UNDERSTANDING COORDINATED AND INAUTHENTIC LINK SHARING BEHAVIOR ON FACEBOOK IN THE RUN-UP TO 2018 GENERAL ELECTION AND 2019 EUROPEAN ELECTION IN ITALY

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1. Executive Summary

The year 2016 marked a turning point in the history of the relations between the Internet, social media, public opinion, and politics. Online practices of grassroots participation, which used to be considered the prerogative of democratizing forces fighting established powers (Jenkins, 2006; Shirky, 2008), turned out to be an effective platform to support conservative extremism as well (Marwick & Lewis, 2017). In the attempt to make sense of what happened and develop workable solutions, shocked actors and observers rapidly moved through the different stages of grief, ranging from denial to anger and acceptance.

Initially, most of the attention and effort was devoted to detecting false content circulating on the Internet. Unfortunately, stopping “fake news” proved harder than expected. The lack of clear boundaries around the definition of both “fake” and “news” (Caplan, Hanson, & Donovan, 2018; HLEG EU Commission, 2018) brought many authors to suggest alternative typologies and terminologies (Wardle & Derakhshan, 2017), with the aim of narrowing down the phenomenon – e.g. the idea of fake news as commercially motivated (Silverman, 2017) – or, instead, expanding the horizon by looking at relations between similar phenomena such as propaganda, satire and even advertisement – e.g. the idea of problematic information (Jack, 2017; Wardle & Derakhshan, 2017).

More recently the focus seems to have shifted from content to actors. Both false and real content benefit from a multitude of actors that amplify (whether intentionally or not) its reach (Giglietto, Iannelli, Valeriani, & Rossi, 2019). Depending on the popularity of each actor in the network and the budget it can invest in social media ads, the magnitude of this amplification may

change drastically. Furthermore, popular content tends to spread faster on social media due to the effect of algorithms that prioritize better-performing images, videos, and posts. These performances depend on an estimate of popularity based on the analysis of quantified attention metrics provided by each platform (likes, reactions, retweets, views, shares, etc). Beside the effect of this “rich will get richer” feedback loop, popular social media content and highly discussed topics are often featured in traditional media, thus benefiting from a significant further spin. The centrality of these metrics offers big rewards to those interested in increasing the visibility of certain content.

For these reasons, different actors may attempt to coordinate their efforts to get the initial plug which, once detected by the algorithm, may ignite the propagation machine and even attract the attention of mainstream media (Phillips, 2018). This is not at all a new phenomenon. Fans’ attempts to coordinate their behavior to push certain hashtags into Twitter trending topics date back to 2011 at least (Boyd, 2017). During the last few years, we observed similar practices applied with the aim of enhancing the spread of political news stories.

This report tries to shed some light on these practices in the context of Italian politics. Using two datasets of political news stories collected in the six months preceding the 2018 Italian general election (Giglietto, 2018; Giglietto et. al., 2018) and the 2019 European elections in Italy, we analyzed the social media shares of these links on both Facebook and Instagram. By looking at the news stories shared by multiple Facebook and Instagram accounts, pages and public groups, we identified several networks (10 for 2018 and 50 for 2019) that repeatedly acted in coordination to share the same links within a very short period of time. Both in 2018 and 2019, news stories shared by these networks of coordinated actors received a higher volume of

Facebook engagement when compared with other stories, boosted anti-immigration, far-right propaganda and items often published by news outlets featured in the black lists of Italian fact-checkers.

The following chapters describe the behavior of these networks and the political content they promoted. Beside findings related to the Italian context, the report provides a method for the identification of coordinated networks that can be easily applied to other national contexts.

The report introduces the reader to the role played by coordination and authenticity in the realm of misinformation and is structured in three parts: networks, news sources, and content. The first part describes the networks of pages, groups and public profiles that actively cooperated to spread political news stories in the months preceding the 2018 and 2019 Italian elections. The second part focuses on the sources of these news stories and their political leaning. The last part delves into the content of the news articles shared by the coordinated networks.

2. Crazy ideas, “fake news”, coordination and authenticity on the Internet

2.1 A pretty crazy idea

On Friday, November 11, four days after the 2016 vote for the US Presidential election, Mark Zuckerberg was interviewed on stage during the “Techonomy” conference by the author of “The Facebook Effect” (Kirkpatrick, 2012). Inevitably, given what the interviewer described as a “bizarre moment in history with an election having just happened”, the opening question was “how do you respond to the fact that Donald Trump has just been elected?”. This broad initial question was then followed by increasingly specific inquiries on the influence of Facebook on the US 2016 election. Pressed by the friendly but targeted questions, Facebook founder and CEO said “Personally I think the idea that fake news on Facebook, which is a very small amount of content, influenced the election anyway... I think it is a pretty crazy idea”, and responding to a question on the “filter bubble idea” (Bruns, 2019), replied that “all the research that we have suggests that this isn’t really a problem” (Zuckerberg, 2016a).

Besides the obvious self-defensive nature of these public statements, both the tone and the content of the interview well describes the stage of denial that initially characterized the Facebook response to inquiries on their impact on the 2016 US Presidential election.

A few days later, a post on Zuckerberg Facebook page – eloquently starting with the sentence “A lot of you have asked what we’re doing about misinformation, so I wanted to give an update”, broadly describing the efforts undertaken to fight misinformation on the platform – signaled a first departure from the initial denial stage (Zuckerberg, 2016b). Another status update

published by the Facebook founder and CEO on his personal Facebook page well describes this shift. He wrote: “After the election, I made a comment that I thought the idea misinformation on Facebook changed the outcome of the election was a crazy idea. Calling that crazy was dismissive and I regret it. This is too important an issue to be dismissive. But the data we have has always shown that our broader impact – from giving people a voice to enabling candidates to communicate directly to helping millions of people vote – played a far bigger role in this election” (Zuckerberg, 2017). In the space of a few months, Facebook radically altered the public response on the issue of the platform's impact on elections and started to openly advertise the efforts to fight attempts to subvert elections. While this post clearly marks a new stage in public response to the issue, the efforts to fight misinformation on the platform were intensified immediately after the election.

“Facebook Newsroom” blog and more specifically its “Integrity and Security” section testify the various stages, strategies and definitions employed. The term “fake news”, used by both the interviewer and Zuckerberg during the November 2016 interview, appears only in the first post of the post-electoral series (Mosseri, 2016), to be quickly replaced by the terms “false news” and “misinformation”. The focus is on improving the process of reporting by users, of evaluating these reports by external “third party fact-checkers”, and on the idea of flagging false news as an alternative to removing the content from the platform. In the first stage, content flagged as false by teams of third-party fact-checkers were not deleted but signaled to users with a red label. More recently, the spread of this content is demoted by the news-feed algorithm which takes into account the responses of third-party fact-checkers as an additional factor affecting content distribution.

The publication of the white paper “Information Operations and Facebooks” marks the entrance to a new phase (Weedon, Nuland, & Stamos, 2017). Although specifically focused on “Actions taken by governments or organized non-state actors to distort domestic or foreign political sentiment”, the report opens with a critique of the term “fake news” and attempts to detail and extend the terminology used to describe these operations by introducing the term “False Amplifiers”. “False Amplifiers” are defined as “Coordinated activity by inauthentic accounts with the intent of manipulating political discussion” (2017, p. 5). In this report, for the first time, Facebook widened the focus from content to actors and introduced the key concepts of “coordinated activity” and “inauthentic accounts”.

Starting mid-2018, Facebook began to publicize more widely and systematically the actor-centered approach undertaken to fight the spread of misinformation on its platform. Whenever a group of pages, groups, and profiles are removed from the platform, a press release that briefly explains the rationale behind the choice is issued via the “Facebook Newsroom – Integrity and Security” blog. In the vast majority of cases, the action is undertaken in response to a violation of the platform policy or community standards. Frequently this violation is described as “Coordinated Inauthentic Behavior”.

“Coordinated Inauthentic Behavior” on Facebook and Instagram have been defined in a brief two-minutes explanatory video by Nathaniel Gleicher, Head of Cybersecurity Policy of Facebook as a case when “groups of pages or people work together to mislead others about who they are or what they are doing” (Gleicher, 2018). By shifting the attention to deceptive behaviors, the definition deliberately avoids to fall in the trap of judging the truthfulness of content: “The posts themselves may not be false”. In the same video, Gleicher also provides an

example: “We may take a network down for making it look like it’s being run from one part of the world when in fact it’s being run from another. This could be done for ideological purposes or can be financially motivated.”

The issue of coordination is further explained by press releases describing concrete operations, such as the recent one concerning organized campaigns in UAE, Egypt and Saudi Arabia (Gleicher, 2019): “The people behind this activity coordinated with one another and used fake accounts to misrepresent themselves, and that was the basis for our action.” “The people behind this network used compromised and fake accounts (...) to run Pages, disseminate their content, comment in Groups and artificially increase engagement. They also impersonated public figures and managed Pages – some of which changed names and admins – posing as local news organizations in targeted countries and promoting content about UAE”.

In other terms, the definition comprises of coordination and inauthenticity. Both topics have been widely studied, although rarely in conjunction. In the next paragraphs, we summarize these studies with the aim of grounding the definition of coordinated inauthentic behavior in the existing literature.

2.2 Inauthentic Behavior

In a famous cartoon designed by Peter Steiner and published by The New Yorker on July 5, 1993, a dog sitting in front of a computer says to another: “On the Internet, nobody knows you’re a dog”. It reminds us that the problem of authenticity on the Internet is as old as the Internet itself, or it would be better to say, as the human ability to lie. Indeed, many online deceptive tactics can be conceived as types of propaganda consolidated throughout the history of media

and politics. In the last few years, it has become increasingly evident that websites and social media can create opportunities for actors to propagate ideas covering their real identities and intentions. Donovan and Friedberg coined the term “source hacking” to describe a set of techniques for hiding the source of problematic information (Donovan & Friedberg, 2019). For example, McTavish (2006) reported that “entering the term ‘pro-choice’ in an Internet search engine reveals a range of sites, including one called ‘ProChoice.com’, which is actually an anti-choice site providing false information about abortion”. Anti-abortion websites concealed by pro-choice websites have also been found by Daniels (2014), who identified white supremacist sites disguising cyber-racism (2009), while Farkas, Schou, and Neumayer (2017), found Danish Facebook pages that imitate radical Islamist pages to spark racist reactions against Muslims and immigrants.

Daniels (2009, 2014) has defined “cloaked websites” the sites “published by individuals or groups who conceal authorship in order to disguise deliberately a hidden political agenda”. He argues that this type of website is “similar to previous versions of print and electronic media propaganda in which the authorship, source or intention of a publication or broadcast is obscured” (Daniels, 2009). He has referred, in particular, to the concept of “white”, “grey” and “black” propaganda that Soley and Nichols (1986) employed to classify revolutionary and counter-revolutionary radio communication. “White propaganda” radio stations are those that spread messages identifying authorship, affiliation, and the intended political purpose. “Grey propaganda” points at the radio stations “operated purportedly by dissident groups within a country, although actually they might be located in another nation”. Finally, “black propaganda” radio stations “transmit broadcasts by one side disguised as broadcasts by another”.

The stronger difference, needless to say, is that between “black” and “white” propaganda. Becker (1949) defined the first as a “variety which is presented by the propagandizer as coming from a source inside the propagandized”, and the latter “that variety which is definitely announced by the propagandizer as coming from a source outside the propagandized”. Gray propaganda can be defined, instead, using a veracity criterion, as a combination of accurate and inaccurate content and sourcing information (Jack, 2017). Becker dismissed the concept exactly for this reason: “the term usually rests on the erroneous introduction of the veracity criterion; as previously stated, a workable definition does not include the question of how much of the propaganda is true or how much is false”. A less restrictive definition of black propaganda can be found, for example, in Doob (1950), who, with reference to Goebbels’ principles of propaganda, defined the black type as composed of “material whose source is concealed from the audience. Goebbels disguised his identity when he was convinced that the association of a white medium with himself or his machine would damage its credibility”.

Daniles (2009) underlined the concept of hidden political agenda as a key element to define cloaked websites, in this way drawing a distinction between this kind of sites and the more general category of “counterfeit”, “hoax” and “urban legend” websites. It is, however, worth to note that a certain degree of ambivalence, including when it comes to online actor’s real agenda, is constitutive to the Internet itself (Phillips and Milner, 2018).

Regarding the effectiveness of this kind of covert propaganda, it is worth notice what Becker (1949) observed: “Mass dissemination of rumors and the like is furthered, naturally enough, when there is widespread distrust of ordinary news sources”. As reported by the Reuters

Institute, trust in the news is particularly low in Italy, which ranks 21st among the 38 countries taken into account (Newman et al., 2019).

Besides cloaked websites, the behavior of bots – agents that, with a varying degree of automatization, communicate on social media – and fake accounts represent a well-known type of inauthentic behavior. Both are a key tool for spreading computational propaganda, which is “the assemblage of social media platforms, autonomous agents, and big data tasked with the manipulation of public opinion” (Woolley, Howard, 2016). Paid users are employed by regimes to impersonate fake social media accounts to undermine online public discourse and distract the public from controversial issues (King, Pan & Roberts, 2017). Additionally, bots are widely exploited to manipulate online political discussion and boost politicians’ followers to generate false impressions of popularity (Bastos, Mercea, 2019; Bessi, Ferrara, 2016; Howard, Kollanyi, 2016; Ratkiewicz et al., 2011; Serrano et al., 2019; Woolley, 2016).

In their seminal work “The people’s choice”, (Lazarsfeld, Berelson, & Gaudet, 1944) ((Lazarsfeld et al., 1944)) wondered about the potential role played by personal influence (exposure to casual conversations about politics as opposed to the role played by mass media) on the formation of political opinions. According to the authors, in comparison with formal media, personal influence is more pervasive, it reaches more frequently undecided voters and tends to catch the audience less prepared against influence. Much of the causal exposure to political and para-political content on social media happens in a context similar to personal influence which may leave us unguarded. For this reason, social media accounts, pages, and groups (from now on referred to as “entities”) that aim at influencing political opinion, may have a strong incentive to do so without revealing their authentic goals. Furthermore, it is much easier to build a large

follower base by presenting the entity as if it were dedicated to entertaining and popular culture than politics. Once the follower base is established, the pages and groups can be used to convey political content to a largely unguarded audience.

2.3 Coordinated Behavior

Coordination can be defined as the act of making people and/or things involved in an activity work together in an organized way. Several authors argued that it is a distinctive mark of users' participation within online spaces (Bruns, Highfield & Burgess, 2013; Jenkins, 2006; Rotman et al., 2011; Shirky, 2014). Such coordination plays a key role in the online participatory culture described by Henry Jenkins in “Convergence Culture” (2006). In fact, fans were able to organize collective actions with different purposes, for instance, to inflate social media attention metrics (likes, retweets, etc) on a specific topic or to influence the plot of a narrative or the trade of an item. Widely popular examples include the collective action of fans of the TV program “Survival” to find the location where each season was filmed (Jenkins, 2006), or the “Beliebers”, devoted fandom of Justine Bieber, and so on.

Online activism benefited from the opportunity of building communities going beyond the need to meet in person and coordinating their collective actions allowed by the Internet. In fact, in a first phase, several experiences of “hacktivism” (Goode, 2015; Hampson, 2012) were listed as positive: also a controversial and multifaceted imageboard as 4Chan is praised for its popularity and capacity to give birth to popular and effective movements like Anonymous (Stryker, 2011). Several collective actions of Anonymous became widely popular, such as those supportive of the Arab Spring, or the DDoS campaigns aimed at shaming financial organizations

(Coleman, 2014). Focusing on the online protests, there are examples of organizations that recruit armies of web-activists to engage in coordinated online actions – such as mail bombing, signing and spreading of online petitions and so on – in response to messages from the central organization (De Matteis, Bertuzzi, 2019).

Beside the positive implications of the Internet on the activism, some online communities started to exploit the new communication opportunities with very different purposes from social justice and politically salient actions (Coleman, 2014; Jenkins, Ito, boyd, 2015). Such coordinated behaviors started to take forms aimed at manipulating the communication space to harass designated victims (Marwick, Lewis, 2017). For example, “Internet trolls” can work together in organized brigades aimed at harming marginalized groups. Such social phenomena are widely spread online, and one noticeable case was the “Gamergate”, an online movement that used participatory culture strategies and tactics to target feminist media critics and game developers (Marwick, Lewis, 2017).

Social network sites have probably become the most important tools for social movements to organize both online and offline collective actions (Earl et al., 2010; Harlow, Harp, 2012). Rotman and colleagues (2011), for instance, argued that “social activism campaigns flourished via various social media” (p. 820), highlighting the role of social media in facilitating such collective actions. For example, social media has played a role in organizing disinformation campaigns (Keller et al. 2019), massive offline protest (Pérez, 2008), and contemporary popular social and political movements have been effectively organized through social media such as the “Yellow Vests” in France and the activists of “Friday for Future” in several countries.

Besides activism, it is evident that also every type of political propaganda requires a certain degree of coordination to reach its goals. In the online environment, computational tools, along with coordinated networks of social media activists, can facilitate the pursuit of communication goals. Sometimes it is hard to draw a neat distinction between human-based and automated-based information campaigns (Giglietto et al, 2019a), and the two forms may well work together many times.

3. Organized networks of pages, public groups, and verified profiles

Through the analysis of the data collected through CrowdTangle, we detected a number of coordinated networks that shared, on Facebook and Instagram, political news stories both during the 2018 and 2019 Italian electoral campaigns. In order to do so, we implemented an algorithm that, given a list of Facebook public shares of a set of URLs (links), estimate a time threshold in seconds that identifies potential coordinated link sharing. In its essence, the algorithm looks at unlikely (as compared to the entire set) quick shares of the same link by different entities. Entities that performed this coordinated link sharing repeatedly on different URLs become part of a network. We adopted a conservative approach both concerning the estimate of the time threshold and the number of coordinated shares to be performed by an entity to become part of a network. For these reasons the networks presented here should be considered as the core of potentially larger networks (see Appendix 1 for methodological details).

3.1 2018 Italian general election

Considering the most coordinated entities, 28 Facebook pages and groups shared news in a highly synchronized way before the election day of March 2018 (see Appendix 2, Tabs. 14 and 16). By grouping these entities in networks that shared the same news items we ended up with 10 diverse networks, three of which are merely editorial networks (1, 4 and 6). Apart from them, networks with a high number of average subscribers (i.e. follower for pages and profiles, and members for groups) stand out. It is the case of the network 2 (3,718,662.31 average subscribers), 7 (1,611,914.98 average subscribers) and 8 (922,618.44 average subscribers).

The networks 2 and 8 (Fig. 1) are composed of official political pages of the League: the first comprises the pages “Matteo Salvini” and “Lega - Caprino Bergamasco”, while the second includes “Lega - Salvini Premier”, “Matteo Salvini Leader” and “Il Populista”¹ and one public group, “Noi con Salvini”.

Fig. 1. Networks 2 and 8 - 2018

Conversely, the network 7 (Fig. 2) is composed of five Facebook pages and groups apparently not related to politics, “Aforismi e Link”, “link CATTIVI”, “Che il degrado sia con voi”, “Professione”, “Affare Fatto”. Except for “Affare Fatto”, which shares content explicitly related to politics, the other pages appear to be registered as entertainment websites.

¹ Il Populista is a hyperpartisan source of information officially close to the right-wing League party.

Fig. 2. Network 7 - 2018

The network 5 (Fig. 3) includes two pages, namely “Tutte le cazzate del presidente”, and “Tutti pazzi per Luciana”. While the first is aimed at reporting corruption and injustice in contemporary politics, the latter is a fan page of the popular Italian comedian Luciana Littizzetto which alternates her quotes and political or parapolitical news.

Fig. 3. Network 5 - 2018

The network 3 (Fig. 4) counts two pages apparently not related to politics: “FilmLinko” and “Illusione ottica di movimento”. They both share news published by “nextQuotidiano.it”, an online news source close to Italian left-wing.

Fig. 4. Network 3 - 2018

Finally, network 9 is composed of Facebook pages and groups close to far-right parties and movements. In the period preceding the 2018 general election it counted three entities (Fig. 5), namely “Italia Patria Mia” (no longer available), “NERO Dentro” and “Italia Uguale Dittatura”, but the network considerably expanded in the run-up of 2019 European elections (see paragraph 4.1).

Fig. 5. Network 9 - 2018

3.2 2019 Italian election for the European Parliament

In the run up of 2019 European Parliament election the number of networks that shared news coordinately is considerably increased: 50 (vs. 10 during the 2018 Italian general election) composed of 143 different Facebook pages and groups (see Appendix 2, Tabs. 15 and 17).

Similar to 2018, some groups are simply editorial networks of clearly identified local pages (1, 5, 11, 17, 29 and 39). The networks with an average subscribers count of more than a million

are the number 3, 4, 9 and 29 (FanPage editorial network). Among these four networks, the first (number 3) is formed by Five Star Movement institutional pages, namely “M5S MoVimento 5 Stelle” and “MoVimento 5 Stelle Camera”, while the second (number 4) includes the League institutional pages “Matteo Salvini” and “Salvini Premier”.

The network number 9 (4,009,045 of average subscribers) in figure 6 includes nine pages and groups that are apparently non political: “Situazioni Virali”, “L’amore Proibito”, “Esperimenti Sociali”, “Lu Mejo”, “Silenzio a ore”, “Ammazzate Dalle Risate con Lu Mejo”, “Tuasta”, “Link Today”, “•»» Dolce & Bastarda ««•”. These entities alternate yellow press, tabloids information, and political news stories. Usually they share popular tabloid news sources such as “Bigodino.it” and “Cronaca Social”.

Fig. 6. Network 9 - 2019

The network 6 was present also in 2018 (network 3 see Fig 4). Judging from the stability of the network in 2019 and 2018 in terms of entities involved and average subscribers count, the network appears essentially unchanged.

The network 14 is peculiar. It is essentially an evolution of network 9 of 2018 (see Fig. 5). This group of entities tend to share highly partisan extreme right content. Compared to 2018 the network growth in terms of entities involved. Beside explicitly political pages/groups, in 2019 it includes pages apparently dedicated to entertainment and fun such as “Dislessia Portami Via” and “Screenshots divertenti”, and news media outlets such as “Corriere della notizia”. “Dislessia Portami Via” and “Screenshots Divertenti” have an openly satirical nickname and display fun memes on their profiles and cover images. Conversely they publish almost hyper-partisan posts, including racist and pro Matteo Salvini messages.

Fig. 7. Network 14 - 2019

Network 15 is the evolution of network 5 of 2018 (see Fig. 3) and remained substantially unchanged, except for an additional component, i.e. “I fan di MARCO TRAVAGLIO”, a fan page of a popular Italian journalist often considered close to the Five Stars Movement. Network 20 is peculiar because it includes a popular Facebook page, “La Tecnica della Scuola”, and a public group, “ProfessioneInsegnante.it”, both related to Italian school issues and teaching career. Both the components alternate the share of news and opinions about issues related to teaching careers and politics-related posts.

Network 25 is the largest in terms of components number. It is composed of 18 unofficial Facebook pages/groups close to the Five Star Movement with an overall level of average subscribers.

Fig. 8. Network 25 - 2019

There are three more networks that are over 500k average subscribers:

- the 35th is composed of two news sources close to the Five Star Movement, namely “Diario del Web” and “diario 5 stelle”;
- The 44th is formed by two official Facebook channels of the leader of the League Matteo Salvini: “Lega Salvini Premier” and “Matteo Salvini Premier”;
- Lastly, network 44 is composed of two counter-information and anti-establishment components adjudicated to the League, called “sapere è un dovere” and “controinformazione”.

Although assessing the impact of these networks on the public opinion falls outside the scope of this report, a preliminary analysis showed, quite interestingly, that the political news stories shared by one or more Facebook/Instagram coordinated networks before the 2018 and 2019 election received an engagement significantly greater than other news stories (Fig. 9). Further analyses are required to ascertain the overall impact of coordinated link-sharing behavior.

Fig. 9. Facebook engagement (log) of coordinated (pink) and non-coordinated (light blue) entities before the 2018 Italian general election (on the left) and the European Election (on the right).

4. Shared News Sources

According to our estimate², in 2018 almost the whole of the news was shared by coordinated networks close to the League (4,924 out of 5,662, or 87%). In 2019 the scenario was more nuanced. Nonetheless, the entities closer to the League generated about 39% of all the URLs shared by the highly coordinated networks, ranking second only to the cross-partisan entities and clearly standing out from the Five Star Movement (6.4% of the URLs) and the Democratic Party (1.3%) (Tab. 1).

Tab. 1. Number of URLs shared by the highly coordinated networks before the 2018 and 2019 elections by MP-MPAS adjudication

2018 Italian general election			2019 European Election		
Adjudication	URLs	Prop	Adjudication	URLs	Prop
Lega	4,924	0.870	Cross-partisan	4,304	0.386
M5S	557	0.098	Lega	4,222	0.379
LeU	87	0.015	NA	1,759	0.158
NA	39	0.007	M5S	714	0.064
PD	35	0.006	PD	142	0.013
Cross-partisan	20	0.004			
TOT	5,662	1.000	TOT	11,141	1.000

The URLs shared by the highly connected social media entities during the 2018 Italian electoral campaign were published by 304 distinct news media sources. The first most shared domain (Tab. 2), accounting for around 31% of all the shared news stories, is the League hyperpartisan

² See Appendix 1 for methodological details.

online news media “ilpopulista.it”. The domain that ranks 2nd is “tg-news24.com”, an already signaled source of “fake-news” shared by far-right Facebook pages and groups (Puentes, 2018).

Tab. 2. Top domains by unique URLs shared by highly coordinated entities before the 2018 Italian elections.

Rank	Domain	Unique URLs	URLs proportion	Cumulative frequency
1	ilpopulista.it	608	0.31	0.31
2	tg-news24.com	75	0.04	0.35
3	ilfastidioso.myblog.it	59	0.03	0.38
4	ansa.it	57	0.03	0.41
5	tv.ilpopulista.it	57	0.03	0.44
6	ottopagine.it	54	0.03	0.47
7	italiapatriamia.eu	53	0.03	0.50
8	affaritaliani.it	51	0.03	0.52
9	leggiara.info	48	0.02	0.55
10	ilgiornale.it	40	0.02	0.57

Some of the domains shared by the entities in 2018 do not exist anymore. It is the case of domains such as “italiapatriamia.eu”, already flagged by the debunking website Butac (2019), “lafinestrasulcortile.altervista.org”, suspended because in violation of the hosting service community rules, “informazioneitalia.com”, signaled by debunkers and likely associated with the Facebook page “Mafia Capitale” (Puentes, 2017b), “notizie24h.net”, “leggiara.info” and “siciliainformazioni.com”. Among the deleted domains, those with the greater number of news shared by the highly coordinated entities are “italiapatriamia.eu” (53 news stories) and “leggiara.info” (48 news stories). Both the domains were among the most shared by the

Facebook page “Italia Patria Mia”, whose name clearly resembles that of the first news source. The page, still existent in a first moment and with 383.899 likes, resulted shortly after not available anymore. Another domain shared by the page is the already mentioned “informazioneitalia.com”. The source is no longer online, although the Facebook page possibly associated (the website is linked in the info section as of August 2019) is still online. The page now shares news published by the website “kontrokultura.it”, whose director manage a network of online media that has been associated with the spread of fake news (see AGI, 2016; Mingani, 2017; Rijtano, Barcellona, 2016). Also the administrator of the page “Italia Patria Mia” has already been signaled by debunkers and associated with the domain “italiapatriamia.eu” and other websites and Facebook pages (see Democratica, 2018; Puente, 2015, 2017a; Mastinu, 2016). This page is part of a coordinated network that comprise also “Italia uguale Dittatura” and “NERO Dentro”. The most engaging stories shared by the network are against the former prime minister and Democratic Party leader Matteo Renzi (Fig. 10).

Compared with 2018, in 2019 among the most prolific domains there were more sources close to the Five Star Movement, such as the mainstream online newspaper “ilfattoquotidiano.it” and “ilblogdellestelle.it”, the official websites of the party (Tab. 3).

Some of the 2019 domains are not accessible anymore at the time of writing. It is the case, for example, of “cronacapiu.it” and “attivonews.com”, signaled by debunking websites (Bufale.net, 2019; Butac, 2019), “giornale24italia.altervista.org”, suspended because in violation of the rules of the hosting service, “info5stelle.blogspot.com”, “tg-news-24.net”, and “video5stelle.altervista.org”.

Overall, 10 domains whose news was shared in a highly coordinated way before the 2018 Italian general election, and 16 domains of those shared before the 2019 European elections, appear in debunking list of “fake news” and hyperpartisan sites (Tab. 4).

Fig. 10. News with the highest engagement on Facebook shared by “italiapatriamia”. The first on the left says “Hurry up! Share this before they censor it!.. A citizen contests Renzi. Here is how the Democratic Supporters of the PD treat her!” (engagement: 20110). The news headline bottom right says: “Fear for Matteo Renzi, a furious crowd attacks him, he manages to save himself by a miracle” (engagement: 10019). The headline on the top says: “Denounced by Matteo Renzi now faces a sentence of 6 years (...)” (engagement: 6545)

ITALIAPATRIAMIA

CATTIVI AL PUNTO GIUSTO

FATE PRESTO FATE GIRARE PRIMA CHE VENGA CENSURATO.. Cittadina contesta Renzi. Ecco come la combinano i Supporters democratici del PD! Video

POSTED BY: OSE 13/12/2017

“STRON*o, TI SPACCO LA FACCIA, VERGOGNATI, SPARATI, VAI A CASA TUA CRETINA, ZOCCOL*o”

Sono queste solo alcune delle ingiurie che si è beccata una cittadina italiana. Il motivo? Essersi permessa di contestare pubblicamente Renzi.

Denunciato da Matteo Renzi e ora rischia una condanna a 6 anni, perché quando la diffamazione è rivolta ai politici da qualche tempo scatta un’aggravante. Questo è il suo appello che chiede di fare girare

ITALIAPATRIAMIA

CATTIVI AL PUNTO GIUSTO

VIDEO| Paura per Matteo Renzi, folla furibonda lo aggredisce, riesce a salvarsi per miracolo.

POSTED BY: OSE 30/11/2017

Un centinaio di ex operai Lucchini ha aggredito verbalmente il segretario del PD ieri all'arrivo del trenoPd a Donoratico, una frazione di Castagneto Carducci.

Gli operai hanno lanciato slogan contro **Matteo Renzi**, reo secondo la folla, grazie all'abolizione dell'art.18, di avergli **fatto perdere il posto di lavoro**.

Tab. 3. Top domains by unique URLs shared by highly coordinated entities before the 2019 European election.

Rank	Domain	Unique URLs	URLs proportion	Cumulative frequency
1	ilfattoquotidiano.it	350	0.08	0.08
2	ilblogdellestelle.it	346	0.08	0.17
3	diariodelweb.it	284	0.07	0.23

4	ilgiornale.it	227	0.05	0.29
5	ansa.it	148	0.04	0.32
6	silenziefalsita.it	128	0.03	0.35
7	ilmattino.it	101	0.02	0.38
8	fanpage.it	88	0.02	0.40
9	nextquotidiano.it	82	0.02	0.42
10	affaritaliani.it	69	0.02	0.43

Tab. 4. News domains shared in highly coordinated way in the six months before the 2018 Italian general election and the 2019 European election which appears in black lists of fake news and hyperpartisan sites.

2018	2019
notizie24h.net	silenziefalsita.it
ilpopulista.it	riscattonazionale.org
tg-news24.com	imolaoggi.it
zapping2017.myblog.it	scenarieconomici.it
scenarieconomici.it	lonesto.it
centrometeoitaliano.it	voxnews.info
internapoli.it	zapping2017.myblog.it
leggimiora.com	ilpopulista.it
meteoweb.eu	meteoweb.eu
italiapatriamia.eu	attivonews.com
	ilprimatonazionale.it
	internapoli.it
	tg24-ore.com
	5stellenews.com
	byoblu.com
	saper-link-news.com

4.1 Networks that change, networks that stay the same

15 out of 28 (54%) highly coordinated entities active in 2018 were active in 2019 too (Tab. 5). Comparing 2019 to 2018, it can be observed that new networks emerged, some networks remained stable and some other changed. As already briefly mentioned, the far-right network that includes “Italia Patria Mia” (not anymore available at the time of writing) expanded from 3 to 10 entities.

Fig. 11. The far-right network comparison in 2018 and 2019

In 2019 the network also included “Screenshots divertenti”, “Dislessia Portami Via”, “Riprendiamoci La Patria”, “Nessuno di loro”, “Corriere della notizia”, “Prima aiutiamo gli Italiani poi si vede. - Movimento Adesso Italia” and “Adesso Italia”. All these pages – with the exception of “Screenshots divertenti”, “Dislessia Portami Via” – have also been included in a list of pages that spread hate and disinformation by the ONG Avaaz and the online newspaper TPI (Di Benedetto Montaccini, 2019; Mastinu, 2019). Overall, the Avaaz and TPI list includes 22 Facebook pages that spread news on Facebook in a highly coordinated manner during the 2018 and 2019 Italian elections (Tab. 6)

Tab. 5. Coordinated entities active both in 2018 and 2019.

Account name (link to the Facebook page)	Avg account subscriber	MP-MPAS adjudication
Matteo Salvini	3,716,140	Cross-partisan
Lega - Salvini Premier	518,195	LN
Italia Patria Mia	374,736	LN
NERO Dentro	109,907	LN
tutte le cazzate del presidente	109,344	M5S
FilmLinko	105,975	PD
Illusione ottica di movimento!	99,472	PD
Matteo Salvini Leader	71,414	LN
Italia uguale Dittatura	68,657	LN
Tutti pazzi per Luciana	54,279	M5S
Il Mattino di Foggia	20,593	M5S
Corriere di Siena	18,525	Cross-partisan
Corriere di Rieti	12,875	NA
Il Mattino di Basilicata	8,949	M5S
Il Castello Edizioni	3,565	M5S

Tab. 6. Facebook pages that have spread news in a highly coordinated way before the 2018 and 2019 Italian and European elections and are included in the list of Avaaz and TPI (Di Benedetto Montaccini, 2019; Mastinu, 2019).

Italia Patria Mia	Segreto di Stato
NERO Dentro	Governo Giallo- Verde Al Servizio Del Paese
M5s- Attivisti Blasonati	Fans club di Alessandro Di Battista
IO SONO populista	IL PD
La pagina eventi	Amici di Beppe Grillo
Adesso Italia	DonneA5Stelle
Riprendiamoci La Patria	M5S \\\ LEGA
Anonymous attivisti	Grillino a mia insaputa
Riscatto Nazionale	Corriere della notizia
Nessuno di loro	Gli Attivisti Cambiano il Mondo
5Stelle TV	Italia uguale Dittatura

4.2 The news sharing cascade

A preliminary exploratory analysis pointed out that each page within the network had a different role in the news sharing cascade. For instance, considering the first of the 2018 most followed networks (Tab. 7), it can be observed that the page “Matteo Salvini” tend to share the news first (mean rank = 1.00), regularly followed by the page “Lega - Caprino Bergamasco” (mean rank = 1.91). The same is true for the 2019 most popular network (Tab. 8).

Tab. 7. Rank of the 2018 Facebook entities part of the three most followed networks involved in coordinated inauthentic link sharing in the six months before the 2018 Italian general election.

Name	Component	Mean rank
Matteo Salvini	2	1.00
Lega - Caprino Bergamasco	2	1.91
Aforismi e Link	7	2.43
link CATTIVI	7	2.08
Che il degrado sia con voi	7	2.33
Professione	7	2.72
Affare Fatto	7	2.11
Lega - Salvini Premier	8	1.99
Noi con Salvini	8	1.51
Matteo Salvini Leader	8	2.16
Il Populista	8	2.15

Tab. 8. Rank of the 2018 Facebook entities part of the three most followed networks involved in coordinated inauthentic link sharing in the six months before the 2019 European general election.

Name	Component	Mean rank
MoVimento 5 Stelle	3	1.10
MoVimento 5 Stelle Camera	3	1.48
Matteo Salvini	4	1.03
Salvini Premier	4	1.64
Situazioni Virali	9	5.56
L'amore Proibito	9	4.75

Esperimenti Sociali	9	7.50
Lu Mejo	9	3.58
Silenzio a ore	9	5.58
Ammazzate Dalle Risate con Lu Mejo	9	3.58
Tuasta	9	6.92
Link Today	9	2.80
•»» Dolce & Bastarda ««•	9	6.92
<hr/>		
Roma Fanpage.it	29	1.24
Milano Fanpage.it	29	1.21

5. Content

5.1 Non-political and ambivalent entities with a hidden political agenda

In 2018, non-political pages and groups included in coordinated networks were 17 while the political ones 11 (see Tab. 9). Before the 2019 election the number of coordinated pages and groups was clearly higher: 49 were non-political and 94 political (see Tab. 10). In 2019 the political pages and groups are almost the double of non political ones, while in 2018 the average subscribers count of the pages and groups was higher.

Tab. 9. Count of classified coordinated Facebook pages and groups and their average subscribers count during the period preceding the 2018 Italian general elections.

Class	N of entities in each class	Avg. members/followers
Political	11	496,993.16
Non-Political	17	125,442.54
Tot	28	271,408.9

Tab. 10. Count of classified coordinated Facebook pages and groups and their average count of followers/members during the period preceding the 2019 European elections.

Class	N of entities in each class	Avg. members/followers
Political	49	192,095.22
Non-Political	94	84,104.53
Tot	143	121,108.3

Political set of pages and groups is quite homogeneous and composed of activists, official parties and hyper partisan spaces. The non-political items are composed of Facebook pages of national and local media outlets, such as “Roma Fanpage.it” or “DiariodelWeb.it”, satirical and

aphorisms pages apparently not related to politics, such as “Aforismi e Link” (Aphorisms and Links”) and “Screenshot Divertenti” (“Funny Screenshots”), and online spaces related to education and teaching, such as “La Tecnica della Scuola” (“The School Technique”) or “ProfessioneInsegnante.it” (“Teaching Career”).

The most interesting cases among non-political Facebook pages and groups are those apparently related to satire and entertainment, such as “Situazioni Virali” (“Viral Situations”) and “L’Amore Proibito” (“The Impossible Love”), which are included in network 9. They are two related pages sharing different news, political, soft and yellow news (see Fig. 12).

Fig 12. Two examples of posts shared by “Situazioni virali”, the one on the left side is a tabloid news talking about the look of a young George Clooney, while the other one is a clearly political post by the title “Matteo Salvini commented the meeting between Conte and Macron. This is what the ex Vice Prime Minister said.”

In the run up of the elections, both these pages shared this widely popular political news: “Matteo Salvini alla scrittrice Michela Murgia: ‘Radical chic’. E lei ha risposto così” (“Matteo Salvini called the writer Michela Murgia a ‘Radical chic’ and she answered like that”), published by “Cronache Social” and concerning a long-lasting debate between the feminist writer Michela Murgia and Matteo Salvini, who accused her of being a “Radical Chic”, an expression used as a synonym of elitist.

Also network 14 (see Appendix 2, Tab. 15) , is composed of both openly far-right entities, such as “NERO Dentro” (“Black Inside”) or “Italia uguale Dittatura” (“Italy means Tyranny”), and completely misleading entertainment pages, such as “Dislessia Portami Via” (“Dyslexia take me away”) and “Screenshots Divertenti” (Fig. 13) that actually use to share hyperpartisan content. For example, Dislessia Portami via shared in a coordinated way a political news entitled: “The Church is collapsing, but the Vatican launches a crusade against Salvini”, published by the Antonio Socci’s blog “Lo Straniero” (Fig. 14). The article reaches 20,244 Facebook interactions and attacks Pope Francis because his pro-migrants positions and his criticism against the Italian anti-migrants politics.

Fig. 13. Cover and profile images of the Facebook page Screenshots Divertenti (network 14). In addition to the laughing emoji, there is an ironic comic streep about Eve asking god to fix Adam obsession for football.

Fig. 14. An example of news shared by “Dislessia portami via”, it is news published by the blog “Lo Straniero”, edited by the journalist and writer Antonio Socci.

LA CHIESA STA SPROFONDANDO, MA IL VATICANO LANCIA LA CROCIATA CONTRO SALVINI.

SCRITTO IL 6 GEN, 2019

A further ambivalent network (see Appendix 2, Tabs. 14 and 15), is composed of a political page, “tutte le cazzate del presidente” (“all the president’s crap”) and two non political fan pages, namely “Tutti pazzi per Luciana” (“All crazy for Luciana”), devoted to the famous comedian Luciana Littizzetto and “i fan di MARCO TRAVAGLIO” (“Marco Travaglio’s fan”), dedicated to the journalist Marco Travaglio. According to our estimate, this network is close to Five Star Movement positions and coordinately shared political news. For instance, one was entitled: “‘The list of ministers announced by Di Maio is comical, they are third-class professor’, said Silvio Berlusconi, the one who proposed Carfagna, Gelmini, Alfano, Mastella, Calderoli, Previti, Giovanardi and many others who are even worse!” (Fig. 15, Facebook engagement 21,041)

Fig. 15. The image of the post “‘The list of ministers announced by Di Maio is comical, they are third-class professor’, said Silvio Berlusconi, the one who proposed Carfagna, Gelmini, Alfano, Mastella, Calderoli, Previti, Giovanardi and many others who are even worse!’”

5.2 Migration and League dominates most engaging shared news-stories

Considering the news shared in a highly coordinated way during both the 2018 general election and the 2019 European election, the centrality of the League and that of migration – a core issue on the League’s political agenda – stand out. The top engaging stories during both the 2018 and 2019 elections are all favourable to the League narrative or against its political opponents, such as that published by the League online news media “Il Populista” that is entitled: “Di Maio will vote the Ius Soli, the Five Star Movement is more and more to the left” (ilpopulista.it, engagement 20,970), and that published by Vanity Fair with the title: “Salvini said: “I would be a vandal? Saviano should give up the escort and come among the common people” (vanityfair.it, engagement 16,203).

Fig. 16. Some engaging news stories shared in a highly coordinated way before the 2018 Italian general election. The first on the left is entitled: “Di Maio will vote the Ius Soli, the Five Star Movement is more and more to the left”, the news on the up-right “Salvini said: “I would be a vandal? Saviano should give up the escort and come among the common people”. The title of the news on the bottom-left is: “The illegal immigrants coming from Libya? One out of four are sick with aids or hepatitis”. The last one is entitled: “Ius Soli, a Moroccan activist: “Remove citizenship from Salvini”

The same pattern marks the most engaging 2019 news stories. For instance: “13 Romanian prisoners returned home. Salvini: ‘This is only the beginning’” (ilgiornale.it, engagement: 249,833), “Failed cooperatives, Matteo Renzi's parents under house arrest” (corriere.it, engagement: 170,638).

In 2019 there are also some exceptions. For example, the fourth most engaging news story (huffingtonpost.it, engagement: 196,259), is entitled: “‘We are governed by a band of half fascists and half of idiots’. The accusation of Gino Strada. The founder of Emergency: ‘Fortress Europe is a Hitlerian idea’” (“‘Siamo governati da una banda per metà di fascisti e per metà di coglioni’. L’accusa di Gino Strada. Il fondatore di Emergency: ‘La fortezza Europa è un’idea hitleriana’”). Nonetheless, both in 2018 and 2019 immigration emerges as one of the most

relevant issues. Considering the 2018 most frequent terms, afterwards generally referred to the political sphere, such as politicians' and party's names, the word "Ius Soli" represents the 24th most frequent one, and "immigrato" (immigrant) ranks 29th. Taking into account the 62 news outlets that have published the 1,388 news mentioning one of the top lemma "ius soli", "immigrato" (immigrant), "immigrazione" (immigration) or "clandestino" (illegal immigrant), it emerges that the hyperpartisan outlets "ilpopulista.it", and its subdomains "tv.ilpopulista.it", close to the League, is responsible for 64% of the total news on immigration shared by the coordinated networks. In 2019, the topic is even more prominent, considering that "migrare" (that is "to migrate") ranks 11th among the most frequent lemma. The most engaging news that mentions this lemma frames migration as a threat and spread the Salvini's point of view (Fig. 17). For instance: "Terrorism, jihad informer triggers a blitz: 8 arrests. 'You are risking suicide attacks in Italy'" (palermo.repubblica.it, engagement: 88,619), or "Matteo Salvini (...) 'I don't change my mind about migrants, ports remain closed'" (lettoquotidiano.it, engagement: 86,383), or "The hatred of migrants against Salvini: 'Assassin'" (ilgiornale.it, engagement: 82,634).

Further analysis confirmed the centrality of the League and Matteo Salvini in the news stories shared by the highly coordinated networks. Indeed, taking into consideration the three topics more likely to be shared by coordinated pages in 2018 (Tab. 11), we found that the first most recurring topic is about the electoral rally of Matteo Salvini, the second most frequent one is relative to the League's transformation from a secessionist northern party to a national party seeking for consent also in southern Italy (a change represented by the removal of the word "Nord" from the party name and symbol), but that, at the same time, keep supporting traditional issues of the "old" Northern League, such as the referendum for the autonomy of Lombardy and

Veneto regions. The third most recurrent topic is about the clash between Salvini and European Union politics.

Fig. 17. A set of news stories supporting the ex-Vice Prime Minister Matteo Salvini

Taking into consideration the three most recurrent topics in 2019 (Tab. 12), the first one is about the closure of Italian harbors to migrants decided by Matteo Salvini, the newly Interior Minister. The second most recurring topic concerns migration and related security issues, and the topic that ranks third in the classification is public investment in infrastructure and other activities such as the strengthening of public security.

Overall, the analyses point out that a large quantity of content spread by the highly connected entities, during both the 2018 and 2019 electoral campaign, boosted League-friendly propaganda. This insight is further supported by the number of news that mentioned the main political leaders: in 2018, 62% of news shared by the highly coordinated entities mentioned Salvini, while only 6% Di Maio, 11% Berlusconi, and 17% Renzi. In 2019 the scenario is somehow more nuanced, but Salvini was anyway mentioned by 48% of the news circulated within these

networks, Di Maio 9%, Berlusconi 4%, Renzi 5%, and Zingaretti, the new secretary of the Democratic Party, 2%.

Tab. 11. The three most recurring topic in the news shared in a coordinated way by Facebook and Instagram highly coordinated entities before the 2018 Italian general election (English translation).

Topic	Most relevant terms	Examples of news
1	February, carroccio [the League in journalistic jargon, Ed.], square, meeting, friday, stage, venue, meet, tour, party	<ul style="list-style-type: none"> ● Ponte San Pietro: Salvini inaugurates the new headquarters of the League ● Crowd bath for Salvini in Modena, everyone wants a selfie with the leader of the League ● Salvini returns to Campania: «I like the South. And I don't care about De Magistris»
2	symbol, north, veneto, new, autonomy, lombardy, referendum, council, next, name	<ul style="list-style-type: none"> ● New symbol of the League without North ● Referendum: Salvini, a lesson of democracy ● Salvini in Bari: "The League will have a unique symbol for the elections"
3	eu, europe, european, defend, euro, country, put, exist, interest, brussels	<ul style="list-style-type: none"> ● Elections, Salvini: "As prime minister I will impose duties, as Trump". Calenda: "It is a foolish and unrealizable idea. Duties are decided by the EU" ● Things are getting crazy - Both Forza Italia and Pd vote in favor of the invasion of Chinese products in the European Parliament! It is the coup de grace for Italian companies! ● Salvini: "The EU letter? Waste paper if it damages Italians"

Tab.12. The three most recurring topics in the news shared in a coordinated way by Facebook and Instagram highly coordinated entities before the 2019 European election.

Topic	Most relevant terms	Examples of news
1	sea watch, sea, libya, closed, landing, to land, jonio, german, border, mediterranean	<ul style="list-style-type: none"> ● Malta authorizes the disembarkation of the Sea Watch smuggler ship: the illegal immigrants will be distributed in 8 countries including Italy ● The Sea Watch smuggler ship is registered as a yacht. Minister Toninelli: "It is not in order to save lives at sea" ● The Alan Kurdi ship of the NGO Sea Eye is heading towards Malta after Italy did not allow it to dock at Lampedusa
2	nigerian, police, arrest, agent, carabinieri, policeman, center, ferrara, arrest, enne (referring to the age of criminals and victims in news, Ed.)	<ul style="list-style-type: none"> ● Nigerian Mafia hit in Gubbio: 10 arrests, they are all asylum seekers ● Terror in Vicenza, policemen bitten by a Nigerian and surrounded by dozens of foreigners

3

municipality, construction site, danilo toninelli (Minister of Infrastructure and Transport, Ed.), work, unlock, fund, billion, school, province, plan

- He carries the crucifix around his neck, Moroccan tries to slit his throat
- Tav, Palazzo Chigi sends letter to Telt: We are going to postpone the calls, they will not start on Monday. The go-ahead is not given
- Safe schools, for the province of Naples Salvini unlocks about 300 thousand euros
- ROME. Safe beaches: Salvini writes to 100 mayors of seaside resorts

6. Limitations

The work presented in this manuscript makes use of CrowdTangle data gathered through the official API. The authors gained access to the tool in the context of the Social Media and Democracy Research Grants, managed by the Social Science Research Council in partnership with Facebook and Social Science One, which has allowed selected scholars to access a dataset of URLs shared on Facebook and the Facebook Ads Library API. Unlike the commercial version of CrowdTangle, which also tracks Twitter and Reddit, the version currently provided to researchers is limited to Facebook and Instagram data. CrowdTangle includes most but not all the public interactions performed on Facebook and Instagram³. The analysis based on CrowdTangle shares is thus limited to what is tracked by the tool.

Another limitation concerns the application of the Multi-Party Media Partisan Attention Score (MP-MPAS, Giglietto et al., 2018) to Facebook entities. MP-MPAS was originally conceived to estimate the political leaning of online news media sources by measuring the activity of partisan communities around the news stories published by these outlets. Using the annotated lists of news sources shared on Facebook in the six months before the 2018 general election and 2019 European election in Italy, we mapped the MP-MPAS scores to the Facebook entities that shared the news stories published by these sources. However, some clearly partisan entities (e.g. the official Facebook page of Matteo Salvini), tend to share links from a variety of news sources, sometimes to amplify positive coverage and sometimes to criticize or mock stories against the

³ A full description of what is tracked and not is available at <https://help.crowdtangle.com/en/articles/3192685-crowdtangle-for-journalists-please-use-these-caveats-when-you-cite-the-data>.

party and its leader. In cases like this, the method underestimates the partisanship and classifies the pages and groups as cross-partisan.

Given the highly innovative repertory of data this work dealt with, some of the strategies employed proved to be tricky. More specifically, many analyses focused on the understanding of the pattern of sharing were required to set the threshold that defined coordinated link sharing in order to allow us to identify the networks of coordinated entities. Although we linked the threshold to the statistical distribution of Facebook shares, a number of arbitrary choices were made to surface coordinated link sharing. For this reason, we were extremely conservative regarding the definition of coordinated entities, i.e. the frequency of repeated coordinated shares that define a network of coordinated entities. In this sense, the networks we identified represent the core of potentially larger networks.

7. Discussion and Conclusion

Starting from an analysis of the official Facebook discourses on disinformation in the aftermath of the 2016 US Presidential election, we traced the different stages of dealing with this issue. While the initial focus was on false content and hoaxes, the most recent phase seems to be more focused on the actions of certain actors on the platform. Coordinated inauthentic behavior is only briefly defined by Facebook in official public statements, but the concept itself is useful to frame future studies insofar as both the idea of coordination and authenticity are well established in the literature.

Using CrowdTangle API link endpoint and two datasets of political news stories published in the run up to the 2018 general election and 2019 European election in Italy, we identified several networks of pages, groups and verified public profiles (referred to as “entities”) that shared, within a very short period of time, the same links. We called this behavior “coordinated link sharing”. By analysing the profile and cover photos of the entities, we observed that not all the entities belonging to these networks presented themselves as clearly political in nature, despite the fact that all of them shared political content at least sometimes. Political news stories published by non political entities can reach a broad audience which is largely unguarded against attempts to influence. We described these entities as “inauthentic”.

On average, the news shared by the coordinated networks registered a volume of Facebook interactions significantly higher than those shared by non coordinated entities, both before the 2018 and 2019 elections. Overall, the exploratory analysis of the news stories shared by these networks pointed out that a considerable quantity of content boosted League-friendly

propaganda. The finding was supported by the number of news stories that mentioned the main political leaders and the estimated partisanship of the coordinated entities. A further analysis revealed that several online news outlets and Facebook pages included in the coordinated networks were already mentioned in black lists of Italian fact-checking websites.

The findings described in this report, although preliminary, shed light on specific strategies used by social media actors to amplify certain news stories in an attempt to influence public opinion. While in terms of the volume of interactions gathered by these stories the attempt seems to have been successful, measuring the effect of these operations in influencing public opinion falls outside the scope of this report.

From a methodological perspective, the report introduced a method to identify coordinated link sharing based on a list of political news stories and the respective Facebook/Instagram shares. This method can be easily replicated in other national contexts.

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Appendix 1 - Measures and Methods

Dataset

The report is based on two datasets of online Italian political news stories shared on Facebook during the six months before the 2018 Italian general election (N=84,815) and the 2019 European election (N=164,780). For both the election, the news items were collected in real-time using a technological infrastructure based on open-source software Huginn⁴. The news stories were collected from three sources: Google News, the Global Database of Society (GDELT) and Twitter (filtering for tweets including a link and mention of a candidate or a political party)⁵. CrowdTangle API link endpoint (CrowdTangle Team, 2019) was used to collect public Facebook/Instagram shares of the news stories URLs in our datasets performed in a period of seven days after the publication of each piece of news. CrowdTangle is a social media analytics tool owned by Facebook that tracks public posts on Facebook, Instagram and Reddit, made by public accounts or groups. The tool does not track every public account and does not track private profiles or groups, so this data is not representative of performance across the entire platform. The numbers shown by this tool reflect public interactions (likes, reactions, comments, shares, upvotes and three second views), but do not include reach or referral traffic. It does not include paid ads unless those ads began as organic, non-paid posts that were subsequently “boosted” using Facebook’s advertising tools. Because the system doesn’t distinguish this type of paid content, note that some high-performing content may have had paid distribution.

⁴ Huginn is “a system for building agents that perform automated tasks”: <https://github.com/huginn/huginn>.

⁵ See (Giglietto et al., 2019a, 2019b) for a detailed description of the methodology used to collect political news-stories.

CrowdTangle also does not track posts made visible only to specific groups of followers⁶. The resulting datasets consist of 107,842 shares performed by 6,171 unique entities (2018 election) and 222,877 shares performed by 8,107 unique entities (2019). Leveraging on MP-MPAS (Giglietto et al., 2019b) each entity has been categorized according to the partisanship of the news sources they shared. MP-MPAS (i.e. Multi-Party Media Partisanship Attention Score) is a measure of partisan attention towards news media sources which builds on a rapidly growing body of existing literature (Bakshy et al. 2015; Barberá 2015; Benkler et al. 2018) that introduced and developed the idea of analyzing the patterns of link sharing of known partisan users to infer the attention devoted by certain partisan community to different online news media outlets. In this report, we leverage the same logic to infer the partisanship of entities that shared news stories from known partisan news sources. In other terms, a Facebook page that only shared news stories from news sources close to a certain party is, in turn, considered close to that party.

Coordinated network detection

In order to identify the coordinated networks, we developed an algorithm that estimate, for each dataset of CrowdTangle shares, a coordination threshold based on the analysis of the sharing behavior of all the entities⁷. Even though it is common that several entities share the same URL, these shares are unlikely to occur within a very short period of time. In order to operationalize

⁶ Please see <https://help.crowdtangle.com/en/articles/1140930-what-is-crowdtangle-tracking> for an overview of what CrowdTangle is tracking. For this study only Facebook and Instagram platforms have been used.

⁷ The algorithm is developed in r and the code is available on request. If you are interested please write a message to fabio.giglietto+ss1@uniurb.it.

the concept of “very short time”, we analyzed the time differences between each share of the same URL and ranked them based on the share date (i.e. the datetime when the links were shared). We then calculated the time difference in seconds between the first (in chronological order) and all the other shares of the same URL. We used the time difference between the first and the second share to identify a subset consisting of the 10% of URLs with the shortest time span between the first and the second shares. We then analyzed the behavior of this subset and identified the desired threshold by calculating the median time in seconds used by 10% of the quickest URLs to reach 50% of their total number of shares. This threshold is, respectively, 10 seconds for 2018 and 23 seconds for 2019.

We used this threshold to identify a set of entities that quickly shared each URL. From this list we derived the networks of entities that frequently (above the 90th percentile or more than 8 times for 2018 and more than 6.4 times for 2019) shared links in a coordinated way. Given the conservative approach used in estimating both the time and repetition threshold, the networks listed in this report should be considered as the core of potentially larger networks.

All the networks and entities detected are listed in Tab 14 and 15 of this appendix. For a more easily reusable format, the same tables, enriched by additional metadata, are also available at <https://doi.org/10.7910/DVN/KYRK0X>.

Engagement

To compare the engagement distribution of the URLs shared by entities included and not included in the coordinated networks, we used a Mann-Whitey U one-tailed test (also known as Wilcoxon rank sum test), a non-parametric test for determining statistical differences between

two distributions. This is only a preliminary data and further analyses are needed to ascertain the impact of coordination on the spreading of political news on Facebook.

Tab. 13. Mann-Whitney U test (Wilcoxon rank sum test) results for the engagement of the news shared by coordinated vs. non-coordinated entities before 2018 (on the left) and 2019 (on the right) elections.

2018			2019		
	Coordinated	Non-coordinated		Coordinated	Non-coordinated
N	2,386	36,795	N	5,706	63,052
Mdn	796	213	Mdn	1,274.5	125.0
W	60372000		W	266750000	
p	< .001		p	< .001	

Automated content analysis

To analyze the content shared in a coordinated way by the entities we relied on the “titles” and “descriptions” of the news stories, short texts that Facebook users can directly read on the platform without clicking any links. The texts were lemmatized and a topic modelling analysis was run (Blei et al., 2003; Blei 2012; Phan et al., 2008). We estimate 60 topics in the 2018 dataset and 75 in the 2019 dataset using the maximum log-likelihood approach (Griffiths, Steyvers, 2004) for a number of topics ranging from 2 to 100. We identify the topics more likely to appear in the corpus based on marginal topic distributions (Sievert, Shirley 2014). Finally, the quantity of news items mentioning the main political leaders and the partisan leaning (MP-MPAS, Giglietto et al., 2019b) of the coordinated social media entities have been assessed.

We checked the domains shared by the coordinated networks against a “blacklists” of disinformation sources (“Butac.it”, “Bufale.net” and “bufalopedia”) already used for this purpose (e.g. Fletcher et al., 2018; Lovari, Martino, Righetti, forthcoming) to ascertain whether these

domains were already known for publishing controversial content, such as “fake” and hyperpartisan news. We also checked the coordinated entities against a list of Facebook pages already identified as sources of problematic information (Di Benedetto Montaccini, 2019; Mastinu, 2019).

Appendix 2 - Tables

Tab. 14. Entities participating in the 2018 coordinated networks.

Name	Avg Subscriber	URL linked in the info section ⁸	Network ID
Ottopagine	87,692	https://www.ottopagine.it	1
Ottopagine Benevento	28,028	http://benevento.ottopagine.it	1
Ottopagine Avellino	27,946	http://avellino.ottopagine.it	1
Matteo Salvini	3,716,140	https://www.legaonline.it	2
Lega - Caprino Bergamasco	2,522		2
FilmLinko	105,975		3
Illusione ottica di movimento!	99,472		3
Corriere di Siena	18,525	https://corrieredisiena.corr.it	4
Corriere di Rieti	12,875	https://www.corrieredirieti.it	4
tutte le cazzate del presidente	109,344		5
Tutti pazzi per Luciana	54,279		5
Il Mattino di Foggia	20,593	http://www.ilmattinodifoggia.it	6
Il Mattino di Basilicata	8,949	https://www.ilmattinodipugliaebasilicata.it	6
Il Castello Edizioni	3,565	http://www.ilcastelloedizioni.it	6
Aforismi e Link	84,2945		7
link CATTIVI	221,689		7
Che il degrado sia con voi	197,129		7
Professione	187,151		7
Affare Fatto	163,000		7
Lega - Salvini Premier	518,195	https://www.legaonline.it	8
Noi con Salvini	309,520	https://www.legaonline.it	8
Matteo Salvini Leader	71,414		8
Il Populista	23,489	http://www.ilpopulista.it	8
Italia Patria Mia	374,736	http://www.ilcorrieredellanotizia.info	9
NERO Dentro	109,907		9
Italia uguale Dittatura	68,657		9
Pane e malavita	133,691		10
Keep & calm	82,018		10

⁸ At the time of writing.

Tab. 15 Entities participating in the 2019 networks

Name	Avg Subscriber	URL linked in the info section ⁹	Network ID
La Nazione	174,557	http://www.lanazione.it	1
Firenze - La Nazione	27,935	http://www.lanazione.it/firenze	1
Amici di Beppe Grillo Cagnano Varano	1,038		2
Attivista movimento 5 stelle	344		2
MoVimento 5 Stelle	1,457,546	http://www.ilblogdellestelle.it	3
MoVimento 5 Stelle Camera	231,721	http://www.parlamentari5stelle.it	3
Matteo Salvini	3,732,052	https://www.legaonline.it	4
Salvini Premier	80,289		4
Tempostretto.it - Quotidiano online di Messina e provincia	76,403	http://www.tempostretto.it	5
Tempostretto Tirreno - Quotidiano online area tirrenica di Messina	7,817		5
FilmLinko	105,958		6
Illusione ottica di movimento!	99,453		6
Gazzetta della sera	14,409	http://www.gazzettadellasera.it	7
Segreto di Stato	6,799	http://www.catenaumana.it	7
Lega Russi -Salvini -	1,005		8
Prima Russi	534		8
Situazioni Virali	1,044,161	http://24orenотizie.com	9
L'amore Proibito	735,793		9
Esperimenti Sociali	654,096		9
Lu Mejo	583,475	https://www.cronacasocial.com/	9
Silenzio a ore	519,654		9
Ammazzate Dalle Risate con Lu Mejo	151,385		9
Tuasta	119,409		9
Link Today	111,985		9
•»» Dolce & Bastarda ««•	89,088		9
Smart Nation Italia a 5 stelle	15,060	http://smarnationitalia5stelle.wordpress.com	10
ALESSANDRO DI BATTISTA: IL GUERRIERO	2,110		10
TUTTI GLI ATTIVISTI DEL M5S (quelli veri) in UN UNICO GRUPPO	941		10

⁹ At the time of writing.

Corriere di Siena	18,538	https://corrieredisiena.corr.it	11
Corriere di Rieti	12,877	https://www.corrieredirieti.it	11
Una Via Per Oriana Fallaci	29,038	http://www.thankyouoriana.it	12
ALLEANZA per la LIBERTA'	146	http://www.alleanzaperlaliberta.it	12
Condividi se sei infuriato	203,648		13
La Voce del Popolo Italiano	138,930		13
Italia Patria Mia	375,220		14
NERO Dentro	109,816		14
Italia uguale Dittatura	68,613		14
Prima aiutiamo gli Italiani poi si vede. -			
Movimento Adesso Italia	64,656		14
Nessuno di loro	43,215		14
Corriere della notizia	35,074	www.corrieredelmattino.it	14
Riprendiamoci La Patria	33,970		14
Adesso Italia	27,243		14
Dislessia Portami Via.	17,292	http://www.CondividiQuesto.com	14
Screenshots divertenti	13,552	http://www.CondividiQuesto.com	14
tutte le cazzate del presidente	109,304		15
Tutti pazzi per Luciana	54,275		15
i fan di MARCO TRAVAGLIO	6,098		15
#iostoconMatteoSalvini	4,450		16
MILITANZA LEGHISTA	3,884		16
Il Mattino di Foggia	20,605	http://www.ilmattinodifoggia.it	17
Il Mattino di Basilicata	8,947	https://www.ilmattinodipugliaebasilicata.it	17
Il Castello Edizioni	3,567	http://www.ilcastelloedizioni.it	17
Forza Italia Grosseto Coordinamento			
Provinciale	1,360		18
Forza Italia Campagnatico	109	http://www.forzaitalia.it	18
La pagina eventi	16,203		19
Governo Giallo- Verde Al Servizio Del			
Paese	16,163		19
Fans club di Alessandro Di Battista	14,050	http://www.beppegrillo.it	19
IO SONO populista	10,506	https://dona.ilblogdellestelle.it	19
M5s- Attivisti Blasonati	8,769	https://dona.ilblogdellestelle.it	19
Anonymous attivisti	7,218		19

La Tecnica della Scuola	253,119	http://www.tecnicadellascuola.it	20
ProfessioneInsegnante.it	122,730		20
Lega per Salvini Premier Lsp Bologna			
Città	6,654		21
Lega Bologna - Segreteria Provinciale	3,802		21
Matteo Salvini FanGruppo	18,737		22
Salva l'Italia con Salvini	3,461		22
Movimento 5 Stelle Napoli	15,326	http://movimento.napoli.it	23
MoVimento 5 Stelle Napoli -		http://www.m5smunicipalita10.wordpress.co	
Municipalità 10	4,545	m	23
Lega Salvini Premier - Francofonte SR	2,496		24
Lega Salvini Premier - Lentini e			
Carlentini	2,362		24
Gruppo Tutto TRAVAGLIO Forever	60,656		25
MOVIMENTO DEI DISOCCUPATI E			
DEI PRECARI, di Rosario Napoli	45,002		25
MOVIMENTO 5 STELLE			
GOVERNIAMO L'ITALIA	29,050		25
ALGORITMO 5 Stelle 40% e oltre ...	18,967		25
Virginia Raggi - E' STORIA!	18,714		25
La conoscenza e la consapevolezza			
salveranno il mondo	15,841		25
Oltre	14,211		25
Grillino a mia insaputa	13,332		25
Movimento 5 Stelle News	12,680		25
Governo Conte - M5S - Luigi Di Maio -			
Di Battista	11,798		25
Marco Travaglio #L'informazione	9,388		25
Movimento Pentastellato con Virginia			
Raggi	6,772		25
ROUSSEAU@5STELLE.IT	6,625		25
moVimento 5 stelle	5,468		25
Fan_Club Luigi Di Maio e Alessandro			
Di Battista	4,248		25
L'Alba della terza Repubblica	2,996		25
Governo Conte cambiamento scelto dai			
cittadini ☆ ☆ ☆ ☆ ☆	2,303		25

<u>LOMBARDIA 5 STELLE NEWS</u>	1,459		25
<u>Nessun Dorma</u>	28,621		26
<u>Via La Maschera 2.0</u>	22,112		26
<u>Amici di Beppe Grillo</u>	17,758	http://www.beppegrillo.it	27
<u>MV5 Stelle Italia</u>	11,869		27
<u>DonneA5Stelle</u>	10,838	https://dona.ilblogdellestelle.it	27
<u>IL PD</u>	3,858		27
<u>Pentastellati Siciliani</u>	2,255		28
<u>Tribuna Pentastellata</u>	1,529		28
<u>Roma Fanpage.it</u>	1,564,682	http://roma.fanpage.it	29
<u>Milano Fanpage.it</u>	1,480,089	http://milano.fanpage.it	29
<u>Movimento Marcello 2.0</u>	24,647	http://www.beppegrillo.it	30
<u>VENETO MoVimento 5 Stelle</u>	2,374		30
<u>Lega Salvini Premier Liga Veneta</u>			
<u>Segreteria Provinciale di Vicenza</u>	7,247	http://www.leganordvicenza.eu	31
<u>Lega Nord Altavilla Vicentina</u>	560		31
<u>Lega - Liga Veneta di Costabissara</u>	253	http://www.leganordvicenza.eu	31
<u>Lega Cortona Valdichiana - Salvini</u>			
<u>Premier</u>	2,619	http://naz-toscana.leganord.org	32
<u>Lega Provinciale Arezzo - Salvini</u>			
<u>Premier</u>	2,151		32
<u>NOI CON SALVINI</u>	880		33
<u>IL CAPITANO MATTEO SALVINI</u>	698		33
<u>Lega Salvini Premier Provinciale</u>			
<u>Mantova</u>	2,155		34
<u>Lega per la Sovranità</u>	1,896		34
<u>DiariodelWeb.it</u>	509,740	https://www.diariodelweb.it	35
<u>Diario 5 Stelle</u>	33,514	https://www.diariodelweb.it/politica	35
<u>Notizie Sul Movimento Di Beppe Grillo</u>	19,910		36
<u>Movimento 5 Stelle Campania-gruppo</u>			
<u>Facebook</u>	2,295		36
<u>LEGA - Mario Seghezzi Sindaco</u>	4,522		37
<u>Omar Bassani</u>	2,369		37
<u>Selezione 5 Stelle</u>	23,353	http://m5stelle.com	38
<u>M5stelle</u>	12,514	http://m5stelle.com	38
<u>Il Mattino di Salerno</u>	10,149	http://www.ilmattino.it/SALERNO	39

Il Mattino di Caserta	8,909	http://www.ilmattino.it/CASERTA	39
Il Mattino di Benevento	5,915	http://ilmattino.it/benevento	39
Il Mattino di Avellino	3,815	http://www.ilmattino.it/AVELLINO	39
LEGA - Salvini Premier - Ogliastro Cilento	4,236		40
Comitato cilentano. Prima gli italiani	914		40
Lega - Salvini Premier	520,791	https://www.legaonline.it	41
Matteo Salvini Leader	71,909		41
Coordinamento 25 Aprile Udine	4,257		42
Udine Antifascista	2,639		42
Dalla vostra parte	23,807		43
L'ITALIA CON MATTEO SALVINI	15,695		43
Sapere è un Dovere	442,803		44
ControInformazione	65,004	https://www.sapereundovere.com	44
Diario del Movimento 5 Stelle	5,161		45
Appuntamenti a 5 Stelle	1,529		45
Riscatto Nazionale	14,479		46
Riscatto Nazionale II	13167		46
M5S \ LEGA	18049		47
Un'Italia senza Renzi - fan club	10667		47
Pentastellati M5S. Guardiamo al futuro	2033		48
Movimento 5 Stelle Polonia	747		48
Forza Italia Divisione Sicurezza Difesa e Giustizia	1007	http://www.dspforzaitalia.it	49
Forza Italia Dipartimento Sicurezza Regione Piemonte	472	http://www.dspforzaitalia.it	49
5Stelle TV	26722		50
Gli Attivisti Cambiano il Mondo	11215	https://dona.ilblogdellestelle.it	50

Tab. 16. Summary of networks Italian General Elections 2018

Network ID	N of entities in the network	SUM of Members/followers
1	3	143,666
2	2	3,718,662
3	2	205,448

4	2	31,400
5	2	163,623
6	3	33,107
7	5	1,611,915
8	4	922,618
9	3	553,300
10	2	215,708
<hr/>		
Grand Total	28	7,599,447

Tab. 17. Summary of networks European Election 2019

Network ID	N of entities in the network	SUM of Members/followers
<hr/>		
1	2	202,492
2	2	1,382
3	2	1,689,267
4	2	3,812,341
5	2	84,220
6	2	205,411
7	2	21,208
8	2	1,539
9	9	4,009,045
10	3	18,111
11	2	31,415
12	2	29,184
13	2	342,578
14	10	788,651
15	3	169,677
16	2	8,334
17	3	33,119
18	2	1,469
19	6	72,910
20	2	375,849
21	2	10,456
22	2	22,198

23	2	19,872
24	2	4,858
25	18	279,511
26	2	50,733
27	4	44,323
28	2	3,784
29	2	3,044,771
30	2	27,021
31	3	8,060
32	2	4,770
33	2	1,577
34	2	4,051
35	2	543,254
36	2	22,205
37	2	6,891
38	2	35,867
39	4	28,788
40	2	5,150
41	2	592,700
42	2	6,896
43	2	39,502
44	2	507,806
45	2	6,690
46	2	27,646
47	2	28,717
48	2	2,780
49	2	1,479
50	2	37,937
Grand Total		17,318,495

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