International Journal of Communication 12(2018), 548–569 1932–8036/20180005

Reuniting a Divided Public? Tracing the TTIP Debate on Twitter and in Traditional Media

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The Transatlantic Trade and Investment Partnership (TTIP) has evoked fundamental opposition in various European countries and in the United States. Citizens' initiatives and NGOs opposed the agreement, whereas many politicians from major parties supported it during the first years of negotiations. This contrast raises the question of whether the issue is being discussed differently on social media and traditional media. Using a comparative approach, we examine differences between the Twitter and traditional newspaper coverage to understand Twitter's role within the overall media ecology. We found that tweets containing #TTIP reflect more unique events than national newspapers, although Twitter's overall agenda is similar to traditional media's. Over time, the sentiment of discussion on Twitter becomes more polarized and less balanced. The shift to negative sentiment goes hand in hand with a mobilization of TTIP opponents. The case of TTIP shows that integrated large-scale content analysis of tweets and newspaper coverage is valuable for analyzing the distinct characteristics of different media.

Keywords: Twitter, TTIP, social media, content analysis, sentiment analysis, media ecology

In recent years, social media has emerged not only as a source of news but also as a competitor for traditional journalism. Media consumers combine both sources. The *Reuters Institute Digital News Report* claims that the growth of news accessed via social media is the "biggest change in digital media" (Newman, Levy, & Nielsen, 2016, p. 8). Of the users polled, 51% state that they use social media as a source of news every week. Besides YouTube and Facebook, Twitter is an important social network for news "favoured by journalists, politicians, and heavy news users in particular" (Newman et al., 2016, p.

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10). The different dynamics of social media such as Twitter and traditional media outlets challenge fundamental communication theories. From the perspective of media ecology, these dynamics challenge the assumption of linear evolution and suggest models of networked evolution (Scolari, 2013) in which a new medium tries to construct its own separate niche that is still connected to its environment. This interdependence requires a comparative approach because "the evolution of media cannot be understood outside the relationships that the media 'species' establish within an ecology" (Scolari, 2013, p. 1434). In the case of Twitter, it is important to understand "Twitter's role within the overall media ecology, before assessing what aspects of public debate it can represent, and how well it is able to do so" (Bruns & Stieglitz, 2014, p. 4). Methods need to be combined to identify the relation, the differences, and the commonalities of networked (boyd, 2010), personal (Schmidt, 2014) or affective (Papacharissi, 2014) publics and traditional publics. To do so, this article sets the digital traces of a political debate on Twitter in the context of newspaper coverage.

The course of a political discussion on social and traditional media will be examined with the Transatlantic Trade and Investment Partnership (TTIP) as a case study. TTIP is particularly appropriate because the issue is restricted to a distinct time frame and not a universal, latent, or cyclical subject of discussion. In addition, TTIP was seen as a communication challenge by the European Commission (2013): The leaked strategy paper *Issues Paper Communicating on TTIP* revealed how alarmed the communication strategists were at the end of 2013 by the "unprecedented level of public and media interest" (para. 2) that would require a special social media strategy. Hence, the debate around TTIP might be a discourse in which social media play a special role that helps us to understand their characteristics.

Background

The Transatlantic Trade and Investment Partnership

TTIP is a trade and investment agreement between the United States and the European Union that has been on the political agenda since 2013. The U.S. government emphasizes that TTIP "is an ambitious, comprehensive, and high-standard trade and investment agreement" that "will help unlock opportunity for American families, workers, businesses, farmers and ranchers through increased access to European markets for Made-in-America goods and services" (Office of the U.S. Trade Representative, 2016, para. 1). The European Commission stresses that the aim of TTIP is to "help people and businesses large and small, by: opening up the U.S. to EU firms, helping cut red tape that firms face when exporting, setting new rules to make it easier and fairer to export, import and invest overseas" (European Commission Directorate-General for Trade, 2015, para. 2). Since the beginning of the negotiations, TTIP has been controversial. In the EU, approval of TTIP has decreased continuously over the last years. In spring 2016, Eurobarometer data showed that 51% of Europeans supported it (European Commission, 2016), although opinions differ considerably in the various countries: Whereas in Lithuania and the United Kingdom the majority supports TTIP (77% and 64%, respectively), at the other end of the scale, most Austrians and Germans oppose it (70% and 59%, respectively). A representative population survey of February 2016 revealed that more Americans were opposed to TTIP than in favor of it (Bluth, 2016).

Arguments often brought forward against the deal are threats to food safety, data protection, and the environment, for example, because of fracking, the investor-state dispute settlement (ISDS), and the restriction of public services such as the United Kingdom's National Health Service (NHS; European Economic and Social Committee, 2016). Furthermore, opponents attack TTIP negotiations as undemocratic and lacking transparency. An agreement has not been reached to date.

Other transnational political deals that have been hotly debated in recent years include the Stop Online Piracy Act (SOPA) and the Anti-Counterfeiting Trade Agreement (ACTA). Focusing on the ways that discourse connected online activism, conventional activism, and mass media coverage in the opposition to SOPA and ACTA, Powell (2016) highlighted "the continuing role for the popular press in developing and carrying discourses, in dialectic with social media" (p. 250). Tonndorf (2015) analyzed German newspaper and online coverage of ACTA and found "that opponents of ACTA succeeded to dominate the press coverage" (p. 220). She had already identified parallels between ACTA and TTIP, but was skeptical whether activists would be able to gain broad visibility for TTIP in the media.

Twitter as a Research Field

Since its inception in 2006, Twitter has evoked considerable interest among communication researchers. One reason for this might be that tweets can be collected through the application programming interface (API) as corpora of particular hashtags. It is the hashtag and the "close monitoring of trends on Twitter which makes Twitter so powerful as a newsgathering tool but also as a way to construct a communicative space" (Cammaerts & Couldry, 2016, p. 335). Twitter facilitates easy analysis of ad hoc thematic publics on social media. However, it is important to note that a hashtag text collection does not represent a topic in its entirety. Hwang (2009) found that less than 60% of the tweets about the 2009 Iranian election used "#iranelection." Furthermore, Twitter does not allow scientists access to all tweets, especially retroactively. This impacts the research questions that can be studied, making it difficult to address unforeseen events or long-lasting issues like the debate around TTIP. "The API," Richard Rogers (2017) claims, "appears to have shaped social media studies beyond its selective availability of data" (para. 47).

Researchers must be aware that the nature of data access may lead to a bias in perspective on certain issues. In particular, analysis of topics developing in the social media sphere—in the blind spot of the traditional mass media—is probably underrepresented in research because of access limitations. Twitter is used "as an emergency communication channel in times of disasters and other major events as well as an event-following and aid machine for revolution" (Rogers, 2013, p. 363). Cammaerts and Couldry (2016) state that aside from moments of breaking news, there are no studies of "examples of sustained collaborations across social media to shift journalistic agendas and the norms of journalistic practice" (p. 338). This could create the impression that within the media ecology, Twitter has the function of an extended forum, where users merely comment "on the performance of mainstream media and politicians rather than engaging in direct political discussion" (Burgess & Bruns, 2012, p. 384).

In addition, scholars discuss what Twitter data actually represent. McCombs, Shaw, and Weaver (2014) point out that analyzing Twitter does not mean analyzing the Internet issue agenda or a complete

portrait of public opinion. Bruns and Stieglitz (2014) state that patterns of societal activity observed through the lens of Twitter are dependent on certain variables and must therefore be understood anew in every case. Further difficulties inherent in Twitter research are reproducibility and validity of research (see also the Data Collection section). Scientists proposing solutions for methodical problems with Twitter include Bruns (2013), Bruns and Stieglitz (2013), Gaffney and Puschmann (2014), and Puschmann and Burgess (2014).

Actors on Twitter

Various groups have engaged in the TTIP discourse—in our analysis we focused on three of them: politicians, journalists, and activists. Twitter is deemed important for public opinion building because politicians use it for statements and campaigning, especially during election periods (Nuernbergk & Conrad, 2016; Skogerbø & Krumsvik, 2015). Their tweets are also used in traditional media. Broersma and Graham (2012) found that in the 2010 British and Dutch elections, "almost a quarter of the British and nearly half of the Dutch candidates shared their thoughts, visions, and experiences on Twitter. Subsequently, these tweets were increasingly quoted in newspaper coverage" (p. 403). Dohle and Bernhard (2014) analyzed the increased use of Twitter by German members of parliament from 2012 to 2013. Golbeck, Grimes, and Rogers (2010) found that members of the U.S. Congress primarily use Twitter to disperse information and report on their daily activities. This one-way mode of communication has been confirmed by various studies, as Jungherr (2014) summarized in a metastudy.

Canter (2015) states that journalists use Twitter in particular for "newsgathering, live reporting and incremental journalism" (p. 904). In other words, they are using the platform, above all, as a way to distribute news about ongoing events and as a tool for live coverage and breaking news. Russell (2015) compared the Twitter usage of different types of journalists and found that business journalists are particularly infrequent Twitter users, less active than public affairs and sports journalists. Hermida (2014) stressed the active role that some journalists play on social media, acting as "pivotal node(s)" (p. 369). Other work examining Twitter as a source for media coverage found clear evidence that Twitter was influencing journalists' decisions (Skogerbø, Bruns, Quodling, & Ingebretsen, 2016; Wallsten, 2015). Wallsten and Skogerbø et al. analyzed intermedia effects by tracking citations of tweets in multiple newspapers. Correspondingly, a 2011 survey of 500 journalists in 15 countries found that almost half used Twitter to source angles for stories (Oriella PR Network, 2011). Accordingly, Paulussen and Harder (2014) argue that "Twitter has the capacity to increase the diversity of voices in the news by including both unknown and well-known sources that are not available—or at least not easily accessible—other than on social media" (p. 549).

Another group that engages in the Twitter discourse is activists. Drawing on an analysis of tweets about Occupy Wall Street in 2011, Tremayne (2014) states that the new dimension of social media–based protest lies in the ability to connect "people by ideas, people who might have little else in common" (p. 124). Analyzing the Twitter communication of protest movements in Spain, Greece, and the United States, Theocharis, Lowe, van Deth, and García-Albacete (2015) found that "although Twitter was used significantly for political discussion and to communicate protest information, calls for participation were not predominant" (p. 202). Bastos, Puschmann, and Travitzki (2013) found that political campaigns are

driven by "highly-active, politically engaged users that tweet across different hashtags and are immune to language barriers" (p. 168). Accordingly, only these kinds of activism-related hashtags or information streams could overcome language barriers on Twitter.

Comparing Twitter and Traditional Media

Although Twitter research has extensively studied the Twittersphere itself, it is short on insights into characteristics distinguishing Twitter from traditional media and remains mostly platform-centric. Among the few studies employing a comparative approach is that of Petrovic et al. (2013), which compared Twitter and newswire reporting as a source of real-time news. Their results indicate that Twitter reports the "same events as newswire providers, in addition to a long tail of minor events ignored by mainstream media" (p. 1). The authors found that neither stream leads the other when dealing with major news events. However, Hermida (2010) emphasizes the sensitivity of Twitter as an "awareness system" (p. 301) whose value lies less in the contents of single tweets than in the big picture created by all tweets over time.

Watson (2016) considered whether Twitter could be regarded as an alternative medium producing an alternative discourse to mainstream media. Examining the coverage of the 2010 BP oil spill, she found that individual journalists and Twitter users "did not differ in their attitudes toward the oil industry, or their coverage of the BP oil spill" (p. 666). Poell and Borra (2012) came to a similar conclusion analyzing tweets from the 2010 Toronto G20 summit: Twitter streams resembled journalistic practices, such as focusing on police activities rather than the causes of protest. Zhao et al. (2011) compared the content of Twitter with *The New York Times* using latent Dirichlet allocation (LDA), an unsupervised topic model, and confirmed Watson's result that Twitter cannot be regarded as an alternative medium because Twitter and traditional news media cover a similar range of topic categories. During the Egyptian uprising of 2011, Papacharissi and de Fatima Oliveira (2012) also established that the types of events covered and the tone of reporting on Twitter reflected the news values of traditional media. Moreover, they identified the characteristic news values on Twitter as instantaneity, solidarity, and ambience (Papacharissi & de Fatima Oliveira, 2012), coining the term "affective news streams" to explain "how news is collaboratively constructed out of subjective experience, opinion, and emotion within an ambient news environment" (p. 274). Furthermore, Papacharissi (2014) stresses that affective public formations on Twitter are "mobilized and connected or disconnected through expressions of sentiment" (p. 125) and that "digital structures of expression and connection are overwhelmingly characterized by affect" (p. 8). According to Papacharissi (2014), this activating momentum combined with the "additive architecture of platforms like Twitter" make discourses into "organically developed narratives of a granular texture" (p. 131). This process could also be described as collaborative framing through an interaction of groups in an "organic, ad hoc manner" (Meraz and Papacharissi, 2013, p. 159).

Research Approach and Method

Research Questions

Following from previous studies on agreements, we wanted to examine whether the opponents succeeded in dominating the TTIP discourse on Twitter or in newspapers. Based on the observation that previous Twitter research has neglected discourses that first gain momentum on Twitter, we sought to clarify whether TTIP is such a discourse and, if so, to what extent Twitter activity precedes traditional media activity. Drawing on actor-centered Twitter research, we asked whether politicians become involved and, if so, in a discursive or a broadcast mode; whether journalists play an active role in the discourse; and whether activists with various agendas contribute. At a further comparative level, we analyzed the visibility of the groups of actors on Twitter and in newspapers. Based on previous comparative research, we asked whether Twitter is more sensitive and reflects more events associated with TTIP, whether Twitter activity mirrors similar news values to those in the traditional media, or whether there are signs of collaborative framing dynamics on Twitter. We also investigated possible mutual interferences. Using an analysis of sentiment, we wanted to find out whether increased expressions of sentiment mobilize discourse participants on Twitter and whether shifts in sentiment occur earlier in one of the two media.

Metrics

Our method sought to compare the ad hoc public (Bruns & Burgess, 2011) that evolved around #TTIP and the traditional public that follows newspaper coverage. We therefore adapted the metrics that Bruns and Stieglitz (2013) proposed to compare different sets of tweets in a new cross-media approach. They distinguish among three major research fields: users and groups of users, patterns of time series, and metrics that combine these aspects. Our analysis used the metrics of activity (counting tweets per user), visibility (counting @ mentions per user), and influence (counting retweets). Bruns and Stieglitz assign the last item to the category of visibility. We also differentiated the user groups according to the 90-9-1 rule. For our analysis of the TTIP debate, we included the group of 10 top users.

We identified actors that are visible with real names and not with Twitter handles using the Stanford Named Entity Recognizer (NER; Finkel, Grenager, & Manning, 2005). To determine the most visible actors, we also applied the same text-mining technique to the newspaper articles. For German texts, we used the classifier HGC-175M, which was developed for newspaper texts (Faruqui & Padó, 2010).

For the purposes of temporal analysis, we analyzed each group's activity over time and the total number of unique users active per week. To determine whether the discussion is dominated by a small traditional group or larger groups of users, we analyzed the share of tweets assigned to the different user groups (most active 90%, 9%, and 1%, or top 10, of most active users) on a weekly basis.

To understand overall activity in the debate, we studied the volume of tweets, retweets, and posted hashtags over time. We also analyzed the most prominent secondary hashtags, those apart from #TTIP (top hashtags), and the most cited words (top words) using standard frequency analysis.

We subsequently conducted frequency analysis on newspaper articles using the software R, Version 3.3.1 (R Core Team, 2016) and the top.topic.words function of its package lda (Chang, 2015). For every frequency analysis, we preprocessed the data, eliminating stop words.[1]

As an additional metric, Bruns and Stieglitz (2013) propose the evaluation of hyperlinks in tweets. We accordingly analyzed the frequency of URL tweets and the list of sites that they direct to gain insights into possible intermedia effects. We also analyzed @ mentions of newspaper accounts. In the newspaper articles, Twitter citations were examined for mutual influence.

Method Used to Determine the Sentiment of Discussion

Sentiment analysis of Twitter has proven to be a difficult coding task with results that often lack the necessary validity (Diakopoulos & Shamma, 2010). The quality of results largely depends on the characteristics of the analyzed text (González-Bailón & Paltoglou, 2015). A polarized discourse seems to be a comparatively promising basis for gaining interpretable insights. In this context, it should be noted that tweets "tend to be more negative than average for the topic" (Thelwall, Buckley, & Paltoglou, 2011, p. 413) and that Twitter is a medium "most intensively used to voice political opposition and not support" (Jungherr, 2015, p. 208).

To determine the overall sentiment of the TTIP discussion, two human coders categorized the 50 most shared tweets per month (starting February 2013, ending December 2015), totaling 1,749 tweets (one Spanish tweet was excluded). Poell and Borra (2012) have pointed out that retweets are particularly useful for analyzing Twitter data because they reflect the digital selection principles of the platform: The most relevant tweets are those that are most retweeted. Coding instructions were as follows: A tweet containing #TTIP could be classified as positive, negative, or neutral toward the trade agreement. Intercoder reliability was calculated using the R package irr (Gamer, Lemon, & Puspendra Singh, 2012), resulting in Krippendorff's alpha for ordinal data being .806. This output results from 1,525 matches (108 consensual positive, 218 neutral, 1,199 negative) and 224 nonmatches (of which 15 were positive or negative nonmatches). For further analysis, only tweets with consistent sentiment were used.

To determine the sentiment of TTIP discussion in traditional media, all articles were coded by a human coder following the same instructions as the tweets. In addition, 100 random articles were categorized by another coder to test intercoder reliability, resulting in Krippendorff's alpha for ordinal data being .611. This output results from 72 matches (six consensual positive, 23 neutral, 43 negative) and 28 nonmatches (of which six were positive or negative nonmatches).

[1] We used stopword lists provided by the Snowball Stemmer Project (2016a, 2016b) in German and English.

Method: Setting Digital Traces in Context

Data Collection: Twitter

Collecting data on social media such as Twitter is an unsatisfactory process. Temporal limitations—for example, seven days of using the Twitter Search API—hinder the research of unpredictable or current events. Social media activity that occurs before a key event triggers the attention of traditional mass media cannot be measured and investigated. Another restriction is rate limits to the number of queries that can be run. The Streaming API allows requests to remain open, but, depending on the volume of potential results, may capture just a portion of the activity, at most about 1% of the complete stream.

Studies comparing various accesses to Twitter data state that the amount and sampling of data received differ in an unpredictable and nontransparent way (boyd & Crawford, 2012; Driscoll & Walker, 2014). Liang and Fu (2015) demonstrated the poor replicability of findings made in social media research because of variations in sampling strategies in multiple studies. González-Bailón, Wang, Rivero, Borge-Holthoefer, and Moreno (2014) found that sample biases are particularly relevant for the study of core-periphery dynamics. A comparison of tweets by Morstatter, Pfeffer, Liu, and Carley (2013), retrieved with Firehose API (complete stream) and Streaming API, revealed that visual inspections of both resulting graphs produce an almost identical list of events. However, comparative statements on the overall course of the Streaming API graph (e.g., the comparison of two maxima) seem difficult because Streaming tilts when Firehose spikes. This is especially true for events that attract great attention at a given moment, such as elections and catastrophes. These findings indicate that our focus on analyzing key players and local maxima in a continuous discourse could produce comparatively valid results even if they are based on sampled data.

Altogether, researchers aiming to analyze social media activity are forced to compromise. They need to accept a "margin of error in their data captures, and treat the resulting datasets as close approximations of the total amount" (Bruns & Stieglitz, 2013, p. 93).

To shed new light especially on slowly evolving topics, we chose to retrieve tweets from the outside: As the Twitter Search API delivers tweets for the previous week only, we used a Python scraper (Henrique, 2016). This scraper accesses the Twitter advanced search URL and downloads all tweets in a JSON format. Tweet personalization is disabled by restricting the search URL to "timeline?f=realtime," which returns all tweets instead of just the personalized tweets. To ensure that we would only collect public tweets, the data were retrieved without logging on to Twitter.

Compared with "the industry provided (limited) APIs, scrapers may be viewed as the less polite variant of data collection" (Weltevrede, 2016, p. 32), but in times of increasing "marginalization of critical research" (Langlois, 2015, p. 1) by privatization of social data, unconventional data gathering will be necessary to answer questions of public interest.

The downside of using the public search, as with the API, is that it remains unclear which part of the Twitter public becomes visible to the researcher. Another disadvantage is that we do not receive the

same metainformation available from the API. Consequently, we cannot evaluate every metric proposed by other Twitter researchers (Bruns & Stieglitz, 2013).

We retrieved a corpus of 254,607 tweets containing #TTIP in German and English, starting February 2013 and ending December 2015.[2]

Data Collection: Traditional Media

The newspapers analyzed are headquartered in the Western countries playing a prominent role in the debate on TTIP: the United States (*The New York Times*), the United Kingdom (*The Guardian*), and Germany (*Süddeutsche Zeitung*). All three newspapers are considered liberal, quality newspapers in their respective national public spheres.

From the full text archives from 2013 to 2015 (*The Guardian* and *The New York Times* via Nexis, *Süddeutsche Zeitung* from the publisher's archive directly), we generated subcorpora containing all elements we expected to provide insights into TTIP. *The New York Times* (*n* = 59) and *The Guardian* (*n* = 291) subcorpus includes all articles containing "TTIP" or "T.T.I.P." or "Transatlantic Trade and Investment Partnership" or "TAFTA." The *Süddeutsche Zeitung* subcorpus (*n* = 470) includes all articles containing any of these and, in addition, "Transatlantisches Freihandelsabkommen," "Transatlantischen Freihandelsabkommen," or "Transatlantischem Freihandelsabkommen." The search queries ignored upper- and lowercase.

Results

Frequency of the TTIP Debate

Until the end of 2015, the TTIP debate on Twitter was largely determined by the 11 rounds of negotiations taking place in this period. These political events explain 11 of a total of 22 local maxima.[3] Integrating context information into the analysis, it emerges that, over time, the arguments criticizing TTIP are increasingly linked to the dates of the negotiations. Gradually, the activities of TTIP opponents emerge as separately visible events on Twitter.

The first tweet about TTIP is posted on February 13, 2013. The occasion is the announcement by U.S. President Barack Obama, European Council President Herman Van Rompuy, and European Commission President Jose Manuel Barroso that negotiations on a free trade zone are being launched

[2] Because it is uncertain whether the scraper generates equal samples from different accesses, we will disclose the list of all tweet IDs from our corpus on request. We thus respect the authors' copyrights because deleted tweets cannot be retrieved using the IDs.

[3] *Local maxima* are defined as the highest number of tweets aggregated weekly compared with direct neighbors. To minimize noise, we defined furthermore a threshold for the average weekly number of tweets for each year. In our analysis of the period between February 2013 and the end of December 2015, there are 22 maxima for a total of 151 data points.

(European Commission Directorate-General for Trade, 2013a). The following peaks in activity on Twitter can be explained by political events as well: The next are a meeting of U.S. Secretary of State John Kerry with the European Commission President Manuel Barroso in late April (U.S. Department of State, 2013) and the repeated announcement of negotiations on the sidelines of the G8 Summit in mid-June (top hashtag *g8*; Delegation of the European Union to the United States, 2013). The top associated keywords tend to be generic (e.g., *trade, agreement*, *negotiations*). Top words endorsing TTIP (e.g., *investment, jobs*) can be found only in the period of the second peak. Tweets during the first round of negotiations in early July are already linked to the revelations of Edward Snowden, which were published in June 2013 (top associated word: *NSA*).

Between the first and second rounds of negotiations in mid-November (European Commission Directorate-General for Trade, 2016), two unforeseen political events mark a turning point in the TTIP debate on Twitter: the postponement of negotiations because of the U.S. government shutdown (top hashtag: *shutdown*; European Commission Directorate-General for Trade, 2013b) in early October, and the publication of NSA documents revealing the spying on Chancellor Angela Merkel's cell phone by U.S. intelligence later in the month (top hashtags: *Merkel* and *NSA*; "NSA-Überwachung," 2013).

Henceforth, the negotiating sessions are regularly associated with top hashtags (*nottip*, *stopttip*, *ACTA*, *NSA*) and top words (*fracking*, *ISDS*, *NHS*) clearly attributed to the anti-TTIP movement. After four more rounds of negotiations, a Europe-wide day of action against TTIP (top hashtag: *O11DoA*), the first genuine campaign event (O11DoA European Day of Action, 2014), takes place in October 2014. In November, EU and U.S. representatives stress their support for the agreement on the periphery of a G20 summit (top hashtag: *G20*; European Commission Directorate-General for Trade, 2014). In particular, the British prime minister's pledges to back TTIP and his statements on the NHS provoke significant controversy on Twitter (top word: *Cameron* and top hashtags: *CameronMustGo* and *NHS*).

Along with four other rounds of negotiations in 2015, two events excite attention: the demonstration under the slogan "Wir haben es satt!" ("We are fed up!") in Berlin in January (top word: *Berlin*, top hashtag: *WirHabenEsSatt*; Wir haben es satt!-Demonstration, 2015) and the heated debate in the European Parliament in June triggered by the postponement of a vote on the subject (top words: *MEPs*, *parliament*, *vote*; European Parliament, 2015). In December, the German Social Democratic Party (SPD) Congress causes a minor increase in frequency (top word and top hashtag: *SPD*) when the delegates agree on a proposal by the party leadership to endorse TTIP (SPD, 2015).

Frequency in Context

Süddeutsche Zeitung and *The Guardian* react to the same events as the Twittersphere. However, fewer events trigger reporting in *The Guardian* than in the Twittersphere. There is only limited coverage not associated with traditional political news events.

In *Süddeutsche Zeitung* and *The Guardian*, most peaks are found in the temporal context of the negotiations. The analysis of top words indicates that these events are used primarily as an occasion for listing various arguments against TTIP: For example, in *Süddeutsche Zeitung* in November 2013, top

words are *secret services*, *lobbyists*, *transparency*, *Monsanto*, *privacy*, *data protection*. Examples from *The Guardian's* top word list in September 2014 include *NHS*, *ISDS*, *threat*, and *health*.

In the second half of the TTIP news cycle, it emerges that *Süddeutsche Zeitung* and *The Guardian* start connecting other national discourses with TTIP. In Germany, *Süddeutsche Zeitung* links the rise of right-wing political movements with the TTIP debate (top words in January 2015: *Pegida*, *AFD*, *Petry*, *Henkel*). In the United Kingdom, *The Guardian* draws a line from TTIP to the Scottish Referendum (top words in October 2015: *Scotland*, *independence*, *referendum*, *vote*).

Based on the temporal distribution of articles, we conclude that there is a delay in the newspapers' response to the emerging topic of TTIP. The number of unique users and the frequency of tweets suggest that the Twitter public using #TTIP reaches a stable size in the first half of 2014, but the shift in newspaper coverage does not occur until the second half of 2014.[4] *The New York Times* coverage of TTIP is infrequent, the only notable increase can be observed in June 2015, following the fierce debate in the European Parliament.

Whereas the comparison of the individual newspapers with Twitter shows that the latter provides a more complete picture, the aggregation of newspapers reveals that the agendas have many similarities (see Figure 1).

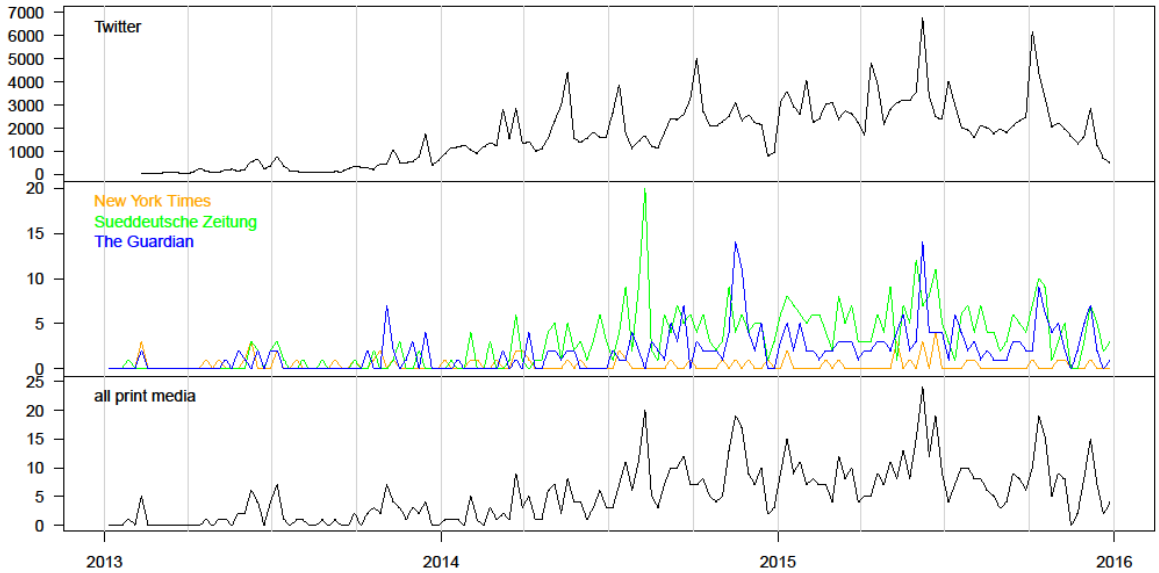

Figure 1. Weekly numbers of tweets and newspaper articles for each medium and for all print media aggregated.

[4] For the purposes of this study, *a stable size* is defined as a series of six months, the average of which is above the total average of all unique users, tweets, or articles.

Actors in the TTIP Debate: Lost Opportunities

The number of unique users in the hashtag public around TTIP increases fivefold between the end of 2013 and October 2015 (see Figure 2). At the beginning of the TTIP discourse on Twitter, a small group of users dominates the discussion. In 2013, the top 10 users (most tweets sent) send a quarter of the tweets transmitted per week. With more users engaged in the discussion in 2014, the top 10 user impact declines. But over the whole period analyzed, frequent Twitter users dominate the conversation on TTIP. This effect even increases until mid-2015. In 2013, the most frequent 1% of Twitter users sends up to 12% of the tweets per week. In 2014, it is more than 15%, and in 2015, nearly 20%. The 9% group of most active Twitter users post between 20% and 45% of the tweets per week. For this group also, the effect intensifies over time.

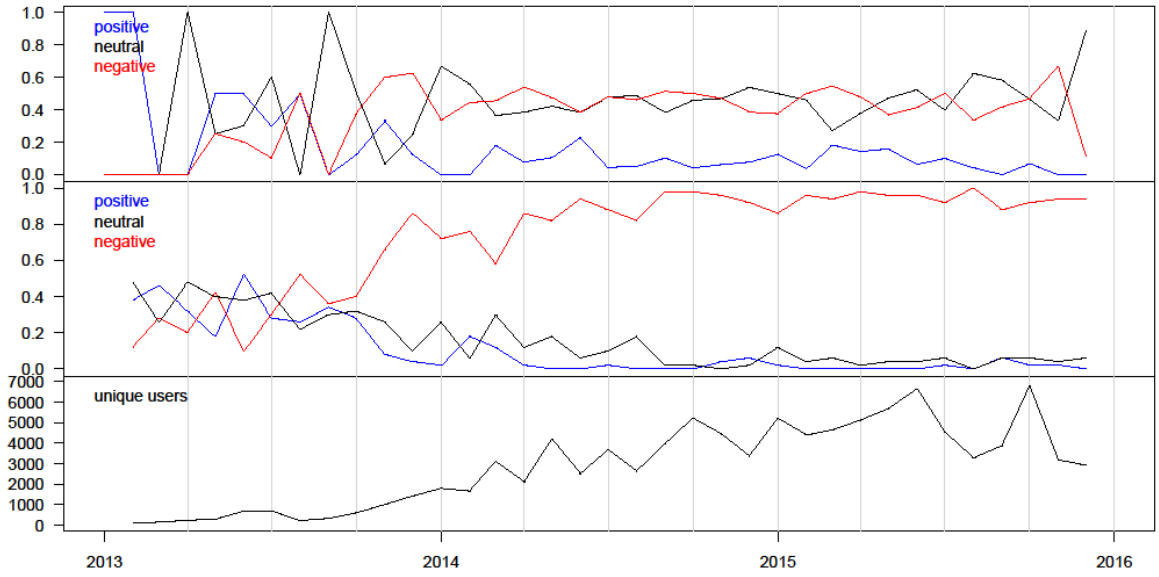

Figure 2. The top graph shows the sentiment of newspaper reporting, the middle graph shows the sentiment of the tweets containing #TTIP (monthly share), and the bottom graph shows the increase of total unique users.

The most active Twitter user in the TTIP discussion from 2013 until 2015 is writer @glynmoody, who is also ranked in the top 10 list of most retweeted users throughout the whole period. Generally, politicians involved in the TTIP negotiation process, such as Barack Obama, David Cameron, and, in 2013, Manuel Barroso, are @ mentioned frequently and thus make it onto the list of the top 10 most visible accounts. The NER analysis confirms the focus on political actors. Representatives of the European Union and the United States are most visible, along with national representatives of Germany and the United Kingdom. But they usually do not appear on the most active or most retweeted list; 2013 is an exception when @eu_commission, @eucopresident, and the spokesperson of the EU, Trade Commissioner Karel De Gucht, @eujohnclancy, are among the most retweeted. Regarding the organizations involved, evidence

shows that some actors grasp the opportunity to embark on the discussion more readily than others. The @EU_TTIP_Team misses the chance to access the social media discussion on Twitter at an early stage. Many arguments against TTIP are already being discussed when @EU_TTIP_Team is launched in June 2013. Nevertheless, @EU_TTIP_Team does make it into the most active top 10 in 2013 and 2014 (first place), but is superseded in 2015 (to third place) when Commissioner Malmström tops the list. In 2015, @mehr_demokratie ("more democracy"), @pcgtw Global Trade Watch, and @ttipbeware, which are on the top 10 list, show increasing TTIP opposition to @EU_TTIP_Team.

A closer look at the Twitter habits of the most visible politicians reveals that in the majority of cases, they use it as a broadcast channel: announcing new rounds of negotiations, summarizing discussion results, expressing their confidence in or the importance of the agreement. They rarely use Twitter as a tool for discussion or to respond to opponents. When addressing counterarguments, they remain very general: not @ mentioning or citing or retweeting criticism, but mostly referring to other politicians or journalists that interviewed them.

Over time, @EU_TTIP_Team loses its influence on the debate, becoming relatively passive, whereas other actors opposing TTIP gain power. The active monthly users include activist groups and nongovernment organizations from various backgrounds, such as Attac, Foodwatch, Greenpeace, People's NHS, WikiLeaks, and LobbyControl.

Few journalists engage in the discourse around TTIP. Among the active users on a monthly basis are three journalists: the already mentioned Glyn Moody, who is mainly a technology blogger and book author, only occasionally writing for newspapers such as *The Guardian* or *Daily Telegraph*; Marianne Falck, a freelance journalist working for German public broadcasting mainly producing investigative documentaries about food safety; and Shawn Donnan, a *Financial Times* journalist specializing in world trade.

Actors in Context

Most of the actors mentioned in the newspapers analyzed are politicians: In *Süddeutsche Zeitung*, cabinet members (*Merkel*, *Gabriel*) and representatives of the EU (*Malmström*, *De Gucht*, *Juncker*) dominate the frequency tables. Mirroring the political situation in the German parliament, where the government is a coalition of the major parties, there are no opposition politicians among the most frequently mentioned. The only nonpolitical actors appearing on the top 10 list are Edward Snowden and Dieter Zetsche, CEO of Daimler AG, who argued for the agreement in the German public arena.

In *The Guardian*, the number of cabinet members and opposition politicians mentioned is balanced: the Conservatives David Cameron and Boris Johnson and the Labour members Ed Miliband and Jeremy Corbyn are among the politicians reported on most frequently. Because no European players are ranked among the top 10, we conclude that *The Guardian* reports on the TTIP debate primarily from a national perspective. The traditionally strong relations with the United States are reflected in the visibility of President Obama, ranked third in the list of the most frequently mentioned individuals.

In *The New York Times*, mentions of EU (*De Gucht*, *Juncker*, *Malmström*), U.S. (*Obama*, *Froman*, *Mullaney*), and foreign politicians (*Merkel*, *Cameron*, *Hollande*) are relatively balanced.

Mutual References

To examine intermedia agenda-setting effects, we studied whether newspaper articles picked up on the discussion of TTIP on Twitter. We searched the three papers for "twit" or "tweet" and found that only a fraction of articles reference Twitter. But some articles mention the Twitter debate: *Süddeutsche Zeitung* reports on the changing style of demonstrations over the last decades, giving TTIP opponents as an example, and both *The New York Times* and *The Guardian* mention the Twitter debate about trade agreements expressed by hashtags such as #NotAnotherNAFTA and #justdontdoit.

Analyzing the tweets containing hyperlinks, we found that the references to articles on sueddeutsche.de and theguardian.com were the most numerous, outnumbered only by the video platform youtube.com. Among other German (spiegel.de) and British (independent.co.uk) media, we found many activists' websites, including corporateeurope.org, blog.campact.de, and stop-ttip.org. Compared with the coming years, the proportion of traditional media among the links in 2013 was low and increased subsequently. By contrast, the analysis of overall link frequency revealed that the share of tweets containing URLs decreased over time. In 2013, up to 20% of tweets contain URLs, whereas in 2015, the peak is 15%.

Sentiment of TTIP Debate: The Turning Point

Aiming to grasp the overall sentiment of debate on Twitter and in traditional media, we classified 1,749 tweets containing #TTIP into the categories endorsing it, opposing it, or with uncommitted opinions. The results show that negative tweets dominate from the second half of 2013 onward. Furthermore, the classification polarizes over time: The number of negative tweets increases significantly, and fewer positive and neutral tweets occur (see Figure 2).

Sentiment in Context

The sentiment of all newspapers combined changes to negative during the time span under scrutiny. The shift occurs at roughly the same time as it does in the Twittersphere. But in contrast to the tweets, a considerable number of positive articles and significantly more neutral articles are published during all periods studied. The sentiment of discussion on Twitter becomes more polarized and less balanced over time.

Discussion

Our analysis confirmed the findings of previous studies that Twitter reacts to similar events as traditional media (Petrovic et al., 2013; Watson, 2016; Zhao et al., 2011). However, the tweets containing #TTIP reflect more events than the coverage of *The Guardian* and *The New York Times*. The hashtag public reflects a similar count of events as *Süddeutsche Zeitung*. Tweets containing #TTIP do not mirror a

national agenda, affirming studies on the international character of discourse on Twitter driven by a highly active spearhead of activists (Bastos et al., 2013), whereas newspapers reflect their national perspectives and link TTIP to other country-specific discourses.

The analysis of URL-containing tweets shows that during the rarely observed initial phase of the discourse, Twitter activity does not depend on traditional media. As with previous research findings (Tonndorf, 2015; Tremayne, 2014), in the following phase, counterarguments begin to dominate the Twitter debate, compiled by different groups with entirely different agendas. Regarding the activity of politicians and journalists, it is not surprising that groups of activists determine the Twitter dynamics: As other studies have shown (Jungherr, 2014), politicians use Twitter mainly as a broadcast channel. Journalists who regularly publish on TTIP in traditional media are passive viewers on Twitter, if they use it at all. The notion of the journalist who plays a pivotal role in social media (Hermida, 2014) can only be confirmed for highly specialized journalists such as tech blogger Glen Moody. In the TTIP debate, newspaper journalists emerge as rather passive actors who do not use Twitter to engage in discussions (Canter, 2015; Russell, 2015). Regarding the visibility of actors, the #TTIP public has a similar focus on political elites as do newspapers.

The mobilization of opponents goes hand in hand with the shift to negative sentiment, affirming Papacharissi's (2014) description of affective publics that become mobilized and connected through expressions of sentiment (see Figure 2). Furthermore, the sentiment shift on Twitter is more polarized than in traditional media. After a period of time, positive and neutral tweets occur only very rarely, whereas at the same juncture, newspapers still publish neutral and balanced articles.

The results of the sentiment analysis reflect not the results of opinion polls, but the overall negative tendency evident in the surveys. The results, which mirror amplified negativity compared with the polls, affirm previous findings about the negativity of Twitter (Jungherr, 2015; Thelwall et al., 2011).

To summarize the findings regarding Bruns and Stieglitz's (2014) and Scolari's (2013) calls to understand the role of Twitter in media ecology through its relationships to other media, our results support Hermida's (2010) finding that Twitter is an awareness system that reacts earlier to topics that attract only minimal attention from traditional media in the initial phase. Our results highlight the quality of Twitter's "additive architecture" (Papacharissi, 2014). It reflects a continuity of discourse by connecting various events associated with a certain topic over a long period of time. Because of the absence of political elites and media representatives who use dialogic communication, thematically bundled ad hoc publics form mainly around bottom-up groups such as NGOs. Thanks to the heterogeneity of these groups, a joint collection of arguments from various areas emerges, which could be regarded as a framing process on an aggregated level (Meraz & Papacharissi, 2013). One important intermedia dynamic between Twitter and traditional media could be that journalists are influenced by these prenegotiated frames, overemphasizing the opponents' side.

Looking to further research, our results should be verified by broadening the data set. The newspapers analyzed are only a fraction of the traditional news sources available in their respective public spheres, and they have a left-wing bias. The Twitter data set should be supplemented by searching for

other TTIP-related hashtags, such as #NotAnotherNAFTA. Furthermore, a comparative analysis of additional countries would be desirable. It is important to mention that the media-ecological perspective on Twitter is simplified for practical reasons: We accumulated tweets and acted as if this aggregate is a medium that can be compared with other media units. Thus, we took a bird's-eye view that is not achievable for a user in an individualized communication space. Further investigations should take into account that individualized usage is more common on Twitter than it is in traditional media.

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