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WHITEPAPER

Social Bots

Context, Criticism & Opportunities

Datum: 7. Dezember 2016
Ansprechpartner: Valentina Kerst

topiclodge - für das Schöne am Internet
Elsaßstraße 15
D-50677 Köln
info@topiclodge.com
+49 (221) 64 00 777-0

About Societal Discourse Past and Present – and Social Bots

Government attempts to sway public opinion or that of certain target groups are not new. Known as propaganda, they are not unique to our times. Companies and other interest organizations manipulate public opinion on their image or products all the time – either by disseminating false information, withholding unfavorable details or citing the positive in an inflationary manner. Think advertising.

While we may not like it, the attempt to influence opinions is common and socially accepted. In fact, humans engage in daily conversations in the same manner. We are not always objective or sincere. In history, plenty examples exist in which influencers were hired to perpetrate a certain opinion as their own – or in which influencers were threatened until they conceded to do so. Some companies, political parties and governments have even gone as far as renting protestors in an effort to suggest a higher degree of (un)popularity of issues within society (Reuters 2016).

Until the early 1990s information was spread by real people – even if it was “just” on TV or a newspaper and not face to face. Influencers had a face, a body and a name. They uttered opinions with their own voices. Their identity was part of their credibility. Back then, working with “fake” opinions as a means of persuasion took a certain amount of effort, funds as well as a sense of adventure. The risk of discovery was real and a permanent threat. These means were and are still regarded as unethical and cause scandal for those who engage in them. The suspects will distance themselves from the accusations quickly.

Digitalization has fundamentally changed this particular aspect of societal discourse. Nowadays we research, share and debate information in the virtual space – often with individuals we never met or will meet in person. We present our opinions to online crowds – whose members and posts we assume be human. But it’s not always true. Ever heard of Social Bots? Perhaps in the context of product marketing, or - more recently – in the election in which Donald Trump defeated Hillary Clinton?

What are social bots? How do they function? Who steers them? Are they dangerous? It is possible to distinguish a social bot from a real person? What are governments, political parties, experts, the media and the public saying about them? In this White Paper we seek to answer these questions, to show the context in which social bots are embedded and to create an understanding of the status quo on an issue that still merits much research and debate.

What are Social Bots?

The name “bot” comes from “robot” - not to be confused with “botnet”, a combination of “robot” and “network”, which describes a network of computers “with programs, that communicate across multiple devices to perform some task” (Kollanyi, Howard & Woolley 2016). Botnets can be benign or malicious. They are more of the latter when they launch spam, engage in distributed denial-of-service (DDoS) or click fraud (Kollanyi, Howard & Woolley 2016). In the early stages of the internet, users could converse with so-called chat bots, such as the John Lennon artificial intelligence project on mIRC (Triumphpc.com 2016). During the 2000s, virtual assistants rendered basic customer support around the clock for many companies (chatbots.org 2016). Remember Anna from IKEA?

The term “social bot” refers to (fake) profiles on social networks, steered by a computer program. A key feature of the social bot is that it appears to be authentic to real (human) users. German quantum physicist Lutz Finger programmed a bot and enhanced its appearance with a profile picture (taken from Flickr), creating a user history by downloading a newsfeed off the internet and enticing other followers, mostly other bots (Made in Germany 2016).

What Do Social Bots Do?

Depending on their programmer’s intentions, social bots speak favorably of products or post negatively on a competitor’s product on platforms such as Amazon (Voss 2016). They collect data (e.g. by connecting with profiles that restrict information to those not on their friends list), automatically follow or insult other users, post a link to a (porn) site, distribute jokes or engage in debates, spreading pre-determined propaganda messages in trying to convince them to vote for or against a cause (Hegelich 2016a). According to German political data scientist Simon Hegelich (we’ll be hearing plenty of him), it is difficult to prove post-election that voters came to a decision based on confrontation with content posted by social bots. He also says that social bots currently have no relevance in election campaigns, but he does admit they could play a role in the future. (We’ll come back to that later)

Either way: you’ve probably guessed it: the power lies in having not just one social bot, but in steering many thousand fake accounts, all of which appear to be real users, all working towards a common target. Currently, the benefit for those that make use of social bots is that it is quite hard to find out who requested them.

What are the intentions of social bot makers?

The people who employ social bots want to influence the conversational climate online and offline. They want to dominate and decide the outcome of debates. In doing so, they create a negative and aggressive atmosphere, causing moderate (real) users to withdraw from

conversations and (real) users with more radical views to stay alone with the bots. The makers of social bots seek to rank certain hashtags (content) or accounts as high as possible, thus creating incentive for news outlets to report on issues more often or even for the first time.

The makers of social bots also want to transcend the (as we will call it) “bot universe” and connect with real users. They accomplish this task by sending out friend requests or following (what are hopefully) real user profiles and then connecting with their contacts, and so on: “A large-scale social bot infiltration on Facebook showed that over 20% of legitimate users accept friendship requests indiscriminately, and over 60% accept requests from accounts with at least one contact in common” (Ferrara et al 2016).

Where are Social Bots Found?

Bots are most common on dating sites, Facebook, Twitter and Instagram. The profiles are usually purchased: 50 US-dollars buy 1,000 Twitter profiles; 10,000 Twitter profiles and software to steer them are available at 500 US-dollars (Wolf 2016). Social bots are often operated out of Russia and most often found on Twitter (Hegelich 2016a). Lutz Finger estimates about seven percent of Twitter users are bots (Made in Germany 2016). Other researchers find, however, that “nobody knows exactly how many social bots populate social media, or what share of content can be attributed to bots—estimates vary wildly and we might have observed only the tip of the iceberg.” (Ferrara et al 2016). As a consequence of bot permeation, Lutz Finger predicts that social media platforms will be a whole lot less anonymous in the future (Made in Germany 2016). He says users will have to reveal more about themselves in favor of a more controlled online discourse. Twitter and other social platforms don’t actually allow the use of social bots in their terms of service and will delete profiles once detected.

Twitter is popular among social bot programmers, because its automated interface (API) is easier to access than that of Facebook (Hegelich 2016a). Identifying and researching social bots on Twitter is also easier than on other platforms. But, as Hegelich suggests, there are quite a few social bots active on Facebook and the research community should thus focus on platforms other than Twitter. Another third reason Twitter is so popular with bots is that the hurdle to follow other users is fairly low (much like on Tumblr) (Ferrara et al 2016).

Instagram is also popular with social bots, and for just two US-dollars a day “apps, such as Instagress, can assist (real or fake) users build a following” (Gardt 2016). Instagress makes profiles seem more active. The app likes pictures, follows other users or content – e.g. based on a list of hashtags – at a predetermined pace. John Lincoln, co-founder and CEO of Ignite Visibility explains how it works: “if you use a bot to auto-like 50 photos per hour and half of those people follow you back, that’s 25 new followers every hour or over 5000 new followers every day. The actual number of people who follow you back is actually much lower. (...) it is more like 2%” (Lincoln 2016). While anyone who works in social media seeks to building a larger audience, creating it inorganically using bot technology – regardless of the platform –

involves risks for both the credibility and deletion of the channel (Gardt 2016). The qualitative outcome of social bot use – in terms of building an organic following with real engagement - is also dubitable.

How to identify a bot

Social bots are used for benign or malicious purposes. Social bots with “good” intentions (e.g. a customer support chat bot) will usually identify themselves. Programmer of malign bots will attempt to conceal the bot’s fake identity. Thirty percent of internet users cannot distinguish between a social bot and a real user (Finger 2015). The following list is compiled from an overview on Talkspace.com, a platform offering online-therapy services and other sources and shows key characteristics of social bots:

1. A bot is highly likely to mention a product or service.
2. It may send links without being requested to do so.
3. It could ask for personal financial information.
4. Humans require time to live their offline lives and sleep.
A bot is will respond quickly and around the clock.
Bots may post a lot of content in an unusually short time-frame (Hegelich 2016).
5. A bot may often send the same answers to different queries
6. The bot’s speech may seem unnatural, including strange syntax. A bot may excuse its bad language skills (not to be confused with real users actually struggling with learning a language).
7. A bot’s social media profile will most likely only have just one picture.
8. A bot is often followed by other bots (Ferrara et al 2016).

Users can bait the bot by asking “weird questions” requiring interpretation on part of the respondent (“You sound like you’re having the same kind of Monday I’m having”), using fillers (“umm”, “ooh” or “hmmm”) and sarcasm (this will not work with popular phrases) or requesting a video of the user on the other end, a request a social bot cannot deliver (talkspace.com 2016).

The Context In Which Social Bots Operate

Social bots are not a sterile surprise that arrived overnight. They are part of a larger societal phenomenon with a context. They have a history. The reality is – as depicted in many examples from the Arab Spring to the 2016 US election - social bots are already in use. Does this mean

they are already influencing people? For Hegelich there is no way of knowing (2016). He adds: „you can't just tell someone: be for Brexit and expect them to say 'okay'; you have to pick them up from somewhere, perhaps a trail of thought they had already considered" (taz.de 2016). We should hold off answering that question for now, and focus on the context that they operate in.

The Changing Role of the Media

In the 1980s, in the United States the number of PR experts and journalists was pretty much even. In 2016, one journalist is matched by five PR experts (Russ-Mohl 2016). In addition, the many "free" media sources made available through digitalization have made the general public weary of paying for news and other documentation. Many of the funds previously paid to the media now sit in the bank accounts of Google, Facebook and other companies in the online industry.

This structural change assisted the rise of a "copy and paste" journalism which (despite the many wonderful options created by digitalization) relies little on fact-checking. Even without the fast pace of the digital age, the media are up against a giant, well-funded PR sector. Based on resources alone it is a Mission Impossible for independent media to keep up with real human information sources that also eat, sleep and have a social life. What a feat to keep up with automated information channels that have zero physical requirements spreading pre-determined news around the clock! And consider: certain political streams – think Donald Trump and populist parties in Europe - permeate a negative view of the free press, saying it is run by corporate or government interests. It's not helpful. Either way, and regardless of the reasons, the credibility of the news industry regularly takes a hit. It's one of the many aspects of the context in which the makers of social bots operate.

The Changing Behavior of (Social) Media Consumers

Nowadays, information, regardless of whether it is true or false, spreads fast. The quickness of digitalization is both wonderful and alarming and renders an interesting situation for internet users, a.k.a. members of civil society. When real users have a hard time distinguishing between a social bot and other human users, in theory they could also be less critical of the information spread by someone they assume to be human. And once real users engage in distributing information, the makers of social bots transcend the "bot universe" and permeate real-life discourse.

Challenging Algorithms and Quantitative Communication Rules

Real internet users deserve – at least – a little credit. Many have understood how the spreading of information on social media – regardless of the channel – is structured. They know they are

up against machines and that algorithms decide what information should be distributed to which users and at what time. Just think of the demands of SEO.

Online discussion and presentation culture is changing as a consequence. Take comment pods for example. It's a method for Instagram users to announce (e.g. in a Facebook group created for this reason) whenever a new post is published on their feed in order to brief all other comment pod members (real users). They then visit the advertised picture and leave "genuine" comments, creating the impression of relevance where perhaps none might have been "naturally" (Instarevealed 2016). Or, as a Facebook discussion on social bots and fake engagement revealed rumor has it: if you want to damage a competitor's online image, simply invest a few bucks in a couple of social bots. Make them follow the competitor and then report them as a cheat. Voilà: the competitor's account gets deleted, and their credibility suffers a serious blow! Comment pods may not be social bots, and the above mentioned strategies are more than questionable: but they are certainly an expression of the desperation internet users feel when they are up against machines: we can't win with legitimate means, so we can self-promote through fake engagement or use the rules of the system in our favor.

Recent Examples of Social Bot Use

Social bots are used to create an artificial climate within online discourse related to elections, and also to stir popular opinion on hot topics during legislative periods. Fake Twitter followers have been spotted in Switzerland, Italy and Venezuela and appeared during the Brexit campaign in 2016 in the context of pro-Brexit content on Twitter (Hegelich 2016a). Statal organizations, such as the United States Air Force, have also been suspected of bot-use for intelligence-related operations (Guardian 2011). Persona management "involves software that allows social bots to be generated rapidly en masse, disguised in a way to enable them to infiltrate terror cells on social networks" (Hegelich 2016a). Twitter, the organizational tool during the Arab Spring in 2010, was disrupted by the Egyptian government through continuous spamming the stream of tweets with an automated system, pushing relevant messages lower on the page (Finger 2015). During Park Geun Hye's 2012 presidential campaign, the South Korean secret service sent out approximately 1.2 million tweets praising Park and vilifying her opponents (Voß 2016). In the Ukraine, bots supposedly send 60,000 propaganda-related Twitter messages for the ultranationalists from 15,000 accounts (Wolf 2016).

But the use of social bots is not only restricted to influencing the opinion of the population within a government's own country. Most prominently Russia has been accused at least three times between 2015 and 2016 of wanting to influence the political climate outside its borders: on the issue of refugees within Germany, the 2016 election cycle in the United States and pushing right-wing nationalist groups within the EU (Reuters 2016). All of these examples show just how relevant spreading awareness on social bots has become to democratic societies.

Use of Social Bots During the 2016 US Election

In October 2016 a study by two Oxford University scholars revealed that social bots had created a significant amount of traffic on Twitter during the presidential debates between Hillary Clinton and Donald Trump. Every third tweet in support of Trump and every fourth tweet in support of Secretary Clinton was sent out by a bot. The scholars estimated about a third of the followers of both accounts to be bots (Wolf 2016). The study found “Twitter traffic on pro-Trump hashtags [to be more] than twice that of the pro-Clinton hashtags” and that “the significant rise of Twitter traffic around debate time is mostly from real users who generate original tweets using the more neutral hashtags” (Kollanyi, Howard & Woolley 2016). The researchers admitted difficulties in distinguishing the number of bot messages vs. messages from real users. The latter don’t always use hashtags or tag the Twitter profiles – two filters used in the study (Kollanyi, Howard & Woolley 2016). Thus, tweets from real users were not considered, perhaps skewing the number of bot tweets higher than it actually was. In early November 2016, two scholars at the University of Southern California published an analysis of one month Twitter activity during the 2016 US presidential election, using a list of manually compiled keyword and hashtags. The researchers estimated that about 400,000 bots were engaged in the political discussion that spanned over 20 million tweets by 2.8 million users. With “roughly 3.8 million tweets” bots were responsible for “about one-fifth of the entire conversation” (Bessi & Ferrara 2016).

Following the quantitative analysis, German online expert Hegelich gives a qualitative explanation of the phenomenon. The bots, he says, appear “to be good-looking young women and men” and “specialized in disseminating jokes.” Many tweets involved racism or anti-Semitism, and were “interspersed with derogatory tweets about Donald Trump.” He concludes: “The makers of this botnet probably assume that Trump supporters will not even realize that their candidate is being insulted (...). The racist jokes are (...) intended to penetrate the filter bubble so that the discrediting messages can take effect. The fact that this will allow racist propaganda of the worst kind to permeate the Internet as collateral damage does not seem to greatly bother the botnet makers” (Hegelich 2016a). He also indicated that “the proportion of Trump’s fake followers [rose] strongly” in 2016 and that the number of real Twitter followers of both the Clinton and Trump accounts could even lie as low as 60 percent (Hegelich 2016a).

Discussion about Social Bots in Germany

In 2012, German Christian Democratic Party was accused of buying Twitter followers – after its account obtained 5,000 new followers overnight (Hauck 2012). In 2013, the Free Democratic Party of Germany was accused of doing the same (Reuters 2016). Both parties said the claim was untrue and asked any bots to be deleted from their profiles. In 2015 nine German scientists warned against the automatization of society, because in their eyes their country was in a phase of upheaval, fundamentally changing the economic and societal structures. The scientists saw chances, but also risks (Hafen et al 2015). Their main worry was the loss of diversity of opinion,

a feature intrinsic to collective intelligence. Personalized information systems (a.k.a. the informational filter bubble) reduce the number of thought streams, ultimately leading to society to lose its social resilience long-term and its ability to handle unexpected shocks. This will impact the ability of society and the economy to function effectively and efficiently. Plurality and participation of the population should thus not be considered concessions to the population, but primary requirements for the functioning of a competitive, complex modern society (Hafen et al 2015). In October 2016, German right-wing nationalist party, Alternative für Deutschland (AfD), announced that it wanted to use social bots during the 2017 German elections, sparking outrage (Zeit Online 2016). The party later clarified it wasn't intending to use bots that "post automated content on third party websites", but merely intended to use analysis or "help programs" to assist their routine online marketing (alternativfuer.de 2016).

After AfD had considered the use of social bots, news agency Reuters inquired with established parties of the German political landscape, such as the Christian Democratic and Social Democratic Parties and the Green and Free Democratic Parties, on their take on the issue. All parties stated they do not intend to employ social bots during the upcoming 2017 election. While the Green Party was very adamant in their position, the Social Democratic Party did say each party must decide for themselves and suggested there would be no harm exchanging opinions with all other election parties (Reuters 2016).

It's not explicitly stated, but the wording by the Social Democrats could imply the suggestion that such an exchange could lead to an agreement on how social bots are to be used after all. Perhaps this indicates the intention of an effort to ensure all parties agree to similar strategies, creating a sort of "fair market policy" on social bots for the 2017 event. Thus, while many large German political parties have come forward with a position on social bots, it remains to be seen how these opinions change throughout the election cycle and if post-election research will reveal that social bots were in fact not used at all. And even if all German parties end up using social bots, it will be difficult to prove their use was in fact commissioned by individual parties – and not other interest groups (as was the case of Russia in the 2016 United States election).

The Future of Social Bots – An Outlook

The discussion on social bots should not revolve around just one aspect: the fear that they could influence real users in their decisions and actions. We need to go deeper.

We need to talk about the people behind the bots and their intentions.

We have to consider the changes in the role and structure of the media and how their work is affected by social bots.

The behavior of social media users and their role in handling information distributed by social bots needs to be addressed.

And, we need to openly discuss the role of social networks in contributing to the mystery that are social bots, and evaluate whether we want algorithms to determine what information is relevant to us in addition to the timing, and whether we want information to be withheld or heavily distributed to us based solely on location or other aspects of our identity and preferences.

We need to recognize that social bots and aspects related to its use can fundamentally change the way societies reach consensus and that they do so by achieving two goals:

1. Fueling distrust among all parties involved.
2. Creating confusion (even among experts) about what constitutes popular opinion.

While an open and transparent communication culture, a lively civil society, a strong independent media and a varied landscape of opinions can minimize the influence of social bots, we need to understand now that this security can only remain true for as long as we have a solid digital education, independent media and a fairly elected government that believes in an open discussion culture. These are all soft and fragile factors that can crumble easily. We need to protect them.

As an increasing number of actors – regardless of their origin or their intention- seek to employ social bots, political parties, governments, companies, the media and the public need to be mindful of what a change in a single one of these conditions could do to their credibility. For example, what is to become of online petitions to governments? Will they be as relevant when the first army of social bots signs one?

Social media analysts should be guaranteed the ability to distinguish bot-content from content posted by real users by those that run social networks. Will social network operators be willing to give up at least part of their business secrets? Will they eventually be able to confine bot use themselves as technological advances will make it increasingly difficult to differentiate social bots from real users?

Also, creating awareness of social bots and “promoting digital media competence in socio-political circles” will be an invaluable tool in making manipulation more difficult (Hegelich 2016a). Will political actors make adequate efforts to reach higher levels of digital literacy?

The more liberties and resources journalists have, the higher the likelihood that they will be able to continue doing their job, independent of the risks. Strengthening free and independent media outlets could be one aspect of preserving and solidifying an environment that is immune to social bot permeation. Is Google’s Digital News Initiative just the first step in operators of social media becoming the media in the future? And if so, what consequences could this have in the face of all the implications related to social bot use and the context they operate in?

We should keep in mind that governments have used bot technology in the past to flood discussions with information suited to their needs in order to “wash out” contradictory information, making it seem irrelevant (Voss 2016). And we have to question whether individual internet users actually have a chance to adequately inform themselves in certain contexts. While this currently may only be a concern in combination with an authoritarian government (such as that of Vladimir Putin in Russia or Recep Tayyip Erdogan’s regime in Turkey), we need to be aware that social bots are just one item in a long list of items serving a long-term communication strategy – even for corporate agendas (something not discussed in this paper), and even in democracies.

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Autorin

topiclodge GbR
Marion Schmidt

Layout & Design

topiclodge GbR
Claudio Kerst

Kontakt

topiclodge GbR
Elsaßstrasse 15
50677 Köln
info@topiclodge.com