

THE IMPACT OF ROBOTICS ON MODERN MILITARY CONFLICTS

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Modern warfare is undergoing a profound transformation, and at the forefront of this shift is the integration of robotics into military operations. Robotics, encompassing a wide range of autonomous and remotely operated systems, is changing the way conflicts are waged and is reshaping the dynamics of the battlefield.

One of the most pressing issues associated with the introduction of robotics into warfare is the deployment of autonomous weapon systems. These systems, equipped with the capability to operate independently, raise critical ethical questions about the use of lethal force without direct human control. For example, Ronald C. Arkin in his work emphasizes the need to address these ethical concerns.

Arkin argues that it is imperative to embed ethical guidelines and mechanisms within the design and behavior of autonomous weapon systems. This approach ensures that such systems adhere to internationally recognized norms and principles, thereby preventing unintended consequences and potential violations of international humanitarian law (Arkin, 2012, p. 149).

Drones, often referred to as Unmanned Aerial Vehicles (UAVs), have emerged as a symbol of the evolving nature of warfare. Their extensive use in various military operations has significantly altered the landscape of conflict. Research conducted by Peter L. Bergen and Katherine Tiedemann provides valuable insights into the widespread use of drones.

Drones have brought about a paradigm shift in military operations. They offer the advantage of precision strikes and real-time surveillance while reducing the risk to military personnel. However, their deployment has sparked considerable debate, primarily concerning their legality, proportionality, and the potential for collateral damage. The ability to conduct targeted operations from remote locations challenges

the conventional rules of engagement and calls for a reevaluation of international laws governing armed conflict (Bergen, Tiedemann, 2013, p.33-40).

The use of robotic systems in maritime operations is another aspect of significance. In his report, Dikmen explores the growing role of unmanned naval systems in enhancing maritime security.

Robotic underwater vehicles and autonomous surface vessels are being employed for various purposes, including mine clearance, reconnaissance, and anti-submarine warfare. These systems have proven to be instrumental in safeguarding maritime routes and gathering critical information. As autonomous systems continue to shape maritime security, new doctrines and strategies are emerging to optimize their use effectively (Dikmen, p.165).

In addition to aerial and maritime robotics, land-based robotic systems are playing an increasingly vital role in modern military conflicts. These systems, including remotely operated ground vehicles, provide a means of executing missions in hazardous and difficult-to-access environments.

Robotic systems designed for ground operations can be used for tasks such as explosive ordnance disposal, surveillance, and reconnaissance. They minimize the risk to human personnel while increasing mission success rates. The development of modular and adaptable ground robots ensures that they can be customized for specific mission requirements, making them versatile tools for military forces.

In the context of the Ukraine-Russia conflict (from 2022), the utilization of robotics in warfare has become increasingly prevalent. Ukraine employs a variety of robotic systems to enhance their military capabilities. Ground-based drones are used for reconnaissance, providing real-time intelligence without risking human lives. UAV groups have been deployed for synchronized attacks and disruption of supply lines. Robotic combat units operate in direct combat roles, particularly in urban warfare scenarios. Autonomous convoy support systems secure supply routes and protect logistics. Remote-operated artillery systems offer precise and devastating firepower. These real-world applications illustrate the significant role that robotics now play in modern military conflicts, providing strategic advantages and

necessitating ongoing ethical and tactical adaptation.

The integration of robotics into modern military conflicts is profoundly reshaping the conduct of warfare. Autonomous weapon systems raise ethical questions, particularly regarding their decision-making capabilities and the potential for misuse. Drones are altering the way wars are fought, raising legal and ethical concerns. In maritime operations, robotic systems enhance the collection of crucial data and improve security, while land-based systems increase mission success rates and reduce risks to personnel.

So, the impact of robotics on modern military conflicts is undeniable, and its implications are far-reaching. It is essential for policymakers, military strategists, and the international community to address the ethical, legal, and strategic challenges posed by the growing role of robotics in warfare. Responsible and ethical use of these technologies is crucial to ensure that they enhance security and contribute positively to global peace, rather than exacerbating the complexities of conflict. As technology continues to advance, the dynamic relationship between robotics and modern military conflicts will continue to evolve, shaping the future of warfare.

References:

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