Warfare & Social Media: Disinformation and Propaganda in the Digital Age

By

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Vienna, 7 June 2023   Hanna Savaryn

Abstract

Information warfare is a complex and rapidly evolving phenomenon with far-reaching implications for global politics, security, and social stability. Within this landscape, the role of Twitter as a critical battleground for information warfare cannot be understated, as many actively exploit the platform to shape narratives, mobilize support, and influence global perceptions. This study investigates the extent of propaganda and disinformation employed on state-sponsored Twitter accounts within the context of information warfare. This study contributes to our understanding of information warfare by examining the role of propaganda and disinformation during the Russo-Ukraine War. By uncovering common trends and narratives employed by Russia and Ukraine, this research enhances our knowledge of information warfare dynamics, highlight common characteristics, and underscores the importance of proactive strategies to counter propaganda in the contemporary information landscape.

Key Words: Information warfare, Twitter, propaganda, disinformation, Russo-Ukraine War.

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Introduction

In contemporary times, warfare has evolved beyond the physical realm. Classical forms of armed conflict have been supplanted by new forms of state confrontation, including information warfare, which constitutes an essential component of modern warfare. Information warfare refers to the utilization of information and communication technologies with the aim of achieving strategic or tactical goals during conflicts (Thornton, 2015; Smith, 2020). Its primary objective is to manipulate the perception of reality, shape public opinion, and influence decision-making processes by means of disseminating information. This concept goes beyond traditional military conflicts and extends to the digital realm, encompassing cyberattacks, disinformation campaigns, propaganda dissemination, and social media manipulation (Libicki, 2020).

The information warfare between Russia and Ukraine has attracted significant academic attention recently. Since the beginning of the conflict that erupted in 2013-2014, Russia has launched massive disinformation and propaganda campaigns targeting Ukrainian and Western audiences (Pomerantsev, 2015; Mullaney, 2022). These campaigns have predominantly been carried out through state-controlled outlets. While many Western scholars use the term 'information warfare' to describe the spread of pro-Kremlin information to Western audiences, Russian public officials and academics argue that Western countries are also engaged in information warfare against Russia. This suggests that information warfare occurs on both offensive and defensive levels (Panarin, 2017; Mullaney, 2020).

After Russia's full-scale invasion of Ukraine in 2022, information warfare occurs in various realms. Western countries and Ukraine have implemented counter-disinformation measures, and digital media has become the primary platform for disseminating propaganda and disinformation (Mujib et al., 2023). These campaigns are typically directly or indirectly sponsored by governments, involving various actors such as state organizations, quasi-state media/supporters, and the general public (Zannettou et al., 2018; Lu, 2022). Both the Western and Russian conceptions of information

warfare agree that waves of 'weaponized' information are generated by state or state-sponsored agents (Thornton, 2015).

Information warfare is a multifaceted and rapidly evolving phenomenon that has the potential to significantly impact global politics, security, and social stability. State actors have increasingly employed information warfare as a tactic to achieve their strategic goals, affecting political decision-making, public opinion, and the behaviour of targeted populations. The prevalence of social media and other internet platforms has made it easier than ever for state actors to disseminate propaganda and misinformation on a large scale, potentially amplifying the impact of their information warfare campaigns. Today social media is actively used in disseminating propaganda, an important component of information warfare.

Propaganda often uses disinformation and manipulation tactics to shape narratives and distort facts. By studying propaganda on Twitter, I aim to understand the scale of propaganda employment on state-sponsored Twitter accounts in the context of information warfare between Russia and Ukraine. By establishing the theoretical foundations, encompassing various aspects of information warfare, discussion of case selection and methods and subsequently proceed with analysing state-sponsored propaganda on Twitter. Through this research, insights can be gained into the strategies employed by state actors and further the understanding of the complexities of information warfare in the digital age.

Information Warfare

Historical Evolution of Information Warfare

Throughout history, propaganda and psychological operations have played a crucial role in shaping public opinion and gaining support. Ancient civilisations like China, Greece, and Rome recognised the significance of psychological warfare and deception in military strategies. Sun Tzu's "The Art of War" discusses this aspect extensively (Pierri et al., 2022). In ancient Greece, propaganda was employed through public speeches and written works to sway popular sentiment. Julius Caesar's publicity campaign in Rome was instrumental in his ascent to power. The invention of the printing press in the 15th century marked a turning point in the history of information warfare, enabling the widespread dissemination of propaganda (Zhadko, 2018). During the Reformation, both the Catholic and Protestant churches extensively used propaganda to influence public opinion and gather followers (Pierri et al., 2022). In the 19th century, modern propaganda strategies emerged with the rise of nation-states. World War I witnessed significant propaganda efforts from both sides, facilitated by dedicated government departments and the use of cutting-edge media such as radio and film (Brudek, 2017).

The development of advanced propaganda techniques, including the use of psychological warfare, took place during World War II (Brudek, 2016). Psychological warfare entails using strategies aimed at influencing an enemy's behaviour and decision-making processes through disseminating false information, propaganda, and manipulating public opinion. The Cold War conflict between the Soviet Union and the United States introduced new dimensions to information warfare. Propaganda and psychological warfare were employed by both sides to shape public sentiment and advance their respective political objectives, with these tactics themselves becoming known as "cold war" tactics. The Soviet Union established the KGB's Information Department to oversee its propaganda campaigns, while the United States formed the United States Information Agency (USIA) to coordinate its propaganda efforts (Whitton, 1951).

The emergence of the Internet and digital communication technologies in the 1990s ushered in a new era of information warfare (Caiani and Parenti, 2009). The internet provided a novel platform for propagating propaganda, spreading misinformation, and conducting sophisticated and targeted information warfare operations. Social media platforms such as Facebook, Twitter, and YouTube became extensively utilized in information warfare tactics during the 2010s. The twenty-first century also witnessed the rise of cyber warfare, a distinct form of information warfare. Cyberwarfare involves utilizing technology to launch attacks or defend against an adversary's computer networks and systems. Cyber attacks can cause damage to critical infrastructure, compromise valuable data, and disrupt communication networks. Both governments and non-state actors have increasingly employed cyber warfare to achieve strategic and tactical objectives (Pierri et al., 2022). A notable ongoing example of information warfare is the conflict between Russia and Ukraine. Since 2014, both sides have employed propaganda and disseminated false information. While Ukraine has responded with its own information warfare campaigns, Russia has been accused of leveraging social media platforms to spread false information and incite unrest in the country (Pantti, 2016).

Cyber Warfare and Information Warfare

The inception of the concept of cyber warfare can be traced back to a seminal publication authored by John Arquilla and David Ronfelt in 1992, commissioned by the renowned think tank, the Rand Corporation. In their influential report, Arquilla and Ronfelt introduced the term "cyber warfare" to delineate a novel manifestation of warfare characterized by deliberate interference with transmitting and managing vital data within interconnected computer information systems. This pioneering work paved the way for recognizing cyber warfare as a distinct domain of conflict, emblematic of the evolving landscape of modern warfare(Arquilla & Ronfeldt, 2001).

While cyber warfare is frequently associated with information warfare, they are pretty distinct in their domains. When we speak about cyber warfare, it implies computer networks and systems are attacked. For instance, hacking, malware attacks, and denial-of-service attacks are just a

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few examples of the many different tactics that can be used in cyberwarfare (Haq et al., 2022).

Critical infrastructure disruption, information theft, and espionage are all possible with

cyberwarfare. On the other side, information warfare encompasses the strategic utilization of

Information and Communication Technologies (ICTs) for the purpose of engaging in offensive or

defensive actions that involve swift intrusion, disruption, or exertion of control over the resources of

an adversary (Taddeo, 2011). It describes the use of information and communication technology to

sway and sway public opinion. Propaganda, disinformation, and psychological operations are just a

few examples of the various tactics that can be used in information warfare (Tosun & Eshraghi,

2022). Information warfare can be used to skew the narrative of a fight, sow discord and doubt, and

delegitimize adversarial forces (Hoskins & Shchelin, 2018). Even though cyberwarfare and

informationwarfare are two separate concepts, they are frequently combined in contemporary

conflicts. For instance, a cyber attack might be used to interfere with an adversary's military or

government's computer networks, while a misinformation campaign might be used to raise

questions about how the attack originated or the attackers' intentions (Carlsson & Gustavsson,

2017).

Information and cyber warfare have a massive impact on contemporary conflicts. With the

use of these technologies, actors can now engage in conflict in novel and creative ways, as well as

attack and defend in ways that were before impractical. As a result, militaries and governments all

over the world are putting more emphasis on cyber security and information operations (Tosun &

Eshraghi, 2022). The difficulty of attribution is one of the problems that cyberwarfare and

informationwarfare present. It might be challenging to identify the perpetrators of an assault or a

disinformation campaign because these activities frequently take place online. This can make it

difficult to react to these activities appropriately and can lead to a feeling of uncertainty and

insecurity. The difficulty of creating efficient defenses against these actions is another difficulty

(Haq et al., 2022). It might be challenging to stay on top of the most recent strategies and

techniques because cyberattacks and disinformation efforts are continuously changing. Governments and military may finds it challenging to construct efficient defenses as a result.

Propaganda and Disinformation in Information Warfare

Information warfare comprises propaganda and disinformation as pivotal elements in shaping narratives, influencing public opinion, and manipulating perceptions during conflicts. Information warfare together with propaganda both refer to the use of information and communication technology to sway public opinion and impact behavior (Kotelenets & Barabash, 2019). While the utilization of propaganda in combat is not a novel concept, the advent of social media and other digital technologies has significantly transformed the production and dissemination of propaganda. Consequently, the term "digital propaganda" has emerged as a descriptor for propaganda in the digital domain (Neyazi, 2020), reflecting the growing influence of digitalization in this sphere. In order to selectively and frequently biasedly influence public opinion and beliefs, propaganda is described as a systematic endeavor (Umar et al., 2020). An ideology or worldview is promoted, the narrative of a conflict is shaped, and the actions of both individuals and groups are influenced by propaganda. Images, movies, news stories, and social media posts are just a few of the many formats that propaganda can take. It can be shared online on sites like Facebook, Twitter, and YouTube as well as through more conventional media channels like newspapers and television (Dimitrov et al., 2021).

The fact that propaganda frequently delivers a biased or distorted version of reality is one of its fundamental characteristics. People can be made to feel fear, rage, and other powerful emotions by propaganda, and these feelings can then be utilized to shape their ideas and actions (Umar et al., 2020). Propaganda and other information and communication technologies are used in information warfare to further tactical objectives. Information warfare can be used to skew the narrative of a fight, sow discord and doubt, and delegitimize adversarial forces. Finding the source and reliability of information can be challenging, which is one of the major problems that information warfare and propaganda provide (Umar et al., 2020). It can be challenging for people to tell propaganda from

real news or information because it frequently has the same look and feel. The vast amount of information that is accessible in the digital age presents another difficulty. With so much information at their fingertips, people could become disoriented by the volume of contradictory and contrasting information, making it challenging to determine the truth.

During conflicts, it is crucial to recognize that both conflicting parties employ propaganda in their discourse, targeting both domestic society and foreign political actors. While propaganda is often associated with negative connotations due to its historical misuse, it can also serve positive purposes. The ethical evaluation of propaganda lies in its intentions and the values it promotes. In some cases, propaganda can be employed to promote socially beneficial causes such as public health campaigns, environmental awareness, or public safety initiatives. These forms of propaganda aim to educate and inform the public, encouraging positive behaviours and fostering social well-being (Horowitz, 2019).

In democratic countries, state-level propaganda is typically employed during times of war in the form of information warfare. During such periods, censorship is imposed on media coverage of military actions and internal events. The government seeks to influence the media to create an enemy image of the opposing side in the conflict. This influence is achieved through financial support for government media and specific information projects and the introduction of new legislation that provides tax benefits to media outlets serving military needs and participating in the information war. Despite limited freedom of speech during wartime conditions, critical viewpoints regarding government-imposed images are still possible within society, although their acceptance may not be as pervasive as in totalitarian states (Thornton, 2015).

The effectiveness of these wars depends not only on the political regime but also on advanced technologies that allow for the manipulation of information flows and reduced verification of their reliability. In such scenarios, facts are substituted with emotions, rationality gives way to the subconscious, and an alternative worldview based on recoding reality is promoted (Golovchenko et al., 2018). In response to these tactics, propaganda and information warfare

experts develop innovative methods to decode and counteract the influence by utilizing stereotypes, oppositional approaches, and psychotherapy techniques.

Disinformation is the deliberate dissemination of false or misleading information to influence public opinion or undermine adversarial parties (Lindley, 2022). It can be used in information warfare to achieve strategic objectives such as causing confusion, subverting democratic institutions, or promoting a specific political or ideological agenda. Disinformation often appears credible, making it difficult to discern truth from falsehood (Bertolami, 2022). It is commonly distributed through conventional media channels and online platforms like social media, blogs, and forums (Yablokov, 2022). State actors, non-state actors, and individuals can all engage in disinformation operations (Lindley, 2022). State-sponsored misinformation campaigns, often well-funded and sophisticated, aim to influence election outcomes or shape the narrative of a conflict (Rossetti & Zaman, 2023).

Disinformation takes various forms, including memes, videos, and social media posts (Lindley, 2022). Bots and fake social media accounts are utilized to spread false information and manipulate social media algorithms (Al-Rawi, 2021). Verifying the accuracy of information becomes challenging, particularly with the abundance of online content. Deceptive advertisements further complicate the issue. The speed at which false information spreads online presents another difficulty, as it can reach millions of people within minutes through social media platforms. Preventing and correcting the spread of false information becomes challenging (Lindley, 2022).

Enhancing public media literacy and critical thinking skills is crucial to combat misinformation. Educating individuals on distinguishing reliable news from misinformation empowers them to defend against its consequences (Haq et al., 2022). Increasing accountability and transparency in the media is another strategy. Strict adherence to standards of objectivity and truth by journalists and media organizations can restore trust in the information people receive.

Role of Algorithms in Information Warfare

Another peculiarity in information warfare is computer algorithms that use data to decide what information to display to viewers. Algorithms are used by social media sites like Facebook, Twitter, and YouTube to choose what information shows in users' newsfeeds, search results, and suggested videos. These algorithms aim to keep users on the platform for extended periods by encouraging engagement (Yousaf et al., 2022). These algorithms, however, can also be exploited to promote misinformation and propaganda. For instance, users who interact with false information, such as fake news stories, are more likely to see content like that in the future. Users may then only be exposed to material that validates their opinions and biases, leading to the construction of filter bubbles (Hussain et al., 2021). As sensational or controversial content is more likely to generate engagement than factual information, this can also amplify false information. It is extremely difficult to thwart information warfare tactics since algorithms are used in those activities (Yousaf et al., 2022). The speed and scope of these initiatives are one of the main obstacles. Limiting the effects of these campaigns can be challenging because algorithms make it possible for incorrect material to spread quickly and to a large audience (Muqsith et al., 2021). Furthermore, because it is only sometimes clear who is behind these campaigns, algorithms can make it challenging to pinpoint false information sources.

One of the challenges posed by algorithmic use is the lack of transparency. Social media platforms often keep their algorithms secret, making it difficult for researchers and the public to understand how false information spreads (Yousaf et al., 2022). However, Twitter stands out as an exception, providing open access to its algorithms since 2016 (Huszar et al., 2021). Within the Twitter context, where regulatory policies to combat propaganda and disinformation lack strict enforcement, an examination of the role played by algorithms in facilitating the dissemination of such content becomes essential. Algorithms exert substantial influence over the visibility and reach of information on social media platforms, including Twitter.

The algorithmic-driven nature of content dissemination on Twitter poses a challenge in effectively curbing the proliferation of propaganda. While Twitter has taken measures to address this issue by implementing policies against specific forms of manipulative behaviour, the absence of stringent regulations specifically targeting propaganda provides scope for manipulating and exploiting the platform (Golovchenko et al., 2018). Understanding the intricate role of algorithms in the propagation of propaganda on Twitter is critical for devising effective strategies to mitigate its impact. This necessitates continuous research, analysis, and collaboration among platform operators, policymakers, and researchers to identify potential biases inherent in algorithms and establish safeguards to counter the dissemination of misinformation and propaganda.

Understanding the Information Warfare in Russia-Ukraine Conflict

Both sides have made the use of information warfare a significant tactic in the continuing confrontation between Russia and Ukraine. Russian misinformation efforts have been used to skew the conflict's narrative, cast doubt on the authority of the Ukrainian government, and foment dissent and confusion among Ukrainians. The spread of a narrative of instability and anarchy in Ukraine has been one of the main goals of Russian media warfare in the conflict there. Russian propaganda efforts have attempted to portray Ukraine as a failing state, marred by political unrest, economic suffering, and corruption (Weikmann & Lecheler, 2022). This story aims to discredit the Ukrainian government's authority and legitimize Russian engagement in the conflict, which was spread around foreign countries. Additionally, Russian disinformation campaigns have attempted to sow discord and confusion among Ukrainians. The spread of misleading information via social media and other online platforms is one of the main strategies employed by Russian disinformation campaigns. Social media accounts funded by Russia have been used to disseminate fake information about the battle, including made-up news articles and deep fakes such as edited photos, and edited videos (Antczak & Waesaw, 2017).

Changing the way the conflict is portrayed in world media has been one of the main goals of Russian information warfare in the conflict in Ukraine. Russian propaganda organizations like RT

and Sputnik News have attempted to frame the situation as a conflict between separatists who support Russia and are supported by the West. The purpose of this story is to persuade a global audience to support Russian geopolitical goals and to provide justification for Russian military intervention in Ukraine (Weikmann & Lecheler, 2022). Russian information warfare in the conflict in Ukraine has also used cyberattacks and propaganda to incite racial and political tensions within Ukraine, in addition to disinformation tactics. In an effort to disrupt Ukrainian society and limit the capacity of the Ukrainian government to respond to the conflict, Russian-backed hackers have targeted military and government networks as well as crucial infrastructure in Ukraine.

The Ukrainian government has only started actively respond to Russian information warfare since the begging of a full-scale invasion, February 24. with a variety of remedies, such as the creation of a network of fact-checking organizations, the expansion of media literacy programs, and the creation of a national policy for combating disinformation. In order to counter Russian propaganda, the Ukrainian government has also worked to improve media accountability and openness while fostering independent journalism. Nevertheless, despite these initiatives, Russian information warfare, continues to be a major factor in the conflict in Ukraine (Weikmann & Lecheler, 2022). Russian propaganda outlets continue to mold the narrative of the conflict in the world media, and Russian-backed disinformation tactics continue to circulate through social media and other internet channels. Russian information warfare has had a tremendous impact on the crisis in Ukraine. Russia continues employed disinformation operations to justify their actions and garner the support of sympathetic audiences within and beyond Ukraine.

Role of Social Media in Information Warfare

Social media has become a key tool in the arsenal of information warfare due to its vast reach, accessibility, and ability to target specific audiences (Prier, 2017). Social media platforms allow users to share diverse content formats, such as text, photos, and videos, enabling them to reach a global audience. Consequently, governments and non-state actors have found it increasingly convenient to disseminate propaganda, false information and manipulate public opinion (Neyazi,

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2020). The utilization of social media algorithms allows users to effectively target specific demographics, further enhancing their ability to influence public sentiment (Zhao et al., 2023). Advocates contend that the precise demographic targeting facilitated by social media algorithms enhances the effectiveness of information warfare (Zhao et al., 2023). By tailoring messages to specific groups, social media platforms enable the precise manipulation of public sentiment. This targeted approach can be considered a strategic advantage for shaping narratives and swaying public opinion (Huszár, Ferenc, et al., 2021).

The algorithms that social media platforms employ further complicate the influence of social media on public opinion. These algorithms are meant to encourage interaction, which can result in the propagation of erroneous information and the amplifying of propaganda (Zhao et al., 2023). For instance, Facebook's algorithms give priority to material that encourages interaction through likes, shares, and comments. As controversial or sensational content is more likely to spark engagement than factual information, this can contribute to the spread of false information (Schwartz, & Mahnke, 2020). Twitter is another algorithm-based platform which is highly utilized by state officials, politicians, and individuals to disseminate their messages and engage with a broad audience. The content displayed on Twitter's home timeline is curated and arranged based on personalized algorithms. These algorithms, through their consistent ranking mechanisms, have the capacity to amplify particular messages while concurrently diminishing the visibility of others (Huszár et al., 2021).

Social media campaigns' rapid and expansive nature poses challenges in responding effectively to them. These campaigns can quickly gain momentum, making it challenging to mitigate their impact. Additionally, identifying responsible actors behind these campaigns often remains elusive, further complicating response efforts.

Twitter has emerged as a critical arena for information warfare, where Russia and Ukraine actively leverage the platform to shape narratives, mobilize support, and influence global perceptions. While it is known that Twitter algorithms can contribute to the dissemination of

propaganda, this study seeks to comprehend how much propaganda and disinformation are used on state-sponsored Twitter accounts in the realm of information warfare between Russia and Ukraine. While the Russian propaganda machine was preparing the narratives way before the full-scale invasion started, I expect that Russian propaganda narratives on Twitter will mainly be focused on distorted facts and delegitimation of the Ukrainian government.

Methods and Case Selection

This thesis delves into information warfare between Russia and Ukraine, focusing on the propaganda tactics employed by both states on the Twitter platform since the full-scale invasion in February 2022. The primary objective is to analyse the propagandistic discourse and trends disseminated by the official state accounts of Russia and Ukraine on Twitter within the timeframe from February 2022 to May 2023. By examining the content shared on Twitter, this study aims to comprehend the evolving narratives, strategies, and influential topics utilised by both sides in their propaganda endeavours.

To conduct this analysis, the selected cases for examination comprise the official state accounts representing Russia and Ukraine on Twitter. These accounts hold significance in shaping and disseminating information related to the conflict, providing valuable insights into the propaganda tactics employed by the respective states. By focusing on these official accounts, the study aims to capture the overarching discourse of state-sponsored propaganda while acknowledging the limitations inherent in this specific sample. The choice of Twitter as the platform for studying propaganda stems from its widespread usage, real-time nature, and considerable influence on public opinion (Haq et al., 2022).

Data Collection and Analysis

Step 1: I collected the data through an APIFY Twitter Scrapper,[i] which enabled me to receive a specific set of Ukrainian and Russian Twitter accounts data set which is necessary for further analysis. These accounts were carefully selected based on their association with state-sponsored entities, political figures, or state organizations. The identified Twitter accounts included United24. media, Vox Ukraine, MFA Ukraine, Mykhailo Podolyak, MFA Russia, GazetaRU, Russia United, and Vladimir Medvedev. Mykhailo Podolyak and Vladimir Medvedev are both political figures who were very influential in spreading propaganda narratives, not only for the local

community but also for a foreign one, frequently referring to foreign political leaders. Please see the appendix for further info on the specific accounts.

The data collection period encompassed a significant timeframe, starting from February 24, 2022, which marked the commencement of the Russian full-scale invasion of Ukraine, and extended until the middle of May 2023. This duration was chosen to capture a comprehensive dataset that reflects the dynamics of propaganda and disinformation narratives disseminated by the Twitter accounts during this critical period of geopolitical conflict.

Step 2: The collected dataset encompassed texts in Russian and Ukrainian languages, necessitating an initial phase of document translation to process with the sentiment analysis and text analytics via topic modelling.[ii] Sentiment analysis is necessary as it can help identify the sentiment associated with propaganda messages, enabling us to assess the emotional impact of such content on the audience. It can uncover patterns in sentiment changes over time, tracking shifts in public sentiment towards specific events or propaganda narratives. By examining the sentiment of tweets related to propaganda, we can gauge the effectiveness of these strategies in shaping public perception and opinions, it allows us to estimate what kind of sentiment is easier to be promoted on Twitter.

Step 3: After running the analysis, I receive sentiment scores for both Ukrainian and Russian data sets separately and classification into negative, positive, or neutral language. Within the feature of topic modelling, I received an automated determination of topics and keywords contained in the data set. Topic modelling makes it possible to obtain general information about the content of the corpus of documents. It works on the assumption that documents are made up of a series of topics, and topics are made up of words/phrases that often occur together. Since the algorithm does not involve generating titles, this classification is performed manually after generation.

Through this analytical process, valuable insights were gleaned regarding the dominant narratives and pivotal issues propagated by both sides on the Twitter platform and how they

evolved over time. Of particular significance is the investigation into the evolving narratives and justifications employed by the involved parties throughout the course of the conflict. For instance, initial Russian propaganda posited a swift conclusion to the "Special Military Operation" within a mere three days, despite the protracted nature of the ongoing war (Umar et al., 2022). Examining how these actors substantiate their actions to their respective societies and foreign communities presents an intriguing avenue for inquiry.

The Essence of Russian Propaganda

This section presents the dynamic of themes that have been highlighted by the selected state-sponsored Twitter accounts, which I get through the result of the topic modelling. This analysis allows us to see some patterns and to trace the evolving nature of information warfare in Russia.

Figure 1: Topic modelling of Russian discourse.
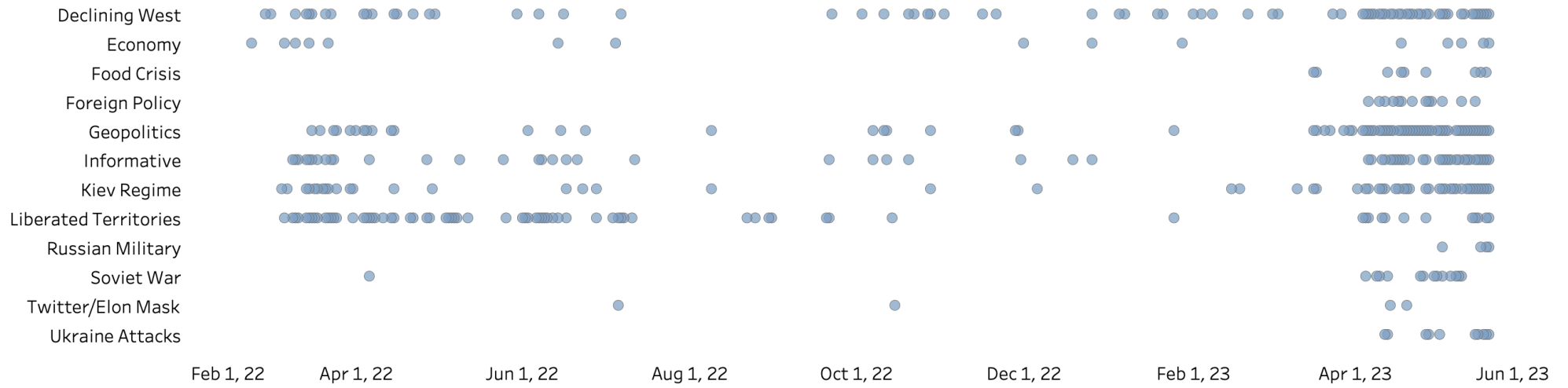
Source: own calculation

Figure 1 shows the frequency of the most occurring topics on Russian Twitter outlets highlighted. While some of the topics tend to be present throughout the analysed time of the conflict, some may occur in separate timeframes. To present a consistent view of discourse, I begin by highlighting the leading narratives that occur at the begging of "special military operation" and how they are evolving through time. As Russian full-scale innovation into Ukraine did not follow its original plan, I would expect that the course of narratives will be changing swiftly without a persistent presence of narratives.

One notable discourse observed within Russian Twitter accounts revolves around the concept of the "Declining West." This tends to be present throughout the analysed timeframe. However, the discourse it represents is entirely changing through time. While it would be expected that Russia will operate more with information regarding military operations, in contrast, it mainly concentrated on the reaction of foreign leaders and speculation narratives about sanctions. Such strategy can be considered an essence of psychological operation for foreign countries and society leaders.

21/03/2022 On Poland. While Europe is getting painfully aware of the damage the anti-Russian sanctions are causing it, our most favorite European country is, as usual, going ahead of the locomotive.
30/05/2022 Biden's stated, the US won't provide Ukraine with the missile systems able to hit Russia. It's reasonable. In the case of attack against our cities, Russia would strike the centres where these criminal decisions are made. Some of them aren't in Kiev. What comes next is obvious.

While at the initial stage of invasion, the discourse regarding the West takes more neutral sentiment, at the end of 2022, it takes more negative or even offensive characters where the West is mainly portrayed as enemies of Russia, with no respect but often ridiculed.

01/12/2022 Led by Heusgen, a dumb, shortsighted clerk, the Munich Security Conference has totally degraded. Now, they're afraid to invite Russians so as not to hear the truth. However, the truth is slowly seeping through to the Europeans, who've been set up by their own political leaders.
26/12/2022 Season greetings to you all, Anglo-Saxon friends, and their happily oinking piglets!

This shift can be understood as a response to Western nations' criticism and a way to counter sanctions and political discrimination. This tendency became particularly pronounced

following the defeat of Russian troops in the Kyiv regions, necessitating new justifications to elucidate the events to the domestic population. Given Russia's long-standing portrayal of itself as a strong military power, the inability to prevail against Ukraine, perceived as a comparatively weaker nation, would require a significant military capacity. Consequently, the West conveniently serves as an ideal rationale for explaining Russian forces' perceived lack of success in Ukraine.

Together with the image of declining West, Russian propaganda is actively working on constructing the image of the enemy, which is essential at the time of warfare. Russian propaganda always refers to a labelling strategy to create a stronger image of the enemy and delegitimise the authorities in Ukraine. In most cases, they use the term "Kiev Regime" or nazi-regime when they begin the discourse about Ukraine. Such calling gives the impression that Ukrainian authorities are something illegal and temporary. Labelling Ukrainian authorities and people Nazi aims to emphasise the brutality associated with the regime.

30/03/2022 Artem Turov: In textbooks from the school libraries of the liberated Volnovakha, residents of the LDNR are called terrorists. They formed a common image of the enemy - Russia, and the textbooks were based on NATO materials, said the deputy chairman of the State Duma Committee on CIS Affairs.

11/03/2022 The head Nazi in Kiev has ordered to consider officially renaming Russia to Moscoviya. What would our response be? Renaming Ukraine as well, but not to Ukroland, and definitely not to Malorossiya. Just Schweinisch Bandera-Reich. Exakt!

The above provided propaganda narratives are examples of distorted information. For instance, the last message claims that the Ukrainian government renamed Russia to Moskoviya. While such an initiative came from a petition, it did not reach its final resolution – yet this information is omitted.

Throughout the conflict, Russian Twitter outlets continue highlighting the Kyiv regime in the same way: by using fake news and distorted information. However, with active military aid from foreign partners, they actively started promoting the idea that Ukraine is used by the West to conduct war with Russia.

17/05/2023 #Zakharova: The West has made its role in the conflict abundantly clear: the Kiev regime serves merely as its tool and Ukrainians as its pawns, ready to be sacrificed in the West's standoff with Russia.

07/05/2023 #Opinion by Maria Zakharova: The interview of Head of Ukrainian Defence Intelligence Kirill Budanov to Yahoo News is a direct blow to the White House. The Kiev regime has basically announced that the Biden administration is sponsoring terrorism.

The discourse around "Liberated Territories" appears as another distinct manipulative narrative which has strengthened since the begging of the conflict in Donbas, Crimea, and Luhansk in 2014. Russian authorities are speculating on historical facts that these territories belong to Russia. This is an apparent distortion of the historical past which perfectly meets the present needs to reach the legitimacy of actions. The first narrative points out Russia as a historical homeland of Crimea and Sevastopol, while, if looked from the perspective of historical right, Crimea is a Tatar's land.

17/03/2022 Vladimir Putin: The inhabitants of Crimea and Sevastopol lived and live on their own land and wanted to have a common future with their historical homeland.
On April 6, 1654, Tsar Alexei Mikhailovich granted his royal charter to Hetman of the Zaporozhian Host Bogdan Khmelnitsky, marking its acceptance into the Russian state.
The document secured Russia's reunification with Little Rus.

The other narrative is pointing to unification Russia and Little Rus while in fact the agreement was about a military-political union between two states which granted Ukraine a military aid.

Within the variety of information about liberated territories, some point out how Russia is helping the people of Donbas, Crimea and the newly liberated Kherson and Mariupol with humanitarian aid and infrastructure development. Such manipulation is again pointing out to Russian society the sound will of the Russian government and portraying the West as the one who ruins the life of people with a military supply to Ukraine.

As a result of sanctions, the economy becomes another vital topic at the beginning of 2023, where Russian authorities are trying to point out how wrong the West is in its actions towards Russia and bring to doubt their expertise. The use of loaded language makes it explicitly visible the manipulative character of such messages.

25/02/2023 Too bad when the EC head has so little knowledge of economics and is used to looking at purely medical objects. Otherwise, why is the highest-ranking EU gynecologist gleefully calculating Russia's losses from the new sanctions, while leaving out her companies' damage?

During times of war, geopolitics has become increasingly important, and it is not surprising that this topic is widely promoted on Russian Twitter accounts. There are two main messages within the geopolitical discourse. The first message focuses on narratives about Russian oil and gas, emphasising how sanctions imposed on Russia harm foreign countries more than Russia itself. The aim is to highlight the vulnerability of Western nations heavily reliant on Russian energy resources, suggesting that punitive measures against Russia have unintended consequences for the countries imposing the sanctions.

The second message aims to portray Russia as a strong geopolitical leader that supports countries suppressed by the West. Russia presents itself as a champion for nations facing Western influence or oppression. By doing so, Russia seeks to enhance its international standing and build alliances with countries that may have grievances against Western powers. This portrayal positions Russia as a reliable alternative to Western dominance, particularly in regions where the influence of the West is seen as limiting or detrimental.

15/02/2023 Too bad when the EC head has so little knowledge of economics and is used to looking at purely medical objects. Otherwise, why is the highest-ranking EU gynecologist gleefully calculating Russia's losses from the new sanctions, while leaving out her companies' damage?

06/04/2023 The 2003 invasion of Iraq by the US-led coalition of Western states not only destroyed the country's statehood and its military, economic and social foundations, but also severely damaged its cultural and historical heritage.

While it is crucial to inform society at the time of war, the informative section of the message on Russian Twitter accounts mainly focuses on sharing information related to foreign countries or events within Russia itself. These messages often do not directly highlight information related to the conflict in Ukraine but give a general overview of events in the country. For instance, the first narrative presents Dmitry Medvedev as an influential authority society can rely on. The other narrative propagates the idea of Russian high culture and the idea that it must be protected presumably from Western influence.

07/12/2022 Dmitry Medvedev: Keep savings in rubles!

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24/03/2023 Culture is a national treasure. In today's world, where every day there are reassessments of meanings for the sake of conjecture, our Russian culture has been, is and will be timeless and beyond borders. Thanks to everyone who brings culture to the masses, who protects and preserves it!

The discussion around unfriendly foreign policies is another central discourse. Russian authorities continue the speculation over the subject of what you do to us is damaging you first. In the global political arena, such discourse promotes Western authorities as ones with low expertise, damaging their own country. Such white and black fallacy enables Russia to promote itself as a competent, reliable state acting for its own interests and the common good.

10/03/2023 #Zakharova: The irresponsible monetary policy of the US in the form of uncontrollable dollar issuance has accelerated inflation in America and around the world.
! *This course undermines confidence in the US dollar as a reserve currency.*

18/04/2023 Russia's Concept of the Foreign Policy:
Given the progressive strengthening of the sovereignty & multifaceted potential of Latin American & Caribbean states, Russia intends to develop relations with them on a pragmatic & mutually beneficial basis.

The last message portrays very well how Russian authorities undermine the French minister without referring to a name by pointing out that what this French minister is saying has no importance.

While the threat of a world food crisis was already a subject of active negotiations between Russia, Ukraine, and other parties in 2022, this topic gained more attention in 2023 on Russian twitter. Russia is actively seeking foreign support in African countries, and the food crisis has become an opportune initiative to garner support and reinforce the narrative that Ukraine, along with its Western partners, lacks concern for fundamental humanitarian issues.

15/05/2023 #Nebenzya: The indisputable fact of "settlement" within the #EU of a significant part of Ukrainian food, originally intended supposedly to be sent to the countries of the Global South, is a vivid example of the true essence of the high-profile humanitarian initiatives of Brussels.

19/04/2023 Maria #Zakharova: Clearly, the Ukrainians & Westerners no longer trouble themselves with either analysing compliance with the Black Sea Initiative, or making any attempts to comply with their own high-flown statements about global food security.

Most of the narrative observed on the analysed Twitter accounts revolves around topics concerning the West and the alleged presence of neo-Nazis in Ukraine's government. However,

there is a notable scarcity of explicit discussions regarding the "special military operation" or the Russian military. Since spring 2023, there have been a few mentions of the Wagner Group, a private military company. The discourse primarily focuses on the military confrontation in the Bakhmut region.

20/05/2023 ❗ *A fighter of PMC "Wagner" told RIA Novosti that Russian forces in Artemivsk are fighting the final battles on the outskirts of the city. According to him, less than a kilometer of territory remains under the control of the Armed Forces of Ukraine.*

While Russian outlets refrain from actively discussing the current state of the Russian military, there is a notable emphasis on actively discussing the Soviet Army. Russian authorities aim to reaffirm the heroism of the Soviet Army and pay tribute to its pivotal role in the victory over Nazism. This concerted effort to circulate such information underscores Russia's historical significance in the fight against Nazism and can serve as an additional justification for military operations, positioning Russia with a mission to overthrow a supposed Nazi regime. The dominant discourse primarily seeks to consolidate support within the domestic community and uphold a strong cultural identity while simultaneously projecting a specific narrative to foreign audiences.

08/05/2023 I'm reminding the citizens of the countries which are now fighting against Russia: over a million Soviet soldiers sacrificed their lives for peace and freedom from fascism in Europe. 600 thousand citizens of the USSR died, liberating Poland from fascism; 380 thousand gave their lives liberating Czechia and Hungary, over a 100 thousand – Germany.

Unfortunately, today's Europe and its squalid leaders have a very short memory. But we will always remember the heroes of the Second World War. Our country eradicated fascism in 1945. Have no doubt: in present-day Europe, we will crush the hideous Bandera neo-nazism, cherished so dearly by the heirs of the third reich in the EU. For the sake of the memory of our fathers and grandfathers. Happy Great Victory Day!

The discourse surrounding Ukraine's alleged attack on Russia has notably gained prominence since April 2023, which can be attributed to a Ukrainian counteroffensive. Nevertheless, it is essential to acknowledge that the narrative of Ukraine attacking Donbas remains prominent.

08/05/2023 #Nebenzia: Attacks of the Kiev regime against civilian infrastructure and peaceful population of the #Donbas happen daily. Donetsk has been living under fire ever since 2014. At present, they report civilian casualties once every few days.

The narrative surrounding Donbas has remained remarkably repetitive, fuelling speculation since 2014. However, in sharing these narratives, news outlets and Russian authorities conveniently omit precise information about what has happened, who attacked whom or what are casualties and human losses, raising doubts about the accuracy of the provided information.

As the importance of social media in information warfare has already been pointed out, we also see specific references that aim at Twitter and its owner/CEO as important topics. While these seem not to have anything to do with the conflict, the persistence of narratives about Elon Mask and Twitter and Meta is proving the importance of social media again as a tool for the spread of information – Russian users reacting to any change of the social media systems that could hinder their previous practices of using these channels.

20/04/2023 Elon @elonmusk still managed to change something in Twitter. Acknowledging public interest to the previous post attests to that

By examining the narrative dynamics promoted by Russian outlets on Twitter, it becomes evident that Russian propaganda primarily aims to manipulate perceptions and cultivate support for its actions. Notably, there is a noticeable absence of emphasis on discussing the present state of Russian military operations. This deliberate strategy is likely employed to preserve a specific narrative that Russia is following its plans of 'special operations' and evade potential scrutiny or discussions concerning operational details.

Figure 1 is showing up the persistence of narratives about the decadent West, liberated territories, Kiev regime, geopolitical issues, and the economy, which are rising during the time of conflict. These trends are a showcase of the main strategical targets of Russian propaganda in this information warfare. The narratives about Soviet War and Twitter are two other topics which are periodically appear in the information space. By throwing up the narratives about Soviet War during the time of another war, Russian propaganda may seek to shape the historical narrative in a way that it portrays Russia as a hero, emphasising past sacrifices and victories. This manipulation serves to foster a sense of national pride and unity among Russians, while downplaying any negative aspects of Soviet history. Also, it can be used as a shift of attention from the current state

of problems, as, for instance, the Russian army does not receive much attention. Instead, Russian media outlets throw in a lot of general information or information about the state of events in other countries to divert attention from any of the problems the Russian military is experiencing in the conflict.

The Central Themes of Ukrainian Propaganda

In the realm of information warfare, it is crucial to recognise that engagement involves multiple parties. As Ukraine, navigates through the challenges of war, it is expected that Ukrainian propaganda will predominantly prioritise the implementation of counterstrategies to Russian information warfare. This can be observed in the figure 2, which depicts the frequency of the most prevalent topics emphasised by Ukrainian Twitter outlets selected for the analysis.

Figure 2: Topic modelling of Ukrainian discourse.
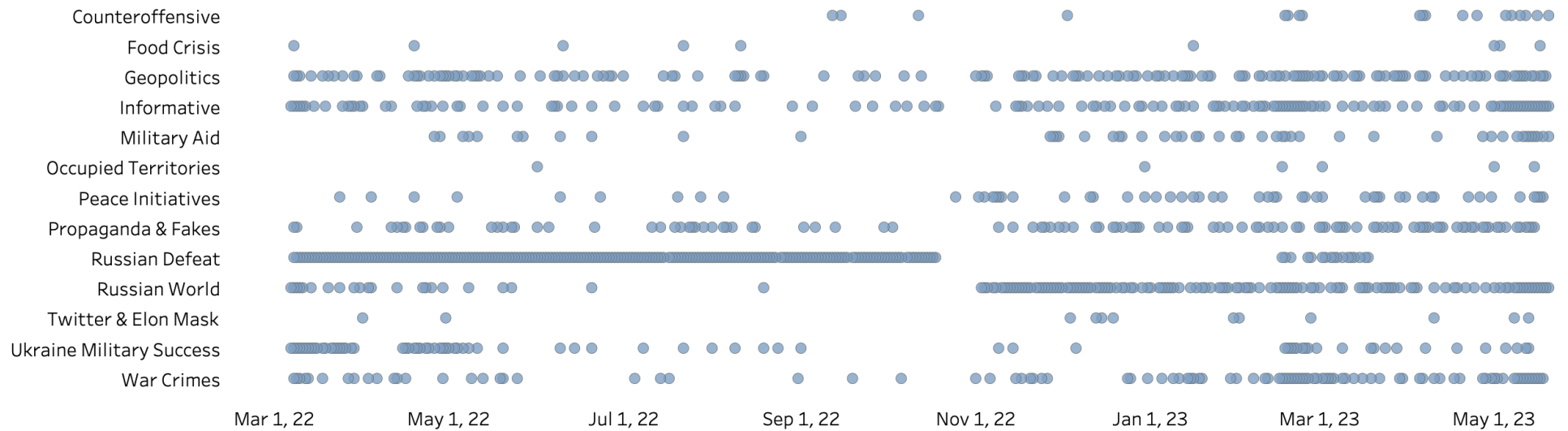
Source: own calculations

As Ukraine is a country with a relatively small military potential, at the beginning of the conflict, it was essential to maximise the narrative about a Russian Defeat and portray the Ukrainian military as the one which can defeat the "third army in the World". This served as an important propaganda tactic known as "psychological warfare" or "psychological operations" (PSYOPS). By emphasising the resilience of the Ukrainian forces in the face of a formidable opponent, this tactic aimed to instil confidence and unity within Ukrainian society.

While the information about Russian defeat usually includes the information about the number of Russian troops being killed or the liberation of territories, in some cases, it propagates a narrative which tends to dehumanise the enemy, in this case, Russia who do not care about the number of victims in this war. Such a tactic is another psychological operation which mainly aims to call Russian society to action.

02/03/2023 "Russian battle tactics". Russia does not count those killed, abandons the wounded and burns bodies in order not to pay compensation. For Russia, people are the cheapest currency. And ru-population is normal. There should probably be 5,000 funerals a day for them to feel threatened and start asking the right questions.

There is a very high frequency of information regarding Russian defeat until 2023, which has to do with the de-occupation of territories during the Ukrainian counteroffensive and the settlement of the conflict, mainly along the Southern and Easter parts of Ukraine.

When information warfare is a part of actual warfare, it is essential to inform society about potential threats. Many of the analysed outlets share information on how to behave in the case of a particular threat. This trend is observed throughout the analysed period. The topics outline changes depending on a new threat emerging. For instance, in 2022, the information concerned chemical attacks, mined areas and literacy regarding the outline of information on social media.

03/12/2022 What to do in a case of chemical attack ↴
#StopRussia #StandWithUkraine #CloseTheSky

While in 2023, Ukraine faced with electricity crisis due to the high damage critical infrastructure, the information on the use of electronic devices has followed.

30/01/2023 Key messages from podcast on how Ukraine's energy system works after mass shelling by russia and what are the forecasts for its recovery.

Another major topic of the material referred to historical events which outline the crimes of the Soviet regime in Ukraine or to draw the lines between Russians and Ukrainians. The purpose of such content is to link the lasting impact the Soviet Union has left on Ukraine's history and collective memory with the current conflict. By highlighting the crimes and atrocities committed by the Soviet regime in Ukraine, Ukrainian propaganda aims to expose the regime's oppressive nature which is attributed to present-day Russia and emphasise the distinct national identities of Ukrainians as different from Russians. This way, the use of historical material allows Ukrainian propaganda to contextualise the current conflict with Russia within a historical framework. By highlighting past grievances and injustices, Ukrainian propaganda aims to garner domestic and international sympathy and support for Ukraine's struggle for independence, territorial integrity, and self-determination.

20/04/2022 How different are Ukrainians and Russians?
The answer is below ⤵#StandWithUkraine

25/05/2023 The Holodomor was a genocide committed by the leadership of the Soviet Union against the Ukrainian people in 1932-1933. The aim was to humiliate Ukrainians, finally eliminating Ukrainian resistance to the regime and its attempts to build a Ukrainian state independent of Moscow.

Countering propaganda and fake news is another critical strategy in information warfare. It can be assumed that in 2022 Ukrainian media were in the process of developing strategies for countering Russian propaganda and fakes, as the more persistent distribution can be seen in 2023. Most of the narratives in 2022 are countering fakes, and disinformation and is on a broad spectrum of topics. Many countering posts are about Ukraine bombing Donbas, propagating that war in Ukraine cannot be called the "Ukraine crisis", and the presence of biological weapons.

08/01/2022 ❗ Fakes produced by Russia

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Russia sent 20 notes to the Organization for the Prohibition of Chemical Weapons regarding the threat of chemical attacks.
⛔*Members of the organization did not hesitate to respond by condemning russia's baseless lies.*

Another part of the narratives was aiming to shed light on Russian lies regarding the willingness for peaceful conflict resolution, which was widely supported by the West. While there was an initiative of a peaceful conflict settlement initiated by Ukrainian authorities, Russia continued to promote the discourse about the unwillingness of "Kiev regime" for a peaceful resolution of conflict.

23/04/2023 A real "peacemaker"...
does not encourage the aggressor to continue expansion, does not close its eyes to mass killings, does not exchange foreign territory for a pause between stages of the war, does not allow Russia to "save face", does not insult the memory of victims of aggression. These are simple axioms that are understandable in any language, aren't they?

To point out the cruelty of Russian authorities together with the armed forces, the term "Russian world" emerged. This label represents the narratives which aim to disqualify the enemy by pointing out what kind of "world" – values the Russian state is propagating. This is a world where human lives do not matter (neither Ukrainian nor Russian) and there is no space for democratic values, human rights.

If in 2022 Ukraine is trying to disqualify Russia from the international political arena, in 2023, it is more concentrated on pointing out the violation of human rights and Geneva Convention 1949 for what Russia must undertake responsibility.

22/11/2022 Do you want to know what the "Russian world" is in the occupied territories? This is 1000 and 1 method of torture. This is kidnapping from home. These are mass executions and rape. Only because our people identify themselves as. Want to know what gives them the strength to survive? The belief that this terrible dream must end.

To hold Russia accountable for its crimes, Ukrainian outlets constantly reported the casualties of Russian attacks on civilian objects and critical infrastructure. The outline of this section is quite diverse due to a wide range of attacks. However, if to look at the topic modelling figure, the intensity of Russian attacks can be traced through the entire period.

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Geopolitics is another important topic discussed on Ukrainian Twitter. The initial state of war is outlined by a discourse with the aim to consolidate Western support around the war in Ukraine. This step is vital to show that Ukrainians are not standing alone in this war. However, 2023 is more intense in highlighting the content of geopolitical character, which is related to an already set partnership with foreign countries and initiatives of jointing NATO and UN integration.

Military Aid is an essential target in the present military confrontation. While in 2022, the message outlined on Twitter highlighted the importance of military supply, in 2023, the discourse became narrower and takes an informative character, detailing the specificities of military aid that Ukraine can count on from its Western supporters.

27/11/2022 "Patriot system" and "escalation" – words that cannot be in the same sentence. Air defense is not about offensives, but about protecting children and civilians from missiles. A wise initiative by Poland. Correct words of the NATO Secretary General. Waiting for Germany's decision.

15/05/2023 German Chancellor Olaf Scholz said that Germany would send additional Leopard 1 tanks, Marder BMPs, and Iris-T air defense systems to Ukraine after the meeting with President Zelenskyy. Germany announced the package of military aid of 2.7 billion euros.

The discussion about Elon Musk and Twitter becomes a prominent one, as it gives a shred of empirical evidence about the importance of social media in information warfare. Most of the posts attack the twitter CEU for not supporting Ukraine or spreading information that is inaccurate or ambiguous when it comes to the war.

04/12/2022 .@elonmusk prefers seemingly magical "simple solutions". "Exchange foreign territories for illusory peace" or "open all accounts, because freedom of speech should be total". But there is one but. With good intentions, the road is necessarily paved into Putin's or West's hell...

13/03/2023 As soon as you start calling Russian propaganda "freedom of speech" and open all the floodgates for it, so that primitive propaganda sewage floods your pages, the advertising attractiveness of the #Twitter platform plummets). It's an axiom, @elonmusk! Wherever Russians stay with their own "interests," real competitive business always dies.

The reason for such interest was that before Elon Musk became the owner of Twitter, the media giant used to have contended moderators who would block social accounts which are disseminators of fake news. As a consequence, at the beginning of the invasion, a variety of

influential Russian propagandist channels has been banned. With the ownership of Twitter by Elon Mask, the algorithms have changed, which enabled the active spread of Russian propaganda.

Figure 2 is showing a tendency of consistent presence of such topic as war crimes, propaganda, and fakes, informative and geopolitics. This trend can signify the main targets of Ukrainian propaganda during the time of war. The persistence of such topics can once again prove that the nature of Ukrainian propaganda on Twitter is mainly of a counter-offensive character.

Topics such as Russian defeat and Ukrainian military success have a high frequency of presence during 2022 and a sudden decline in 2023. This can be explained mainly by two factors. First, it is the state of warfare which had a very active phase during 2022 and then got stalled. Second one can be linked to propaganda initiative of consolidation of society at the initial state of the war. This is why the narratives about Russian world, peace initiatives and military aid, counteroffensive become dominant at the begging of 2023.

Russian vs Ukrainian Propaganda Narratives

A comprehensive overview of the main narratives employed by both countries has been constructed by analysing the main messages of Russian and Ukrainian propaganda. This section highlights the key differences in their approaches to conducting information warfare.

Russian information warfare is built upon promoting the notion of the decadent West, which has fallen under the hegemonic power of the United States. Initially, Russia attempted to justify its actions by invoking historical rights over Ukrainian territories. However, as the conflict progresses, they construct an image of the Ukrainian government as a Nazi regime, portraying it as an enemy. This way, they also draw on the historical analogy of the second world war, claiming Russia is again battling the evil Nazis. Conversely, the Ukrainian government promotes the idea of Ukraine as a country fighting for freedom against a foreign aggressor. In line with this argument Russia is presented as a dehumanized enemy, where lives do not matter.

When examining the propaganda discourse on Twitter accounts, it becomes evident that Ukrainian propaganda adopts a primary counteroffensive approach, aiming to unite and rally society during challenging periods by proving the disinformation or falsity of Russian messages and also emphasizing the heroic fight for freedom of the Ukraine.

One recurring narrative propagated by Russia involves the claim that they are combating Nazis and referring to Stepan Bandera in Ukraine. However, it is crucial to provide a more comprehensive understanding of Stepan Bandera's role in history. Bandera was an ideologist of the national liberation movement, actively fighting against two totalitarian regimes: the Nazis and the Communists. His advocacy was centered around the concept of an independent Ukrainian state with nothing in common with nazism. It is important to note that the propaganda surrounding Stepan Bandera has been deeply ingrained since the Soviet era, thus necessitating the dissemination of alternative information to counter these narratives effectively. By providing a more nuanced perspective, Ukrainian propaganda aims to challenge and refute the distortions perpetuated by Russian propaganda.

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08/05/2022 ❗ *We have collected the main fakes that have been spread for years by Soviet and Russian propaganda about Stepan Bandera and debanked them. See below* ↱
#StopRussia #StandwithUkraine

In addition to the counteroffensive approach, Ukrainian propaganda also employs a countering strategy aimed at discrediting Russian propaganda narratives regarding Ukraine, particularly in the context of global decision-making. Recognizing the influence of Russian propaganda on the international stage, Ukrainian propaganda seeks to challenge and undermine these narratives by presenting alternative viewpoints and evidence.

27/04/2023 The right terminology...
Preservation of RF in the current political format with the current elite; destruction of international law; classic aggressive rhetoric of RF; missile attacks; occupation of the territory of Ukraine; insulting European values ‑ all this is an escalation... RF's defeat; transformation of RF's political system; primacy of international law; return of Ukraine's territories; unconditional sovereignty of all post-Soviet countries; collective control over Russia's arsenals; expulsion of ru-propaganda from global markets; sharp decline of Russian investment in global terrorism ‑ all this is de-escalation.

In fact, Russian propaganda tends to adopt an offensive approach, utilizing tactics such as disseminating distorted facts, fake news, and disinformation to further its agenda. One prominent example of this offensive strategy can be observed in the case of Sergey Kravtsov's claim regarding Ukrainian textbooks and their alleged description of preparations for war with Russia. It is essential to critically examine such assertions made by Russian propaganda, as they often employ obfuscation and misinterpretation to advance their narrative. In this particular case, it is essential to note that Ukrainian textbooks primarily serve as manuals for teaching Ukrainian history, which is different from Russian or Soviet history. Sergey Kravtsov's statement appears to be a deliberate mischaracterization of the purpose and content of these textbooks.

30/03/2022 Sergey Kravtsov: Ukrainian textbooks describe preparations for war with Russia.
❝*There is no mention of the first cosmonaut Yuri Gagarin. In the history textbooks, Bandera and Shukhevych are called heroes who are being cultivated,*❞ *Sergei Kravtsov said.*

Russian propaganda frequently portrays Western countries as a threat to Russia's interests, emphasizing alleged encroachments on Russian sovereignty and attempts to undermine its stability. Such narratives often aim to fuel nationalist sentiments within Russia and create a sense of unity by fostering an "us versus them" mentality. This approach is commonly employed to consolidate

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domestic support and strengthen the government's position. On the other side, Ukraine relies on its international support to claim their fight is the 'right fight', a fight for freedom and democracy.

The topic modelling analysis highlights common geopolitics trends for both Ukraine and Russia. Both countries actively seek external support in the ongoing conflict, indicating the importance of international alliances and backing. Additionally, both countries engage in discussions regarding the world food crisis, albeit with some differences in timing and focus. In Ukraine, the discourse around the world food crisis remains relevant in 2022, indicating an ongoing concern and the need for addressing the issue. Ukrainian discussions on this topic primarily revolve around highlighting the destructive actions of Russia, specifically targeting grain elevators. This narrative aims to draw attention from foreign communities and emphasise the detrimental impact of Russia's actions on Ukraine's food security and agricultural infrastructure.

22/07/2022 Many countries in Africa rely on food imports from Ukraine and Russia.
At the same time, The Russian military is destroying Ukrainian elevators with wheat sunflowers.

While Russian social media is pointing out that the EU is not keeping an agreement on food delivery to Global South.

On the other hand, the Russian discourse regarding the world food crisis emerges in 2023. This suggests that while the topic gains significance for Russia at a later stage, it becomes a matter of discussion and attention within the country. The specific focus or approach taken by Russian discussions on the food crisis varies: it promotes and image of Russia as a protector of the Global South but it also accuses the West and Ukraine of using agreements as pretext to further strengthen support of the Ukrainian regime..

15/05/2023 #Nebenzya: The indisputable fact of "settlement" within the #EU of a significant part of Ukrainian food, originally intended supposedly to be sent to the countries of the Global South, is a vivid example of the true essence of the high-profile humanitarian initiatives of Brussels.

To understand the distinct features of warfare Russia and Ukraine we should look comparatively on Figure 1 and 2 and that highlight how Ukrainian and Russian topics seem to be very closely connected, while they also highlight main concentration of propaganda and explain its nature.

Throughout the year of the war, the main concentration of Russian propaganda goes into attacking the declining West, and Kiev regime, while portraying Russia as a major player of geopolitics. Ukrainian propaganda is mainly targeting war crimes, countering Russian propaganda and fakes, providing tweets of informative character, and pointing out the implications of the conflict for geopolitics. While Russian propaganda is mostly focused on external factors, Ukrainian discourse is centered on internal one. Thus, Russian propaganda tends to emphasize external influences and narratives, while Ukrainian propaganda centers on internal dynamics and the situation within Ukraine.

Surprisingly, Russia is mainly silent on topics which fall under the period of "special military operation". The only topics under this heading are topics of an informative nature. At the same time, Ukraine keeps its focus on presenting russian defeat and ukrainian military success. In the recent period of warfare, which is Spring 2023, Russian twitter outlets intensively point on the matter of world food crisis, foreign policy, russian military, soviet war and ukraine attacks. On the other hand, Ukrainian twitter-sphere is concentrated on military aid, counteroffensive, peace initiatives and the Russian world, presented as an inhumane world.

Sentiment Analysis Results

Sentiment analysis on Twitter data for both countries reveals a relatively balanced distribution of positive, negative, and neutral sentiments, with a predominant persistence of negative sentiments. This suggests that negative sentiment on Twitter may reflect the effectiveness of propaganda efforts or information campaigns aimed at emphasizing negative aspects and manipulating public opinion to foster negative perceptions (Schöne et al., 2021). It underscores the role of social media in amplifying critical viewpoints and disseminating dissenting voices.
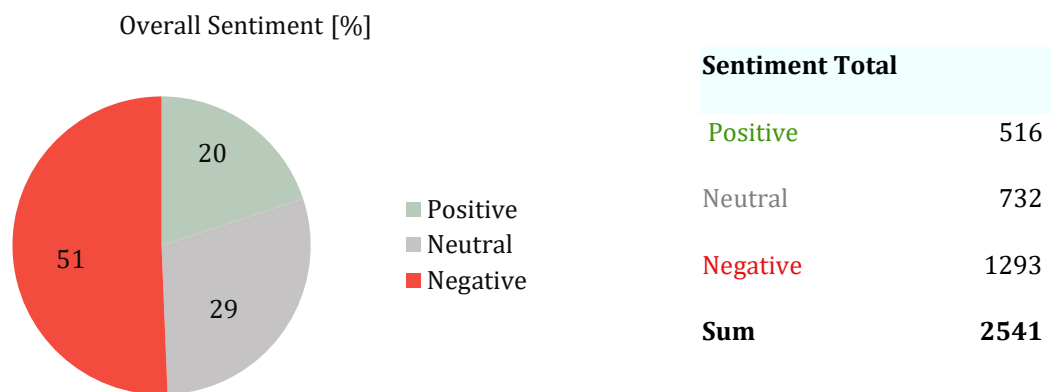
Figure 3: Shows a sentiment polarity on Russian Twitter.

Overall Sentiment [%]

Sentiment Total	
Positive	516
Neutral	732
Negative	1293
Sum	**2541**

Fugure 4: Shows a sentiment polarity on Ukrainian Twitter.

Overall Sentiment [%]

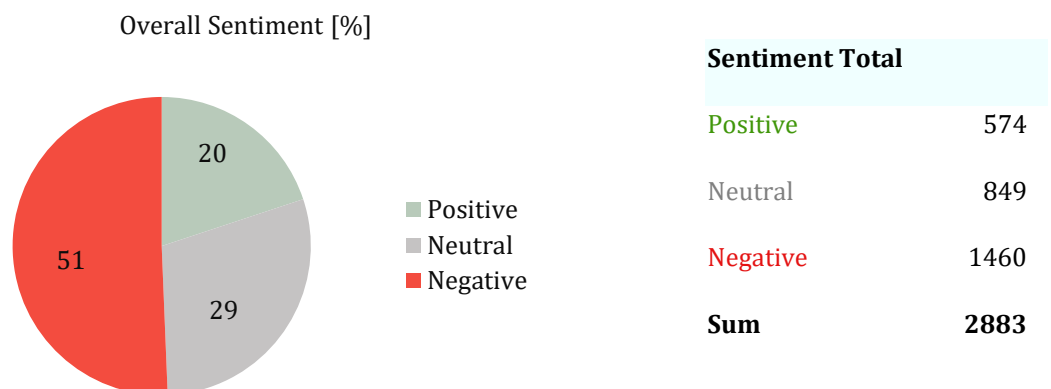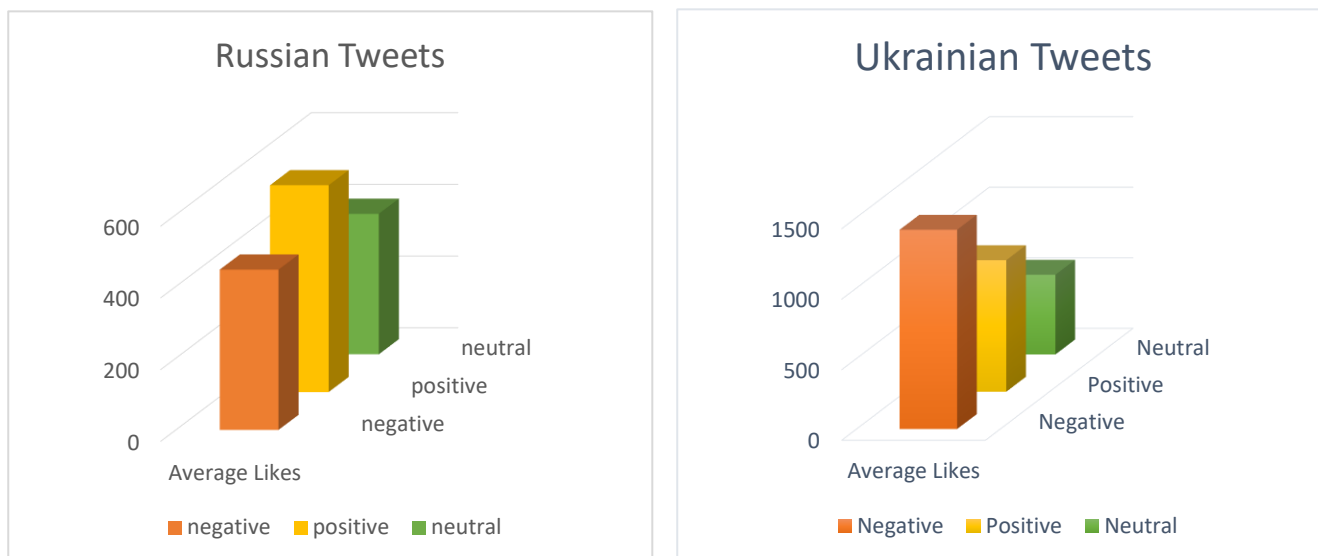| Sentiment Total	
Positive	574
Neutral	849
Negative	1460
Sum	**2883**

Figure 5: Shows the average likes for each sentiment for Russian and Ukrainian tweets.

Despite a balanced distribution of negative sentiments in both countries, there are notable differences in engagement patterns on Twitter. Figure 5 reveals that Russian Twitter outlets receive more likes for positive sentiments, while Ukrainian outlets show a higher average quantity of likes overall on the negative tweets.

These contrasting results can be attributed to the political context of each country, which significantly influences the reception of sentiments on social media platforms. In the case of Russian Twitter outlets, positive sentiments may align with prevailing narratives about Russian culture and values and the portrayal of the conflict as an attempt to protect Russian values. This alignment with existing beliefs and ideologies can contribute to increased engagement, as users are more likely to respond positively to content that reinforces their perspectives.

On the other hand, Ukraine's context is characterized by ongoing war and conflict. This creates a different dynamic, where sentiments related to negative experiences, such as war crimes, causalties or damages may resonate more strongly with the audience. The engagement in the form of likes for such sentiments could be a reflection of the audience's desire to express solidarity, raise awareness, or support efforts to address the challenges faced by the country.

Public sentiment and engagement on social media platforms are influenced by a variety of complex factors including events, algoritms and strategies used in promotion of narratives. Further research and analysis could delve deeper into the specific content of tweets, influential accounts, and the impact of specific events or developments on sentiment and engagement. This would provide a more comprehensive understanding of the complex relationship between sentiment, political context, and audience engagement on social media platforms in these countries.

Conclusion

This thesis has shed light on the notion of information warfare on Twitter in the context of the Russo-Ukraine War, with a specific focus on state-sponsored propaganda. Propaganda plays a significant role in information warfare, with various scholars emphasizing the importance of communication technologies in facilitating the spread of propaganda.

The findings of this study have highlighted the heterogeneous nature of information warfare, which can manifest itself in various forms and be implemented through a range of factors, while also being influenced by different actors. By employing topic modeling techniques, the thesis has provided a comprehensive overview of Russian and Ukrainian information warfare on Twitter, revealing distinct features and outlining the main propaganda narratives employed by each side. Moreover, the sentiment analysis conducted in this study has underscored the significance of tone in the dissemination of propaganda narratives. The sentiment conveyed in the propaganda messages can greatly impact their effectiveness in shaping public opinion and influencing the target audience.

The analysis has confirmed the hypothesis put forth in this thesis regarding the differing nature of Russian and Ukrainian propaganda. The tactics, strategies, and overall outline of propaganda between the two countries exhibit notable distinctions. Russian information campaigns are more geared toward attacking Ukraine and its Western supporters. Ukrainian tweets also attack Russia but at the same time much of these messages focuses on countering the Russian narrative or informing the population about different aspects of the war.

This research contributes to a deeper understanding of information warfare and the role of propaganda in the Russo-Ukraine War, particularly on the platform of Twitter. The insights gained from this study can inform policymakers, analysts, and scholars in devising effective countermeasures and strategies to combat state-sponsored propaganda, safeguard public opinion, and promote critical thinking in the face of information warfare.

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However, it is important to note that the study has certain limitations. The analysis focused solely on Twitter, and only a limited number of actors, which may not capture the entirety of information warfare in the Russo-Ukraine War. Further research could expand the scope to include other social media platforms and traditional media channels for a more comprehensive understanding of the propaganda landscape. By examining the differing tactics and outlining the propaganda narratives employed by Russia and Ukraine on Twitter, this thesis contributes to the broader understanding of information warfare dynamics and emphasizes the need for proactive measures to mitigate the influence of propaganda in the digital age.

Appendix

The MFA Russia – the account was created in February 2011. The number of followers at the time of data scrapping consisted of 622,7K followers. The duplicate Twitter accounts are present for Russian, Spanish, and Arabic-speaking audiences. As this is a state account of the Ministry of Foreign Affairs of Russia, it was essential to see how the official discourse portrayed the crisis in Ukraine to its foreign audience.

The GazetaRu - account was created in April 2009. The number of followers at the time of data scrapping consisted of 1.8M followers.

Russia United RU - account was created in June 2010. The number of followers at the time of data scrapping consisted of 164,7K followers.

Dmitry Medvedev – the account was created in June 2010. The number of followers at the time of data scrapping consisted of 4.5M followers. Hold two accounts for Russian and English-speaking audiences.

UNITED24.media – the account was created in July 2022. The number of followers at the time of data scrapping consisted of 25.3K followers. Account description: *Ukraine is fighting for freedom and independence. We're a new Ukraine-focused digital media showing the real Ukraine to the World.*

Vox Ukraine – the account created in March 2014. The number of followers at the time of data scrapping consisted of 13,4K.

Ministry of Internal Affairs of Ukraine – the account was created in November 2011. The number of followers at the time of data scrapping consisted of 258,9K followers.

Mykhailo Podolyak - the account was created in February 2022. The number of followers at the time of data scrapping consisted of 1.2M followers. Mykhailo Podolyak hold a position of Adviser of the Head of the Office of President of Ukraine Volodymyr Zelenskyy.

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[i] https://apify.com/quacker/twitter-scraper

[ii] Google Sheets add-on