



Does offline political segregation affect the filter bubble? An empirical analysis of information diversity for Dutch and Turkish Twitter users



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ABSTRACT

From a liberal perspective, pluralism and viewpoint diversity are seen as a necessary condition for a well-functioning democracy. Recently, there have been claims that viewpoint diversity is diminishing in online social networks, putting users in a “bubble”, where they receive political information which they agree with. The contributions from our investigations are fivefold: (1) we introduce different dimensions of the highly complex value viewpoint diversity using political theory; (2) we provide an overview of the metrics used in the literature of viewpoint diversity analysis; (3) we operationalize new metrics using the theory and provide a framework to analyze viewpoint diversity in Twitter for different political cultures; (4) we share our results for a case study on minorities we performed for Turkish and Dutch Twitter users; (5) we show that minorities cannot reach a large percentage of Turkish Twitter users. With the last of these contributions, using theory from communication scholars and philosophers, we show how minority access is missing from the typical dimensions of viewpoint diversity studied by computer scientists and the impact it has on viewpoint diversity analysis.

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1. Introduction

It is well known that traditional media have a bias in selecting what to report and in choosing a perspective on a particular topic. Individual factors such as personal judgment can play a role during the selection of news for a newspaper. Selection bias, organizational factors, advertiser and government influences can all affect which items will become news (Bozdag, 2013). About 37% of Americans see a great deal of political bias in news coverage and 68% percent prefer to get political news from sources that have no particular point of view (Pew Research, 2012). Similarly, in a survey performed before the general elections in the UK, 96% of the population said they believe they have seen clear bias within the UK media (Wei et al., 2013). Evidence of bias ranges from the topic choice of the New York Times to the choice of think-tanks that the media refer to DellaVigna and Kaplan (2007).

Many democracy theorists claim that modern deliberative democracy requires citizens to have socially validated and justifiable preferences. Citizens must be exposed to opposed preferences and viewpoints and should be able to defend their views (Dryzek,

1994; Held, 2006; Offe & Preuss, 1990). Exposure to biased news information can foster intolerance to opposing viewpoints, lead to ideological segregation and antagonisms in major political and social issues (An, Cha, & Gummadi, 2012; Glynn, Herbst, O’Keefe, Shapiro, & Lindeman, 2004; Saez-Trumper, Castillo, & Lalmas, 2013). Being aware of and overcoming bias in news reporting is essential for a fair society, as media has the power to shape voting behavior (Saez-Trumper et al., 2013).

Social information streams, i.e., status updates from social networking sites, have emerged as a popular means of information sharing. Political discussions on these platforms are becoming an increasingly relevant source of political information, often also used as a source of quotes for media outlets (Jürgens, Jungherr, & Schoen, 2011). Traditional media are declining in their gatekeeping role to determine the agenda and select which issues and viewpoints reach their audiences (Bruns, 2011). Internet users have moved from scanning traditional media such as newspapers and television to using the Internet, in particular social networking sites (An et al., 2012). Social networking sites are thus now acting as gatekeepers (Bozdag, 2013).

Communication theorists argue that the traditional media are declining in their gatekeeping role to determine what is “news-worthy” and select which issues and viewpoints will reach their audiences Bruns (2011). It is often argued that the Internet, by

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promoting equal access to diverging preferences and opinions in society, actually increases information diversity. Many scholars characterize the online media landscape as the “age of plenty, with an almost infinite choice and unparalleled pluralization of voices that have access to the public sphere (Karppinen, 2009). Some argue that social media will disrupt the traditional elite control of media and amplify the political voice of non-elites and minorities (Castells, 2011). Still others claim that tools such as Twitter are neutral spaces for collaborative news coverage operated by third parties outside the journalism industry. As a result, the information curated through collaborative action on such social media platforms should be expected to be drawn from a diverse, multi-perspectival range of sources (Bruns, 2011). Some further claim that platforms such as Twitter are neutral communication spaces, and offer a unique environment in which journalists are free to communicate virtually anything to anyone, beyond many of the natural constraints posed by organizational norms that are existing in traditional media (Lasorsa, Lewis, & Holton, 2012).

On the other hand, there are skeptical voices that argue that the Internet has not fundamentally changed the concentrated structure typical of mass media, but reflects the previously recognized inequalities (Karppinen, 2009). It is also argued that it has brought about new forms of exclusion and hierarchy (Suoranta & Vadén, 2009). While it has increased some sort of political participation, it has empowered a small set of elites and they still strongly shape how political material is presented and accessed (Hindman, 2008). Others have pointed out the danger of “cyberbalkanization” caused by the Internet (Sunstein, 2002; Pariser, 2011). They argue that the filters we choose on the Internet, or the filters that are imposed upon us will weaken the democratic process. This is because it will allow citizens to join into groups that share their own views and values, and cut themselves off from any information that might challenge their beliefs. Group deliberation among like-minded people can create polarization; individuals may lead each other in the direction of error and falsehood, simply because of the limited argument pool and the operation of social influences.

It is thus very important to verify whether viewpoint diversity is diminishing in social media and whether cyberbalkanization indeed occurs. There are empirical studies that have observed a high level of information diversity in Twitter and Facebook, mainly due to retweets and weak-ties (An, Cha, Gummadi, & Crowcroft, 2011; Bakshy, Rosenn, Marlow, & Adamic, 2012; Sun, Zhang, & Mei, 2013). While being very valuable contributions to the literature, these studies often focus on American users and they define information diversity either as “novelty”, or “source diversity”. However, as we will show below, novel information does not necessarily contribute to information diversity and highly competitive media markets with many sources may still result in excessive sameness of media contents. As we will argue, marginalized members of segregated groups, structurally underprivileged actors and minorities must receive special attention and just measuring number of available sources will not guarantee viewpoint diversity.

In this paper, we contribute with a framework to analyze and understand the impact of political culture in Twitter. Rather than reducing the concept viewpoint diversity to a single quantity or metric, we introduce different dimensions of viewpoint diversity, based on previous studies and the theory from communication studies and political philosophy. In addition, we provide a set of new metrics and operationalize them. Finally, we present the result of a case study we performed for Dutch and Turkish Twitter users using this framework. We show that minority users cannot reach a large percentage of the studied Turkish Twitter users and political culture is making a difference.

2. Empirical studies of information diversity in social media

An empirical study performed by Facebook suggests that online social networks may increase the spread of novel information and of diverse viewpoints. According to Bakshy et al. (2012), even though people are more likely to consume and share information that comes from close contacts that they interact with frequently, the vast majority of information comes from contacts that they interact with infrequently. These so-called “weak-ties” (Granovetter, 1981) are also more likely to share novel information. However, there are some concerns with this study. First, Facebook does not provide open access to everyone, thus we cannot repeat or reproduce the results using Facebook data. Second, our weak ties give us access to new stories that we would not otherwise have seen, but these stories might not be different ideologically from our own general worldview. They might be novel information, but not particularly diverse. The concepts serendipity, diversity and novelty are different from each other (Sun et al., 2013). The Facebook research does not indicate whether we encounter and engage with news that opposes our own beliefs through “weak-links”.

Twitter, with its API, provides an excellent environment for information diversity research. An et al. (2012) observe extreme polarization among media sources in Twitter. In another study, they found that, when direct subscription is considered alone, most Twitter users receive only biased political views they agree with (An et al., 2011). However, they note that the news media landscape changes dramatically under the influence of retweets, broadening the opportunity for users to receive updates from politically diverse media outlets. Sun et al. (2013) performed an empirical study using statistical models to identify serendipity in Twitter and Weibo. Using likelihood ratio test and by measuring unexpectedness and relevance, they observe high levels of serendipity in information diffusion in microblogging communities. Saez-Trumper et al. (2013) found that political bias is evident in social media, in terms of the distribution of tweets that different stories receive. Further, statement bias is evident in social media; a more opinionated and negative language is used than the one used in traditional media. Twitter users are more interested in what is happening directly around them and what is happening to those around them. While communities talk about a broad range of news, Twitter users dedicate most of their tweets to a few of them (Saez-Trumper et al., 2013). Wei et al. (2013) found that individual journalists have the strongest influence on Twitter for UK users. Further, they observed that all influential British Twitter users (mainstream media, journalists and celebrities) display some kind of bias towards a particular political party in their tweets. Jürgens et al. (2011) shows that certain individual German Twitter users act as gatekeepers, especially in the distribution of political information. Those users are also not neutral hubs. They tend to curate political information and post-messages that they find important (Jürgens et al., 2011).

3. Theory

In this section, we first give a short overview “information diversity” and explain why it is a vital value for a democratic society. Later, we show different dimensions of this value and show how it can be defined.

3.1. Information diversity

A cyberbalkanized Internet or “filter bubble” is not acceptable in different models of modern democracy. Aggregative versions of democracy hold that legitimacy lies in the fair counting of votes

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