WESTERN BALKANS AT THE CROSSROADS:
ANALYTICAL STUDY

05

Infodemics, a snap election, and a (lukewarm) Western welcome: North Macedonia's identity at stake on Twitter

Study I – Instruments of Disinformation

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Executive Summary

The study examines the presence of (foreign) computational propaganda methods for disinformation purposes in North Macedonia, a landlocked country on the Balkan Peninsula, one of six Western Balkan countries involved in EU accession-related discourse. The study is focused on the period surrounding the 2020 election, originally scheduled for April 2020, but postponed to July 2020 due to the covid-19 pandemic. We build on insights from North Macedonia's first computational propaganda campaign, namely the #bojkotiram ('I am boycotting') campaign on Twitter, which significantly shaped discussions surrounding the 2018 name-change referendum. We apply several botnet identification techniques, including looking out for repetitive naming patterns, large numbers of similar accounts created prior to key events and activity rates which exceed normal human behavior, usually achieved through retweeting. Using these approaches, we identify a large network of users created in the run-up to the election and sympathetic to VMRO-DPMNE, North Macedonia's right-wing party, as well as to Levica, a far-left party opposed to North Macedonia's NATO and EU integration. Many of the identified accounts oppose North Macedonia's name-change, while also promoting conspiratorial content and anti-Western attitudes. Conversely, very few of the accounts identified expressed support for SDSM (North Macedonia's Western-oriented centre-left party), the name-change or progress in the country's Euro-Atlantic integration process. These findings are not aligned with results from public opinion polls regarding North Macedonia's foreign policy, which show that most citizens are in favor of Euro-Atlantic integration. Moreover, we find that the network identified has extensive overlap and interaction with accounts originally created for the #bojkotiram campaign, which is still active on Twitter.

The analysis suggests that the network identified in the current study is likely run by local actors, as we did not identify any direct foreign involvement. However, even if no foreign actors directly contributed to the development of the network identified, the findings show that the conditions for easy entry by actors interested in developing disinformation campaigns in the country are present, both in terms of technical know-how and existing networks of (automated) accounts which promote anti-Western sentiments. Researchers focused on identifying and responding to disinformation campaigns on social media in the Western Balkans are advised to consider the naming characteristics and closely related account creation dates identified in this study, while paying particular attention to topics and issues pertinent to right-wing voters and parties in the region, such as those endorsed by North Macedonian VMRO-DPMNE or Serbian SNS.

Introduction

Social media platforms and online news outlets play an increasingly prominent role in the development, dissemination and reach of news content. In this media environment, the creation and spread of news have become largely horizontal processes, allowing unverified reporting to easily reach and influence millions across the globe (Nemr and Gangware 2019; Denkovski and Trilling 2020). State actors have begun making use of these trends to advance political objectives in foreign policy through online disinformation campaigns and 'astroturfing' – centrally organized campaigns which imitate grassroots movements and shape discussions about key issues. These campaigns often make use of computational propaganda methods, defined as "the use of algorithms, automation, and human curation to purposefully distribute misleading information over social media networks" (Woolley and Howard 2016, 3; Keller et al. 2019; Harris 2014).

The current study examines the presence of (foreign) computational propaganda methods for disinformation purposes in North Macedonia, one of six Western Balkan countries involved in EU accession-related discourse. The study is focused on the period surrounding the 2020 parliamentary election, originally scheduled for April 2020, but postponed to July 2020 due to the covid-19 pandemic. This election was the most meaningful political event in the country since the name-change referendum in 2018, when the country officially adopted the name Republic of North Macedonia, thus resolving a dispute with Greece which dates back to 1991 (Fidanovski 2018). Largely as a result of the name-change, as of March 2020, North Macedonia became a NATO member state and was also officially invited to start EU membership negotiations. In the research project that this study is part of, we build on the assumption that there would be an increase in computational propaganda approaches during this electoral period which took place amidst several significant developments on the country's Euro-Atlantic integration path.

Computational propaganda methods for political purposes are not new in North Macedonia. Research conducted by the Atlantic Council's Digital Forensics Research Lab showed that automated accounts significantly shaped discussions surrounding the 2018 name-change referendum through the #bojkotiram ('I am boycotting') campaign, largely in an attempt to discredit the referendum (Karan 2018). The development of this campaign coincided with the development of a network of 9,000 Twitter accounts which supported the Serbian Progressive Party (SNS) and President Vučić, accounts since shut down by Twitter for violating Twitter's Terms and Conditions (Bush 2020). The coinciding timing of the two campaigns suggests that computational propaganda methods became a viable approach for political campaigns in the region in this period. As the network involved in the #bojkotiram campaign was never shut down by Twitter, we expect that continued presence of computational propaganda methods in the country would be linked to this network, covering similar identity-related issues and targeting citizens opposed to the name-change. These views are often compounded with anti-Western sentiments and thus aligned with the interests of foreign actors (most notably Russia) opposed to the Euro-Atlantic integration of the countries in the region.

The research project is based on two approaches and data sets, presented in two studies. In the current study, we apply a user characteristic analysis based on account creation dates, activity rates and content shared by all Twitter accounts which interacted with the accounts of major political figures and media outlets in the country in the period between February and August of 2020. In doing so, we attempt to identify networks of (semi-) automated accounts focused on similar issues - investigating the presence and application of instruments of computational disinformation. The study answers the following research questions: a) whether computational propaganda methods were used in the period surrounding the 2020 election and b) whether these can be traced back to foreign actors, such as foreign governments or government-funded organisations.

In the second study (forthcoming), we use a separate data set representing general Twitter discussions in North Macedonia, where we combine automated and manual content analysis approaches to analyse the most shared news domains on Twitter in this period, as well as the most relevant politically substantive hashtags. Results from both analyses are used to determine whether computational propaganda methods were used on Twitter in North Macedonia in the period surrounding the election, to what end these methods were used, as well as whether they can be traced back to foreign actors.

The political context in North Macedonia

Politics in North Macedonia are largely shaped by the activities of the two major ethnic Macedonian parties, the center-left Socialist Democratic Union of Macedonia (SDSM) and the center-right party Internal Macedonian Revolutionary Organization – Democratic Party for Macedonian National Identity (VMRO-DPMNE). The role of the ethnic Albanian parties is also relevant, which represent the largest ethnic minority in North Macedonia, making up 25 per cent of the population according to the latest census data from 2002 (State Statistical Office 2003). The most prominent ethnic Albanian party is the Democratic Union for Integrity (DUI), which since 2006 has been part of every coalition government.

Some of the key debates in the current political landscape in North Macedonia originated in the period between 2006 and 2016 when VMRO-DPMNE was in a ruling coalition with DUI. VMRO-DPMNE, which in the early 1990's presented itself as a right-wing nationalist party, over time adopted a more moderate stance, with an increasingly pro-Western orientation and a technocratic approach, particularly in the first years of Nikola Gruevski's leadership (Šedo, 2013). However, following North Macedonia's unsuccessful bid at joining NATO in 2008 due to Greece's objections over the country's name, VMRO-DPMNE introduced (ethno-) nationalism as one of the key platforms for the party, thus moving away from mainstream positions and endorsing far right ideologies and policies (Bieber 2018, Vangeli 2011; Petkovski 2015).

One key element of this platform was the state policy of 'antiquisation' – linking Macedonian national identity to Alexander the Great. This policy further marginalized ethnic Albanians within the country, while also creating a deeper division in the country's relationship with Greece, making a resolution of the name-change issue nearly impossible (Ceka 2018; Vangeli 2011, Crowther 2017, 752; Petkovski and Nikolovski 2018). However, the policy was met with broad grassroots support among the ethnic Macedonian population frustrated with the slow Euro-Atlantic integration process, allowing the party to set the agenda for identity-based political debates in the country until the present day. Successfully ruling as a "machine party" relying on populist policies and nationalist rhetoric as substitutes for ideological principles, VMRO-DPMNE managed to "deeply entrench" personnel in state administration, blurring the lines between state and party and allowing for the active monopolization of power, abuse of state institutions and electoral fraud (Günay and Dzihic 2016, 533; Hislope 2013, 621, Bieber 2018; Crowther 2017). The lack of substantive ideological principles underlying the party's platform implied that during this period, SDSM and VMRO-DPMNE largely catered to different segments of the ethnic Macedonian population on grounds of identity-related issues, with VMRO-DPMNE promoting a conservative identity linking back to ancient Macedonia, while SDSM largely promoted a more liberal, Western-oriented identity.

Following the 2015 wiretapping scandal, which uncovered extensive illegal surveillance of 20,000 public figures by VMRO-DPMNE, prompting widespread protests around the country, early elections in 2016 eventually brought SDSM to power in a coalition with DUI (Bieber 2018). This change in leadership was welcomed by both the EU and NATO, as SDSM pledged to resolve the name-issue with Greece and to bring North Macedonia back onto its Euro-Atlantic integration path (Gjuzelov and Ivanovska Hadjievska 2019).

SDSM and DUI endeavored to resolve the name-issue by organizing a referendum to change the country's name, ultimately resulting in the 2018 Prespa Agreement with which the country officially adopted the name Republic of North Macedonia. As the name-change agreement and referendum were directly tied to the Euro-Atlantic future of the country, the legacy of VMRO-DPMNE's 'antiquisation' policy, as well as the official party position of boycotting the referendum under the new leader Hristijan Mickoski, directly contributed to the low turn-out– a mere 37%. Moreover, anti-Western party cues, developed in the final years of the VMRO-DPMNE regime, had already substantially shifted the opinion of VMRO-DPMNE supporters away from the EU and NATO (Naunov 2020). As a result, between 2014 and 2019, support for EU membership among VMRO-DPMNE supporters dropped from 77% to 49%, with identity and value-based concerns cited as dominant predictors of Euroscepticism (Damjanovski and Kirchner 2019; Damjanovski et al. 2020; Blanuša et al. forthcoming; Ceka 2018). In contrast, SDSM and DUI supporters expressed near unanimous support for EU integration throughout this period, with 89% and 99% in favor in 2018, respectively (Damjanovski and Kichner 2019). In the meantime, new actors had emerged in the country's political scene, including Levica ('The Left'), a far-left party opposed to the name-change, as well as to North Macedonia's NATO membership. Over time, its leader Dimitar Apasiev, has become an increasingly relevant figure in North Macedonian politics.

In the 2020 election, which this study is focused on, SDSM managed to snatch a narrow lead (46 out of 120 seats in parliament) and after months of negotiation, a new coalition government was formed by SDSM and DUI – effectively resulting in a continuation of the previous ruling coalition and a reaffirmation of the public's Euro-Atlantic aspirations. However, this reaffirmation was secured only by a narrow margin, as VMRO-DPMNE won 44 seats, while Levica won 2, showing that public opinion regarding the future of North Macedonia remains deeply divided.

Several actors, both local and foreign, made use of these divisions in the period surrounding the name-change referendum. Most relevantly, North Macedonia experienced the first large-scale computational propaganda campaign in the country, manifested through the #bojkotiram ('I am boycotting') hashtag on Twitter (Karan 2018; Zafeiropolous 2019). The campaign was orchestrated by a Twitter user who goes by the name of 'Cheese' (@C4i7Z), who with the help of a small team operated a network of thousands of (semi-) automated accounts which promoted fake stories and conspiracy theories aimed at undermining the referendum (Woolley and Howard 2016; Karan 2018; Zafeiropolous 2019; Blanuša et al. forthcoming).

As the #bojkotiram campaign gained traction, Russia also made use of these developments in an attempt to discredit the referendum and its results. For instance, Russian *Sputnik* launched an English language disinformation campaign targeting proponents of the name-change, while the Russian government initially questioned the validity of the referendum and name-change, only to ultimately accept the outcome (Teslova 2019; Noack 2017). At the same time, Prime Minister Zoran Zaev's Facebook account was engaged by foreign bots, which, although never directly linked to Russian actors, utilized techniques similar to those of Russian networks elsewhere (Naunov 2019). As a result of these developments, when North Macedonia officially became a NATO member state, NATO officials stressed the need for greater involvement in the country's response to foreign fake news and influence (Marusic 2020). On the basis of these events, we expect that if foreign influence was present in the period surrounding the election, that this influence would most likely be tied to actors sympathetic to the identity narratives promoted by VMRO-DPMNE, as well as actors opposed to the Euro-Atlantic integration of the country.

Data collection and analysis

Disinformation campaigns based on computational propaganda are frequently focused on the accounts of politicians and media outlets (Howard and Kollanyi 2016). This was also the case in North Macedonia during the #bojkotiram campaign, as numerous bots interacted with the accounts of local politicians, either in an attempt to amplify their messages or to attack political opponents. In the current study, we examine all interactions with the accounts of 26 political figures and media outlets in the country, including those of PM Zaev, Levica leader Dimitar Apasiev and VMRO-DPMNE leader Hristijan Mickoski.[1] The set of accounts included in the study was determined with the goal of achieving a near-representative sample of the country's political landscape while taking into account the activity rates of the accounts, as well as the size of their follower networks. Few Albanian politicians were included in the study as most ethnic Albanian political figures either do not have a Twitter account or do not actively use it. We collected all replies to posts from or mentions of these accounts, effectively capturing all interactions with these accounts which occurred between February 2020 and August 2020. The data set contains 51,969 unique posts, replies or @'s from 5,646 unique users.

For the analysis, the study combines a number of existing methods for botnet identification, including looking out for repetitive naming patterns, detecting large numbers of similar accounts created prior to key events, as well as activity rates which exceed normal human behavior (Howard and Kollanyi 2016; Stukal et al. 2017; Zannettou et al. 2020; Bush 2020). Firstly, in an attempt to detect spam-like behavior which is characteristic of automated accounts, we examine the most active accounts in this data set, looking for users with activity rates which exceed normal human behavior, as well as the issues that they discuss. Secondly, we look into the creation dates of all accounts that interacted with the list of politicians and outlets, as a large number of new accounts created in a short period of time is a common characteristic of networks created for computational disinformation purposes (Bush 2020; Zannettou et al. 2020). The artificial nature of a network created in a short period of time can be confirmed by an examination of repetitive account naming patterns, which is conducted as the third step of our analysis (Gurajala, White, Hudson and Matthews 2015; Inuwa-Dutse, Liptrott & Korkontzelos, 2018). Finally, we examine the follower networks of a group of users identified as suspect in the study so as to determine whether the follower networks of these accounts are organic or a result of an artificial injection of followers.

1 See Appendix A for a full list of accounts considered.

Study findings

Which accounts shaped discussions with political figures in the period surrounding the election?

The analysis of the most active accounts in the data set revealed a substantial number of spam-based users which appear linked to a single network focused on vilifying SDSM and Western officials, while amplifying the messages of VMRO-DPMNE and Levica. The activity rates of these accounts do not appear to be organic. For instance, the account with the highest number of interactions with the accounts of politicians and media outlets is @burdush_gv, with 801 interactions in the 6-month period examined. Since being created in July 2013, this account has posted 180,900 times, amounting to an average of 55 tweets per day. Most of this content amplifies messages from VMRO-DPMNE leaders, attacks SDSM policies and promotes anti-Western or conspiratorial views. The second most active account in this list is @realTotoMK, with 774 interactions in the 6-month period examined. Since July 2018, this account has posted 46,000 times, a majority of which were retweets, amounting to an average of 61.3 tweets per day, many of which are similar to or the same as those shared by @burdush_gv. The account @C4i7Z, one of the key instigators of the #bojkotiram campaign, is also among the most active accounts in this data set, with 99 interactions in the 6-month period examined, having posted 151,600 tweets since November 2012.[2]

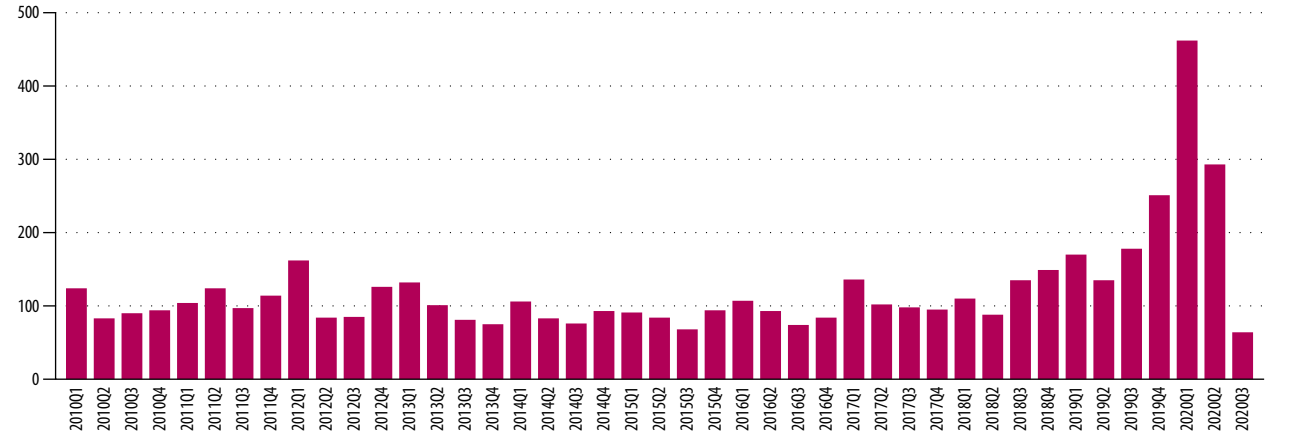
These findings suggest that many of the discussions with political figures in this period were driven by users sympathetic to VMRO-DPMNE and opposed to the name-change – users whose activity rates cannot be characterized as organic, suggesting at least partial automation of these accounts. Other users identified were highly engaged with the account of Levica leader Dimitar Apasiev and with the content shared by the #bojkotiram network. None of the most active accounts identified supported SDSM or North Macedonia's Euro-Atlantic integration. Having identified the most dominant users in this period and their issue-focus, we proceed to examine whether these users and other accounts exhibiting similar behavioral patterns can be classified as belonging to an artificial network.

Account creation dates and usernames as means for detecting artificial networks

As part of the second step of the analysis, Figure 1 shows the creation dates of all accounts that interacted with the list of politicians and outlets examined. The figure shows that in the period between 2006 and 2018, the number of accounts created in any given month was steady, usually with less than 50 new accounts per month. A slight increase in the number of accounts created occurred around June 2018, coinciding with the development of the network involved in the #bojkotiram ('I am boycotting') campaign. While the following two-year period shows a well above-average increase in new accounts, the most striking increase occurred in the three months prior to the initial election date, with as many as 500 new accounts created between January and March of 2020. As there is no reason to assume that the number of politically engaged Twitter users in North Macedonia organically surged in this period, we examine whether the large number of new accounts can be classified as artificial and thus as belonging to the same network of users.

2 See Appendix B for an overview of the top 50 most active accounts in this data set.

Figure 1. Creation dates of accounts interacting with the accounts of political figures and media outlets considered (by quarter)



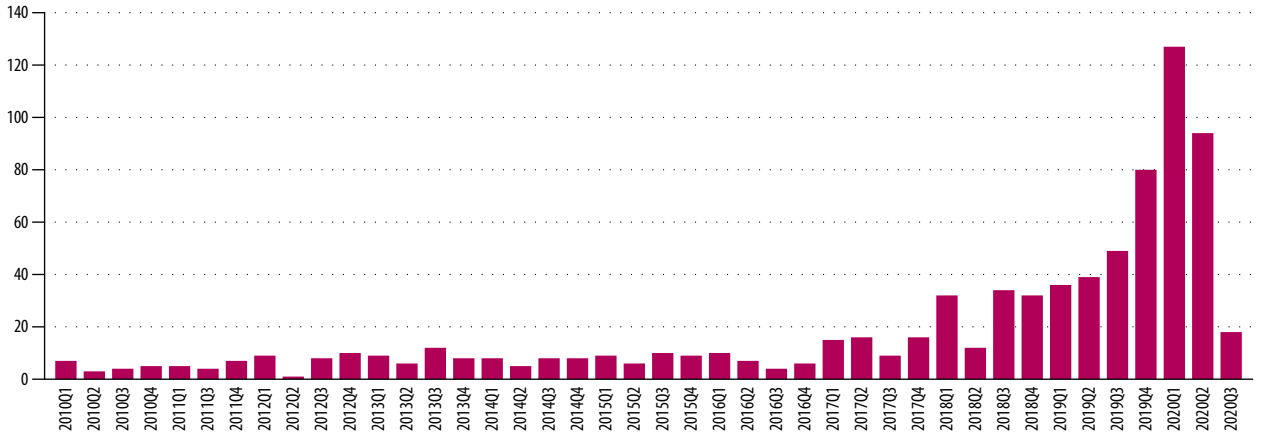
To do so, we rely on insights from past research, which show that when creating a large number of fake accounts, those responsible often rely on some degree of automation in the account naming process (Gurajala, White, Hudson and Matthews 2015; Inuwa-Dutse, Liptrott & Korkontzelos, 2018). This approach allows for a detection of such groups through an examination of repetitive account naming patterns. A manual review of the usernames in the data set suggested two naming patterns worth investigating, namely:

- Usernames based on long arbitrary strings consisting of at least 1 number, such as o8zOS0lCcThHno0 or MFFMRb7tSblpyzW
- Usernames based on 'generic' names followed by a set of 8 arbitrary digits, such as Makedon27584769 or Maximus03283435

We used a regular expression (regex) search pattern, a form of text search which allows for querying patterns of text rather than literal search strings (e.g. the regex pattern \d can be used to match all digits in a string of text), to identify all usernames longer than 10 characters which also contain at least 1 number. While these criteria are relatively crude (in that they also identify users which match the query criteria, but not the naming patterns observed), a manual review of the retrieved accounts verified that a majority do match one of the two naming patterns. We find that 808 out of the total 5,645 users interacting with the accounts of politicians and media outlets match one of these two naming patterns, making up 14% of the total accounts in the data set and generating 17% of the overall interactions in the 6-month period examined.

Figure 2 shows the account creation dates of all accounts matching one of the two naming patterns. The creation date of a majority of these accounts is after 2018, with significant increases in the months prior to the original election date in April 2020. These increases are likely not organic, since between 2010 and 2018, on average, less than 5 accounts matching the naming patterns were created every month. Figure 2 provides some more context to the findings presented in Figure 1, as the sudden surge in accounts interacting with the accounts of politicians and media outlets can at least partly be explained by the increase in accounts matching one of the two naming patterns. These accounts made up 31% of all accounts created in the period between August 2019 and August 2020.

Figure 2. Creation dates of accounts matching one of the two naming patterns (by quarter)



Characterizing the profiles and content shared by the accounts which match the naming patterns

Most of the accounts matching these naming patterns offer little information about the true identity of the users, with profile pictures and bios often based on political content. A majority of the accounts appear to be closely aligned with VMRO-DPMNE or Levica, with a focus on the name-change referendum or North Macedonia's Euro-Atlantic integration. Much of this content appears originally sourced from some of the most active accounts identified in the first step of the analysis, including @burdush_gv and @realTotoMK, as well as the 'Apsaana' hashtag and account, the current manifestation of the #bojkotiram campaign, which is described in greater detail below. In interactions with political figures, most of these accounts focus on attacks of SDSM and Western officials. We present two examples of these interactions.

- Mini59150498 - *Zoran_Zaev* Со спогодбата од Преспа извршивте најтежок чин велепредавство *и* когатогаш ќе одговарате *\nНикогашСеверна ('Zoran_Zaev You've committed the greatest act of treason with the Prespa Agreement and at some point you will answer for it #NeverNorthern')*
- Alex50981439 – *RT sargesae Sekerinska3* Благодарение за геноцидот врз македонскиот народ *и* Македонија *('Sekereinska Thank you for the genocide of the Macedonian people')*

A profile that is representative of many of the accounts identified in the current analysis (no personal information available, a political focus and high activity rates) is presented in Image 1.

Image 1. The profile of mpp2mLJTRMmAZ3V – a highly active account in the #Bojkotiram network representative of many users identified in the current study

Many of the accounts identified are also among the most vocal in the discussions with political actors examined in this study, despite their relatively recent creation date, including accounts such as @Mini59150498, @Mirjana63251676 and @Mince62984985, all of which were created after November 2019, representing Macedonian women living abroad. @Mince62984985 and @Mirjana63251676 have 297 interactions with the accounts of politicians in the 6-month period examined, while @Mini59150498 has 232 interactions. These accounts

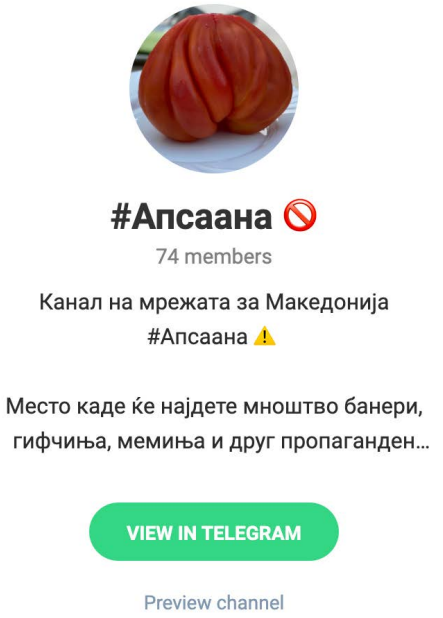
3 Radmila Sekerinska is the current Minister of Defense.

and accounts with similar characteristics also retweet conspiratorial news items in English, including support for hydroxychloroquine as treatment for Covid-19, shown in Image 2. @Mince62984985 has already been flagged by Twitter due to 'unusual activity'.

Image 2. False news content shared by @Mirjana51628319

Many of the accounts matching one of the two naming patterns share content from the account @aps_aana, a continuation of the #bojkotiram campaign and a common source of content for the #bojkotiram network. The term '*apsaana*' is best understood as an equivalent of the 'lock her up' campaign against Hillary Clinton, in reference to SDSM officials. The bio of this account reads "After 1st meme war, #Bojkotiram net HQ in Veles, Macedonia with overseas departments launch @Apsaana for the 2nd Battle for Macedonia 2019. Name is identity". The bio invites users to a Telegram group with "banners, gifs, memes and other propaganda material", as demonstrated in Image 3. This account, as well as several accounts which match one of the two naming patterns, are followed by official VMRO-DPMNE accounts, including @mkd_finance, the official Finance Commission of VMRO-DPMNE and @VMRO_DPMNE, the official VMRO-DPMNE party account, as well as Levica leader Dimitar Apasiev.

Image 3. @aps_aana Telegram propaganda group

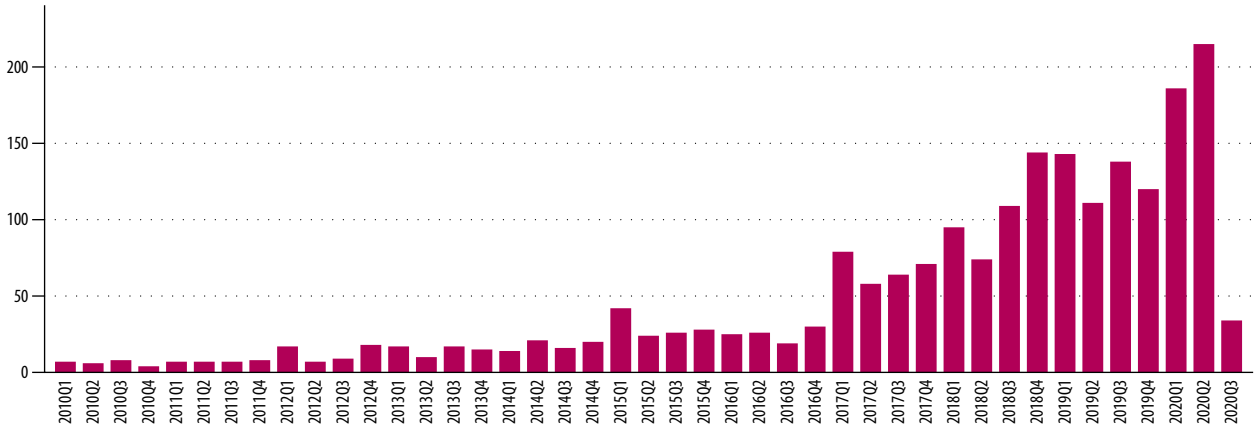


Analyzing the follower network

Having analyzed the creation dates, naming patterns and profile characteristics of accounts identified in this analysis, for the following step we analyze the follower networks of the users which match one of the two naming patterns and which also interacted with the accounts of politicians and media outlets at least 18 times (an arbitrary threshold, which nonetheless implies high levels of activity) – a total of 63 users. The follower network of these 63 users includes 11,698 unique followers and 35,894 unique relationships (a user followed by a user). These findings show that many of the followers of the 63 accounts follow more than one of the accounts, around three on average, suggesting a potentially tightly connected network. For instance, @pandorabox97, an account created in June 2020, followed

35 of these accounts by July 2020. Another example of an account from this follower network is @TheJoke91877592, an account which combines political content (largely attacks of SDSM officials), memes and pornographic content, and @MdVOBqSyLIG2PMA, an account which protects its activity from non-followers, with the following bio publicly displayed 'Само ретвитам цена по договор' (I only retweet, price per negotiation), potentially suggesting an account available for hire. Around 25% of the followers identified (3,015 accounts) match one of the two naming patterns examined in the study. Figure 3 shows the creation dates of these accounts, showing that a majority were created following 2018, with the highest number in the period leading up to the 2020 election, suggesting that many of these accounts were created specifically for the election, likely so as to increase the engagement rates of already existing, highly active accounts in the network.

Figure 3. Creation dates of accounts matching the naming patterns among the followers of the 63 accounts examined (by quarter)



User characteristic and network analysis summary

In summary, the user characteristic analysis shows that a large number of the accounts interacting with the accounts of the politicians and media outlets examined were created in the period prior to the original election date in April 2020. Many of these accounts spam the accounts of politicians and media outlets, with much of their remaining activity based on retweets from several highly active hybrid accounts, as well as the account @aps_aana, a continuation of the #bojkotiram campaign. Topically, a majority of the accounts identified amplify the messages of VMRO-DPMNE and Levica, oppose the name-change referendum and attack SDSM officials, as well as Western institutions. The repetitive naming patterns used by many of these accounts, their consistent issue focus and the fact that a large part of the follower network of the suspect accounts identified was also created shortly prior to the election, suggest that these accounts belong to a network that was artificially created for election-related goals of political actors. However, the analysis did not reveal a direct link between the accounts identified in this analysis and foreign intervention, as the network is most likely run by local actors with ties to #bojkotiram campaign. Nevertheless, given that the content spread by the network is aligned with past Russian narratives in the country, as well as Russia's opposition to the Euro-Atlantic integration of North Macedonia, current or future Russian involvement in the activity of this network cannot be excluded as a possibility.

Examining a unique case of a pro-Western bot

While the network identified appears to largely focus on right-wing, anti-Western content, a few accounts such as @Pepi91084061 focus on promoting the Euro-Atlantic prospects of North Macedonia. Since its creation date in March 2020, this account has exclusively retweeted content from Zoran Zaev and Radmila Sekerinska, the current Minister of Defense of North Macedonia, pertaining to North Macedonia's NATO and EU accession progress. Due to its unique nature, we also examined the follower network of this account. One of the followers of this account is @TeresaW65457824, a U.S.-based account created in March 2020 which also matches one of the two naming patterns identified in this study. Like many of the accounts identified in this study, @TeresaW65457824 does not have much content, except two pictures of a woman, suggesting a female user. Examining the accounts followed by @TeresaW65457824 reveals that many of these accounts match the naming pattern of a random name followed by 8 digits, suggesting that this account may belong to a network similar to the one identified in the current study. Most of these accounts are clearly automated, including @tomdavi77420795 and @michael55576158, both of which largely interact with pornographic accounts and do so with repetitive and limited vocabulary.

Image 4. Interactions from an automated 'pornographic' account followed by @TeresaW65457824

Another account followed by @TeresaW65457824 is @AtlJeffh, whose bio includes hashtags like #ProLife, #ConservativeGaysForTrump and #BlueLivesMatter. This account dates back to February 2020 and largely posts conspiracy theories about George Soros, Bill Gates, vaccination and 5G networks.

Image 5. A post from @AtlJeffh

As an account focused on amplifying pro-SDSM and pro-Western content, @Pepi91084061 is an almost unique case in this study and the account does raise several questions regarding the connections between automated accounts in the Western Balkans and automated accounts globally. Firstly, the account is connected to a network which shows that the naming pattern identified in this study is likely common in botnets globally, suggesting that local actors involved in computational propaganda likely borrow already-established techniques from botnets abroad. Secondly, this seemingly pro-Western account appears to interact with accounts which belong to a network entirely ideologically opposed to it, suggesting that automated accounts are prone to error when establishing connections. Finally, the network of accounts followed by @TeresaW65457824 points to a potential underexplored characteristic of botnets observed both in this network and in the network identified in North Macedonia – a combination of accounts focused on pornography, memes and political content, likely to increase the overall reach of highly active, political accounts within a network.

Conclusion

The analysis shows that computational propaganda methods continue to shape online political discussions in North Macedonia. The study identified the existence of a large group of users likely created and managed by a single source, which holds explicit ties to VMRO-DPMNE and Levica officials, as well as the #bojkotiram network. The analysis demonstrated that this network of users was a) likely created purposefully in the run-up to the election, b) demonstrated many of the characteristics of botnets globally, such as peculiar naming characteristics, closely matched creation dates and high rates of retweeting and c) that the network largely focuses on issues related to the name-change and Macedonian national identity. Much of the content shared (but, primarily retweeted) by the users identified appears to be sourced from several highly active hybrid accounts, some of whom are the key instigators of the #bojkotiram campaign. The network's goals are best described as vilification of actions from SDSM and Western officials, most notably PM Zaev, and amplification of posts from VMRO-DPMNE officials and Levica leader Dimitar Apasiev.

The current analysis does not provide sufficient support for linking this network to foreign actors. Regardless, even if no foreign actors directly contributed to the development of this network, the findings show that the conditions for easy entry by actors interested in developing disinformation campaigns in the country are present both in terms of technical know-how and existing networks with followers sympathetic to anti-Western discourse. Given continued uncertainty about the Euro-Atlantic integration path of the Western Balkan countries, it is safe to assume that computational disinformation based on anti-Western narratives will continue to be a threat to the Euro-Atlantic integration of the countries in the region.

However, it is worthwhile to note once again that the data used in the current analysis is derived exclusively from accounts which interacted with the accounts of politicians and media outlets examined in the study and that it does not consider general posts from Twitter users in North Macedonia. As such, this data set cannot be considered representative of Twitter discussions in North Macedonia as a whole. Consequently, in the second study of this research project (which can be accessed here), we further examine the potential presence of foreign disinformation campaigns through an analysis of the domains and hashtags which shaped Twitter discussions in the period surrounding the 2020 election, using a separate data set of Twitter content in North Macedonia.

Considering the findings, we can provide several recommendations for future research investigating the presence and role of (foreign) computational disinformation in Western Balkan countries. Firstly, researchers are advised to consider the naming characteristics and closely related account creation dates of groups of accounts according to the practices suggested in this study, while paying particular attention to topics and issues pertinent to right-wing voters and parties in the region. Researchers are also advised to examine the follower networks of suspect accounts for assessing potential artificial injections of large numbers of followers for these accounts. Secondly, researchers are encouraged to examine the links between botnets in the Western Balkans and botnets abroad so as to gain an understanding of how networks of automated accounts form relationships and to what extent this process is manually controlled or automated. Finally, researchers are also advised to further examine the potential strategies used by computational disinformation networks for increasing engagement, particularly the specialization of different accounts within one network. The findings from the network studied in this project, as well as from the U.S. network briefly described, suggest that one approach that these networks use may be to deploy fully automated accounts which specialize in creating engagement for a network through pornographic content or memes, with the ultimate goal of redirecting organic users to the content shared by hybrid, semi-automated accounts which focus on politically substantive content. Provided an identification of the types of profiles that make up computational propaganda networks, these characteristics can be used for precise, automated identification of high-risk accounts or networks of accounts.

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Appendix

Appendix A – politician and media list (*N*=26)

NovaTvMk – the official account of Nova TV

Zoran_Zaev – the official account of Prime Minister Zoran Zaev

SDSMakedonija – the official account of SDSM

o_spasovski – the official account of the Minister of Internal Affairs Oliver Spasovski

bobihrist – the official account of journalist Bobi Hristovski

Sekerinska – the official account of the Minister of Defence Radmila Sekerinska

MickoskiHM – the official account of VMRO-DPMNE President Hristijan Mickoski

AlexandarMKD – the official account of VMRO-DPMNE Vice President Aleksandar Nikolovski

SPendarovski – the official account of President Stevo Pendarovski

VladimirGjorcev – the official account of the former VMRO-DPMNE representative in the National Assembly Vladimir Gjorcev

VMRO_DPMNE – the official account of VMRO-DPMNE

Ilijadimovski – the official account of the former member of National Assembly and former VMRO-DPMNE spokesman Ilija Dimovski

NaumStoilkovski – the official account of VMRO-DPMNE spokesman Naum Stoilkovski

GjorgjieskiOrce – the official account of former VMRO-DPMNE Executive Committee member Gjorgjievski Orce

Bujar_O – the official account of the Minister of Foreign Affairs Bujar Osmani

Sekulovska – the official account of journalist Biljana Sekulovska

VladaMK – the official account of the North Macedonian Government

dw_macedonian – the official account of Deutsche Welle North Macedonia

AmbassadorEU – the official account of the EU Ambassador to North Macedonia

USAmbNMacedonia – the official account of the US Embassy in North Macedonia

RSE_Makedonski – the official account of Radio Slobodna Evrope (Radio Free Europe) North Macedonia

Apasiev – the official account of Levica leader Dimitar Apasiev

levica_partija – the official account of Levica

TKarakamisheva – the official account of Professor at the Faculty of Law "Iustinianus Primus" Skopje and ex-member of the Venice Commission Tanja Karakamisheva, a vocal VMRO-DPMNE supporter

MFA_MKD – the official account of the Macedonian Ministry of Foreign Affairs

Dimitrov_Nikola – the official account of the former Minister of Foreign Affairs and Deputy Prime Minister for European Affairs Nikola Dimitrov

Appendix B
a list of the 50 most active accounts in the data set and their number of interactions

Account	Number of interactions
burdush_gv	801
realTotoMK	774
siljanstrkot2	444
Ajdemajkata	377
Fortiifikacija	317
Alex50981439	300
Mince62984985	297
Mirjana63251676	297
VladaMK	296
SeirChair	295
PerdiccasArgead	276
izgledakevrne	267
Mini59150498	232
LfwrzyMu4fFe8bO	231
Makedon27584769	208
Mince51295074	201
GoceOdPrilep	199
Kuglica6	188
Denica3011	187
AngelMakedon	184
Zoran_Zaev	177
micetrkaleski	177
syfer11	176
ficho_vozi	156
Maximus03283435	155

Account	Number of interactions
uJHyOw0SgfDl4Pv	153
Zoki79889487	152
ivanase	143
asteriksiobeli1	142
datarudari	138
VladimirJosifo1	138
TetkaBiberce3	135
nerazzurro7777	129
StrakeTunder	128
Fingerprint83	125
come_justice	125
6Siberian	123
aps_aana	119
DenicaMMM	117
mitkodimitrovsk	114
StevanoAna	114
billii71	113
voinot_od	110
gorgietod	110
Vujkoto_Vane	109
MikaJanev	108
Macedonian100	105
na_sheki	100
C4i7Z	99
Omg01595452	99

Appendix C – list of accounts matching the regex search pattern (at least one digit and longer than ten characters) that appear in the data set more than 18 times (*N*=63)

Maja64343870
peroburgija38
Mirjana63251676
Macedonian100
Ivo62294418
topolovsek11
Alex50981439
LfwrzyMu4fFe8bO
ANGELa99046218
Maximus03283435
Mario52511053
r2d2skywalk
aleksandar_1972
Hedonist100
XtYqT9aUDXD1cNm
HaNa_Taurus666
lionsnevercry28
Aleksan63657112
somnitelen69
antonio5791
forever89726201
finodete_666
nerazzurro7777
Zoki79889487
Maked0n4et01
uJHyOw0SgfDl4Pv
Zoran49415118
zan_valzan73
mpp2mLJTRMmAZ3V
Matrixx41653205
your_baby03
februar1967
Fingerprint83
Vlatko100janosk
Nikola40539926
aerodrom1312
rockatansky191
5UR7B6DbXYBoWNS
Policemen81
Filip29640326
toreador_34
Vildan27765654
Morgan77134232
Boban11425548
Mini59150498
aP41IWsLgUTQD1T
Geko80640289
Cruella48986676
Marjan59394575
Undergraund2001
Makedon27584769
SuzanaSuzy17
andretolstoi74
alexandrou56
jemailjbond007
bruno2101978
B1PcG6cyiRrcoTr
The12728539
007_Ergenot
Mince62984985
f3g7GqRrbPRlZ5c
Mince51295074
Omg01595452

About the author

Ognjan Denkovski is a lecturer in methods, statistics and computational social science at the University of Amsterdam, where he obtained his MSc in Communication Science. He is also a Research Associate at the Global Disinformation Index. His primary work is based on computational social science, with emphasis on the use of text-as-data methods, online data and machine learning for analyzing political rhetoric and fringe narratives. He has contributed towards a publication examining the links between organized crime and terrorism in Croatia and Slovenia, party strategy debates for the Friedrich Ebert Stiftung and a report commissioned by the Dutch MOI titled The Politics of Social Media Manipulation. In his thesis research, awarded with a grant from the UvA DigiCom Lab and published in the International Journal of Communication, he proposed a method for detecting Russian disinformation content in political news in Serbia. Currently, he is a co-author in a Routledge edited volume examining the role of conspiracy theories in political discourse in Croatia and North Macedonia, as part of the COST COMPACT Action.

About the project

"Western Balkans at the Crossroads: Ways Forward in Analyzing External Actors' Influence" is a follow-up project that aims to build upon a knowledge base established in the preceding project "Western Balkans at the Crossroads: Assessing Non-Democratic External Influence Activities," which mapped, analyzed and publicized Russian, Chinese, Turkish, and Gulf States' influence activities in the region. The innovative project focuses on in-depth socially rooted research and investigative journalism. Its design reflects the aim to go beyond conventional analytical frameworks, overcoming ideologically constructed stereotypes and methodological nationalism while combining a variety of methodological approaches from security studies to visual anthropology.

Project outputs consist of fifteen analytical studies and fifteen journalistic articles drawing on their findings. Major observations on external actors' influence gathered throughout the work on the project will be summarized in a final reflection paper.

Project duration: 10/2019 – 03/2021
Project coordinators: Barbora Chrzová (chrzova@pssi.cz), Petr Čermák (cermak@pssi.cz) and Anja Grabovac (grabovac@pssi.cz)
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About Prague Security Studies Institute

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