance in implementing digital military technologies is achieving technological interoperability among member states with differing capacities and standards. For instance, the alliance's current fleet of reconnaissance drones is insufficient for high-intensity conflicts, and coordinating their effective use in environments characterized by enemy electronic warfare remains difficult. The lack of full compatibility between different nations' unmanned aerial vehicles (UAVs) and the absence of unified technical standards further complicate the collective use of drones and AI capabilities across the alliance. Consequently, NATO continues to work toward harmonizing and integrating the technological capacities of its member countries when introducing new systems and innovations.

Strategic Challenges: For NATO, maintaining technological superiority in the global competition for digital military dominance is of strategic importance. Russia's war against Ukraine has vividly demonstrated how drones and AI can drastically transform the nature of warfare. Advanced technologies are spreading rapidly, and such capabilities are no longer exclusive to NATO countries. The diffusion of drone and AI technologies to non-Western states is weakening the traditional technological advantage of the West. Therefore, NATO must develop a comprehensive strategy that accounts for the growing military AI, cyberweapon, and drone capabilities of its adversaries—particularly Russia and China. This strategy emphasizes information sharing, collaborative research and development, and joint military exercises to continuously test and refine emerging technologies.

Legal Challenges: Ensuring the lawful use of AI-enabled weapons systems is a key concern for NATO and its member states. While compliance with international humanitarian law (IHL) is mandatory in all circumstances, enforcing these norms in systems that make autonomous decisions is particularly complex. For example, when autonomous weapons select targets without human intervention or when AI conducts cyberattacks independently, the risk of violating legal norms—such as those protecting civilians and prohibiting indiscriminate damage—increases significantly[13][14]. Consequently, NATO has called for the integration of legal and ethical safeguards from the earliest stages of AI system development. In other words, the alliance stresses the need for all member states to align their national frameworks on AI ethics and legality, and to adopt shared principles ensuring accountability and compliance.

Ethical Challenges: Ethical debates surrounding the use of AI and robotic weapons are also prominent within NATO countries. A key concern is the moral implication of delegating life-and-death decisions to autonomous systems. Experts within the alliance actively discuss issues of accountability and human dignity in the use of so-called “killer robots,” or lethal autonomous weapons that operate without direct human oversight. Moreover, the possibility that AI algorithms may act erroneously or based on conflicting data—leading to harm to innocent civilians—presents new ethical dilemmas for military conduct. Accordingly, NATO leadership consistently emphasizes the principle of “human primacy” in AI use and strict adherence to international legal norms. However, developing and operationalizing concrete mechanisms to ensure these ethical and legal safeguards remains an urgent and ongoing task.

Results

The above analysis is based on credible research and analytical sources, with each argument supported by verified references (source numbers are indicated within the text). For example, the assessment of China’s military AI integration is derived from The George Washington University International Affairs Review, while India’s initiatives are documented in reports by the IMPRI Impact and Policy Research Institute. Information regarding Russia and NATO is drawn from publications by MindFoundry, CEPA (Center for European Policy Analysis).

Conclusion

The analysis demonstrates that the application of digital technologies in the military sphere brings not only significant opportunities but also serious challenges. While China strives for global leadership, India faces the task of achieving technological self-sufficiency. Russia, operating under sanctions, seeks to maintain competitiveness, whereas NATO must resolve issues of interoperability and legal regulation. Therefore, at the global level, it is essential to harmonize the legal and ethical frameworks governing the use of artificial intelligence (AI) and drones.

The examples of China, India, Russia, and NATO clearly show that the integration of digital technologies into defense systems is not merely a source of innovation and power but also a driver of new strategic, ethical, and legal dilemmas:

China — is pursuing global technological and military leadership.

India — is striving to achieve technological independence.

Russia — is seeking strategic parity under the constraints of international sanctions.

NATO — is working to ensure coherence, interoperability, and adherence to legal norms among its member states.

Thus, the central task of the 21st century is not only to enhance the efficiency of digital military technologies but also to synchronize their legal and ethical boundaries at the global level, ensuring that technological progress aligns with principles of responsibility, security, and international law.

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