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NEOREALISM AND DIGITAL TRANSFORMATION IN RUSSIA-UKRAINE WAR: A MORE CYNICAL PERSPECTIVE TOWARDS UNJUST WAR?

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ABSTRAK

Penggunaan teknologi digital, khususnya dalam peperangan, di satu sisi dapat memperburuk dampak dari perang itu sendiri. Setelah dunia mengalami Perang Dunia (I dan II) yang sangat destruktif, Hubungan Internasional – sebagai sebuah praktik dan disiplin ilmu – telah melalui fase sintesis yang panjang. Meskipun dunia sudah terlihat sangat berbeda dibandingkan abad ke-19, negara-negara, sebagai aktor utama, masih mengejar kepentingan dan kekuasaan mereka sendiri. Rusia adalah salah satu kekuatan utama setelah Perang Dunia II, yang rela merebut kembali kejayaan masa lalunya dengan menunjukkan kepemilikannya terhadap negara tetangga, salah satunya Ukraina. Artikel ini mencoba menilai kehadiran teknologi digital sebagai peralatan tempur dalam memperburuk dampak dari sebuah perang. Artikel ini menggunakan Hukum Humaniter Internasional (HHI) sebagai pedoman utama dalam melakukan perang. Sebaliknya, apa yang sebenarnya terjadi di lapangan (das sein) akan dilihat melalui perspektif Neorealisme sebagai salah satu perspektif utama dalam kajian Hubungan Internasional. Sebagai perang siber modern pertama yang berskala penuh, Rusia-Ukraina telah memberikan contoh penggunaan teknologi digital untuk mengaburkan tujuan perang – menciptakan cara yang adil dan dapat dibenarkan untuk mencapai kepentingan nasional selain melalui cara politik.

Kata Kunci: Neorealisme, Perang Ukraina-Rusia, Transformasi Digital, Hukum Humaniter Internasional

ABSTRACT

The usage of digital technology, especially in warfare, on the one hand, exacerbates the judgment of the war. After the world experienced a major-devastating World War (I and II), International Relations – as a practice vis-à-vis discipline – has gone through a synthesis phase. Although the world has looked very different from the 19th century, states, as the acknowledged primary actors, are still chasing their national interests and power. Russia is one of the major powers after World War II, willing to reclaim its past glory by showing its possession towards the neighboring countries, one of which is Ukraine. This paper tries to judge the presence of digital technology as a combat equipment in worsening the magnitude of the war. This paper uses the International Humanitarian Law (IHL) as the principal guide for conducting a war. By contrast, what was happening in the field (*das sein*) will be seen through a Neorealism perspective as one of the major perspectives in International Relations studies. As the first full-scale modern cyber war, Russia-Ukraine has exemplified the use of digital technology to obscure the purposes of the war – creating a just and justified means to

achieve national interest apart from political ways.

Keywords: Neorealism, Ukraine-Russia War, Digital Transformation, International Humanitarian Law

BACKGROUND

In recent years, digital technology has had a profound impact on almost every aspect of society, including international relations. The emergence of digital transformation and the development of digital technology can be used by countries to gain power and influence in the global system, improve communication, and collaboration, and become the basis for decision-making. Moreover, digital technology plays a crucial role in enabling the transfer of information, influencing our ways of thinking, and affecting the social construction of war and peace. Massive digitalization has entered an era where state actors are forming new tactics and strategies in fighting for their country's goals.

Information warfare, propaganda, intelligence and espionage, cyber operations as well as lawfare are examples of tactics used to produce a game-changing impact, this can be seen in the wars in Iraq and Syria (Marton, 2018). In Syria for instance, various parties in the conflict utilize social media platforms, encrypted communication channels, and cyber operations to disseminate propaganda, coordinate military operations, and engage in cyber warfare tactics. The use of technology in warfare can also be seen in the Estonian cyber war case which was attacked by Russia in 2007 through a wave of Distributed Denial of Service (DDoS) against the government, parliament, ministry, bank, and publishing websites (Imma & Burhanuddin, 2023). The same thing happened to Ukraine, Russia initiated a cyber war against Ukraine through network hacking which disrupted servers and data, espionage, energy resources, and communications facilities in several regions, and disinformation about the Russia-Ukraine conflict (Mohee, 2022).

Russia's invasion of Ukraine in 2022 becomes a contemporary case study that can provide a detailed discussion of the evolution of warfare, particularly in the use of digital technology. The rapid growth in cyberattacks, the use of digital propaganda, and the use of artificial intelligence (AI) have become an integral part of the narrative of this protracted conflict. Beyond the visible confrontation on the ground, an invisible war is taking place in cyberspace, with both countries deploying a variety of tactics to achieve their strategic objectives (Kostyuk, 2022). The use of digital technology in this war can be seen in complex cyberattacks using AI, malware, social media, and encryption techniques. However, the use of digital technology in war still poses its challenges, military policies, and tactics involving advanced technology, paving the way for critical thinking on the concept of "Just War" in the context of modern warfare. Furthermore, the widespread adoption of sophisticated technology often exacerbates power imbalances between nations, with technologically advanced states gaining a significant advantage over their less-equipped counterparts. This power imbalance not only influences the outcomes of conflicts but also raises ethical concerns regarding the justifiability of employing overwhelming technological superiority in warfare.

In general, a Power Imbalance is a situation where two parties experience an imbalance in decision-making and the strength of their power. But if we look from an international relations perspective, there is a term and even a theory called Balance of Power, which is a situation where a country protects its country by prioritizing a balance of state power and matching the power of power with other countries as its country's defense or shield. Usually, in testing the power of power, countries implement two power policies, namely increasing their power by participating in military or arms competitions in the region and secondly building alliance policies with other military countries (Fogarty, 2023). In the Russia-Ukraine case, the inequality of military power between Russia and Ukraine is striking. Russia has one

of the most powerful armed forces in the world, with many modern military assets, including warships, fighter aircraft, and ballistic missiles. On the other hand, Ukraine, after losing Crimea and parts of its eastern territories, faces major challenges in maintaining its territorial integrity. In the study of International Relations, Russia is also known as a communist superpower that has military power and is ranked second in the world after the United States. Meanwhile, Ukraine, as one of the countries resulting from the disintegration of the Soviet Union, which in some international views, wants to join NATO to strengthen the alliance and the country's military strength and become a threat to Russia's military strength. There is also technological innovation that Russia and Ukraine have in developing technological efforts. One aspect is increasing military competitiveness. For Russia, the world is constantly changing and competitive. Russia is trying to maintain its military competitiveness by adopting the latest technology. This can help them to remain relevant at the global level and maintain their position as important players in international affairs. Meanwhile, for Ukraine, technological innovation is useful for maintaining military competitiveness. The discussion about military competitiveness will be interesting if seen from the perspective of Neorealism.

In this context, the Neorealist perspective, which places states as the main actors in the international system, provides a deep understanding of how digital technology becomes an instrument of power and influence in armed conflict. Realism as the main perspective in the study of International Relations emphasizes the anarchic nature of the international system, where countries interact in uncertainty and insecurity. In this situation, competition between states for power and security becomes the main impetus behind states' actions. With the emergence of digital technology as a new force, countries are now competing for control of digital resources, and making war through technology an extension of ongoing geopolitical competition.

The Russia-Ukraine war case, characterized by its complexity, multifaceted nature, and far-reaching implications for international relations, security, and human rights, represents a compelling subject for analysis within the broader context of geopolitical developments and global security challenges. While the Russia-Ukraine conflict shares similarities with other wars involving technology as happened in Syria (Imma & Burhanuddin, 2023) and Estonia (Marton, 2018), it exhibits differences in terms of its geopolitical context, technology utilization, international involvement, and humanitarian impact. Even though it was not the first war, the use of technology in war continues to show several developments. According to the Stockholm International Peace Research Institute (SIPRI), there has been an increase in global military spending for eight consecutive years, reaching its highest level in 2022 at US$2.24 trillion. SIPRI also stated that global military spending increased by 3.7%, which was influenced by military aid to Ukraine and increasing concerns about potential threats from Russia. This assertion suggests that traditional ideas about warfare are evolving in response to the digital revolution. It contributes to the literature by encouraging researchers to explore new dimensions of conflict, including cyber warfare, information operations, and hybrid tactics, and their implications for international security and stability.

Furthermore, this paper will focus deeply on studying the relevance of Neorealism as an analytical tool in the context of the emergence of AI and digital transformation, the use of digital technology in the Russia-Ukraine war, the use of technology and AI in war, and extrapolation of the future by linking developments in international relations and technologies that emerged after the war. The comprehensive discussion in this article can be a reservoir of insights that can complement various previous studies, thereby serving as a foundation for policymakers, military strategists, and scholars in interpreting the global security implications associated with digital warfare.

LITERATURE REVIEW

A study on the relevance of Neorealism in emerging information, communication, and technology (ICT) has been presented by Eriksson and Giacomello (2006) in a paper titled: **The Information Revolution, Security, and International Relations: (IR) Relevant Theory**. This paper argues that the relevance of three International Relations' main schools of thought (Realism, Liberalism, and Constructivism) is being questioned in today's digital security era. However, realism especially is still relevant in seeing the new way of modern warfare (information warfare) and the way to bridge those three perspectives in the current global context is by pragmatism. A very thorough discussion, the paper does not discuss what this article is trying to find: the relevance of realism, especially Neorealism, in the digital device deployment of the Russia-Ukraine war (Eriksson & Giacomello, 2006).

Also, a study titled: **Realism and Cyber Conflict: Security in the Digital Age** by Craig and Valeriano (2020) presented how realism, especially Neorealism, is still relevant in the five dimensions of war: land, sea, air, space, and cyberspace. Realism is still able to explain its core concepts in the new dimension of war mentioned in a previous phrase. Realism core concepts such as anarchy, balance of power (i.e., security competition), and power (i.e., cyber power) are still core principles to explain the modernity of war in cyberspace dimension. Realism, in this context, appears to be a sequacious international relations grand perspective to comprehend conflict, especially in the digital epoch. With a careful and in-depth discussion being delivered, this paper acts perfectly as a relevant gap filler in this topic (Craig & Valeriano, 2020).

In another study entitled **Cyber Operations during the Russian-Ukrainian War** written by Grace B. Mueller, Benjamin Jensen, Brandon Valeriano, Ryann C. Maness, and Jose M. Macias, they analyzed how cyber operations war became a strong factor in the occurrence of war between Russia and Ukraine. Even though

cyber technology can be an instrument of war that determines the future, there are three cyber-related potentials for the two countries in conflict, namely: First, **Cyber Stalemate**: where the future of the two countries, especially Russia, will experience difficulty integrating cyber and conventional effects in battlefield and beyond due to the defense and power of public-private partnerships. The second is **War Comes Home**: which is where Russian innovation emerged to carry out a wave of cyberattacks on infrastructure in the United States. The third is **Digital Lies:** which has the potential for spreading state propaganda for Russia and Ukraine which could damage support from abroad. In this research, the solution to quell cyberattacks is by strengthening resilience and emphasizing operations in cyberspace so that the government can reduce the potential impact of cyberattacks (Mueller et al., 2023).

Based on the three literature studies, provide an overview of technological problems that can occur as a tool and challenge for war, especially in neorealist thinking in the development of information, communication, and cyberspace technology. Several studies also consider Neorealism to be relevant in viewing the dynamics of war, and weather in conventional and cyber dimensions. This paper uses the neorealist to see the International Humanitarian Law as the judgment while on the other hand admits the core concepts from other Realism branches – Classical Realism. The relevance of understanding Neorealism, helps us see how the two countries interact amidst complex geopolitical dynamics, including power competition and the efforts of each country to maintain their security and influence. It also includes an understanding of cyberattacks, an important factor in the strategy and tactics of modern warfare. Thus, the relevance of this research is to understand the technological gap that can influence the conflict as a whole.

The gap that can be seen from these three studies is the lack of clarity in the application of Neorealist concepts, specifically in analyzing the conflict between Russia and Ukraine, especially in the context of information technology and

cyberattacks. Although the relevance of Neorealism has been acknowledged in understanding modern conflicts and cyber conflicts in general, there has been no adequate explanation of how Neorealism can be concretely applied to these specific conflicts.

This paper will provide clarity regarding the use of technology in warfare between countries through the understanding of neorealism. In this discussion, we will look at Neorealism as a view of international relations in the event of war, followed by a discussion of the relevance of Neorealism as an analytical tool for the emergence of digital technology, the use of digital technology in war, followed by case studies that occurred in Russia and Ukraine, and followed by the use of technology in brought a gap in the war. Therefore, this paper will help fill the gaps that occurred in previous writing and provide an understanding of technology in the Russian and Ukrainian wars.

METHODOLOGY

This article uses a qualitative method that aims to produce information in the form of notes and descriptive data based on existing documents' object of study. The qualitative method is a research process to understand human and social phenomena by creating comprehensive and complex representations presented in words and conducted in a natural setting (Walidin, Saifullah, & Tabrani, 2015). This method is used to assess and explain the behavior and motives of relevant actors, in this case, Russia and Ukraine, in their use of digital technology during war. Understanding the events and perspectives surrounding this conflict requires a multidimensional approach, encompassing various scholarly works and contemporary analyses. To compile comprehensive insights on the Realist perspective and the utilization of digital technology during the Russia-Ukraine war, data is meticulously processed from a diverse range of sources, including (1) Primary literature studies: books and

journals; (2) Internet searches and databases, which consist of electronic books, e-journals, reports, web pages, research institutions, as well as theses and dissertations discussing the Neorealist perspective and the use of digital technology during the Russia-Ukrainian war. The researcher initiates the study by conducting exploration which aims to explain a phenomenon based on the data obtained (Mukhtar, 2013). Subsequently, descriptive analysis is conducted on the data encompassing concepts, definitions, thoughts, and arguments found in relevant literature.

DISCUSSION

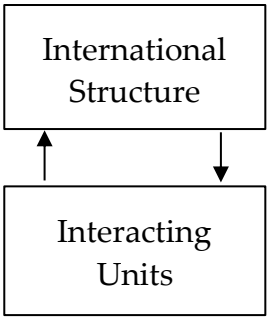
Neorealism as a Perspective

In the discipline of International Relations (IR), realism has long been the dominant paradigm that emphasizes the competitive and conflictual side among states. This view is based on a series of principles and assumptions that state is the most important factor, which operates as an independent unit in the international system and rationally carries out the state's interests, where the interests here aim to guarantee power and security (Schmidt, 2002). Power is a key concept from both realist and neorealist perspectives, military security and strategic issues are considered to be of primary importance and refer to the category of high politics, while economics and social issues are seen by realists as ordinary, less important, or low political weight (low politics) (Asrudin, 2014). Realists themselves believe that maximizing military power can achieve peace and security and that countries must have weapons to maintain self-security. A realist view of international relations can provide a strong understanding of the behavior of states in an international system dominated by uncertainty, anarchy, and competition.

The realism in International Relations itself is divided into two perspectives: Classical Realism and Neorealism. What differs from both perspectives, in Neorealism, Waltz (1979) starts seeing the subject as a discipline instead of only a

subjective social science. Also, Neorealism started acknowledging the influencing factors in the international arena, to be mentioned are norms, laws and institutions, ideologies, including economics as relevant to state behaviors (McKeown, 2019a). Waltz also perceived international law and institutions as the byproducts of the great powers' behavior as well as treating technology (weapons) as another important systemic property states owned.

Waltz admits that the international system – although necessarily anarchic – has the potential to influence states' behavior as interacting units, similar to economic law where the market is abstract. He presented the system theory dividing the approach to international politics into both political and systemic approaches. The purpose of systems theory is to show how the two agents operate and interact, and that requires clarifying them from each other (Waltz, 1979a). Waltz depicted the system theory as:



Picture 1.
System Theory

International structure and interacting units often generate unintended causes and consequences of interaction within the anarchic international system. Under an anarchic international system, states become self-help because states that do not help themselves will put themselves in danger. This led to an offensive-defensive equilibrium condition often justified by states to take military action: expanding their military capability, invading other states, or creating alliances. Structure plays as a

natural selector by dismissing states failing to respond to the interaction within the system (Waltz, 1979b).

As quoted in McKeown (2019b), the core paradigm of neorealism in international relations includes:

1. The state as the dominant role holder always has conflicting interests. This indicates that differences in interests will lead to war or conflict.
2. The power possessed by a country greatly influences conflict resolution and determines its influence on other countries.
3. The main problem in international relations is the condition of anarchy, which means the existence of a central sovereign authority to regulate various relations between countries.
4. Aggressive intentions from various countries, conflicts, and coupled with the absence of a world government are realities that always exist in international relations.
5. Each country is encouraged to build strength, make alliances with other countries, and divide the power of other countries.
6. Each country will always move and act based on their interests.
7. The international system is anarchic. Anarchy does not mean chaos. A state of anarchy means there is no central authority to regulate the actions of other states.
8. The international system is an important factor in determining actor's behavior.

In this discussion, we will use neorealism from Kenneth Waltz's perspective to argue that in the international system, there is no higher power other than states. Even Waltz argues that international law may play a role as international institutions that influence states' behavior, but the dominant and the most supreme authority actor is still states because of their sovereignty. Thus, this condition makes states

anarchic and uncertain which drives them to maximize their military power including digital capabilities, economic, and other power to deter other states. We are using the Neorealist perspective as our main lens in this paper due to Neorealism being the Realist school that admits the presence of international law and on the other hand can explain states' ambitious behavior towards other states. Furthermore, Russia often uses digital technology as its military capabilities in states of war – one of which is when they attract Georgian networks to cripple the government's website and banking system in the 2008 invasion (Isnarti, 2016). The same rules applied when they used their digital equipment in the Russia-Ukraine War.

Based on the aforementioned points, it can be concluded that the events of the Russia-Ukraine war can be interpreted and understood by utilizing the core conceptual framework of Neorealism. The success of Russia in achieving its objectives in Ukraine, whether through military intervention or the application of economic and political power, illustrates the significant influence of power in conflict resolution and in determining a country's influence over others. Furthermore, Russia's aggressive actions in Ukraine, including the annexation of Crimea and support for rebels in the eastern region of Ukraine, reflect the reality of aggressive intentions by certain nations within the anarchic international system. Russia has also actively bolstered its military capabilities and engaged in diplomatic endeavors to forge alliances in the Eastern European region to serve its national interests.

The Relevance of Neorealism as an Analytical Tool in the Context of the Emergence of AI and Digital Transformation

The Neorealist perspective plays an important role in analyzing the influence of digital transformation and the use of digital technologies, such as AI, in the context of international relations. The emergence of digital transformation and the development of digital technology can be used by countries to gain power and

influence in the global system, improve communication and collaboration, and become the basis for decision-making. In the context of digital transformation and the use of technology, the Neorealist view can be described as follows:

1. National interest: Digital transformation and the use of AI can be a significant instrument for increasing state power. Countries will utilize technology to secure their national interests, whether in the military, economic, or political fields.
2. Security considerations: In the digital era, security threats can come from cyberattacks, hacking, or surveillance via technology. Countries will seek to mitigate these risks and protect their national security by developing cyber capabilities and taking necessary actions.
3. Alliances and partnerships: Although Neorealism often emphasizes competition, countries can also form alliances and partnerships to achieve common interests in the use of technology. These alliances can help address common threats, share resources, and strengthen countries' technological positions.
4. Competition for power: With the emergence of digital transformation, technologies such as AI, 5G networks, or cyber technology can become key elements in global competition. Countries will compete to dominate these technological sectors to strengthen their position in the international system.

Waltz seeing the anarchic structural system of international relations is the compelling factor states did the war, especially the cyber war. Neorealism saw power as a tool to reach the ultimate goal in the anarchic system: survival. According to that, the neorealist view of the international system is still relevant to the digital realm when there is no single authority in an anarchic condition (Arslan, 2023). Not only that, the use of digital technology as the means of war is no different when the states project military buildup to deter other states (security dilemma). Thus, in the

view of Neorealism, digital transformation and the use of technology, especially in the context of international relations, must be understood as quite crucial elements in the competition for power and the protection of national interests. Countries will strive to maximize the benefits of this technology. However, the use of technology can also bring risks and challenges that countries need to overcome to ensure stable national security.

The Use of Technology and AI in War

AI in the Neorealist view is a threat because it has provided advantages and benefits for many people, but is not enough to produce annihilation. It can be concluded that AI is a challenge for Neorealist countries because it raises concerns about a country's sovereignty.

The advantages of AI's presence in war:

1. Speed of decision making: This refers to the Observe, Orientation, Decide, Action (OODA) rounds, which can be done faster than the enemy. So, they would not be able to take countermeasures fast enough to surpass the counterattack.
2. Use of big data: Usually used to describe data that is too large to be stored in computer memory, generated too quickly to be managed by a single computer, or has multiple forms and formats. Because of these three issues, it can be difficult for humans to understand the information contained in data, but machines and AI tend to perform better if the more data available to them.
3. Improved targeting and vision: Automatic image recognition and object detection capabilities already surpass human capabilities in at least some cases. This system will be increasingly able to identify objects that humans might miss. Additionally, advances in facial recognition can be applied to

quickly identify terrorists or combatants and facial expression analysis of risky situations or better manage social interactions while building peace.

4. Decision-making support: Of these advantages, one of them is routing technology that can absorb complete maps and traffic information in real-time or projections in a way that humans cannot.
5. Mitigation of manpower issues: These are the types of tasks that AI is well-positioned to help humans with. AI could play a key role in providing robotic assistance on the battlefield, which would allow troops to maintain or expand warfighting capacity without increasing manpower.
6. Improvements in cyber defense: Antivirus companies have leveraged large malware behavioral data sets to create AI that can observe software on systems and flag actions identified as suspicious.
7. Improvements in accuracy and precision: Machine accuracy also extends to AI, machines can also be more accurate than humans due to certain inherent properties, such as the level of accuracy from machine to machine and over time, whereas humans have more individual differences and get tired or bored.
8. Labor and cost reduction: AI has demonstrated the ability to improve or optimize various types of processes, ultimately leading to reduced costs. With so many complex and expensive processes involved from logistics to heating and cooling to hiring, there are many opportunities for AI to increase efficiency and save costs.
9. Ability to operate in anti-access/area-denial (A2/AD) environments: These capabilities and concepts create what some defense analysts in the United States describe as an A2/AD environment, which is increasingly lethal to operators, platforms, and human bases. Autonomous systems will better enable friendly forces to operate in an A2/AD environment. In short,

autonomous weapons and ISR platforms will be able to operate in areas where humans cannot.

10. Improvements in deception and information operations: AI can already analyze the vast amounts of data people reveal about themselves online and gain a better understanding of how to tailor certain messages to increase the likelihood of influencing them. AI may even create fake messages, realistic images, videos, and audio of people that can be used maliciously to deceive. Cyber war has already been put as the fifth domain of war amongst land, air, space, and sea. Since the AI is used in the Russia-Ukraine war by the Starlink technology, this affirms Waltz's systemic theory whereas the international system is still run by states and its power and no regulations about the conduct of war with the digital technology.

Case Study Analysis: The Use of Digital Technology in the Russia-Ukraine War

The use of digital technology and the implementation of digital transformation have changed the landscape of modern warfare, ultimately having a major impact on military strategy, tactics, and the dynamics of international relations. Knox and Murray (2001) state that there are five stages of military revolution, namely (1) The formation of a modern state and modern military institutions, reform of the military logistics system, and reform of military organization and tactics; (2) Mobilization and militarization of citizens, mobilization of the state economy, political support of citizens, and citizen army; (3) Military industrialization and technology adoption; (4) Integration between forces and integration of combat methods; and (5) Development of weapons of mass destruction, as well as computerization and digitization of the country. Meanwhile, the 6th stage itself, as quoted in Widjajanto (2012), is the information technology revolution where the military seeks to win the information war and build a weapons

system that can adopt the latest technological developments in the fields of telecommunications, information, computerization, and digitization.

The Russia-Ukrainian War will be one of the cases of conflict that is analyzed in more depth and the main focus in this section is on the use of various digital technologies to achieve the military, strategic, and political goals of the two countries. The Russia-Ukraine War presents a unique and compelling case study for examining the use of technology in modern warfare due to several key factors such as the extensive use of hybrid warfare tactics, which integrate conventional military operations with unconventional methods, for instance cyberattacks, propaganda, and disinformation campaigns. Hybrid methods of warfare have been used in the past, but what is new about attacks seen in recent years is their speed, scale, and intensity, facilitated by rapid technological change and global interconnectivity (Kong & Marler, 2022).

Apart from that, another factor that makes the Russia-Ukraine War the most suitable case for studying the use of technology in war is that the Russia-Ukraine War witnessed the deployment of advanced military technologies, including drones, electronic warfare systems, and cyberweapons. The innovative use of technology by both sides highlights the importance of adaptation and technological progress in gaining a strategic advantage on the battlefield. This case study of the Russia-Ukraine War is by Neorealism where each country seeks the other's power and position both materially and politically. Power competition is considered likely to continue in the future because there are still countries that think about the realistic assumption that "if you want peace, prepare for war."

The combination of conventional war and cyberattacks accompanied by waves of disinformation is part of the hybrid war strategy that Russia has been waging in Ukraine for the last few years. The following are some of the technologies

that have been used in the war between Russia and Ukraine which is also called the “first cyber world war”:

1. Cyberattacks: Russia uses high technological capabilities to spread malware viruses and hacking government websites as well as educational, economic, and foreign domains. One of them is Russia sending denial of service (DDoS) and a Trojan horse called "FoxBlade" which aims to disrupt internet connectivity and paralyze military command and control center systems. Apart from malware and hacking efforts, Russia also phished the emails of the Ukrainian government and military and various organizations, they were also able to access the personal data of the Ukrainian people. Ukraine itself defended itself by moving its digital infrastructure to the public cloud, which was then hosted in data centers across Europe. Ukraine is taking Cloudflare and Microsoft as partners to build resilience in its encryption and systems. According to the Head of the State Service for Special Communications and Information Protection of Ukraine, in 2022, Ukraine suffered 2,194 cyberattacks and 22% of its fiber network was damaged (Mustaqim, 2023).
2. Social media: Social media has become one of the mainstays of information channels regarding news of the armed conflict between Ukraine and Russia. However, without realizing it, this platform is an information battlefield. The Russian government uses social media for propaganda and spreading misinformation (disinformation) through videos that use deep-fake technology, one of which is a video of the President of Ukraine appearing to say he is surrendering to Russia. Russia also limits posts by Ukrainian citizens by redirecting them to networks owned by the Russian government. User data is also monitored by the Russian government surveillance system known as SORM.

3. AI: Ukrainian AI company Primer has modified voice transcript and translation services capable of hacking Russian communications systems and the data will be used as an information base for Ukrainian military forces. Ukraine also uses AI for facial recognition and imaging developed from Clearview AI software. This technology aims to identify deceased Ukrainian and Russian military troops with profiles on social media so they can send information to their families. Military experts believe that AI will play an important role in future wars because AI systems can predict enemy movements and analyze large amounts of data to identify potential threats.
4. Drones: Both Russia and Ukraine use unmanned aerial vehicles (UAVs) for reconnaissance and surveillance. Ukraine itself uses simple commercial drones, with integrated high-resolution cameras paired with smartphones. The use of drones is used to monitor enemy activities, collect intelligence data, monitor borders, optimally maximize limited forces, and reduce risks to military personnel.
5. Virtual reality (VR) and 3D holograms: In facing Russian military forces, the Ukrainian military used VR to simulate war scenarios, and train tactics and procedures in fighting so that military troops could be safer in training before being deployed on the front line.
6. Satellites: The Russia-Ukraine War is the first conflict in the world in which satellite imagery played an important role in troop movements. Satellites are a technology that helps the Ukrainian people connect to the internet, they make it easier for the Ukrainian military to control drones.
7. Electronic warfare (EW) systems: Significantly, EW systems are used to disrupt communications, radar systems, and other electronic-based systems so that a country's internal communications infrastructure remains protected.

8. Artillery and missile systems: Ukraine uses Palantir software to help most of the Ukrainian military target Russian tanks and artillery. This software helps to target by visualizing the position of military forces using detailed digital maps with data coming from commercial satellites and social media. This thermal imaging technology further enhances digital targeting capabilities.

Do Technologies Make War Even More Unfair Leading to Unjust War?

The development of technology and its use during war on the one hand exacerbates what is called "Just War." Just War Theory is a moral guide for waging war which was adopted from Christian thoughts (Saint Augustine which was later developed by Thomas Aquinas). Some of these thoughts are summarized in three things: taking human life is a wrong action, the state must defend its citizens and protect innocent human life, and defending important moral values sometimes requires a willingness to use violence. This thinking is more about taking preventive action against war rather than permitting it. In Islam too, several regulations apply during the war – one of which prohibits killing of women and children.

There are two principles of Just War Theory developed by Thomas Aquinas: *Jus ad Bellum* – conditions under which the use of military force is justified (declaration of war) – and *Jus in Bello* – how to conduct war in an ethical manner (actions when conducting war).

The principles of *jus ad bellum* consist of (ThinkingFaith, 2013):

1. War must be fought only with lawful authority. This criterion aims to limit small-scale conflicts by barons, captains, and princes and is often considered the *sine qua non* of the Just War Theory.
2. The cause of war must be just. Wars must be fought, for example, to counter aggression, protect innocent people, or support the rights of oppressed

groups. There must be significant reasons strong enough to overturn the *prima facie* obligation that we must not kill or injure another person.

3. War must have the right intentions. The state must prioritize good and avoid evil, have clear goals, and be open to negotiation; it must not be for revenge or the sake of murder and there must be no ulterior motives. This must be done without any inclination to violence, or cruelty; including regret which must be the right attitude. It is formed by efforts to achieve just goals. Because peace must be the goal of war.
4. War must be the last resort after all other efforts have failed or are unavailable.
5. There must be a reasonable expectation of justice or a reasonable chance of success to prevent a pointless war. If there is no such expectation, then not only is it imprudent, but there is also no good basis for setting aside the *prima facie* obligation not to harm others if no just cause can be served, and so going to war is an immoral act.

While the *jus in bello* principles continue the *jus ad bellum* principles (ThinkingFaith, 2013):

6. There must be discrimination. Non-combatants may not be attacked directly or intentionally, although it is known that there may be accidental casualties.
7. There must be proportion in war; that is, there must be a balance between the good achieved and the harm caused. This condition takes into account the impact on all of humanity, not just on one side, and the impact on humans during war is prioritized over other physical damage. This provision also applies to jus ad bellum, to prevent war from occurring due to minor disputes.

Apart from the Just War principles, the country is currently guided by International Humanitarian Law (IHL) as the law of war that applies internationally. IHL itself was ratified according to good practices during war as regulated in the Geneva Conventions including Additional Protocols 1 and 2 of 1977 which contain

additional definitions. The Geneva Convention itself adopted several principles from the 1907 Hague Convention which established the laws and customs of war in a narrow sense, by establishing the rules that belligerents must comply with during hostilities. Specifically, the protection of women and children is regulated in Article 79 of Additional Protocol 1 of 1977.

Additional Protocol 1 in Article 35 also regulates that the rights of parties to a conflict to choose means and methods of warfare are not unlimited and the use of weapons, projectile materials or weapons, and tactics that are of a nature to cause excessive injury or unnecessary suffering is prohibited (Article 35 - Basic rules: In any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited. 2. It is prohibited to employ weapons, projectile materials, and methods of warfare of a nature to cause superfluous injury or unnecessary suffering).

Reflecting on the use of digital technology in the Russia-Ukraine War above, we argue that the use of this technology increasingly ignores the principles of just war (Just War Theory) in kinetic combat. The principles summarized in IHL generally protect civilians and groups who are not fighting, including women, children, and war veterans. The use of digital technology in war, one of which is the use of unmanned combat aircraft (unmanned aerial weapon or UAW), further increases the injustice of war and violates the principles of just war because the targets fired at are random and do not have a specific target.

Russia is known to use drones or UAW in combat. Russia ordered the drones from Iran in the Shahed-101 family that is Shahed-107, Shahed-131, and Shahed-136 that was named the "suicide drones" because they fly into targets and explode on them. Russia repeatedly attacked Kyiv, the capital city of Ukraine, with drones and the attack on August 30th caused a casualty of women injured from broken glass. Also, a 69-year-old woman received burns injury due to the house catching fire from

the falling debris from the attack. This was the second time the attack was launched to Kyiv where the first massive UAW attack was recorded in June (Rubryka, 2023).

From the elaboration above, we can say that the use of digital technology in the Russia-Ukraine war can be explained through the Neorealist perspective because Neorealism is used to analyze the structure of the international system, the distribution of power, and the changing power configurations among states. The usage of international law in this discussion is to show the structure of the international system whereas international law on the other hand still directs the state behavior even if it is not fully controlling and states are still chasing their national interests. Distribution of power and changing power configurations all are shown in the usage of technology as one of the components of military power or capabilities.

CONCLUSION

The Neorealist perspective in International Relations still shows its relevance in the dynamics of contemporary international relations, including the Russia-Ukraine war. This case study of the Russia-Ukraine War is from the view of neorealists where each country seeks each other's strength and position both materially and politically. Power competition is considered to be likely to continue in the future because there are countries that assume the neorealist assumption that "if you want peace, prepare for war." From the discussion, we can also extrapolate the future to connect the dots between the development of international relations as studies and technology prompted after the war. Our finding in this research exemplified that digital transformation through the equipment of war exacerbates the casualties and the judgment of war while the state's behavior is explained through Neorealist perspective.

The development of the studies of International Relations in a structured and systematic manner occurred after the first Great War involving nation-states, namely World War I. International Relations at that time was deemed necessary to explain the phenomenon of war that occurred with the perspective discussed, namely the Neorealist perspective. Then, countries practically form cooperation within the framework of international institutions (international regimes and organizations), which also influences the dialectical development of perspectives (Liberalism, Constructivism, and Gender Theory) in International Relations until now. The same development also occurred in technological developments where the technology that we know as advanced today was first used during the war.

The same thing applies to the development of technology that we use every day. Technology such as radar was originally developed for military use in detecting enemy aircraft and ships. Today, radar is used in air traffic control, weather forecasting, and to detect vehicle speeds on highways. For conditions such as the Russia-Ukraine war, new technology that is currently widely used is VR and 3D holograms, one of which was when President Volodymyr Zelenskyy spoke in front of 200,000 leading technology entrepreneurs, investors, and company leaders at seven major technology events in Europe amidst conditions the country is not yet stable so he cannot travel. Here you can see the development of technology during war, where this technology will begin to be used massively after the war or conflict.

However, this does not mean that all theorizing and technological development came from war – where the development of science itself came from the Enlightenment or Renaissance period which encouraged fundamental changes within the "Industrial Revolution." What we are trying to convey here is that there were efforts to re-systematize thinking and technological developments after war or conflict. As in the idea of "Neorealism" in International Relations itself, which has been discussed since 400 BC by Thucydides, there has been no attempt to systematize

it. Thus, the ontological and epistemological studies of International Relations began to become a separate field of science after the World War I. The same thing applies to technological development where resources for technological development are still focused on carrying out the war, but after the war is over, the use of this technology will begin to be enjoyed by the public or wider community. Thus, this reaffirms the Neorealist perspective regarding the natural nature of humans to pursue their power and interests toward other humans.

We can also conclude that the use of digital technology and the context of digital transformation can provide convenience, for example, when Zelenskyy was able to attend virtually international events, such as technology conferences in the European Union and the G20 event which was held in Bali during Ukraine's unstable domestic conditions and a threat that will affect Zelenskyy if he travels either by land or air. However, the use of technology can also worsen war conditions, making them more unfair. An example is the use of "AI" technology which has great potential to cause war casualties, especially from the non-combatant side. We put this paper as the intermediary studies in the same topics as digital technology keeps evolving. We expanded the current Neorealist perspective to adapt to another combat of war. Neorealists acknowledge the international system is governed by the law and principles to control state behavior even if the national interests are still prominent in states' behavior towards other states.

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