



Computational
Propaganda
Research Project

Working Paper No. 2017.7

Computational Propaganda in Germany: A Cautionary Tale

Lisa-Maria N. Neudert, University of Oxford



Table of Contents

Abstract.....	3
Introduction.....	3
Setting the Scene: Political Communication in Germany	6
Methodology	7
Social Bot Activity During the German Federal Presidency and State Elections	8
Empirical Evidence of the Use of Social Bots	9
Misinformation and Fake News in Public Discourse over Social Media.....	14
Empirical Evidence of Misinformation	16
Outlook: “Fakebook” and Content Providers	17
Responses to Computational Propaganda	20
Policy Advisors and Regulators: A Politicized Sphere	20
Social Networking Platforms: Ill-equipped Regulators.....	21
Civic Society Groups: Insular Activism.....	22
Conclusion	23
About the Author	24
Author Acknowledgements.....	24
References.....	25
Citation.....	30
Series Acknowledgements.....	30

Table of Tables

Table 1: Twitter Conversation About German Politics Around the Federal Presidency Election, 2017	11
Table 2: Political News and Information Shared Over Twitter Around the Federal Presidency Election, 2017	17

Abstract

Political actors are using algorithms in efforts to sway public opinion. In some circumstances, the ways coded automation interacts with or affects human users are unforeseeable. In others, individuals and organizations build software that purposefully targets voters, activists, the media and political opponents. Computational propaganda is the assemblage of social media, autonomous agents and algorithms tasked with the manipulation of opinion. Automated scripts equipped with big data work over social media to advance ideological viewpoints. Politicized social bots are one version of potentially malicious programs. State and non-state political actors have used computational propaganda to manipulate conversations, demobilize opposition and generate false support on Twitter, Facebook and Instagram. Understanding how technologies like these are used to spread propaganda and misinformation, engage with citizens and influence political outcomes is a pressing problem. We have worked with computer scientists to detect bots and misinformation in "real time" during political events in Germany. Furthermore, we have interviewed German bot developers, journalists, data scientists, policy makers, academics, cyberwarfare specialists and victims of automated political attacks in order to investigate potential impacts of computational propaganda, especially in relation to the Bundestagswahlen 2017 and ongoing right-wing currents in the public discourse. Part 1 discusses social bot activity in Germany and empirically analyses their employment during elections. Part 2 evaluates misinformation and junk news. Part 3 examines the political, commercial and social responses to computational propaganda. The findings presented structure the dispersed public debate on online propaganda, relate proposed countermeasures to empirical evidence and serve as a benchmark for evaluating computational propaganda activity in Germany.

Introduction

The strategic manipulation of information online to exercise political power has emerged as a critical concern for the formation of public opinion in the twenty-first century – and as one of the most heatedly debated issues on the political and public agenda in Germany. In just the past year, there was the presumed Russian interference in the United States presidential elections; political bot networks endorsing the United Kingdom's possible Brexit during the referendum; social media fake news campaigns in the Ukraine crisis; and the automated amplification of the Macron leaks in France. In Germany our prior research has found active social bots and an abundance of German junk news during the federal presidency elections (Neudert et al., 2017). Online echo chambers, fake news and coordinated misinformation campaigns, political social bots that amplify, distort or initiate

conversation online and algorithmically afforded micro-targeting of individuals with political messages are all instruments of a novel form of twenty-first century propaganda.

Computational propaganda refers to autonomous scripts and algorithms tasked with the manipulation of public opinion online. Equipped with big data, autonomous agents create, disseminate and amplify political messages over social media with the objective of sowing discontent, fomenting uncertainty and silencing opposition (Woolley & Howard, 2016). Both state and non-state political actors have used computational propaganda to manipulate conversations, demobilize opposition and generate false support. Social media, as a central networked sphere for public discourse and information seeking, serves as an arena for automated scripts tasked with the manipulation of opinion. Code-driven instruments of computational propaganda have been found to be especially prevalent on social networking sites, such as Twitter, Facebook, Instagram and Sina Weibo, where they operate as social actors and through algorithms that disseminate information.

Much like the UK and the United States, Germany has fallen victim to a sceptical political zeitgeist that is suspicious of elites and the establishment (Decker & Lewandowsky, 2017; Jessen, 2017). Suffering from the late effects of the Euro crisis salvation politics and the “culture of welcoming” in the European refugee debate, much of the public has increasingly grown wary of non-participatory political power. This has created a fertile soil for right-wing populist movements that are now on the rise in Germany. Most prominently, the anti-immigration, right-wing Alternative für Deutschland (AfD) party, founded only in 2013, has been gaining votes in the country elections, and recent polls see it at 10–15 percent (Infratest dimap, 2017) – even though it is considerably cushioned by strong poll numbers for the Sozialdemokratische Partei Deutschlands (SPD) and its chancellor candidate Martin Schulz. What is more, much of the German public is highly sceptical of the press. Indeed “Lügenpresse”, or “lying press”, was the word of the year in 2014 (Chandler, 2015), which indicates that Germany might be especially susceptible to manipulation of opinion. However, more recent research from the University of Würzburg finds that trust in the media is at an all-time high (University of Würzburg, 2017).

The election year 2017 is notable as one in which the German public will elect not only the chancellor but also the pluralistic, multiparty parliament that will drive political decisions for the four years to come. As the economic powerhouse in the crumbling Eurozone, Germany's role in European politics is especially pivotal. What is more, with Donald Trump in the US, Theresa May in the UK and the recent possibility (though ultimately unsuccessful) of Marine Le Pen in France, Germany remains one of the "liberal West's last defenders" (Smale & Erlanger, 2016). Evidently, the implications of the outcome of the elections in September 2017 far exceed the German and even European sphere, making Germany a vulnerable target for the manipulation of public opinion.

In reference to the US elections the German Bundestag was explicitly cautioned about the potential impact of computational propaganda online during the annual budget address in late November 2016. Chancellor Angela Merkel pointed out that the formation of opinion worked "fundamentally different than 25 years ago", whereby "fake news sites, bots, trolls ... self-enforcing opinion and amplification ... through algorithms can tamper with public opinion" ("Merkel besorgt", 2016). Computational propaganda, and especially the role of political bots, has emerged as an issue of public and political concern. All of the major German parties have positioned themselves in the debate surrounding bots and committed to refrain from using them in campaigning. Regulatory measures to combat computational propaganda within existing legal frameworks have been discussed. A novel law, the *Netzwerkdurchsetzungsgesetz*, that would hold social networks liable for computational propaganda on their platforms has been proposed; governmental expert committees and task forces have been initiated; and influential elite media like *Süddeutsche Zeitung* (Moorstedt, 2016) and *Der Spiegel* (Amann, Knaup, Müller, Rosenbach & Wiedmann-Schmidt, 2016) have extensively discussed the threat of social bots. However, the debate lacks conceptual clarity.

Phenomena in relation to the dissemination and manipulation of opinion like social bots, chatbots, fake news, hate speech and trolling are blended and get mixed up in the discourse; misconceptions and terminology confusion are prevalent; there is no substantial empirical analysis of computational propaganda in the German sphere. With the exception of episodic observations on social media and limited methodological research (Neudert, Howard, & Kollanyi, 2017), the empirical basis of computational propaganda in Germany remains unaddressed. Politicians and the media are scrambling to come up with overblown proposals that might heavily

restrict freedom of expression. This working paper seeks to tackle this deficit by aligning the disordered public debate on computational propaganda, by anchoring the analysis in empirical evidence and by addressing countermeasures proposed.

Setting the Scene: Political Communication in Germany

Germany is a federal parliamentary democratic republic with pluralist parties competing. There is a multiparty system that informs the formation of the division of powers. Historically, the German political landscape has been dominated by the Christlich Demokratische Union / Christlich-Soziale Union (CDU/CSU) and the Sozialdemokratische Partei Deutschlands (SPD), where government is usually formed by coalitions. A national election will be held in September 2017, which will decide whether Merkel will remain in office or will be replaced by another candidate. So far her most prominent opponent is Martin Schulz from the SPD, former president of the European Parliament. Schulz in many ways is an unusual candidate. He has not received any higher education, has struggled with alcoholism and is an underdog in the German public discourse on politics that often neglects European matters. Furthermore, the composition of the parliament for the four years following the election will be decided in the nationwide elections. Leading up to the federal elections this year, three state elections were held that underlie the formation of the legislation and serve as an indicator for the federal elections.

Right-wing populist currents are picking up momentum in the German political sphere. The anti-immigration, right-wing party AfD – founded in 2013 in response to the ongoing Euro crisis – has gained substantial public support in EU and state elections. What is more, the topic of immigration has polarized the German political discourse, with strong political endorsement among Germany's political leadership, yet also with vocal opponents such as the nationalist Pegida. Nevertheless, the political landscape is stable, with Angela Merkel holding the chancellorship since 2005. The press functions as the fourth estate of power in Germany and is bound to diverse regulations and norms both online and offline in an effort to ensure quality. Nevertheless, much of the public has been highly wary of the "lying press" and has accused journalists of misportraying public sentiments in relation to immigration and EU scepticism. According to a comparative Reuters news survey, Germany is leading in traditional news media consumption. Only a fifth of Germans claimed to get their news on social media (Hölig & Hasenbrink, 2016).

Germany has held a central role as both an originator and a victim of propaganda in the recent history of the twentieth century. In World War I, propaganda was employed to mobilize and motivate the public for the war and to demonize opponents. Nazi propaganda during World War II was an integral element of totalitarian, nationalist politics and forcible coordination. The press, broadcasting and all liberal arts media and mass events were instrumentalized for the manipulation of public opinion (bpb, 2011b). In the German Democratic Republic (GDR) widespread propaganda was used to discredit the Federal Republic of Germany and Western capitalism. All media was censored and steered by the government (bpb, 2011a). However, the Federal Republic of Germany also used propaganda frequently during the Cold War, criticizing communism and the GDR (Gries, 1996). With that in mind, it is evident that Germany today takes much pride in freedom of expression and its liberal press system, as well as a political discourse climate that allows for debate and diversity. More recently, several renowned politicians and journalists have accused Russia of disseminating agitating propaganda messages directed against the German media and political sphere (Gathmann & Wittrock, 2016; Wickert in Noworth, 2016). However, a year-long investigation by the German intelligence service failed to reveal any “smoking guns” (in relation to Russian propaganda in Germany) (Mascolo, 2017).

Methodology

The case study on Germany has been informed by rigorous, qualitative interviews with the makers, victims, avid observers and regulators of computational propaganda, which were conducted in Germany between December 2016 and May 2017. Political campaign managers, academic experts, journalists, bot developers, policy makers, computer science experts, digital lobbyists and social media managers were interviewed in order to understand political manipulation via the internet in Germany. A hybrid selective sampling/snowballing strategy was employed, where interesting candidates were sought out and asked to recommend further subjects for interviews. All subjects remained anonymous to ensure their integrity. The analysis was enriched by quantitative analysis of the political social media discourse in Germany in relation to computational propaganda. Based on grounded enquiry, empirical evidence of computational propaganda was qualitatively analysed in an effort to distinguish central patterns and actors. Furthermore, a systematic evaluation of secondary literature of reports of

computational propaganda in Germany in the media, but also in civic journalism outlets, such as watchblogs, was conducted.

Social Bot Activity During the German Federal Presidency and State Elections

In recent years it has become common for people who log on to social media sites to find themselves interacting with not only human users, but also with code-driven social actors, automated bot accounts. Bots are computer scripts that automate human tasks online, deploy messages and replicate themselves. Security experts estimate that bots generate as much as 10 percent of content on social media websites, and drive 62 percent of all web traffic (Rosenberg, 2013). Bots administer legitimate tasks on the internet. They track and disseminate breaking news articles on behalf of media outlets, correct typos on Wikipedia, promote matches on social media and have performed the first real census of device networks. Yet, they can also be deployed for commercial tasks that are beyond mundane, such as spamming, carrying out distributed denial-of-service and virus attacks, email harvesting, click fraud and content theft. Networks of such bots are referred to as botnets, which describes a collection of connected computer programs that communicate across multiple devices to jointly perform a task. These botnets, which can comprise hundreds and even thousands of accounts, can be controlled by a single user on a single device. What is more, bots are cheap to produce and maintain, highly versatile and ever evolving.

Social bots are a subcategory of bots that are active on social media. They are automated social media accounts that mimic human behaviour and interact with other users on social networking sites, where they usually do not reveal their non-human nature. These bots are especially active on Twitter, but they are also found on other platforms such as Facebook, Instagram or online dating services (Samuel, 2015). Increasingly, the ways social bots are being used go beyond the social spheres to those discretely political: both state and non-state actors have used bots to manipulate public opinion, choke off political discourse, disturb conversation and muddy the identity of political actors (Woolley & Howard, 2016). Social bots have been found active during political moments worldwide: the UK Brexit referendum (P.N. Howard & Kollanyi, 2016), the US presidential elections 2016 (P. Howard, Woolley, & Kollanyi, 2016), during the Ukraine crisis (Hegelich & Janetzko, 2016) and during the ongoing protests in Syria (Qtiesh, 2011).

The prominent media coverage on computational propaganda during pivotal moments of political life in 2016 spurred much public concern about social bots. Political scientist and bot expert Simon Hegelich discussed an “invasion of opinion robots” (Hegelich, 2016), his colleague Andree Thielges assumed an “exceptional multiplier potential” (quoted according to Beuth, 2017) for social bots in Germany, and elite media published how-to’s on bot detection for end users and claimed that German politicians had declared “war on opinion machines” (Mair, 2016). Eventually, all of the major German parties declared that they would refrain from using social bots for political campaigning. Despite heated discourse on social bots and their potential to manipulate public opinion, there is little empirical evidence on the use of social bots in Germany.

Empirical Evidence of the Use of Social Bots

To understand the scope and the strategies of social bots in Germany and to address public concerns, we have conducted data-driven research on social bot activity during German elections. Two elections were monitored: the federal presidency election in February 2017 and the Saarland state parliament election in 2017. Evaluating these elections serves as a benchmarking exercise for the general elections in September 2017 with respect to bot activity and other evidence of computational propaganda strategies. The federal president of Germany is the official head of state. In contrast to the chancellor, power is not executive, but merely representative. The president is elected for a term of five years by the federal convention, mirroring the aggregated majority situation in the federal parliament, the Bundestag and the state parliaments. The convention is formed by all Bundestag members and an equal number of electors elected by the state legislatures in proportion to their population. As the election mirrors multiparty representation in the Bundestag, it is often criticized as being undemocratic and is therefore the subject of much controversy. In the state parliament elections in Saarland, voters voted for a party in a proportional representation system. Traditionally, state elections serve as a trend indicator and predictor for general elections.

To understand the phenomenon, tweets on both elections were collected using a combination of hashtags associated with the elections, the candidates and the parties. Since the purpose of this analysis is to discern how bots are being used to amplify political communication, a specific analysis of hashtags used in these data sets was performed. Twitter provides free access to a sample of public tweets. The platform's precise sampling method is not known, but the company itself reports that the data available through the streaming API is at most 1 percent of the overall global public communication on Twitter. Selecting tweets on the basis of hashtags has the advantage of capturing the content most likely to be about the elections. The streaming API yields tweets that contain the keyword or the hashtag; tweets with a link to a web source, such as a news article, where the URL or the title of the web source includes the keyword or hashtag; retweets that contain a message's original text, wherein the keyword or hashtag is used either in the retweet or in the original tweet; and quote tweets where the original text is not included but Twitter uses a URL to refer to the original tweet. The method employed counts tweets on the selected hashtags in a simple manner. Each tweet was counted if it contained one of the hashtags that were being followed.

For the German federal presidency elections, 121,582 tweets were collected over the course of three days that were generated by 36,541 users. An analysis on the levels of automation focusing on high-frequency accounts was conducted. A high level of automation was defined as accounts that post at least 50 times a day using these hashtags. This bot detection methodology fails to capture bots tweeting with lower frequencies. The traffic generated by high-frequency accounts focusing on the federal presidential elections was not substantial. 22 highly automated accounts were identified. These accounts generated a total of 5,962 tweets, which suggests an overall low level of bot-driven automation. Grouping the bot level by presidential candidate, between 4 percent and 15 percent of traffic was driven by bots.

Table 1: Twitter Conversation About German Politics Around the Federal Presidency Election, 2017

Candidate	Total		High Frequency Accounts		
	Tweets (N)	Percent	Tweets (N)	Percent of the total	Accounts (N)
Albrecht Glaser (AfD)	33,125	40.2	2,353	7.1	20
Alexander Hold (FW, BVB)	1,064	1.3	160	15.0	6
Frank-Walter Steinmeier (SPD, CDU/CSU, FDP, Bündnis90/Die Grünen, SSW)	44,533	54.1	1,861	4.2	20
Christoph Butterwegge (Die Linke)	3,627	4.4	279	7.7	16

Source: Author's calculations from data sampled 11-13/02/17.

Note: Glaser hashtags include #afd, #afdwaehlen, #afd wählen, #blauesswunder, #albrechtglaser, #glaser; Hold hashtags include #hold, #alexanderhold, #fw, #freiewaehler; Steinmeier hashtags include #frankwaltersteinmeier, #steinmeier, #spd, #grüne, #fdp, #cdu, #csu; Butterwegge hashtags include #butterwegge, #christophbutterwegge, #dielinke, #linke.

As the federal presidency elections are primarily a formality, the Saarland state elections were analysed for comparison. Here 154,793 tweets from 32,008 unique users were collected over the course of seven days in March 2017. 11 high-frequency accounts were identified that tweeted 5,062 times during the period of interest. Hence, high-frequency, bot-driven accounts tweeting in large numbers were not present during the German federal presidency and Saarland state elections.

While these results cannot dismiss the possibility of social bot activity during the elections in September 2017, they nevertheless serve as an indicator. However, one must note that bots tweeting with lower frequencies are not examined here. Due to the low number of bots it was possible to perform a close analysis of the bot accounts, with some common patterns emerging that revealed some interesting insights. German bots were primarily active in retweeting content, rather than generating original tweets themselves or engaging in conversation. The bot profiles were curated, often displaying symbolic profile pictures of cartoon characters or animals and mobilizing self-descriptions. There were both old and new accounts, indicating that some of the accounts might have been generated specifically for the elections. Only one of the bot accounts identified was active in both elections.

Otherwise, there was no overlap between the accounts. However, an overlap in the content retweeted was observed as well as bots retweeting and following each other, which indicates some form of coordination. Thematically the majority of the bots support a right-wing agenda: negative comments on immigration and xenophobic comments were a common topic, as well as tweets explicitly supporting the AfD. However, this observation does not allow for an attribution of the highly automated accounts. Bots verbally attacked German government politicians with hate speech, whereby commonly Chancellor Angela Merkel and chancellor candidate Martin Schulz were the target. There were both old and new accounts indicating that some of the accounts might have been generated specifically for the elections.

Outlook: Media Multipliers and Unrealized Potential

The empirical analysis suggests no substantial political social bot activity during elections in Germany. However, that is not to give the all-clear to bot-related computational propaganda. There is evidence that social bots have been active during pivotal political moments in Germany. Angela Merkel was targeted with bot-generated hate speech messages in response to the German Christmas market attack (Nicola, 2016). There are reports of xenophobic bots manipulating the debate on refugees on popular political Facebook pages (Schulte, 2016). Presumed botnetworks supporting the right-wing AfD that are automatically adding users to pro-AfD groups have been discovered on Facebook (Bender & Oppong, 2017). An interview respondent reported that social bots on Facebook are used throughout the political spectrum to increase the visibility of content by driving user metrics such as likes and shares, and adding users to political interest groups. Evidently, political bots have entered the German discourse on social media where they are active on open platforms such as Twitter, but also on closed Facebook groups that hide themselves from public observation.

The effects of bots cannot be measured by analysing their prevalence in social networks only. Rather their potential needs to be taken into account. A central trajectory of bots is the relationship to multipliers, influential figures of public life such as politicians, journalists and celebrities. When these gatekeepers pass on bot-generated messages they not only expand the bots' reach but also provide them with credibility, thus multiplying their effect. Both German politicians and journalists

use social media as a source of information and to detect sentiments in the public (Neuberger, Langenkohl, & Nuernbergk, 2014). German Twitter is especially populated by such opinion leaders, which might create an exceptional opportunity structure for bots to disseminate content (Beuth, 2017). One of the interviewees, who runs a distinguished digital think tank and serves as a technologic advisor to the government, assessed the media literacy of German journalists as follows:

German journalists use social media as a source because it is cheap and available, but they often don't understand it Some of them [the media multipliers] take the social media agenda as reality without further reflection or awareness of manipulation or bias. (Che, personal communication, February 17, 2017)

In relation to the potential applications of bots in Germany, the interviews were informed by a cautionary vigilance. Sleeping political botnetworks often exist undiscovered on social media. These accounts are either inactive or focus on non-political issues or spamming. Theoretically, these botnetworks can be activated to disseminate political content any time. In Germany, one interviewee, who has been systematically tracking bots for almost two years, reported a number of smaller botnetworks whose activity and agenda changed over the course of the period of enquiry. The expert mentioned a network of bots tweeting on American football that became active tweeting on German political TV debates. Similarly, Nicola (2016) observes that Twitter accounts that were almost exclusively tweeting on Donald Trump suddenly targeted Angela Merkel during the German Christmas market attacks. This serves as a reminder that bots are highly adaptive. What is more, one participant claimed to have observed an adaption in frequency of tweets to the threshold criteria of 50 tweets or more per day. An interviewee who is an expert on digital law and has served as a political advisor to the government on social bots recalled:

The debate on social bots is a debate about their [future] potential, not about evidenceThat is not to say we shouldn't be cautious. (Azur, personal communication, March 29, 2017)

No substantial commercial market for bots seems to exist within the country. Simple software that operates social bots is readily available online. User accounts that host bot activity similarly can be obtained online. The price for 1,000 fake accounts on

Twitter and Facebook ranges between US\$45 and US\$150, and most sellers are usually located abroad (Hegelich, 2016). An interviewee who is a cybersecurity expert in academia explained that, while Germans are comparatively well equipped with the technological capacities and knowledge needed to build a bot, there were few incentives for commercial bot developing as Eastern European countries offer them cheaply.

Summing up, the research conducted has not found substantial bot activity on German social media or evidence of bot making for political purposes. While political bots have been found active in amplifying opinions, disseminating biased content and targeting influential politicians with hate speech, their public activity remains limited. Threats from social bots persist in their ability to influence multipliers in the political and media sphere. These groups are highly reliant on social media as a source of information, yet often lack media competency, perpetuating and extending the influence of bots.

Misinformation and Fake News in Public Discourse over Social Media

Digital misinformation has become pervasive online to an extent that the World Economic Forum named the concern over the rapid spread of misinformation online among the top 10 perils facing society (World Economic Forum, 2014). High-penetration social media websites like Facebook or Twitter have become constitutive venues for the massive diffusion and consumption of misinformation content. They provide users with convenient tools for not only content creation, but also mass dissemination of content. Thereby, social media content bypasses traditional information gatekeepers, fact-checking mechanisms, journalistic norms and legal obligations. Social media favours sensationalist content irrespective of whether the content has been fact-checked or is from a reliable source (Alejandro, 2014; Anderson & Caumont, 2014). That in turn encourages less rigorous journalistic practices and the deliberate presentation of incorrect information as factual in an effort to generate attention (Silverman, 2015). Yet, attention-grabbing presentation and selection logics are not only exploited for economic returns, but also for ideological motives. Both state and non-state political actors deliberately manipulate and amplify non-factual information online.

In response to prominent cases of misinformation in the US elections such as #pizzagate, fake news stories have been under much scrutiny for manipulating public opinion. Fake news websites deliberately publish misleading, deceptive or incorrect information purporting to be real news for political, economic or cultural reasons. When fake news content is backed by automation, through opaque dissemination algorithms, through political social bots that promote content in a preprogrammed way or through simulating false approval, political actors have a powerful set of tools for computational propaganda (Neudert, Howard & Kollanyi, 2017). These fake news sites often rely on social media to attract web traffic and drive engagement, so they do not rank behind in engagement as compared with traditional major news outlets (Silverman & Nardelli, 2017). Both fake news websites and political bots are crucial tools in digital propaganda attacks in many of the same ways. They aim to influence conversations, demobilize opposition and generate false support. Evidently, there is much cross-pollination potential for the deliberate manipulation of public opinion. Bots may serve as an instrument for the perpetuation and amplification of fake news content through widespread diffusion of URLs over social media.

The German media system is internationally acclaimed for having “a strong track record of reliable reporting from both public service and commercial news brands” (Hölig & Hasenbrink, 2016). In recent years, however, the German media was increasingly accused of biased, self-referential reporting (Klößner, 2015). The accusations peaked in relation to the debate on the New Year’s Eve sexual assaults in Germany in 2015/16 (Reinemann & Fawzi, 2016). Hundreds of women were sexually assaulted in various German cities, and police officials announced that the perpetrators were mostly Arab and African men, which fuelled much debate on Germany’s refugee politics (Hill, 2016). At first several German media outlets did not cover the incidents, but only started reporting after increasingly facing public critique over social media, which prompted much disdain of the media (Karnitschnig, 2016). Communication science scholars Reinemann and Fawzi (2016) dismiss “lying press” allegations as instruments of populist and extremist politics that have found fertile soil on social media to disseminate distorted ideological and conspiracy content.

Empirical Evidence of Misinformation

For the tweets collected during the German federal presidency elections, a content analysis with respect to misinformation content on Twitter was conducted. Of the total tweets captured in this sample, some 17,453 tweets included links to external content. A random sample of 10 percent of these tweets containing a URL was drawn and analysed. The linked web pages from the subset were identified and classified into content categories distinguishing political news and information. The set of tweets was then screened for other instances of these categorized sources. Roughly 94 percent of tweets were identified using this approach. The sample contains 14,852 tweets on political news and information. To evaluate the qualities and quantities of the various sources of political news and information, a grounded typology was developed. Political news and information content is produced by organizations displaying qualities of professional journalism, with fact-checking and credible standards of production. Junk news includes various forms of propaganda and ideologically extreme, hyperpartisan or conspiratorial political news and information. It seeks to persuade readers about the moral virtues or failings of organizations, causes or people and presents commentary as a news product. Russian news sources like Russia Today were not included in this category but evaluated separately (Neudert et al., 2017).

The analysis has found a ratio of political news and information to misinformation of 4 to 1, whereby 74 different misinformation sources were found. The right-wing, anti-Islam blog *Philosophia Perennis* and the extremist right-wing *Zuerst!* generated the most shares, followed by the similar *Junge Freiheit* and the anti-establishment *Politically Incorrect News*. Mirroring the findings from the enquiry on social bots, the majority of the misinformation pages identified were politically right, and xenophobic, nationalist, pro-Pegida, pro-AfD and Islamophobic content was common. Many of the sources mixed misinformation reporting with content from news agencies such as Reuters and dpa, which were quoted as sources. Only a handful of the sites were comparable to established online media publications in their design and functionality, whereas the majority of outlets resembled blogs and newsfeeds. Emotive language, capital lettering and an emphasis on visual over textual content emerged as indicative of misinformation. The misinformation sources commonly referred to themselves as alternative, unbiased sources of information that provide news against the mainstream and that present content that media and political news elites remain silent about. This communication style, which claims to be an antagonist to elites and a member of "the people", is symptomatic

of a populist communication style (Jagers & Walgrave, 2007). A substantial number of outlets displayed indicators of Russian references: the page language could be switched from German to Russian, but not to any other language, and there was Russian advertising.

Table 2: Political News and Information Shared Over Twitter Around the Federal Presidency Election, 2017

Type of Source	URLs (N)	Percent	URLs (N)	Percent
Professional News Content				
Major News Brands	5,987	89.8		
Minor News Brands	680	10.2		
Subtotal	6,667	100.0	6,667	44.9
Professional Political Content				
Political Party or Candidate	1,543	76		
Government	260	12.8		
Experts	226	11.1		
Subtotal	2,029	100.0	2,029	13.7
Other Political News and Information				
Junk News	1,504	44.8		
Other Political	770	22.9		
Citizen or Civil Society	529	15.7		
Russia	395	11.8		
Humor or Entertainment	113	3.4		
Religion	49	1.5		
Subtotal	3,360	100.0	3,360	22.6
Other				
Social Media Platform	1,978	90.2		
Other Non-Political	215	9.8		
Subtotal	2,193	100.0	2,193	14.8
Inaccessible				
Language	429	71.1		
No Longer Available	174	28.9		
Subtotal	603	100.0	603	4.1
Total	14,852		14,852	100.0

Source: Author's calculations from data sampled 11-13/02/17.

Outlook: "Fakebook" and Content Providers

With a ratio of information to misinformation of 4 to 1, the share of misinformation was relatively low as compared with findings on misinformation on Twitter during the presidential elections, where the ratio was 1 to 1 (Howard, Bolsover, Kollanyi, Bradshaw, & Neudert, 2017). However, the German Twittersphere is populated with politicians, journalists and highly educated users (Neuberger, Langenkohl, & Nuernbergk, 2014) whereas US Twitter engages a broader public. Rather content on Facebook, which attracts 21 million unique visitors in Germany every day, appears

to be the online focal point for misinformation. Silverman and Nardelli (2017) find that the top-performing Merkel stories on Facebook in both English and German are mainly highly critical and misleading articles from fake news and conspiracy pages. Syrian refugee Anas Modamani, who took a selfie with Angela Merkel, unsuccessfully sued Facebook for defamation after fake news stories that accused him of terrorist activities repeatedly popped up on the network and were shared hundreds of times (Eddy, 2017). An interactive map of alleged refugee crimes was largely circulated over the social network (Schönauer, 2017).

Many of the interview participants, among them journalists and social media managers, stated that they have been subjected to fake news content that is circulated on public pages and in private groups on Facebook. Junk content therefore appears in external sources but is also posted natively to Facebook via a multitude of German-language public Facebook pages and personal accounts that disseminate content in a blog-style format. One subject had collected a list of more than 400 such sources. A social media manager from a leading German newspaper observed that fake news and conspiracy content was shared frequently in comments on controversial political posts, alongside hate speech and trolling. She stated that this is a trend that emerged only around 2014 and which had forced many German publishers to disable comments on Facebook and on their proprietary websites. Indeed, fake news content has become so constitutive to the platform that the German media landscape frequently refers to the platform as “Fakebook” (Beuth, 2016), as interviewees pointed out.

The interviews echoed that the majority of fake news and conspiracy stories are presumed to originate from individuals who see themselves as activists and minor, semi-professional media organizations, a handful of major professional media corporations or Russian media outlets. The quantitative analysis confirmed this evaluation. The majority of the junk news sources identified were attributed to individuals and minor media organizations, whereas about a third of sources were major organizations. Russian content accounted for roughly 4 percent of all accessible sources. Coordinated political communication from a party, non-state commercial organization, non-Russian state actors or military operations was suspected to play a minor role, if any.

A common pattern in the interviews originated in the assumption that for individual activists and minor organizations the online sphere serves as a public domain,

where they can speak out (anonymously) and connect with like-minded supporters of unpopular, often “politically incorrect” viewpoints. Ideological and cultural motivations dominate rather than economic incentives. What is more, personal discontent and a feeling of discrimination in the overall political system were presumed to be drivers. Similarly, interviewees stated that major media organizations were driven by ideological and cultural motivations, referencing unprofitable, donation-based publications. While right-wing, nationalist content is thereby not a novel phenomenon, but has a longstanding tradition both online and offline, social media and easy-to-use content tools have expanded the misinformation sphere in Germany. An interview subject, who is the editor-in-chief of a leading digital politics publication and digital expert summarized this as follows:

They [the providers of fake news and conspiracy content] are unhappy, often unemployed or somehow excluded from benefits ... these people see themselves as ideological activists. (Verfassungsschützer, personal communication, February 14, 2017)

Major Russian media corporations such as Russia Today and Sputnik are well established in Germany, as indicated by their significant social media following and web traffic. They are known for heavily biased, often factually inaccurate reporting that is critical of the German government, Merkel and the European Union (Kohrs, 2017). However, mirroring the findings of the German intelligence investigation, while this reporting is highly questionable, it is hardly illegal to an extent that would justify censorship or filtering. The most prominent example of Russian misinformation in Germany is arguably “the criminal case of Lisa”, the Russian–German girl claimed to have been kidnapped and raped by migrants in Berlin in January 2016, but the German police had evidence that she had made a false statement. Russian media accused German officials of hushing up the case and extensively covered the story, claiming the girl had been mistreated and was held as a sex slave. Eventually, foreign minister Sergey Lawrow repeated the accusations, whereupon the former German foreign minister Frank-Walter Steinmeier cautioned Russia not to politicize the case (McGuinness, 2016). The interviews highlighted that pro-Russian content does not exist in a political vacuum, but there is a discernible share of the public that agrees with the views propagated. An interview subject reflected:

In Germany a share of 10 to 15 percent of the population is pro-Russian, sceptical of the US and NATO The most vocal, most shrill are often Russian publications It is a business model that caters to a pro-Russian, conspiracy milieu. (Verfassungsschützer, personal communication, February 14, 2017)

Responses to Computational Propaganda

Fake news, social bots and micro-targeting algorithms have triggered much debate on how to control propagandistic, political content and its dissemination mechanisms on the internet. While journalistically produced content in Germany is subject to strict professional norms and a journalistic duty of care and is regulated by the law, user-generated content and social media as content platforms largely operate in a legal vacuum. Social networking sites and search engines with opaque algorithms are sometimes perceived as threats to democracy in Germany (Schweiger, 2017). However, the existing framework is often not applicable to digital contexts. Increasingly, regulatory and self-regulatory efforts are put into motion in Germany. Three key actors have emerged: policy and regulators, social networking sites and civic society.

Policy Advisors and Regulators: A Politicized Sphere

In the run-up to the elections in September 2017, social bots and misinformation have gained continuous presence on the political agenda in Germany. All of the major German parties have publicly stated that they would refrain from using social bots in elections and strongly condemn such instruments, except the right-wing AfD. Top candidate Alice Weidel argued that the AfD would “self-evidently make use of social bots in elections” (Endt, 2017), emphasizing that social bots were a legitimate and “normal” means of digital political campaigning. The party distanced itself from this statement later. The Green Party (Die Grünen/Bündnis 90) demanded a mandatory labelling obligation for bots on social media that would apply to all kinds of Twitterbots, chatbots and conversational assistants (Göttsche, 2017). The governing party CDU/CSU has proposed a binding obligation for users to register with their real name on social media, but this would violate German law (Braun, 2017).

Regulatory efforts proposed in Germany are increasingly directed at social networking sites, corresponding to vocal public calls for treating such platforms as

media companies, rather than technology companies. In early January 2017, three German states revived a legislative initiative on digital trespassing that would impose fines on users for breaking the terms and conditions of social networking sites (Reuter, 2017). This measure would effectively criminalize the use of social bots on Facebook, which bans bots in its terms and conditions. In March 2017, Germany's judiciary minister, Heiko Maas, proposed a law (Netzwerkdurchsetzungsgesetz) that would impose heavy fines on social networking sites if they fail to take down illegal hate speech and fake news content. An alliance of leading civic society and commercial associations, including Bitkom and D64, echoed that such a law would be overbearing and could negatively affect freedom of expression (Beckedahl, 2017). The policy experts interviewed concurred with this evaluation of German digital policies. They pointed out that the regulatory efforts correspond to public concerns on digital political campaigning and manipulation of opinion online, and were highly politicized rather than results-driven. Most experts considered media literacy campaigns as pivotal for countering such issues. An interview subject who is a public digital politics media figure and acclaimed expert summarized this as follows:

This reminds me of road traffic regulations, where we (the German state) heavily invested into education The alternative is abolishing cars. But none would get rid of cars, to prevent accidents. (Verfassungsschützer, personal communication, February 14, 2017)

This statement highlights that regulatory measures in Germany often seek to attend to symptoms rather than underlying structural conditions and fail to effectively create a regulatory framework for the interaction with new technologies.

Social Networking Platforms: Ill-equipped Regulators

Social networking platforms have begun to acknowledge responsibility for actions on their platforms. After the US, Germany was the first country in which Facebook rolled out fake news detection tools. The company cooperates with the independent German fact-checker Correctiv to report and flag fake news content (Horn, 2017). In April 2017, Facebook launched a nationwide media literacy campaign on how to detect fake news content. Users were provided with 10 tips on how they could protect themselves from misinformation on the platform. While Facebook's terms and conditions prohibit social bots, the platform does not actively prosecute their employment. Neither Twitter nor YouTube have undertaken similar

efforts in Germany. Mirroring expert opinion in the press, the interviewees agreed that, while social networking platforms acknowledging responsibility was generally commendable, the measures proposed were rarely sufficient. Cutting economic incentives and changing the algorithm so as to present fake news content lower in the newsfeed were proposed. Furthermore, the legitimacy and capability of platforms as fact-checkers were questioned. A digital policy advisor and prior member of the German parliament provided the following critique:

Leaving the responsibility of deciding on what is true effectively makes Facebook a gatekeeper that does just that—dictate their truth. (Kollegah, personal communication, April 07, 2017)

This statement emphasizes that shifting editorial capabilities to social network operators, both self-regulatory and regulatory, endows these actors with substantial responsibilities whose effects extend beyond the digital sphere.

Civic Society Groups: Insular Activism

The aftermath of the 2016 US presidential campaign resulted in rising civic engagement in relation to misinformation and more policing of right-wing content. Advertising companies have emerged as media watchdogs. Gerald Hensel from the renowned advertising agency Scholz & Friends called for an advertising boycott of right-wing media. The campaign quickly became highly controversial as it was accused of serving as an instrument of censorship reminiscent of Nazi boycotts of Jewish businesses (Hanfeld, 2016). Similarly, YouTube found itself at the centre of an international advertising boycott against right-wing and extremist content. While the boycott found little public reciprocation in Germany, large German brands like Audi and Volkswagen participated (Rentz, 2017). Non-profit watchdog organizations like Mimikama and media organizations like the ARD have initiated fact-checking services and have launched fact databases (Bouhs, 2017). Schmalbart, a participatory online initiative that seeks to act as a counterbalance to misinformation and extremist content online, has launched more than 20 civic society projects (Rauschenberger, 2017). The Facebook group #ichbinhier (I am here) has made it its mission to counter hate speech and misinformation with objective, user-generated comments on the platform. Founded in December 2017, the group had 35,000 members at the time of publication. While the list of civic society countermeasures is long and their scope ambitious, they stem from vocal but insular cases and hardly constitute a comprehensive movement.

Conclusion

Brexit and the US elections have spurred a cautious vigilance in relation to the manipulation of opinion in the digital sphere in Germany. Computational propaganda has become a controversially debated issue on the public agenda, with much media and political attention dedicated to its causes, agents and countermeasures. The debate on computational propaganda itself has become a highly politicized proxy war in response to public concerns. Despite the ongoing discourse and exerted political efforts to regulate online manipulation of opinion, there is limited documented empirical evidence that computational propaganda is a serious problem in Germany. The results of the research conducted have concluded that the activity of highly automated bot accounts during prior elections was marginal. Due to the immediateness of such automated agents for disseminating information, a real-time evaluation of bot activity in relation to the federal elections in September 2017 remains constitutive. Furthermore, the analysis finds that misinformation and junk news content play a substantial role on German social media, accounting for roughly 20 percent of all political news and information on Twitter.

Germany leads the way as a cautionary authority over computational propaganda, seeking to prevent online manipulation of opinion rather than addressing already present issues. Policy advisors and regulators, social networking platforms and civic society actors have undertaken vigorous action to counter the causes and effects of computational propaganda. Yet, many of those measures lack legitimacy and suitable enforcement, and some are disproportionate responses considering their implications for freedom of expression. Multipliers such as journalists, politicians, celebrities and other public opinion leader figures on social media are pivotal for the perpetuation of propaganda messages and the transfer of social media issue salience to the public agenda. Careful monitoring of online propaganda combined with media literacy campaigns for building digital capabilities therefore lie at the very centre of preventing computational propaganda from becoming a problem.

About the Author

Lisa-Maria Neudert is a research assistant at the Computational Propaganda Project (ComProp) and a graduate student at the Oxford Internet Institute. She is author of the ComProp data memo on social bots and fake news during the German Federal Elections and has presented her work at re:publica 2017. Selected as a Fulbright and German Academic Exchange (DAAD) Scholar, Lisa-Maria studied Communication Technologies & Diplomacy at the Georgetown University, Washington DC; and holds a Bachelor of Arts in Communication Science and Economics from the Ludwig-Maximilians-University, Munich. Lisa-Maria has worked in various fields in the (digital) communications sector including radio & broadcast news journalism (ARD), communication consulting (Allianz Singapore) and Marketing (Coca-Cola, BBDO). She has conducted research at SDA Bocconi, Milan, the National University of Singapore and Ludwig-Maximilians-University, Munich. She tweets as @lmneudert.

Author Acknowledgements

Thank you to all the interviewees for their time and participation. We hope you see your insights reflected in this working paper. Sincere thanks to Phil Howard, Sam Woolley and Bence Kollanyi at the Oxford Internet Institute for making this working paper possible.

References

- Alejandro, J. (14 March 2014). Journalism in the age of social media. Retrieved from <http://reutersinstitute.politics.ox.ac.uk/publication/journalism-age-social-media>
- Amann, M., Knaup, H., Müller, A.-K., Rosenbach, M., & Wiedmann-Schmidt, W. (n.d.). Social Bots: Wie digitale Dreckschleudern Meinung machen. *Der Spiegel*. Retrieved from <http://www.spiegel.de/spiegel/social-bots-propaganda-roboter-verzerren-politische-diskussion-im-netz-a-1117955.html>
- Anderson, M., & Caumont, A. (2014). How social media is reshaping news. From <http://www.pewresearch.org/fact-tank/2014/09/24/how-social-media-is-reshaping-news/>
- Azur & Dutt (March 29, 2017). Face-to-face interview with LM Neudert.
- Beckedahl, M. (11 April 2017). Breites Bündnis stellt sich mit Deklaration für die Meinungsfreiheit gegen Hate-Speech-Gesetz. Retrieved from <https://netzpolitik.org/2017/breites-buendnis-stellt-sich-mit-deklaration-fuer-die-meinungsfreiheit-gegen-hate-speech-gesetz/>
- Bender, J., & Oppong, M. (7 February 2017). Digitaler Wahlkampf: Frauke Petry und die Bots. Retrieved from <http://www.faz.net/aktuell/politik/digitaler-wahlkampf-frauke-petry-und-die-bots-14863763.html>
- Beuth, P. (19 November 2016). Schluss mit Fakebook. *Die Zeit*. Hamburg. Retrieved from <http://www.zeit.de/digital/internet/2016-11/facebook-zuckerberg-massnahmen-gegen-fake-news>
- Beuth, P. (16 March 2017). Heiko Maas: Auf Hass gezielt, die Meinungsfreiheit getroffen. *Die Zeit*. Hamburg. Retrieved from <http://www.zeit.de/digital/internet/2017-03/heiko-maas-gesetzentwurf-soziale-netzwerke-hass-falschnachrichten>
- Bouhs, D. (2017). "Fake news"-checker in Deutschland. Retrieved from [/fernsehen/sendungen/zapp/Fake-News-Checker-in-Deutschland-faktencheck146.html](http://fernsehen.sendungen.zapp/Fake-News-Checker-in-Deutschland-faktencheck146.html)
- bpb (Bundeszentrale für politische Bildung). (2011a). Blick über die Mauer: Medien in der DDR | bpb. Retrieved from <http://www.bpb.de/izpb/7560/blick-ueber-die-mauer-medien-in-der-ddr>
- bpb (Bundeszentrale für politische Bildung). (2011b). Geschichte der Kriegspropaganda | bpb. Retrieved from <http://www.bpb.de/gesellschaft/medien/krieg-in-den-medien/130707/geschichte-der-kriegspropaganda?p=all>
- Braun, S. (29 January 2017). Netzpolitischer Wochenrückblick KW 4: Und täglich grüßt der Social Bot. Retrieved from <https://netzpolitik.org/2017/netzpolitischer-wochenrueckblick-kw-4-und-taeglich-gruesst-der-social-bot/>
- Chandler, A. (2015, January 14). The "Worst" German Word of the Year. *The Atlantic*. Retrieved from

- <https://www.theatlantic.com/international/archive/2015/01/the-worst-german-word-of-the-year/384493/>
- Che, (February 17, 2017). Face-to-face interview with LM Neudert.
- Decker, F., & Lewandowsky, M. (2017). Rechtspopulismus: Erscheinungsformen, Ursachen und Gegenstrategien | bpb. Retrieved from <http://www.bpb.de/politik/extremismus/rechtspopulismus/240089/rechtspopulismus-erscheinungsformen-ursachen-und-gegenstrategien>
- Eddy, M. (6 February 2017). How a refugee's selfie with Merkel led to a Facebook lawsuit. *The New York Times*. Retrieved from <https://www.nytimes.com/2017/02/06/business/syria-refugee-anas-modamani-germany-facebook.html>
- Endt. (2017, February 10). Wie Phantom-Accounts die politische Debatte verzerren. *Sueddeutsche.de*. Retrieved from <http://www.sueddeutsche.de/politik/social-bots-wie-phantom-accounts-die-politische-debatte-verzerren-1.3373535>
- Gathmann, F., & Wittrock, P. (2016). Angebliche russische Propaganda-Aktionen: Lügen, Gerüchte, Vorwürfe. *Der Spiegel*. Retrieved from <http://www.spiegel.de/politik/deutschland/angebliche-russische-propaganda-aktionen-viele-vorwuerfe-wenig-fakten-a-1125494.html>
- Göttsche, K. (2017). Social Bots: Grüne fordern Kennzeichnungspflicht. *Computerbild*. Retrieved from <http://www.computerbild.de/artikel/cb-News-Internet-Social-Bots-Kennzeichnungspflicht-die-Gruenen-17209425.html>
- Gries, D.G. and R. (Herausgeber). (1996). *Propaganda in Deutschland, Zur Geschichte der politischen Massenbeeinflussung im 20. Jahrhundert*. Darmstadt: Wissenschaftliche Buchgesellschaft Verlag.
- Hanfeld, M. (15 December 2016). Boykottaufruf gegen "Rechts": Wirb nicht bei den Schmutzkindern. *Frankfurter Allgemeine Zeitung*. Retrieved from <http://www.faz.net/aktuell/feuilleton/debatten/scholz-friends-ruft-zum-werbeboykott-gegen-rechts-auf-14576102.html>
- Hegelich, S. (2016). Social bots: Invasion der Meinungsroboter. Retrieved from <http://www.kas.de/wf/de/33.46486/>
- Hegelich, S., & Janetzko, D. (2016). Are social bots on Twitter political actors? Empirical evidence from a Ukrainian social botnet. In *Tenth International AAAI Conference on Web and Social Media*. Retrieved from <http://www.aaai.org/ocs/index.php/ICWSM/ICWSM16/paper/view/13015>
- Hill, J. (2016, January 13). Cologne attacks put spotlight on Germany's North African migrants. *BBC News*. Retrieved from <http://www.bbc.com/news/world-europe-35298224>
- Hölig, S., & Hasenbrink, U. (2016). Reuters Institute Digital News Survey 2016: Ergebnisse für Deutschland. Hans-Bredow-Verlag, Hamburg.
- Horn, V.D. (2017). Facebook markiert Fake News jetzt auch in Deutschland. *Tagesschau*. Retrieved from <https://www.tagesschau.de/inland/facebook-fakenews-105.html>

- Howard, P., Bolsover, G., Kollanyi, B., Bradshaw, S., & Neudert, L.-M. (2017). Junk news and bots during the US election: What were Michigan voters sharing over Twitter? Data Memo 2017.1. Oxford, UK: Project on Computational Propaganda. Retrieved from <http://comprop.oii.ox.ac.uk/2017/03/26/junk-news-and-bots-during-the-u-s-election-what-were-michigan-voters-sharing-over-twitter/>
- Howard, P.N., & Kollanyi, B. (2016). Bots, #StrongerIn, and #Brexit: Computational propaganda during the UK-EU referendum. arXiv:1606.06356 [Physics]. Retrieved from <http://arxiv.org/abs/1606.06356>
- Howard, P., Woolley, S., & Kollanyi, B. (31 October 2016). Bots and automation over Twitter during the third US presidential debate. Retrieved from <http://politicalbots.org/?p=769>
- Infratest dimap. (2017). Sonntagsfrage < Bundesweit < Umfragen & Analysen < Infratest dimap. Retrieved from <https://www.infratest-dimap.de/umfragen-analysen/bundesweit/sonntagsfrage/>
- Jagers, J., & Walgrave, S. (2007). Populism as political communication style: An empirical study of political parties' discourse in Belgium. *European Journal of Political Research*, 46(3), 319–345. <https://doi.org/10.1111/j.1475-6765.2006.00690.x>
- Jessen, J. (5 March 2017). Populismus: Der Hass auf die da oben. *Die Zeit*. Hamburg. Retrieved from <http://www.zeit.de/2017/08/populismus-eliten-hass-spd-cdu-afd-kritik>
- Karnitschnig, M. (20 January 2016). Cologne puts Germany's "lying press" on defensive. Retrieved from <http://www.politico.eu/article/cologne-puts-germany-lying-media-press-on-defensive-migration-refugees-attacks-sex-assault-nye/>
- Klößner, M. (2015). Die große Meinungsvielfalt in der deutschen Presse ist Geschichte. Retrieved from <https://www.heise.de/tp/features/Die-grosse-Meinungsvielfalt-in-der-deutschen-Presse-ist-Geschichte-3373110.html>
- Kohrs, C. (4 January 2017). Russische Propaganda für deutsche Zuschauer. *Correctiv*. Retrieved from <https://correctiv.org/recherchen/neue-rechte/artikel/2017/01/04/medien-RT-RTdeutsch-russia-today/>
- Kollegah (April 07, 2017). Face-to-face interview with LM Neudert.
- Mair, M. (2016). Propaganda-Roboter als Wahlkampfhelfer: Social bots in der Politik. Retrieved from <https://www.tagesschau.de/multimedia/politikimradio/audio-35929.html>
- Mascolo, G. (2017). Geheimdienste: Keine "smoking gun" aus Russland. Retrieved from <https://www.tagesschau.de/inland/deutsche-geheimdienste-russland-101.html>
- McGuinness, D. (2016, January 27). Russia steps into Berlin "rape" storm claiming German cover-up. *BBC News*. Retrieved from <http://www.bbc.com/news/blogs-eu-35413134>

- Moorstedt. (2016). Trumps Twitter-Bots werden zur politischen Gefahr. *sueddeutsche.de*. Retrieved from <http://www.sueddeutsche.de/digital/us-wahl-wie-trumps-twitter-bots-zur-politischen-gefahr-werden-1.3002280>
- Merkel besorgt über "Fakeseiten, Bots und Trolle". (2016). *Der Tagesspiegel*. Retrieved from <http://video.tagesspiegel.de/merkel-besorgt-uber-fakeseiten-bots-und-trolle.html>
- Neuberger, C., Langenkohl, S., & Nuernbergk, C. (2014). Social media und Journalismus. Landesanstalt für Medien (LfM) Nordrhein-Westfalen: Nordrhein-Westfalen.
- Neudert, L.-M., Howard, P., & Kollanyi, B. (2017). Junk news and bots during the German federal presidency election: What were German voters sharing over Twitter? Retrieved from <http://comprop.oii.ox.ac.uk/wp-content/uploads/sites/89/2017/03/What-Were-German-Voters-Sharing-Over-Twitter-v6-1.pdf>
- Nicola, S. (22 December 2016). Merkel feels Hillary's pain as web trolls bombarded her with abuse. *Bloomberg.com*. Retrieved from <https://www.bloomberg.com/politics/articles/2016-12-22/merkel-feels-hillary-s-pain-as-web-trolls-bombard-her-with-abuse>
- Noworth, M. (2016). Ulrich Wickert: "Medien haben ein falsches Verständnis von Toleranz". Retrieved from <http://www.wiwo.de/politik/deutschland/ulrich-wickert-medien-haben-ein-falsches-verstaendnis-von-toleranz/12890660.html>
- Qtiesh, A. (18 April 2011). Spam bots flooding Twitter to drown info about #Syria protests [Updated]. Retrieved from <https://advox.globalvoices.org/2011/04/18/spam-bots-flooding-twitter-to-drown-info-about-syria-protests/>
- Rauschenberger, V.P. (16 January 2017). Wir gegen sie. *Sueddeutsche.de*. Retrieved from <http://www.sueddeutsche.de/medien/online-medien-wir-gegen-sie-1.3334911>
- Reinemann, C., & Fawzi, N. (2016). Eine vergebliche Suche nach der Lügenpresse. Retrieved from <http://www.tagesspiegel.de/politik/analyse-von-langzeitdaten-eine-vergebliche-suche-nach-der-luegenpresse/12870672.html>
- Rentz, I. (2017). Umfeldsicherheit bei Youtube: OWM unterstreicht Forderung nach mehr brand safety. Retrieved from <http://www.horizont.net/marketing/nachrichten/Youtube-OWM-unterstreicht-Forderungen-nach-mehr-Brand-Safety-156869>
- Reuter, M. (17 January 2017). Hausfriedensbruch 4.0: Zutritt für fake news und bots strengstens verboten. Retrieved from <https://netzpolitik.org/2017/hausfriedensbruch-4-0-zutritt-fuer-fake-news-und-bots-strengstens-verboden/>
- Rosenberg, Y. (16 December 2013). 62 percent of all web traffic comes from bots. Retrieved from <http://theweek.com/articles/454320/62-percent-all-web-traffic-comes-from-bots>

- Samuel, A. (19 June 2015). How bots took over Twitter. Retrieved from <https://hbr.org/2015/06/how-bots-took-over-twitter>
- Schönauer, M. (16 January 2017). Kartenlegen mit kriminellen Ausländern. Retrieved from <http://uebermedien.de/11488/kartenlegen-mit-kriminellen-auslaendern/>
- Schulte, B.R. (5 February 2016). Hasskommentare gegen Flüchtlinge: Das Problem der social bots [audio]. Retrieved from <http://www.br.de/radio/b5-aktuell/sendungen/medienmagazin/fluechtlinge-social-bots-102.html>
- Schweiger, W. (2017). *Der (des)informierte Bürger im Netz - Wie soziale Medien die Meinungsbildung verändern*. Retrieved from <http://www.springer.com/de/book/9783658160579>
- Silverman, C. (2015). *Lies, damn lies, and viral content. How news websites spread (and debunk) online rumors, unverified claims, and misinformation*. Tow Center for Digital Journalism.
- Silverman, C., & Nardelli, A. (2017). Hyperpartisan sites and Facebook pages are publishing false stories and conspiracy theories about Angela Merkel. Retrieved from <https://www.buzzfeed.com/albertonardelli/hyperpartisan-sites-and-facebook-pages-are-publishing-false>
- Smale, A., & Erlanger, S. (2016, November 12). As Obama Exits World Stage, Angela Merkel May Be the Liberal West's Last Defender. *The New York Times*. Retrieved from <https://www.nytimes.com/2016/11/13/world/europe/germany-merkel-trump-election.html>
- University of Würzburg (Ed.). (2017). Tenor Medienvertrauen. Retrieved from http://www.wiwi.uni-wuerzburg.de/lehrstuhl/professur_fuer_wirtschaftsjournalismus/medienvertrauen/
- Verfassungsschützer (February 14, 2017). Face-to-face interview with LM Neudert.
- Woolley, S.C., & Howard, P.N. (2016). Automation, algorithms, and politics: Political communication, computational propaganda, and autonomous agents—Introduction. *International Journal of Communication, 10, 9*.
- World Economic Forum. (2014). 10. The rapid spread of misinformation online. Retrieved from <http://wef.ch/GJAFq6>

Citation

Lisa-Maria N. Neudert, "Computational Propaganda in Germany: A Cautionary Tale." Samuel Woolley and Philip N. Howard, Eds. Working Paper 2017.7. Oxford, UK: Project on Computational Propaganda.

comprop.oii.ox.ac.uk<<http://comprop.oii.ox.ac.uk/>>. 31 pp.

Series Acknowledgements

The authors gratefully acknowledge the support of the European Research Council, Computational Propaganda: Investigating the Impact of Algorithms and Bots on Political Discourse in Europe," Proposal 648311, 2015-2020, Philip N. Howard, Principal Investigator. Additional support has been provided by the Ford Foundation and Google-Jigsaw. Project activities were approved by the University of Oxford's Research Ethics Committee. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the funders or the University.