

CLAUSEWITZ IN THE ERA OF AUTONOMOUS WAR: THE RELEVANCE OF CLASSICAL STRATEGIES IN THE DYNAMICS OF TECHNOLOGICAL CONFLICT

CLAUSEWITZ DI ERA PERANG OTONOM: RELEVANSI STRATEGI KLASIK DALAM DINAMIKA KONFLIK TEKNOLOGI

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Abstract – Carl von Clausewitz's strategic thinking, in *On War*, remains a fundamental reference in the study of war and military strategy. However, the emergence of advanced technologies such as drones, artificial intelligence (AI), autonomous weapons, and cyber warfare has introduced significant challenges to the classical application of Carl von Clausewitz's thinking. The purpose of this research is to revisit the relationship between four core Clausewitzian concepts: the trinity of war, the fog of war, political dominance, and the center of gravity, by reinterpreting these concepts in the context of technology driven conflict. Through a qualitative approach based on literature and theoretical criticism, this study also evaluates the limitations of Clausewitzian theory using the Russian-Ukrainian war as a case study that illustrates the tension between classical strategy and autonomous warfare. Although the tools and methods of warfare have evolved, the fundamental nature of war as a violent and uncertain political phenomenon remains unchanged. The findings of this research confirm that Clausewitz's principles still hold strategic value when applied contextually and adaptively. This article offers an original cross-disciplinary conceptual framework that integrates classical theory with AI-based conflict, ethics, and technological transformation, providing a unified analytical perspective for understanding future warfare.

Keywords: Artificial intelligence, autonomous warfare, Clausewitz, cyber conflict, military strategy.

Abstrak – Pemikiran strategis Carl von Clausewitz, dalam *On War*, tetap menjadi rujukan fundamental dalam kajian perang dan strategi militer. Namun, kemunculan teknologi mutakhir seperti drone, kecerdasan buatan (AI), senjata otonom, dan peperangan siber menghadirkan tantangan signifikan terhadap penerapan klasik dari pemikiran Carl von Clausewitz. Tujuan dari penelitian meninjau kembali hubungan empat konsep inti Clausewitzian: trinitas perang, kabut perang, dominasi politik, dan pusat gravitasi, dengan menafsirkan ulang konsep-konsep tersebut dalam konteks konflik yang digerakkan oleh teknologi. Melalui pendekatan kualitatif berbasis literatur dan kritik teoretis, penelitian ini juga mengevaluasi batasan teori Clausewitzian dengan menggunakan perang Rusia dan Ukraina sebagai studi kasus yang menggambarkan ketegangan antara strategi klasik dan perang otonom. Meskipun alat dan metode peperangan telah berevolusi, hakikat dasar perang sebagai fenomena politik yang penuh kekerasan dan ketidakpastian tetap tidak berubah. Temuan penelitian ini menegaskan bahwa prinsip-prinsip Clausewitz masih memiliki nilai strategis apabila diterapkan secara kontekstual dan adaptif. Artikel ini menawarkan kerangka konseptual lintas bidang yang orisinal, yang mengintegrasikan teori klasik dengan konflik berbasis AI, etika, dan transformasi teknologi, sehingga memberikan perspektif analitis terpadu untuk memahami peperangan masa depan.

Kata kunci: Kecerdasan buatan, peperangan otonom, Clausewitz, konflik siber, strategi militer.

Introduction

Carl von Clausewitz remains one of
the most influential military thinkers in

the history of warfare. Through his monumental work, *Vom Kriege* (On War), he introduced fundamental strategic concepts such as the trinity of war, the fog of war, political domination, and the center of gravity. For centuries, these ideas have provided the foundation for understanding military strategy and tactics.

However, the rise of modern technologies such as drones, autonomous robots, artificial intelligence (AI), and cyber warfare has significantly transformed the paradigm of conflict, posing challenges to the traditional application of Clausewitz's theories (Echevarria, 2007). Recent studies further emphasize how AI-enabled warfare generates new forms of instability and unpredictability, echoing Clausewitz's concerns about friction and the limits of control in war (Bracey, 2025).

Digital technologies have revolutionized not only the tools and methods of warfare but also the interactions among the key actors in conflict: the government, the military, and society. Against this backdrop, a pressing question arises: can Clausewitz's classical principles still be meaningfully applied on battlefields increasingly

shaped by automation, algorithms, and decentralized control systems?

This study aims to assess the applicability and adaptability of Clausewitz's four core principles: the trinity of war, the fog of war, political dominance, and the center of gravity, within the context of technology-based autonomous warfare. By employing a literature-based theoretical and critical approach, this paper bridges the legacy of classical strategic thought with the demands of digital age conflict, while upholding the essential premise that war remains a political phenomenon marked by violence, uncertainty, and contestation.

Although previous studies have examined Clausewitz's ideas in the context of cyber operations or information warfare, for instance, Dimitriu (2020), who highlighted the expansion of Clausewitz's concept of *Politik* into domestic power dynamics and fluid modern conflicts, this article takes a different approach. It proposes an integrated framework that connects Clausewitz's four principles with the operational realities of autonomous systems, AI-driven warfare, and digital infrastructures. In doing so, this study situates itself within a broader conceptual dialogue that both

encompasses and extends beyond cyber-specific interpretations.

To guide this inquiry, the central research question is posed as follows: To what extent do Clausewitz's classical principles, namely, the trinity of war, the fog of war, political dominance, and the center of gravity, remain relevant and adaptable to the realities of technology-based autonomous warfare? This question aims to test the durability of Clausewitzian theory, despite its origins in the Napoleonic era, as a conceptual tool for interpreting and responding to the evolving nature of digital and automated conflict.

Research Methods

This study adopts a qualitative approach, employing a structured literature review and theoretical-critical analysis. To frame this approach, Templier & Paré (2015) emphasize that such reviews aim not only to synthesize existing studies but also to develop new conceptual frameworks through critical interpretation, configuration, and thematic integration. In line with, this review also highlights the importance of the researcher's analytical reasoning and reflexivity in assessing the relevance, methodological consistency, and theoretical contributions

of each selected study. The focus is on the conceptual exploration of Carl von Clausewitz's strategic principles in the context of modern warfare, which has undergone significant transformations due to technological advances, including drones, artificial intelligence, autonomous robots, and cyber warfare. This methodological choice aligns with the study's conceptual orientation, which does not rely on empirical field data.

The sources used in this study consist of primary and secondary literature. The primary literature includes Clausewitz's original work, *On War* (Clausewitz, 1976), which provides the primary theoretical foundation for the field. Secondary literature comprises books, academic journal articles, and contemporary publications relevant to the topic, particularly those by Echevarria (2003, 2007), Cummings (2017), Rid (2012), Scharre (2018), and Horowitz (2018) offer critical perspectives on the intersection of military strategy and technological development.

The selection of references was conducted through purposive sampling, focusing on scholarly publications, particularly peer-reviewed journal articles and institutional reports published between 2020 and 2025 to ensure

conceptual relevance and recency. Priority was given to sources that explicitly examine the intersections between military strategy, technological transformation, and Clausewitzian theory.

This study employs a theory-driven, critical synthesis approach (Templier & Paré, 2015), which facilitates the reinterpretation of classical concepts through structured engagement with contemporary literature. Rather than merely summarizing existing studies, this method enables the construction of an integrative framework that connects Clausewitz's four core principles with the emerging realities of warfare shaped by artificial intelligence, autonomous systems, and cyber capabilities. This analysis is situated within the context of modern military technological developments and focuses on how these dynamics affect the interpretation and application of Clausewitzian principles.

This article is limited to the analysis of Clausewitz's four main concepts, without attempting to encompass his entire theoretical framework. It aims to enrich our understanding of the evolving character of war in the digital era, while positioning itself in comparative dialogue with prior studies on Clausewitz and digital conflict. Additionally, the Russia-

Ukraine conflict is used as an empirical illustration to assess the adaptability of Clausewitzian theory to autonomous military technologies, particularly drones. Although no primary data analysis was conducted, the use of real-world examples strengthens the conceptual validity of the study.

Results and Discussion

Reinterpretation of the Trinity of War

The first Clausewitzian principle examined in this study is the trinity of war, which remains central to understanding how conflict is shaped by the interaction of state, military, and society in a digitized environment.

Clausewitz (1976) conceptualized war as the interaction of three main elements: government, military, and society, referred to as an extraordinary trinity. Together, these forces form a dynamic balance that determines the direction and character of conflict. In contemporary warfare, however, the relationship among these elements has undergone significant structural change.

Governments now make strategic decisions supported by real-time data generated by artificial intelligence systems (Horowitz, 2018). As demonstrated by Saylor (2024), the integration of

autonomous systems and AI has reduced the deliberative role of states and societies in strategic decision-making, thereby challenging the classical balance envisioned in Clausewitz's trinity. Within the military sphere, dependence on automated systems such as drones and autonomous robots has not only reshaped the structure of combat operations but also introduced new vulnerabilities, particularly susceptibility to cyberattacks.

Civil society, meanwhile, has become indirectly involved in warfare through the digital information environment. Public opinion is increasingly shaped by online narratives, propaganda, and disinformation campaigns, many of which are amplified by AI algorithms (Rid, 2012). Thus, while the Clausewitzian trinity remains relevant, the intensity and form of its interactions have undergone profound transformation. Building on this, Cole (2020) interprets Clausewitz's trinity as a complex adaptive system, in which people, the military, and government interact in non-linear ways. This perspective emphasizes that their interactions generate emergent behaviors that are both intelligible and difficult to predict, offering a valuable

lens for interpreting the unpredictability of modern conflict.

The Fog of War in the Age of Data and Disinformation

The second Clausewitzian concept examined in this study is the fog of war, which remains vital for understanding uncertainty and strategic blindness in battlefields increasingly shaped by information technologies.

Clausewitz (1976) employed the "fog of war" as a metaphor to convey the uncertainty, chaos, and limited knowledge inherent in combat. Modern technologies such as drones, advanced sensors, and digital surveillance systems promise greater operational transparency. However, in practice, these advances have given rise to a new form of "digital fog." Massive volumes of unstructured data, when poorly analyzed, can hinder rather than improve decision-making. Moreover, disinformation disseminated through cyberattacks and social media manipulation further thickens this fog of war (Valeriano et al., 2018).

The challenge is especially evident in the ongoing conflict in Ukraine, where coordinated cyberattacks and disinformation campaigns have targeted

critical infrastructure and media outlets, disrupting access to reliable information (Duguin & Pavlova, 2023). These dynamics are further amplified by cognitive warfare tactics powered by artificial intelligence, which shape human decision-making through personalized disinformation and psychological manipulation (Van Diggelen et al., 2025).

Winczewski (2023) reinforces this view, noting that while drones and real-time intelligence improve battlefield awareness, the fog of war persists. Rather than being eliminated, it is reconfigured and sustained by disinformation campaigns, data overload, and emotional bias, all of which complicate objective strategic assessments.

In this context, Taddeo (2016) emphasizes that digital disinformation should be understood as a form of strategic aggression that is invisible yet has tangible consequences for the dynamics of conflict. At the same time, the growing reliance on algorithms in intelligence processes and military decision-making introduces risks of systemic bias and error, particularly when AI models are poorly calibrated or built upon unacknowledged assumptions.

Accordingly, the fog of war does not disappear in the technological era; instead, it transforms from ignorance rooted in limited information to confusion fueled by information overload and deliberate data manipulation. This view is echoed by Tyson Brown (2024), who cautions that efforts to automate military intelligence through generative AI risk mistaking tactical noise for strategic signal. AI systems, he warns, often “hallucinate” coherence in contexts defined by uncertainty and deception, thereby compounding rather than resolving the problem of the fog of war.

The Challenge of Maintaining Political Dominance in the Era of Military Automation

One of Clausewitz’s central principles was that war must remain subject to political control. He famously argued that war is a continuation of politics by other means; therefore, military strategy should always serve broader political objectives. However, in the era of automated weapon systems, the line between strategic planning and tactical execution is becoming increasingly blurred.

Boulanin & Verbruggen (2017) identify multiple levels of autonomy in modern weapon systems, each of which directly affects the degree of political oversight in military decision-making.

Erickson (2021) illustrates how Clausewitz's notion of political primacy remains essential for understanding cyber conflicts, citing Russia's SolarWinds hack as an example of a strategy designed to achieve political objectives without kinetic force by deliberately generating strategic friction and disrupting decision-making processes. Similarly, the ability to conduct near-instantaneous strikes with armed drones enables military action to bypass in-depth political deliberation (Cummings, 2017).

This dynamic reflects what McFarland (2022) describes as the erosion of political control, replaced by operational trust in autonomous systems, where command responsibility becomes dispersed across opaque algorithmic decisions. In some cases, autonomous weapons may even act beyond human oversight, heightening the risk that military operations diverge from the political objectives intended to guide them.

The presence of non-state actors further complicates this landscape.

Hacker groups and digital militias often operate outside the reach of formal political authority, yet their actions significantly shape conflict dynamics. A European Parliament report highlights how state-backed and volunteer cyber collectives, such as KillNet and the IT Army of Ukraine, have blurred the boundaries between civilians and combatants in cyberspace, raising serious challenges to legal accountability (Duguin & Pavlova, 2023). Echoing this concern, Tsotniashvili (2024) stresses the urgent need for updated legal and ethical frameworks tailored to cyber conflict, as traditional rules of engagement struggle to remain effective in an era defined by rapid automation and uncertain attribution.

In this context, Clausewitz's principle of political dominance is not obsolete. Instead, it demands renewed institutional mechanisms and adaptive legal doctrines to ensure its relevance and operability within today's algorithmic battlespace.

The Evolution of the Center of Gravity in Technological Conflict

The fourth and final Clausewitzian principle examined in this study is the center of gravity, an analytical

construction used to identify the focal point of an adversary's power, which remains critical in both kinetic and non-kinetic dimensions of modern warfare.

The concept of the center of gravity, as defined by Clausewitz, denotes the primary source of an enemy's strength an element that, if neutralized, would substantially diminish its capacity to wage war (Echevarria, 2003). In conventional warfare, this center of gravity typically takes the form of a major combat force, headquarters, or a political leader. However, in a modern conflict landscape that relies heavily on digital infrastructure and information systems, the center of gravity is no longer purely physical.

Communication networks, logistics systems, and energy infrastructure are high-value strategic targets due to their systemic impact and capacity to disrupt entire operational networks. An attack on these elements can lead to operational paralysis, even without a confrontation on the battlefield. In the context of information warfare, public opinion can also function as a center of gravity that determines the direction of legitimacy and sustainability of conflicts (Arquilla & Ronfeldt, 1993). Davison (2018) states that autonomous weapon systems

extend the target spectrum to the digital and non-kinetic realms, thereby demanding a reinterpretation of the classic military concept of center of gravity.

Šlebir (2022) deepens this reinterpretation by identifying seven core dimensions that recur in the strategic literature, such as leadership, ideology, public morale, and legitimacy, emphasizing that the center of gravity in modern warfare often transcends tangible entities and includes abstract yet decisive elements of societal cohesion. Therefore, the concept of the center of gravity in Clausewitzian doctrine needs to be expanded to include the digital, psychological, and cognitive dimensions of the autonomous era warfare.

Yet, as Meyer (2022) cautions, the contemporary doctrinal adoption of the center of gravity concept often suffers from a lack of coherent theoretical anchoring, resulting in conceptual ambiguity and inconsistent operational applications, especially in hybrid and technologically complex conflict environments.

Ethics and Law in Modern Military Technology

The rise of autonomous systems and AI-driven military operations introduces profound ethical and legal dilemmas. A central concern is accountability: when autonomous systems cause harm, responsibility becomes dispersed across operators, commanders, and even algorithm developers. Traditional principles of international humanitarian law, such as distinction and proportionality, are increasingly difficult to uphold when decision-making is delegated to AI systems (Scharre, 2018).

Furthermore, the deployment of dual-use technologies and autonomous weapons outside conventional military frameworks raises complex questions regarding legitimacy and the potential for escalation. Both the International Committee of the Red Cross (ICRC, 2021) and the Stockholm International Peace Research Institute (Boulain et al., 2020) emphasize that meaningful human control is crucial to prevent unintended consequences. Legal scholars, including Yeremyan & Yeremyan (2022), argue that classical doctrines like *jus ad bellum* and *jus in bello* face limitations in attributing intent or responsibility in cyberspace.

In this context, strengthening international legal and ethical norms is

urgent. Bode and Huelss (2022) highlight a normative gap between rapid technological advancement and current legal frameworks, stressing the need for adaptive regulation. Future military doctrine must integrate not only strategic oversight but also ethical guidance, ensuring that human judgment remains central in high-stakes autonomous operations.

Lucas (2020; 2022) emphasizes the importance of ethics in military strategy, particularly in relation to emerging and disruptive technologies. He advocates “moving beyond Clausewitz” to develop proactive normative frameworks rather than reactive ones. This article aligns with Lucas’s emphasis on ethical integration but interprets it differently: ethical oversight is framed not as a departure from Clausewitzian principles but as a contextual reinterpretation within a revised Clausewitzian framework that includes non-human actors. Here, the term future military doctrine refers to an evolving synthesis, rather than a complete rupture with existing doctrine. It envisions doctrinal development that retains classical strategic logic while expanding normative and algorithmic dimensions to address the challenges posed by AI and autonomous systems.

Comparative Framework: Clausewitzian Principles Then and Now

To illustrate how Clausewitz’s four core principles have been reinterpreted in the context of autonomous warfare, this section presents a comparative framework that contrasts their classical formulations with contemporary adaptations. Table 1 offers an original

synthesis developed by the author, integrating insights from multiple sources to highlight how each principle evolves in response to technological and strategic developments. This framework not only clarifies these conceptual shifts but also serves as a bridge to the case study presented in the following section.

Table 1. Comparison of Clausewitzian Principles: Classical Formulation and Autonomous Warfare Context

Clausewitz's Original Principles	Adjustment in the Context of Autonomous War
The Trinity of War – Government, Military, People	A digital system mediates the relationship of the trinity; Algorithms and online information flows shape public opinion.
Fog of War – Uncertainty due to limited information	The Fog of War has evolved into the Digital Fog of Big Data, characterized by complexity, algorithmic bias, and structured disinformation.
Political Dominance over the Military	Weakened by an autonomous system that reacts instantly; Political deliberation is often eliminated from the decision-making cycle.
Center of Gravity – The primary source of strength of the opponent	Shifting from physical entities to digital infrastructure, logistics networks, and influence on public perception.

Source: Processed by author, 2025

Case Study and the Limits of Clausewitz's Theory in the Era of Autonomous War

The Russia–Ukraine conflict, which has continued since 2022, offers a vivid illustration of how Clausewitz’s theory encounters a new battlefield shaped by autonomous and digital technologies. More than a clash of armies, it represents a struggle between two systems of adaptation, one grounded in traditional command structures, the other driven by

automation, data, and decentralized decision making. In this evolving context, Ukraine’s strategic response has been remarkably adaptive. The country employs an asymmetric approach, combining reconnaissance sensors, automated targeting systems, and artificial intelligence to offset Russia’s superior conventional power (Samus, 2024).

The operational impact of autonomous systems in this war is considerable. Ukrainian drone units have reportedly contributed to a large share of Russian battlefield losses; some estimates suggest they are responsible for up to 80% of frontline casualties (Business Insider, 2024). Although this figure cannot be independently verified and must therefore be viewed with caution, it reflects a broader transformation in how technology magnifies both the reach and speed of modern warfare. Beyond the visible sky of drones, a quieter yet equally decisive struggle unfolds in cyberspace. Nearly two thousand cyber incidents have targeted critical infrastructure, often synchronized with physical attacks to intensify their destructive potential (Duguin & Pavlova, 2023).

In strategic and institutional terms, this conflict demonstrates a structural shift in the military's center of power, from physical command hierarchies to digitally mediated operations. The widespread deployment of drones has led to the restructuring of the Ukrainian military organization, including the formation of a special tactical command overseeing the Unmanned Systems Forces (Samus, 2024). This shift reflects a

broader transformation in how Clausewitzian concepts such as the center of gravity manifest under conditions of automation and decentralized warfare.

However, these advances also pose new challenges. In January 2025, the UN Human Rights Monitoring Mission in Ukraine (UN-HRMMU) reported that short-range drones are the leading cause of civilian deaths, surpassing other conventional weapons (UN-HRMMU, 2025). Ethical analyses further highlight that the widespread use of drones in Ukraine has introduced significant challenges to the principle of distinction in armed conflict, raising critical moral and legal questions regarding proportionality and accountability (Enemark, 2024). These findings underscore concerns about the legitimacy of autonomy-based military actions. The SIPRI and ICRC reports stress the need for apparent, verifiable human oversight to mitigate unintended consequences (Boulain et al., 2020). This aligns with Scharre (2016), who warns that failures in controlling autonomous systems could accelerate the uncontrolled escalation of conflict.

Taken together, these operational, organizational, and ethical developments

provide a critical lens through which to reassess Clausewitzian theory. While Clausewitz's strategic principles, such as political dominance, center of gravity, and the fog of war, remain conceptually relevant, their contemporary application must account for the complex interplay between human actors, algorithms, and information systems.

Rather than abandoning Clausewitz, this case study supports a reinterpretation that extends his original insight, particularly regarding strategic friction, political primacy, and the systemic nature of conflict, into domains shaped by automation and artificial intelligence. In doing so, it helps fill a theoretical gap by integrating non-human decision-making and digital infrastructures into classical strategic logic.

Similar Studies and Position of This Article's Contributions

Several previous studies have sought to evaluate the relevance of Clausewitz's thought to cyber warfare and digital technology. For example, Ashraf (2025), in his paper "The Paradox of Cyber Warfare and Clausewitz's Conception of War," examines how Clausewitz's trinitarian elements can be applied to cyber warfare, particularly by highlighting

the presence of violence, policy, and uncertainty as characteristics of war. Meanwhile, Jacobsen (2014), in "Clausewitz and the Utility of Cyberattacks in War," emphasises that while cyberattacks have a strategic function, they do not fully replace conventional warfare and should still be viewed through the Clausewitzian lens of "political goals."

Rauti (2020) discusses a more initiative-taking approach to cyber warfare in "Controlling Uncertainty with Proactive Cyber Defense: A Clausewitzian Perspective", which adapts Clausewitz's concept of "friction" to design a more flexible and resilient cyber defense strategy.

This article goes a step further by integrating Clausewitz's discussion within the broader context of military technology, not only in relation to cyber warfare but also encompassing artificial intelligence, autonomous weapons systems, and the ethical and legal dilemmas that accompany them. While drawing on existing Clausewitzian interpretations, this article contributes a cross-domain conceptual framework that revisits Clausewitz's four core principles (the trinity of war, the fog of war, political dominance, and the center of gravity)

within the digitized and automated landscape of contemporary conflict.

In doing so, it positions itself as a theoretical advancement that not only affirms Clausewitz's continued relevance but also offers an integrative reinterpretation that accommodates new forms of strategic complexity involving non-human actors, data driven systems, and algorithmic decision making.

Conclusion, Recommendations, and Limitations

Carl von Clausewitz's thought continues to demonstrate remarkable intellectual resilience in the face of profound transformations in the character of war brought about by technological progress. His four central principles, namely the trinity of war, the fog of war, political dominance, and the center of gravity, remain relevant as analytical tools for understanding contemporary conflicts, provided they are interpreted contextually and adapted to modern realities.

Although new technologies have changed the form and instruments of warfare, the essential nature of war as a complex, violent, and uncertain political phenomenon endures. The trinity of war persists, yet its elements, government,

military, and society, are now connected through digital systems and algorithmic communication. Sensors and data have not dispelled the fog of war; instead, they have deepened it through disinformation and the overwhelming flow of information. Political dominance faces renewed challenges as automation blurs the boundaries of authority and responsibility. The center of gravity has also shifted from physical entities to digital systems and psychological domains such as public perception and collective morale.

Recent defense research highlights that although artificial intelligence can enhance tactical performance, it lacks the flexibility and moral reasoning required for complex strategic decisions. This underscores the continued necessity of human oversight and ethical judgment in warfare. Clausewitz's theory, therefore, should not be regarded as a relic of the past but as a living conceptual framework that continues to illuminate the dynamics of modern conflict.

This study emphasizes the need to reinterpret Clausewitz's ideas through ethical, legal, and technological perspectives. Adapting classical principles to digital warfare requires a synthesis between human judgment and

technological capability. Strategic thinking must evolve to preserve the moral and political dimensions that define human agency in war.

At the theoretical level, this article proposes an integrated framework that extends Clausewitz's four principles to encompass the realities of autonomous and digital warfare. Unlike earlier analyses that focused narrowly on cyber operations, this framework links artificial intelligence, automated systems, and the broader strategic environment. In doing so, it affirms the continuing relevance of Clausewitz's insights while extending them toward a more flexible and ethically grounded understanding of modern conflict.

Efforts to integrate human control into the global governance of autonomous weapons are essential. Similarly, international institutions are encouraged to strengthen cyber resilience and legal clarity, particularly where civilian and military infrastructures intersect. From a practical standpoint, new doctrines are needed that combine Clausewitzian principles with contemporary ethical and legal standards. Strengthening international regulation on autonomous systems is urgent, with special emphasis on

accountability, transparency, and human responsibility.

Future research should further examine how the concept of victory evolves in conflicts increasingly shaped by digital operations and nonhuman actors, expanding the Clausewitzian framework to new technological and moral dimensions.

This study's primary focus on the Russia-Ukraine conflict limits the general applicability of its conclusions to other contexts that may differ in political or technological conditions. Moreover, the rapid pace of innovation in artificial intelligence and autonomous systems means that some conclusions presented here may require revision as new technologies emerge. Continuous interdisciplinary research will therefore be necessary to ensure that Clausewitzian theory remains responsive to the evolving realities of war in the digital era.

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