Is Twitter the New Coffee House?

The Contribution of the European Political Twittersphere to the European Public Sphere and European Demos.

Javier Ruiz-Soler

Thesis submitted for assessment with a view to
obtaining the degree of Doctor of Political and Social Sciences
of the European University Institute

Florence, 12 June 2019

European University Institute
Department of Political and Social Sciences

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Researcher declaration to accompany the submission of written work
(Department of Political and Social Science, Ph.D. Programme)

I, Javier Ruiz Soler certify that I am the author of the work *Is Twitter the new coffee house? The contribution of the European Political Twittersphere to a transnational European Public Sphere and European demos,* I have presented for examination for the Ph.D. at the European University Institute. I also certify that this is solely my own original work, other than where I have clearly indicated, in this declaration and in the thesis that it is the work of others.

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I declare that this work consists of 61.800 words.

Statement of inclusion of previous work:

I confirm that chapter 2 draws upon an earlier article I published in *Partecipazione e Conflitto* Special issue: From Big Data in Politics to the Politics of Big Data, ed. A. Mattoni and Alicia P, 11(2): 2018.

I confirm that chapter 4 was jointly co-authored with Professor Luigi Curini and Assistant Professor Andrea Ceron and I contributed more than 60% of the work.

Statement of language correction:

This thesis has been corrected for linguistic and stylistic errors. I certify that I have checked and approved all language corrections, and that these have not affected the content of this work.

Signature and Date:

15/05/2019

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Acknowledgments

Many people have helped me along the way to complete this endeavor. Their support and assistance, whether big or small, has been invaluable.

I would like to first thank my supervisor, Alexander Trechsel. He has always believed in me, even in times when I doubted myself. Throughout the program, he has provided constant support and guidance, not only academic but also personal.

During my time in Florence, Philadelphia and Milan, I had the tremendous privilege to meet with other scholars. They have generously offered their time and constructive feedback along the way. In particular Sandra Gonzalez-Bailón and the DIMENET group at the University of Pennsylvania. Mauro Barisione, Luigi Curini and Andrea Ceron at the POMLAB in Milan. Last, but not least I would like to thank my committee members Giovanni Sartor, Luigi Curini and Anamaria Dutceac Segesten for their review and invaluable comments on my thesis.

Numerous individuals have reviewed portions of my work and provided constructive feedback. I am grateful to Maggie Lee, Nicola Owtram, and Pablo Barberá for their contribution to my work.

Between Milan and Florence, Matteo Colombo offered his help to put on to paper the ideas I had in mind. I thank him as well for sharing and fighting/debating with me our common worries and fears with the Twitter data and the 'R and the quantitative burden'.

I also have to mention *Captain Europe,* Peter Dahlgren and Asimina Michailidou. Without their help at the very beginning, I do not think I would have been admitted to the PhD program.

I was fortunate enough to have met some really good friends during these five years. I am especially grateful to the *Negroni Society gang* – Andris, Ieva, Tobias and Lea for the fun times we spent together, common support with our worries and fears, and also sharing our dreams. Having met them is one of the best things that happened in my PhD journey. I will truly treasure our friendship forever.

I also would like to thank two very special persons for their support and encouragement: Mars, and Jackson. They have always been amazing, despite at times I

was grumpier than usual because of my work load. You are and will always be in my heart.

Finally, and most importantly, I would like to thank my parents, brother and sister-in-law, my cousin Gessamí and her husband Josep, and my uncle Pep for their constant and unconditional support, material and motivational. They never exactly understood what I was doing, and why I was so busy all the time, but they always believed in me. I hope they are proud of my achievements. This dissertation is dedicated to them.

Abstract

A Public Sphere and a *demos* are intrinsic key elements of any democratic society. The literature has pointed out that social media platforms can play an important role in developing direct interactions between users and creating a sense of community. Can Twitter contribute to the emergence of a transnational networked European Public Sphere and European demos? This thesis examines the contribution of the European Political Twittersphere to this question.

I divide the question into three articles. In each I use a different theoretical framework and methodological approach to two datasets of two issue publics (the Schengen agreement and the transatlantic trade partnership, TTIP) collected through the public Twitter Streaming API from August 2016 to April 2017. In the first article I explore the actor level of the networks created from the Twitter data. I investigate whether these Twitter networks constitute networked publics where non-elite actors receive attention and play an important role by the number of mentions and retweets. In the second article I explore the question of the constitution of European transnational networks. To do so, I geolocate the accounts involved in the two networks to identify the type of interactions the users establish, whether national or transnational. In the third article I analyse the content of these networks by extracting what sentiments the users express for the topics, and whether they see themselves and the topics as national or European.

The three articles capture three features of the European Political Twittersphere. First, the results indicate the presence of transnational European networks. Second, built from the bottom-up where non-elite actors receive most of the attention. And third, composed of a multilingual *demoi* where the users see themselves and the topics as European. However, although these mapped Twitter networks contribute to some extent to transnational interaction and a sense of community, the deliberative quality of these networks is low.

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AI Artificial Intelligence

API Application Programming Interface

CET Central European Time

EPS European Public Sphere

EPT European Political Twittersphere

EU European Union

FR Fruchterman Reingold

ISA Integrated Sentiment Analysis

MAE Mean Absolute Error

RT Retweet

SA Sentiment Analysis

SD Standard Deviation

SE Standard Error

SNA Social Network Analysis

TCAT Twitter Capture and Analysis Toolkit

TTIP Transatlantic Trade and Investment Partnership

WAT West Africa Time

1. Introduction

1.1. Research Rationale

The European Union (EU) is a unique and remarkable political project that is in a continual process of construction and development. It has won acclaim and been awarded the Nobel peace prize because for over six decades, it has contributed to the advancement of peace and reconciliation, democracy, and human rights in Europe, accelerating European economies to unprecedented levels.[1]

Despite the EU's significant contributions, the economic crisis of 2008–2012, the effects of which continue to linger, has significantly affected the lives of European citizens. I became aware of the existence of communication gaps among European institutions that were unable to communicate effectively to make themselves widely understood during this period. In particular, the EU emerged as the perfect scapegoat for all woes, including those at national levels. The initiatives introduced by various European institutions failed or were too abstract to be grasped within this vast and highly complex political, economic, and cultural project.

Indeed, the democratic credentials of the EU have been questioned for decades, but perhaps never more acutely than during the current era of Brexit and the rise of nationalism and populism across Europe.[2] The literature indicates that a European public sphere (EPS) would provide a necessary corrective to the EU's democratic deficit. Evidently, this European project cannot be sustained if it is completely disconnected from people. It simply cannot survive. Thus, the 'communication gap' has been always been a matter of concern and centres on the following question: How can the involvement of the people of Europe, whose languages, cultures, and national (or even regional) interests differ, be fostered within this project?

Several scholars within different disciplines have devoted special attention to the constitution of an EPS (Trenz and Michailidou 2014; Nitoiu 2013; Risse 2015; Pérez

[1] Some scholars contend that despite the fact that the EU has led to improved living conditions at a European scale, it has simultaneously impacted negatively on the national economies of some member states (Varoufakis 2016a). At the same time, others argue that EU membership has many benefits, but economic growth is not one of them (Barnebeck Andersen, Barslund and Vanhuysse 2019).

[2] These phenomena have been particularly evident in France, the Netherlands, Hungary, and Italy.

2013). Within this interdisciplinary research field, media and communications scholars have focused on the performance of the mass media, sociologists have focused on how inclusiveness is fostered within the public sphere, and political scientists have focused on public forums for deliberation and communication exchange (Aslama and Erikson 2009). Whereas many researchers have attempted to define and identify a public sphere within contemporary Europe, in most cases, their investigations have not been fruitful, leading to the proclamation that such a thing does not and will never exist. However, social media remains a gap in this research. Adopting a political communication perspective, the present thesis is aimed at answering the following question: *can Twitter contribute to the emergence of a transnational networked European Public Sphere and a European demos?* To answer this question, I identified three key characteristics of Twitter derived from the literature on social media and politics that could facilitate the emergence of an EPS. Each of the following three chapters is devoted to an investigation of one of these features.

This PhD is a comprehensive study of the European Political Twittersphere using innovative computational methods. This dissertation is a first deep understanding of a Twittersphere genuinely European. Previous studies of Twitterspheres have been conducted to countries, regions or topics. However the aim here is to frame and anazlyse the current European Political Twittersphere for the first time.

In fact, this dissertation has the aim to complement the literature of the EPS in one of the most important subfields of the last years: social media and politics. I have attempted to advance understanding on the current situation and the emergence of an EPS, focused on a social media platform.

All in all, this dissertation aims for a better understanding of how Twitter users interact on issues of European relevance. This research, answering the research question, is important for elucidating current practices of online engagement with European politics. Acquiring this understanding is all the more important given the reported gap between European institutions and citizens in the current rise of nationalism and populism across Europe.

1.2. The Status of the European Public Sphere

The concept of an EPS is derived from the original notion of a public sphere developed by Habermas (Habermas 2004; Dahlberg 2004). A public sphere is a social space that is generated through the deliberations of members of the public regarding common concerns. It comprises three elements: participants (actors), the debate (topics and issues) and a public space (e.g., newspapers, cafeteria, and radio (Conrad 2010). The EPS incorporates these three intrinsic elements at the scale of Europe (Eriksen 2005). The concept of an EPS first began to assume prominence in connection with the Maastricht Treaty of 1992 (Nitoiu 2013). This landmark treaty introduced the concept of 'European citizenship,' with its own set of rights and duties, over and above national citizenship and highlighted the need for a public space where citizens of Europe could deliberate on common European concerns (Tarta 2009).

In the last two decades, efforts have been underway to construct an EPS, with the aim of promoting interactions and a sense of belonging to a common European community among citizens. The existence of this EPS has been widely debated (see, for example, Risse 2015; Trenz and Michailidou 2014; De Beus 2010). Various scholars have argued that it is not possible to develop an EPS because of differences in languages and existing socio-cultural barriers within Europe. Moreover, EU issues are inevitably viewed through the lens of national political cultures, as applied by the media within each country, resulting in the portrayal of the public sphere as a national domain (Kaitatzi-Whitlock 2007; Bohman 2004; Pérez 2013). For other scholars, different but overlapping EPSs simultaneously exist at varying levels: local, regional, and European (De Wilde, Trenz, and Michailidou 2011; Koopmans and Erbe 2004; Sicakkan 2012). Finally, some scholars have argued that at most, what can be discerned is a Europeanization of national public spheres rather than a truly transnational EPS (Koopmans and Statham 2010).

What is clear from the above discussion is that until citizens from different countries can talk to and interact with each other, the EU cannot be authentically democratic. This point applies not only from a vertical standpoint (an ascending hierarchy extending from citizens to higher-level European institutions) but also from a horizontal standpoint (communication among citizens across national borders). One of the underlying reasons

behind the considerable distance that separates European citizens and EU institutions is the lack of a common public space where the European *demos* can interact and deliberate on common concerns relating to European affairs (Pérez 2013; Hänska and Bauchowitz 2015). The existence of an EPS and a European *demos* are of critical importance because in the absence of an informed citizenry and a sense of community, a society and a political system cannot be completely democratic (Bärenreuter et al. 2008; Giorgi, Homeyer, and Parsons 2006). Despite the fact that the EU has been reorganized several times, with the aim of promoting greater transparency and efficiency for ordinary citizens, efforts to develop a European *demos* and an EPS that transcends national systems have failed. In fact, a public sphere is not only required for establishing a completely democratic EU but it is also a key element for the development, through communication, of a European *demos*, namely a shared sense of belonging to a European community (Medrano 2009).

1.3. New Possibilities: Social Media and the Rise of Twitter

Studies on the EPS have traditionally focused on mass media. More recently, the Internet has been investigated as a tool for developing or contributing to the emergence of the EPS. However, social media is a neglected topic within past studies. In fact, given their characteristic features of ease of access, global reach, and two-way communication, social media can potentially contribute to the development of a transnational EPS and a European *demos*. As a communication tool, social media can empower citizens to interact directly with each other within spaces of mutual interest (Papanagnou 2013; Papacharissi 2009; Friedland, Hove, and Rojas 2006).

Empirical studies on online data and platforms have, however, generally adopted a top-down approach within analyses of different online mass media or communication tools used in European institutions, such as the Facebook page of the European Parliament (Vesnic-Alujevic 2011). This approach is problematic because a comprehensive examination of the EPS requires the inclusion of civil society. Consequently, a number of researchers have suggested that an alternative bottom-up approach is necessary (Bennett, Lang, and Seberberg 2015).

My aim in this study was to identify emerging public spheres that are organized from a bottom-up perspective. This research extends beyond political institutions and the media to examine how individual users can contribute substantially to the foundation of an EPS and a European *demos*. In this doctoral dissertation, I postulate that Twitter is a technological tool that can encourage the direct participation of citizens at the European scale.

As noted by Splichal (2012a) and Bennett (2012), an in-depth analysis of alternative methodologies applied to less institutionalized actors is necessary. Accordingly, a study on the European Twittersphere could illuminate some of these new practices. Social media technologies associated with user-generated content and interactions can potentially be constitutive of more grounded public spheres than those generated by mass media and institutions because they are capable of transmitting information and facilitating public inputs. Therefore, European citizens' use of Twitter could, to some degree, displace or at least supplement mass-mediated communication in Europe by fostering direct connections among individuals that facilitate personalized engagement as well as interactive communication.

1.4. The Study Rationale

With the proliferation of social media, almost anyone can create content and interact on multiple platforms (Ekdale et al. 2010; Rettberg 2014). Currently, online interactions entail an ecosystem of users who interact simultaneously across several different platforms (blogs, forums, wikis, and social media sites), forming a social network. Social media implies the collective existence of an interconnected community or a social network in which users routinely post and share their opinions about others on different digital platforms, thereby blurring the boundaries between these platforms (Reddick 2012). In fact, users not only produce published content on these digital platforms but they also develop social relations with other users (Rettberg 2014; Michailidou 2014).

In light of the research rationale described above, the primary research object for this doctoral study was the European Political Twittersphere (EPT). Twitterspheres are formed at the intersections of topics, hashtags, and networks of topics. They can emerge

in connection with the most disparate topics, which range from cooking to fashion and politics. The EPT has emerged around discussions held on European topics, such as Brexit, Schengen, and the European elections, bringing together Twitter users whose habitual interactions focus on topics of European relevance. Therefore, my reference to the 'European Political Twittersphere' in this study encompasses all of the user-generated content and interactions relating to EU affairs or the politics of Europe[3] that are posted on Twitter and that are yet to be examined in depth within scholarly studies. For this dissertation I rely on the definition of 'European Politics' by Statham and Trenz (2013). These authors argue that 'European politics refer to the process of executive decision- making over issues that subsequently become politicised in that they acquire public visibility through the media and become subject to debates and contestation among the EU parliament, national political parties, non-governmental organisations (NGOs), social movements and citizens in the various public spheres' (Barisione and Michailidou 2017, p. 2).

In order to carry out this study, I identified and investigated a series of Twitter hashtags that were clearly of European political relevance. This analysis of hashtags provided a comparative basis for the compiled data that could reveal fundamental differences relating to how individuals interact and the extension this interaction to each of the networks mapped in the study. Therefore, I compared how two contrasting topics relating to European affairs were debated to determine whether any common patterns emerged or whether the platform in effect determined the type of interactions, and therefore the debates. My examination of the EPT is intended to complement previous research on the EPS and on the European *demos.*

Thus, the main objective of this thesis is to investigate whether networked online interactions on Twitter contribute to the emergence of a transnational EPS and a European *demos.* Three elements or features of Twitter that could boost the EPS are identified. The argument presented in this thesis is that the EPT can potentially contribute significantly to opening up opportunities for direct transnational interactions among users making use of hashtags of European relevance and to a common

[3] In a broad sense, by European Politics I refer to the politics of the EU (those that refer to policies and treaties of the European Union), but also politics of Europe (those politics evolving the continent of Europe).

perception of European belonging. Figure 1.1 depicts the three different characteristics of a European Political Twittersphere.

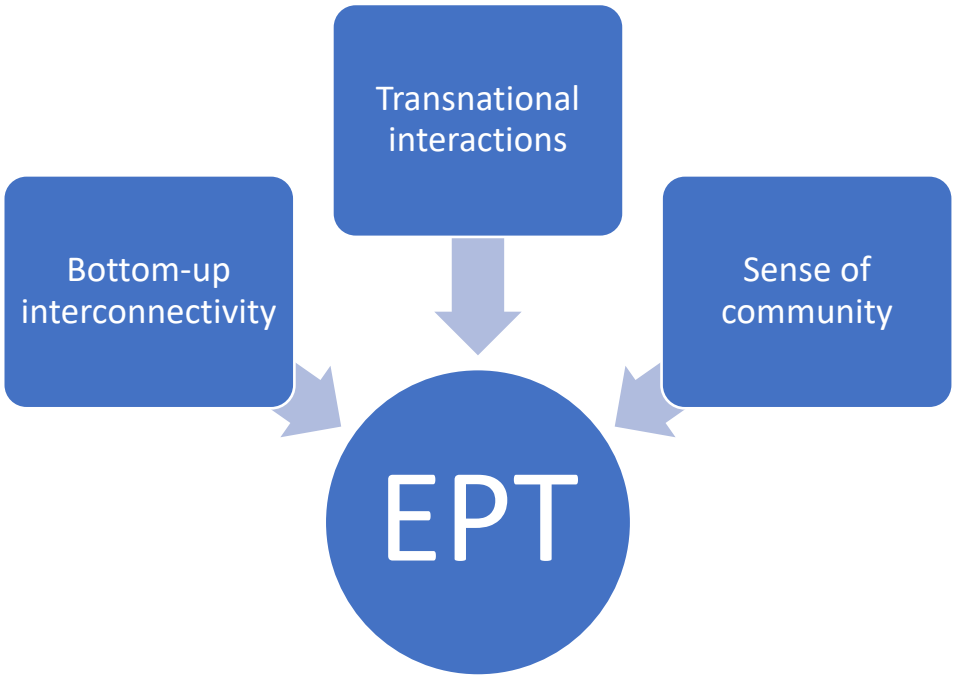


Figure 1.1. The three characteristics of a European Political Twittersphere Analysed in this study.

The three constitutive elements of the EPT that are explored in this dissertation are briefly introduced and contextualized below.

1. **Bottom-up interconnectivity:** Citizens tweet their personal opinions, usually in different languages (Ruiz-Soler 2012; Unger 2014), generating debates, conversations, and communities shaped around topics of concern. Indeed, the open characteristics of Twitter are conducive to direct interactions among users without the mediation of mass media. This could possibly foster democratization from an audience/public participation perspective within European debates.
2. **Transnationality:** Online communication facilitates access to international audiences (Ruiz-Soler 2012). The high degree of transnationalization of Twitter communication (Hansen, Schneiderman, and Smith 2011) could therefore serve to foster the emergence of a transnational EPS that transcends national public spheres.

3. **Sense of community:** Social media platforms such as Twitter, with its particular technical capabilities, can prompt a shared sense of community. Because the topics under consideration are of common concern, a European *demos* and a sense of belonging to Europe could be reinforced through Twitter communication. Online interactions among users on the same issue tend to foster bonds. Accordingly, I examined Twitter data as a generative source of a European *demos* reflecting common patterns.

1.5. Research Design

This doctoral thesis comprises three articles that explore the contribution of the EPT to an EPS. In the first two articles, I deployed social network analysis (SNA) in an examination of the structure of these networks at the actor level (Article 1) and their transnational interactions (Article 2). In the third article, I applied sentiment analysis to examine the content of the networks, with the aim of illuminating how Twitter users talk about these European topics.

1.5.1. Why Twitter?

Twitter[4] was launched in October 2006. Categories and descriptions of Twitter have differed, ranging from a forum 'where consumers of content, information and knowledge are also producers' (Huberman, Romero, and Wu 2008, 2) to a short message service (Kwak et al. 2010), social network (Eleta and Golbeck 2014), or a microblogging tool (Gayo-Avello 2015). With 325 million active users per month, Twitter publishes more than 500 million tweets per day.

According to available statistics on Internet usage, 86% of the population of the EU member states have Internet access, whereas outside of Europe, this figure is around 49% of the population, globally (Internet World Stats 2018). In 2015, 50% of Internet users within the EU posted social media messages (Pew Research Center 2014). Of these users, 23% posted messages on Twitter and 72% posted messages on Facebook. Twitter is used by a wide range of Internet users. In terms of age, the largest section of the

[4] According to Alexa Web metrics, in 2018, Twitter was the thirteenth most visited website in the world.

population using Twitter comprises the 18–29 year age group (37%), followed by the 30–49 year age group (25%). In terms of sex, 24% of men and 21% of women tweet (Pew Research Center 2014; Internet World Stats 2018).

Twitter, a digital public space (Schäfer 2015), provides a unique platform for social media interactions and demonstrates specific characteristics. The first widely known characteristic is its brevity and simplicity, with only 280 characters allowed per tweet. Further, Twitter has other features, such as direct replies to tweets (@replies), references to other users (@mentions), and information dissemination (RT retweets). In addition, users' interactions generate conversations and communities by shaping networks formed around issue publics, that is, communication spheres that evolve over a long duration and centre on a shared topic under a specific hashtag (#hashtag). Moreover, hashtagged topics are themselves formative of networks of topics or issue publics. A further characteristic of Twitter is the asymmetric principle of 'following' users without requiring mandatory reciprocity (Dutceac Segesten, Bossetta, and Trenz 2016; Golder and Macy 2015). All of these features contribute to the constitution of Twitter as a social media platform with its own technical jargon. Consequently, Twitter, with its characteristic interactional mode, provides an exemplary platform for investigating networks and communities of users and topics.

There are solid arguments that support the use of Twitter as an analytical tool for this doctoral dissertation. First, compared with other social media tools and networked platforms, Twitter has a unique structure that is characterized by openness. Twitter is appropriate for fast-paced interactions that are close to real time (Bruns and Enli 2018). In addition, Twitter perfectly fits the research design and purpose for addressing the research questions examined in the three articles. Twitter is evidently an optimal site for research of this kind, given the high degree of transnationalization of Twitter communication and the open interactivity within its communities of users (Hansen, Schneiderman, and Smith 2011). These features make it an ideal public space, with no restrictions in theory (Cantijoch 2014; Ahmed 2015; Almuhimedi et al. 2013; González-Bailón et al. 2014). Consequently, the argument that the number of Twitter users is lower compared with users of other social media platforms does not have any bearing on this study in light of its objectives. In addition, despite the relatively lower number of users, Twitter has attracted the most research attention because of its unique features,

namely its interaction system, openness, and transnationality (Cantijoch 2014; Ahmed 2015; Almuhimedi et al. 2013; González-Bailón et al. 2014).

Second, my theoretical and methodological approach entailed a consideration of Twitter as one more available social media platform, irrespective of whether or not it is the first social media option by usage. Accordingly, I acknowledge that any inferences drawn from the findings of a study on Twitter cannot be generalized beyond Twitter to the entire population. Nonetheless, the findings of a study on Twitter can reveal how it is deployed within sample populations, which is in line with the purpose of this study. My aim was to explore how Twitter users, as a specific group, deploy hashtags to interact about European topics, and the significance of these interactions for fostering an EPS and a European *demos*, rather than how Twitter is used by Europeans for interacting on European topics.

1.5.2. *#Schengen* and *#TTIP*: Two Examples of European Issue Publics

I anticipated that a large amount of data would be generated as a result of Twitter's ubiquitous and borderless nature. Because of the impossibility of mapping and analysing the entire EPT, I chose to focus on specific topics in order to narrow down the research field and produce a manageable quantity of data for each of the three articles comprising this thesis. The selected hashtags are not only of European relevance but they are also multilingual. They are mainly used within simultaneous conversations entailing different publics. In addition, the chosen topics are of common concern for all EU citizens.[5]

I selected two issue publics for this project, which have developed around two Twitter hashtags with reference to the European context.[6] The first hashtag, *#schengen*, refers to the Schengen Agreement; a treaty that led to the creation of the Schengen Area, conceived as an internal borderless space within Europe, wherein citizens of member countries can cross borders without going through checkpoints (European Commission 2016). The second hashtag, *#ttip*, refers to the Transatlantic Trade and

[5] These public issues have some transnational impact, they reach large mediated publics, and entail political conflicts.

[6] The European context has its own particularities entailing differences among member states, news media resources, and languages.

Investment Partnership forged between the EU and the United States (European Commission 2017). Since the commencement of TTIP negotiations in 2013, the trade agreement has oscillated between phases of advancement and stagnation and was discarded altogether following Donald Trump's election as the US president. Prior to that point in time, the TTIP had been highly contested within national as well as European campaigns (Caiani and Graziano 2018).

These two hashtags were selected because of their European relevance and usage across different countries. European relevance is evidenced by the fact that the issues covered in related tweets, such as mobility within Europe and the EU space or trade agreements, not only affect the daily lives of Twitter users but are also regulated at the European level and subsequently implemented at the national level. Moreover, the two hashtags are simultaneously used in different European countries by different national publics. Further, they can also be used by institutions, organizations, or politicians and are not officially backed or sponsored, as in the case of other hashtags such as *#Eurovision* or *#ep2019* and *#thistimeimvoting,* which refer, respectively, to the Eurovision Song Contest and the European Elections in 2019. Thus, they are used by any organization, institution, or individual wishing to refer to a specific topic within tweets, sometimes in conjunction with other hashtags such as *#stopttip*.

The inclusion of both hashtags in the analysis also allows for comparison. Indeed, online conversations around the hashtags *#schengen* and *#ttip* could entail fundamental differences, as one revolves around a political issue (Schengen) and the other around a predominantly economic topic (TTIP). Thus, a comparison of the process whereby the two concerned issue publics evolve and are organized around two completely different but central European concerns, yields valuable insights, illuminating whether any common patterns or relevant differences emerge.

The main difference between this and previous studies is that the latter examined how the use of specific hashtags at the national level was extended to the wider European level (Huberman, Romero, and Wu 2008; Gayo-Avello 2015; Hänska and Bauchowitz 2015; Gruzd, Wellman, and Takhteyev 2011). In addition, the users of the selected Twitter hashtags are highly diverse and speak different languages. This means that there are hashtags used in Twitter that are framed for use in specific languages, such as #EU in English and #UE in Spanish. However, these types of hashtags have been

excluded from this study as one of the purposes is to explore multilingual European hashtags.

1.5.3. The Research Data and Time Frame

I used Twitter's streaming application programming interface (API) and the Twitter Capture and Analysis Toolkit (TCAT) software to gather the data required to trace online conversations centring on the two hashtags (Borra and Rieder 2014). The collected data covered the period extending from August 2016 to the end of April 2017. All tweets containing the keywords 'Schengen' and 'TTIP' that were posted during this period were collected regardless of the language in which they were written.[7] However, only tweets in which these terms were used as hashtags were analysed. One recommendation within the literature is to obtain Twitter data from keywords rather than hashtags (D'heer et al. 2017; Rafail 2018). Studies have shown that sometimes users either intentionally or unintentionally omit the hashtag symbol when referring to a specific issue. The amount of compiled data would have been larger if the keywords 'Schengen' and 'ttip' had been used in the analysis rather than '#schengen' and '#ttip'. However, keywords were not used for collecting the data. This is because hashtags, in contrast to keywords, are organized as public spaces (Bruns and Burgess 2015). Thus, conversations organized under a specific hashtag take place within 'digital rooms' and are sometimes linked with other hashtags. Users make a deliberate choice of including the tweet in the hashtagged public space because they want to express their thoughts and interact within a specific public space. Accordingly, I included the basic elements of a public sphere, cited in the literature, within my conceptual framework: participants (Twitter users), the topic of debate (Schengen and TTIP), and the public space (hashtags on Twitter).

It is important to note here that mentions (including replies) were collected despite the fact that they used keywords rather than hashtags in question. The reason for their inclusion is that the use of hashtags within conversational threads is generally of low frequency compared with their use in the original initiatory tweet (Bruns and Enli 2018).

[7] An estimation of the number of tweets that were not captured because the rate limit imposed by the Twitter API had been crossed showed that some tweets were missing during the period of data gathering. However, the number of missed tweets comprised less than 1% of the total.

Therefore, I have captured public spaces with the hashtags (*#schengen* and *#ttip*) but also conversational tweets that deploy either the hashtag or the keyword. The underlying rationale is that once a conversational thread is initiated, which includes the hashtag, subsequent mentions may or may not repeat the specific hashtag.

Table 1.1 provides a profile of the data samples. It shows the total number of tweets and active users who tweeted using the hashtags as well as mentions with these hashtags and keywords.

Table 1.1. Schengen and TTIP Datasets

	Hashtag	*Nature*	*1 August 2016 to 30 April 2017*	
			Tweets	Users
Treaty that led to the creation of Europe's borderless Schengen Area.	#schengen	Political	232,113	114,295
The Transatlantic Trade and Investment Partnership.	#ttip	Economic	796,721	222,696

The period of the data collection is relevant and meaningful because of the occurrence of various events during or close to the periods of data gathering. Both Schengen and the TTIP have been prominent topics of concern throughout the period of data collection because of one or more events that occurred, and in all three languages.

The following timeline of events applied to Schengen.

- In August 2016, the wave of refugees, especially those coming to Europe from Syria dominated the news and discussions. Further, reverberations of the terrorist attack in Nice in July of that year were still being felt (Rubin et al. 2016).
- In December 2016, an event of vital importance for Schengen took place. A terrorist attack was launched in a Christmas market in Berlin, and the perpetrator was subsequently killed by the Italian police in Milan. The suspect

was able to escape from Germany by taking advantage of the lack of border controls in the Schengen area (CNN 2016).

- In April 2017, there were extensive discussions about the new regulations introducing border checks in the Schengen area (Müller 2017).

The above-mentioned events prompted a proliferation of reports and publications about a possible modification or suspension of the Schengen Area Rules (Traynor 2016; Vela 2015).

The timeline of events associated with the TTIP was as follows:

- In August 2016, Sigmar Gabriel, Germany's minister of economics and labour announced a possible breakdown in the conversations between EU and US authorities (Ford 2016).
- In December 2016, the conversation centred on Donald Trump's election as the president of the United States and his open rejection of the TTIP and similar agreements, such as the NAFTA (Moore 2016).
- In April 2017, the news about a possible resumption of the TTIP negotiations, despite Trump's executive order to abandon the treaty, brought the topic back into the spotlight and sparked widespread discussion (Donnan and Beesley 2017). In addition, during the entire period of data gathering, Greenpeace and Wikileaks were responsible for several leaks of documents and negotiating texts (Guida 2016).

In sum, both Schengen and TTIP were widely discussed as a result of one or more events and circumstances that occurred during the entire period of data collection.

1.6. Thesis Outline

This doctoral study is organized in three parts, each comprising an article. All three articles draw on the same data, but each of them uses the data differently, and each of them demonstrates a different focus and approach to the data analysis. Thus, each article is devoted to an analysis of one of the three elements or characteristics of the EPT.

In the analysis presented in the first article, I applied the theory of networked publics (Benkler 2006; Bennett and Segerberg 2013) to explore bottom-up interactions

and to identify which actors populate the networks. Consequently, I applied the theory of the EPS in the second article to determine whether the interactions of these actors were constitutive of a transnational EPS that transcends national spheres (Risse 2015). In light of the identification of the actors who populate the networks, and the types of interactions (national or transnational) among them, European *demos* theory (Jolly 2005) was applied in the third article to assess whether signs of belonging to a European community were discernible among Twitter users. Finally, in the concluding chapter of this dissertation, the most important findings as well as the limitations of the study were summed up, and recommendations were provided for further research on online European communication.

These articles complement each other in terms of their respective findings. Because they entail different theoretical and methodological approaches, the analyses that they present focus on completely different dimensions of the data. However, their findings are interlinked, providing a comprehensive portrayal and global perspective regarding the topic under investigation.

1.6.1. Article 1. The Last will be the First: A Study of European Issue Publics on Twitter[8]

The purpose of this article was to determine which accounts are most important in terms of the number of ties (interactions) received, and whether they are held by elite or non-elite actors. Accordingly, the in-degree and out-degree scores for nodes (users) in the networks generated through the use of the two hashtags were calculated. Theories of networked publics and networked public spheres posit that alternative actors within the public sphere find it easier to capture attention on social media and other web-based platforms (Benkler 2006; Bennett and Segerberg 2013). The primary goal of the analysis in this article was to empirically test these arguments in a European context. In this case, the theory was confirmed by the research findings, which revealed that it is easier for civil society actors and citizens to attract a high level of attention similar to that associated with the media, institutions, and politicians on topics of European relevance. These findings are important for understanding how a digital

[8] Part of the first article was published as a journal article in 2018 during the period of my doctoral research (2014–2018).

platform such as Twitter contributes to bottom-up conversations about relevant European topics. Findings regarding the structure and configuration of these networks enable a more fine-grained understanding of new forms of communication and interaction used by citizens and their implications for the emergence of an EPS. This understanding constitutes a first step in the exploration of Twitter networks in a European context, illuminating the actors who are present and revealing who is capturing the most attention within the conversations.

Although Article 1 entails an explorative approach and does not present any hypotheses, its findings challenge those of previous studies indicating that mass-media and elite actors find it much easier to garner attention and become influencers on social media. By contrast, non-elite actors (civil society and individual users) are reported to encounter difficulties obtaining the same degree of attention that elite actors achieve within social media networks (Statham 2011).

1.6.2. Article 2. European Twitter Networks. Where are They?

Although the EPS is a frequently discussed topic within the literature, there is no widespread agreement regarding its very existence and even its potential importance. The peculiar framework for analysing European publics (differences in national media, languages, and cultures) add a further layer of complexity to this investigation.

In the second article, I explored whether and to what degree the discussion of European issues on Twitter remains within nationally-bounded communication spaces or transcends these national borders, emerging as transnationally European. This investigation entailed an in-depth exploration of Twitter interactions relating to the issue publics analysed in the previous article but also considered their geographic locations. The aim was to identify a transnational EPS through a case study of issue publics of European relevance on Twitter. The technological capabilities of the Internet, especially social media and Twitter, enable communication to occur across national borders. Here the analytical purpose was to add a further layer to the interaction network developed in the previous analysis using the Google Maps geocoding API to convert user-specified location data into stable geographic coordinates. The literature on the formation and emergence of an EPS (Risse 2015; Sicakkan 2016b; Koopmans and

Statham 2010) was explored, and the formation, at least to some degree, of transnational interactions among users in relation to these two specific hashtags was predicted. Transnational interactions occurring within the European mass media were only weakly or intermittently identified within previous studies in instances where the same issue was simultaneously reported by different media (Heinderyckx 2015). I attempted to obtain empirical evidence of transnational interactions directly from users.

To obtain answers to my research questions, I applied out-degree metrics for the interactions (retweets and mentions) conducted under both hashtags. A network was created, comprising 28 nodes—one for each of the 28 EU member states. Twitter data collected from each hashtag were embedded within each node, resulting in the formation of two different networks—one for each hashtag. The use of network analysis and data obtained from a social media platform (Twitter) represents an innovative approach for studying the EPS. Such an approach entails a bottom-up perspective for examining users' interactions and engagements. This article provides conclusive empirical evidence that a certain degree of transnational interactions does occur, at least with respect to the topics that were analysed in this study.

1.6.3. Article 3. Commenting Political Topics through Twitter: Is European Politics European?

In light of the previous identification of the actors present in the network, and the types of interactions that they have, the third article focused on the content of the networks. It addressed the question of the extent to which discussions on Twitter are European or national framed. In other words, do users perceive topics of European relevance to be national or European? The analysis illuminates how the issue publics mapped in this article are perceived by users, and how they are framed in relation to theories on the European *demos*. The answer to this question has implications not only for theorizing the emergence of the European *demos* but also for the democratic development of the EU project.

Accordingly, with the analysis in this article I am not only focused on the structure of the networks that centre on European Twitter topics reconstructed in the first two articles but also on the content of the tweets. The process of Europeanization, entailing

the formation of a European *demos* through transnational collective belonging (Martí 2015; Lacey 2016; Innerarity 2014) is explored in the article. Social media such as Twitter, with its particular technical capabilities, can prompt shared community building and the construction of a European *demos*. Indeed, previous studies have analysed the content of tweets on topics ranging from the spread of diseases (Sadilek, Kautz, and Silenzio 2012) to live political events (Burgess and Bruns 2012), the ideology of users (Barbera 2015), interactions in the face of natural disasters (Sakaki, Okazaki, and Matsuo 2010), and even predictions relating to elections (Shi et al. 2012; DiGrazia et al. 2013; Tumasjan et al. 2010), or of stock markets (Bollen and Mao 2011).

My aim in this article was to complement the existing literature that has sought to identify a European *demos* using mass media and survey data by attempting to identify processes of Europeanization using social media data comprising the content of tweets. Specifically, I examined the content of the two hashtags across three languages (Spanish, Italian, and English), which provided a comparative basis for the analysis. Each language represents a different national sphere (Spanish and Italian or pan-European through English as the *lingua franca*).

1.7. Methods Applied in the Three Studies

As previously discussed, each of the three articles had a particular key objective and addressed different aspects of the research question of the dissertation. Because of their particularity, I applied different methods for each study. In order to answer the research question(s) of the first and second articles, I applied SNA. Although SNA has been traditionally linked to sociology, it is currently also employed in disciplines such as computer science, biology, media and communications, and political science to investigate social structures and patterns and to analyse and explore relationships. In a nutshell, SNA reveals what is hidden in plain sight (Kadushin 2012, 6). The increasing popularity of social networks responds to growing awareness of the interdependencies and complexities existing within a society. Currently, networks are ubiquitous, occurring, for example, as biological, family, business, and airport networks (Brandes et al. 2013).

An SNA methodology is appropriate for answering the research questions addressed in the two first articles. It is particularly apt for illuminating the microlevel and macrolevel structures investigated in Articles 1 and 2. In line with the goal of the microlevel analysis in Article 1, SNA was used to measure relationships and flows among users (Sathik and Rasheed 2011). This analysis yields insights regarding the various roles of the users (e.g., who are the leaders and which users are situated at the cores and peripheries of the networks) (Scott 2011). In addition, SNA can be used to map public online discussions at the macrolevel. These maps are similar to aerial photographs that capture the approximate size and composition of a crowd. Thus, I applied SNA to explore the interactions within different countries and the extent of interactions between countries in the analysis presented in Article 2.

As revealed by the above discussion, SNA is an analytical method that focuses on the structures and patterns of relationships between and among actors within a network (Robins 2015). Network analysis, which is both a statistical method for analysing the connections between different agents (Scott 1991, 3) and a theoretical perspective that emphasizes the relevance of actors' embeddedness within networked structures (Jansen 2002, 11) have contributed significantly to investigations of the EPS. When used within a cross-country and longitudinal design, network analysis can provide answers to questions of whether transnational discourse coalitions in Europe form around issues or countries and whether they are similar and converge or diverge over time. Developing a comprehensive and detailed map of the EPT requires an extended online network analysis to enable the reconstruction of the networks and users' interactions. Networks reveal a map of those connections that can be measured at individual or collective levels as well as the communication patterns that they give rise to (González-Bailón 2014, 211).

Sentiment analysis informed the third article of this dissertation and was used to elucidate how the mapped European topics are spoken about. This third article complemented the previous two by exploring the content of the two issue publics. My goal in this article was to apply sentiment analysis to gauge opinions regarding the mapped topics and to explore the possibility of identifying how the topics are spoken about (negatively or positively) and if users perceive them as issues that affect them as nationals of their respective countries, or as Europeans. Evidently, social media has

become an avenue for expressing opinions on almost any subject, even politics. Although sentiment analysis has traditionally been used in the field of business and marketing to assess the feelings and opinions of customers regarding certain products and services, more recently, its application has been extended to sociology and political sciences, where it is used to identify political behaviours and ideologies. It is even used to predict election results based on citizens' opinions (Ceron, Curini, and Iacus 2015). For the analysis presented in this paper, I used the integrated sentiment analysis algorithm (iSA), which has been specifically designed for analysing social media content (Ceron, Curini, and Iacus 2016b).

2. Article 1

The last will be the first. A study of European Issue Publics on Twitter[9]

2.1. Introduction

The Internet and more specifically social media have become a space where citizens, activists, politicians, news organizations and institutions from across the globe can communicate and engage in dialogue about issues that interest them. The Internet offers virtually unlimited platforms, sources of information and network opportunities. Different theories have emerged that try to explain this new relationship between the actors present in the public sphere (Benkler 2006; Bennett and Segerberg 2013; Chadwick 2013). These theories argue that digital media technologies such as social media have the potential to constitute bottom-up and grounded public spheres as they are less dominated by mass media and institutions, and citizens' involvement in public debate becomes more spontaneous than ever before. The capability to overcome the domination of political and media actors of traditional communication flows is due to the capacity of digital platforms to transmit information and to enable public input, thus facilitating greater citizen and civil society engagement.

Amongst all the digital communication tools we can find online, Twitter has received particular attention because of the specific characteristics of its networks. A microblog such as Twitter is considered the ultimate expression of online asymmetric interaction based on the exchange of user-generated content. Despite the extensive results of research conducted on Twitter in different countries and on different topics, very little research is focused on the European context. The European angle remains relatively uncharted, and this omission is problematic especially given the increasing gap between European institutions and citizens (Morganti and Bekemans 2012, Pérez 2013; Michailidou 2007).

[9] Part of this paper has been published in *Partecipazione e Conflitto* Special issue: From Big Data in Politics to the Politics of Big Data, ed. A. Mattoni and Alicia P, 11(2): 2018.

In this article I research political European issue publics that can be found inside the European political Twittersphere in order to see whether more grassroots and less elite actors, which differ from political ones and the mass media, have space and visibility within conversations that unfold online. The purpose is to discover whether Twitter networks of European topics contribute to bottom-up conversations where non-elite individuals interact and are fully engaged.

The article is divided into two parts. In the first part I present network public theories and why previous research has chosen Twitter as the platform to test these theories. The article continues with the current debate on European topics online and their contribution to a European Public Sphere. I then introduce the research questions on the European context and the case study on which empirical analysis is based - two different hashtags on European topics – i.e., #*schengen* and #*ttip*. In the second part, I introduce the data and the analytical methods adopted, followed by the illustration of results. I conclude by discussing the results of the analysis in relation to three aspects. First, I comment on European issue publics on Twitter. Second, I compare results obtained from the analysis of the two hashtags. Finally, I discuss results in relation to their importance for a more general discussion on the European Public Sphere.

This article studies the first characteristic described at the Introducction chapter: bottom-up interconnectivity. In oder to analyse the contribution of the European Political Twittersphere to the emergence of European Public Sphere, it is important, as a first step, to know who compose the networks mapped.

2.2. Issue publics from bottom-up

In the last decade, we have seen the emergence of different theories about the changing roles of actors as well as on the impacts of new technologies that have emerged onto the public sphere. These theories have two points in common. First, they argue that Internet technologies have opened up new and previously unimaginable possibilities of communication thanks to the usability, interoperability of digital communication tools and the possibility to produce and circulate user-generated content. Second, because of these opportunities, different types of actors have more

visibility and importance in new digital channels than in the past (Benkler 2006; Bennett and Segerberg 2013; Chadwick 2013).

Benkler (2006) was one of the first to capture this change in the public sphere. He theorizes that contrary to the 'classic' public sphere, dominated by the mass media and political institutions, an 'online networked public sphere' provides room for other actors, including NGOs, think tanks, and single individuals to express and take part in the discussion. Benkler argues that the decentralised individual action facilitated by digital tools allows a more democratic and participatory form of political communication than before. Thus, the structure of the online networked public spheres is unique insofar as pieces of information are pushed and pulled between shared spaces and may travel 'upward' from smaller to larger publics. In essence, networked platforms allow anyone to be a media outlet (boyd 2011).

Since Benkler's initial elaboration, the networked public sphere theory has evolved, particularly as a consequence of the diffusion of social media and other digital communication tools. Furthermore, other theories have been developed, complementing the explanation of the distinct roles played by mass media, politicians and civil society in these new forms of online communication. Bennett and Segerberg (2011) have shown that established actors are still central to political debates, but that less conventional voices can now also make themselves heard and sometimes heavily interact with traditional centres of attention. As online content can be posted quite easily without the interference from gate-keeping journalists, it is more difficult for authorities to contain the free expression of citizens' opinions and needs. All this can 'empower' those who have always wanted to engage in public debate but were previously marginalized particularly by traditional media, thus yielding to the consolidation of a connective action logic underneath online interactions (Bennett and Segerberg 2013). This distributive connective action forms a complex and powerful alternative public sphere that serves as an arena for communicating, organizing and connecting a wide range of actors and organizations (Benkler et al. 2015). These collectives can vary greatly in focus, scope and stability and range from publics emerging around specific events (Ausserhofer and Maireder 2013), political developments (Tumasjan et al. 2010) and fan communities (Larsson and Moe 2012).

While the Internet offers manifold communication tools, Twitter has often been considered the ultimate expression of online interaction based on the exchange of user-generated content (Bruns and Burgess 2015). With its unique interaction system, Twitter is a perfect platform to study a characteristic sociotechnical type of networked public (Bossetta 2018). First, interactions made by users under a hashtag shape Twitter networks as issue publics that entertain conversations and ground communities (Gruzd, Wellman, and Takhteyev 2011). Moreover, these hashtagged conversations themselves form networks of topics or sphericules (Bruns and Highfield 2016). At the intersections between topics, hashtags and networks of topics a Twittersphere is formed. Twitterspheres can emerge in relation to the most disparate topics, from cooking, to fashion, to politics. When it comes to the discussion of European topics, such as Brexit, Schengen, the European Elections or the European Commission, a European political Twittersphere emerges that gathers Twitter users and their interaction habits around topics of European relevance. Second, the inherent structure of Twitter is unique compared to other social media platforms, with its asymmetric principle of 'following' users without mandatory reciprocity (Golder and Macy 2015). Third, the degree of transnationalisation of Twitter communications and the open interactivity among its users make the platform an ideal public arena with, in principle, no restrictions (Dutceac, Bossetta, and Trenz 2016).

Nevertheless, despite the potential for allowing the participation of individual users and alternative voices, concerns have arisen about the impact of automated accounts, especially on Twitter. Bots are small computer programs with increasingly complex and sophisticated algorithms that automatically perform tasks such as the publication of tweets, replies and following other accounts. They can influence the dissemination of information, or the interruption of online conversations (Michael 2017; Howard, Kollanyi, and Woolley 2016). There are numerous scientific studies that point in this direction and not only try to measure the quantity of bots on Twitter (Wojcik et al. 2018; Moon 2017), but also their impact. For instance, a research on how social media are used to give voice to actors traditionally excluded from public discussions raised some concerns about how political bots are negatively affecting democracy and political communication (Tucker et al. 2017). In the same line, in a recent article in The Economist the idea that of how social networks, which at first were called to be democratizing

structures, have ended up becoming disseminators of partisan propaganda, often false, was discussed (The Economist 2017). Indeed, it has already shown that in the 2016 US presidential campaign, key states in which Trump won by a minimum margin, there was a concentration of false news spread by Twitter above the average (Howard, Woolley, and Calo 2018). According to Badawy et al., one in five political tweets about the presidential campaign was generated by bots (Badawy, Ferrara, and Lerman 2018).

2.3. The debate of European topics on Twitter

Many scholars and political actors have insisted on the importance of a European Public Sphere as a contribution to the democratic quality of the European Union (Risse 2015; Bennett, Lang, and Seberberg 2015). One of the reasons underpinning the proverbial distance between European Union institutions and European citizens has been attributed to a communication gap: the lack of a common and public space where the European *demos* is able to talk about common concerns regarding European affairs (Splichal 2006; Sicakkan 2016; Kaitatzi-Whitlock 2007).

There is no agreement as to whether the European Public Sphere exists or not (Trenz and Michailidou 2014; Risse 2015; Koopmans and Statham 2010). Extant studies have adopted different research designs to explore the domain of European political communication thus revealing the sophistication and complexity of such research task. Despite the uneven and fragmented character of research in this area, observers consistently underline that the inclusive participation of citizens in European affairs is the only way to generate a genuine European Public Sphere. In this respect, it has been argued that interaction within Europe-related debates enables lay citizens to discuss and engage with European issues of common concern. What has been pointed in previous research on the European Public Sphere is that in the European community of communication, societal actors, including interest associations have a minimal presence (Díez Medrano 2009). The European community of communication is almost exclusively populated by elites rather than by civil society. To the extent that there is a lively debate, it mainly takes among and between national governments and the European Commission. Europeanized public spheres are more even executive-centered than national ones (Koopmans 2007; Doerr 2008; Della Porta and Caiani 2006; Risse 2010a).

With the diffusion of the Internet, researchers have also begun to investigate whether online there is already a different, more participated, interaction in public discussions than in the past (Gil De Zuñiga, Puig-I-Abril, and Rojas 2009). Increasing attention is thus being paid to the opportunities generated by the Internet enabling political organizations to engage with the public (Anduiza Perea 2012). Results produced in this respect suggest that the Internet, and the communication tools citizens and users have within their reach, can help increase or enhance interactions on European issues that are relevant for everybody (Bennett 2012).

For the purpose of this article, I consider Twitter, as a platform where citizens can inform themselves about EU issues and communicate about them in a participatory way. For this reason, I investigate empirically whether online conversations on European issues are still dominated by elite actors, such as mass media and political institutions, or whether other actors have a greater presence and prominence. Indeed, the extent to which online discussions on EU topics host different actors that acquire different levels of prominence is important for the European project as well as for the consolidation of a more democratic and participated public sphere.

The choice of studying Twitter as a platform where political interactions can develop lays in the path marked by a vast amount of research that has been carried out within different disciplines. One growing field of study is the study of communities and topics of discussion inside Twitter. For instance, Bruns and Burgess have mapped and explored Twitter networks of different Australian national elections *(#ausvotes*) (Bruns and Burgess 2011). Mappings of specific Twitter communities discussing specific topics, such as the Digital Humanities research community, have also been conducted (Grandjean and Mauro 2016). In the U.S., similar studies have been carried out exploring *#sopa* and *#pipa* topic networks (Benkler et al. 2015). Furthermore, the Russian Twittersphere has also been a target of analysis (Kelly et al. 2012). Indeed, different academic disciplines have explored Twitter in order to shed light on the potential of these networks to overcome the traditional structure of political conversations (Bruns, Burgess, and Highfield 2014; González-Bailón 2014; Grandjean and Mauro 2016; Mejova, Macy, and Weber 2015; Weller et al. 2013). As it has been shown, indeed, Twitter networks can be inclusive of multiple publics and connect seemingly disparate actors in a political debate (Ausserhofer and Maireder 2013).

However, there is a striking shortage of empirical studies addressing the European level and context. Twitter-based studies considering Europe have been conducted but only at the national levels or with reference to specific national topics. For instance, observers have engaged in studying the Austrian Twitter public sphere (Ausserhofer and Maireder 2013), or the German discussion of *#aufschrei* (outcry) (Maireder and Schlögl 2014) and the Norwegian Twittersphere (Bruns and Enli 2018). Conversely, only few studies have addressed questions of the European Twittersphere transcending from the national lens. Exceptions in this respect are provided by the study of Twitter follower/followee networks of the 2014 European Elections (Maireder et al. 2014), or of how the circulation of the hashtag *#austerity* makes national public spheres Europeanized (Hänska and Bauchowitz 2018; Barisione and Ceron 2017). However, compared to other regions, or even topics, very little research has been conducted in Europe.

Against this background, the question on whether the European Political Twittersphere is more open to the meaningful participation of non-elite, civil society and individual users remains an open one. With the aim of contributing to overcome this situation, this article will explore whether Twitter enables the creation of a bottom-up networked public sphere when it comes to the discussion of European political issues, enhancing visibility of non-elite actors. To this aim, I implement and adjust the methodology already used in previous research on Twitter issue publics to study the European context[10] making a systematic use of network analysis to trace online conversations around European topics. Given the relative scarcity of similar analyses, I take an explorative approach and examine Twitter networks on European political topics with the aim of highlighting who are the actors that occupy more central positions within online discussions and to elaborate on the participatory nature of the European political Twittersphere.

Taking the same theoretical approach, the so-called European Political Twittersphere in Europe may reveal that civil society and individual users now receiving more attention. Consequently, this article will try to answer the question of whether Twitter also enables the creation of a bottom-up networked public sphere when it

[10] The European context has its particularities: different member states, different news media resources and different languages.

comes to the discussion of European political issues, enhancing visibility of non-elite actors.

I do not perform a traditional hypothesis-testing analysis. This article, hence, is an explorative approach to examine Twitter networks on European political topics, referred to as the European Political Twittersphere.

2.4. Data and Methodology

To collect data necessary to trace online conversations around the two hashtags I used Twitter's Streaming API (Application Programming Interface) and the software TCAT (Twitter Capture and Analysis Toolkit) (Borra and Rieder 2014). Collected data cover a time period that goes from August 2016 to the end of April 2017. During this period, all Tweets containing '#Schengen' and '#TTIP' were collected regardless of the language in which they were written.

From all collected tweets, those published within three time snapshots, August 2016, December 2016, and April 2017 were extracted. The three months were chosen so to leave a three-month period between one snapshot and another and to make it possible to compare conversations developing in 'random' periods separated by regular intervals. Overall, I created three different datasets for #*schengen*, and three different datasets for #*ttip*. Table 2.1 presents the data samples and contains the total number of Tweets in each period, and the distinct active users that tweeted using one of the two hashtags.

Table 2.1. Characteristics of the two Issue publics of European relevance developed around *#schengen* and *#ttip*

Hashtag	*1 August to 31 August*		*1 December to 31 December*		*1 April to 30 April*	
	Tweets	Users	Tweets	Users	Tweets	Users
#schengen	17,869	12,862	65,237	37,385	27,941	18,371
#ttip	151,715	69,389	32,773	17,359	17,163	9,514

Several types of networks can be built from Twitter data. For the purpose of this investigation, I created networks consisting of mentions and retweets because the structure of this specific kind of network is indicative of actual interactions users have amongst them. Thus, if one user mentions or retweets another user by their username, including retweets (RT), a directed link is created. The more often one user mentions another, the stronger the link between them[11].

Table 2.2 presents the number of nodes (Twitter users) and edges (mentions to others and retweets) that constitute each network. It is worth noticing that the number of users in Table 2.1 and the number of nodes in Table 2.2 is not the same. The difference between these numbers corresponds to the users who tweeted using any of the two hashtags, yet without mentioning or retweeting any other user. Given that the focus of this article is on interactions, these isolated Twitter accounts were eliminated from the network.

Once the networks were created, Walktrap algorthim (Pons and Latapy 2006) was applied in order to identify communities and clusters[12]. Walktrap tries to find densely connected clusters with the rationale that short random walks tend to stay in the same community. The aim is to detect the possible communities formed with the established interactions within the users. Due to their large size of the networks the visualizations of the network, together with the communities detected, are attached in the appendix.

Table 2.2. Network characteristics

Hashtag	*1 August to 31 August*		*1 December to 31 December*		*1 April to 30 April*	
	Tweets	Users	Tweets	Users	Tweets	Users
#schengen	17,869	12,862	65,237	37,385	27,941	18,371
#ttip	151,715	69,389	32,773	17,359	17,163	9,514

[11] @mentions include mentions and replies. See https://help.twitter.com/en/using-twitter/mentions-and-replies

[12] For the full visualization of the networks see Appendix. Visualizations were performed with Fruchterman Reingold layout (FR). FR is a force-directed graph drawing that position the nodes in two-dimensional space so that the edges have the fewest crossing as possible.

2.4.1. Indegree centrality

In order to shed light on the numbers of retweets and mentions received by users participating in the conversations around the two hashtags, I calculated indegree centrality, which stands for the number of incoming ties held by each and every node in a network (Prell 2012). Ultimately, indegree centrality indicates how 'important' a Twitter user is for others in the network.[13]

After calculating indegree centrality for all nodes in the two conversations around *#schengen* and *#ttip* hashtags, I focussed on the first 200 for each snapshot, i.e., those most mentioned and/or retweeted, to study more in details who are the actors that participants in our networks recognized as more important or worth retweeting. Indeed, after the first 200 nodes, the differences in the indegree score of nodes in our networks is minimal. Therefore, by looking at the first 200 nodes ranked by indegree I was able to capture those that were recognized by others in the network as important, influencers or role players.

2.4.2. Outdegree centrality

The study of indegree centrality was then complemented by that of outdegree centrality. This latter calculates the outgoing ties of a node. In the context of the Twitter networks around *#schengen* and *#ttip*, outdegree stands for the number of retweets and mentions sent to other users. Thus, outdegree centrality indicates how active a Twitter user is in establishing ties with others in the network. Considering outdegree scores, I was able to see whether nodes receiving more ties from others (i.e., nodes with higher in-degree) are also active within the conversations or merely passive accounts with very little interaction with the rest of participants.

2.4.3. Type of actor

In order to verify whether Twitter users with highest in-degree are politicians, institutions, mass media or civil society and individual citizens, most prominent nodes

[13] Six tables have been created for each dataset with the two hashtags containing the first 200 nodes in each snapshot ranked by in-degree. They include an anonymized ID code, in-degree and out-degree score, as well as the probability score of the account being a bot. Full Tables are available in the Appendix.

in were classified into different groups. By looking at the results of this classification, I could elaborate on whether Twitter allows individual users and civil society to by-pass the dominance of institutions and mass media as rulers of online debates and influencers.

Although there have been various attempts to classify Twitter accounts into different actor types (see for instance Dutceac Segesten and Bossetta 2016; Lotan et al. 2011; Pavan 2017; Barisione, Michailidou, and Airoldi 2017), for the purpose of this article I chose to manually classify users in four groups based on the description field of their Twitter account. If the account represents a local, regional, national, international or transnational public office, political party, politician, or political institution, it is coded as Group 1. If the account is from media industry or journalists, it is coded as Group 2. If the account is from a think tank, NGO, association, company or social movement, it is coded as Group 3. Finally, if the account description points towards an independent blogger or account without any kind of manifest affiliation, it is coded as Group 4. Table 2.3 presents the results of this grouping. Groups 1 and 2 represent actors who traditionally play a leading role and exerted power in the public sphere: politicians, political institutions and mass media. Groups 3 and 4 represent instead actors with a secondary role or mere listeners. Following Andrew Chadwick's approach (2013), Groups 1 and 2 gather elite actors, while groups 3 and 4 hold together non-elite actors.[14]

Table 2.3. Categorization scheme to distinguish types of most central actors

Group	*Nature*	*Description*
1	Politician, politics	- National politician or political institution, EU politician or institution, public office, political party, etc.
2	Media & Communications	- Media industry, newspapers, professionals in journalism and/or communications related, news source etc.
3	Civil society	- NGOs, think tanks, associations, companies, celebrities etc.
4	Citizen	- Individual user level, including independent bloggers, experts, etc.

[14] With regard to Group 3 and Group 4, it is worth specifying the reasons why I decided to keep them separated even if citizens and individual users are part of civil society. In light of recent reflections on the retrenched role of formal organizations for political participation processes (e.g., Earl and Kimport 2011), I decided to keep them separated to identify more accurately the nature of individual users, and their possible influence as *solo* Twitter accounts.

2.4.4. Bots

Once that network nodes have been ranked by in-degree, and the first 200 accounts have been categorized by actor group, I verified whether these Twitter accounts were 'real' accounts managed by humans or bots. The identification of bots is pursued to analyze whether the European context shows similarities or differences in terms of quantity and impacts of automated accounts with cases dealt within previous research on different regions or topics. A higher number of 'non-real' accounts amongst the most mentioned ones would thus point towards a successful manipulation of the conversation.

Verifying how many of the bots are seems necessary. The identification of the bots, and their potential impact, is taken into consideration for the analysis. It might happen that the European context follow similarities in terms of quantity and impact with previous research on different regions or topics, or it might happen that the European context has some particularities regarding the number and the impact of bots in the interaction.

To spot bots, I used *BotOrNot*[15] developed by the Observatory on Social Media from Indiana University (Davis et al. 2016). The algorithm calculates a score that ranges from 0 to 100 for each account that is based on different indicators – particularly, the number of tweets, the date of the last tweet, ratio of followers, etc. The higher the score, the higher the probability that an account is a bot. This scoring method is not perfect, but it is an effective way to determine whether or not a given user account is likely to be fraudulent. For the purpose of this article, I consider account scoring over 65% as having a high probability of being a bot.

2.5. Results

The visualization of the networks (in appendix) and the community detection using walktrap algothrim provide a general overview how the conversations inside Schengen

[15] The algorithm has been finalist as one of the best novel artificial intelligence (AI) method based on unsupervised learning to detect deceptive social bots. See: https://aiethicsinitiative.org/news/2018/12/3/meet-the-66-finalists-in-the-ai-and-the-news-open-challenge

and TTIP developed. We can extract two main issues from the visualizations. The first is that large communities are created around specific users forming large clusters: those accounts with the highest in-degree centralities. These large communities or bubbles of interaction, addressing specific nodes, rarely interact within each other. Second, the high number of communities detected. After the large clusters, easily identifiable by size and colors, we have hundreds of small communities of two to three nodes. Figure 2.1 is an extract of one of the network's visualization precisely showing this phenomenon: clusters organized aound specific central users with high number of incoming interacions, and surrounded by very small communities of two to three nodes.

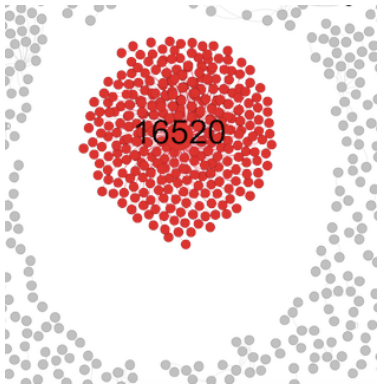


Figure 2.1. Extract of the Schengen August 2016 network visualization

The following graph in the next page (Figure 2.2) shows the number of tweets per day for each period of the built networks (August and December 2016, and April 2017) for both hashtags. Mentions are represented in blue and retweets in yellow. Mentions represent organic and first-time tweets by users, including mentions to others. On the other hand, retweets represent unmodified tweets which have been spread through personal networks, in a sort of relay stations.

We observe strong peaks worth mentioning in 'December 16 Schengen network', and 'August 16 TTIP network'. For the month of December, the peak corresponds to the terrorist attack on a Christmas market in Berlin on the 23rd of the month. For the month of August, the peak corresponds with reports of different media sources quoting top German official Sigmar Gabriel, Minister of Economic Affairs and Energy and deputy to

Chancellor Angela Merkel, speaking on the failure of US-EU talks regarding the TTIP agreement.

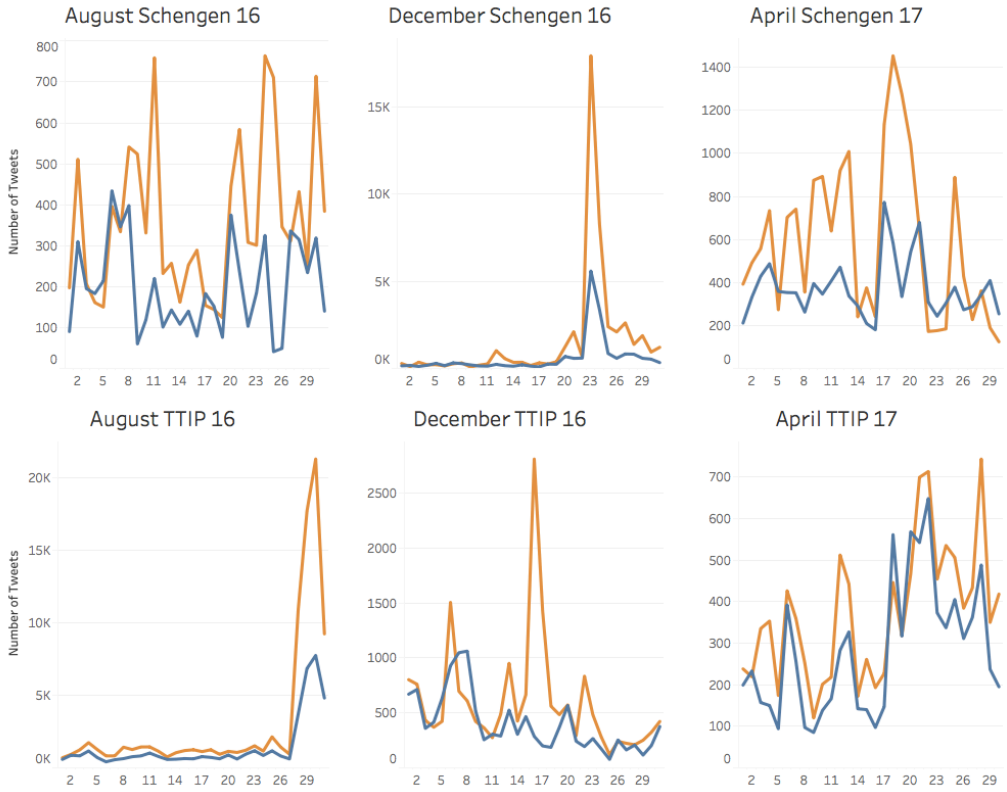


Figure 2.2. Time span for *#schengen and #ttip*

Figure 2.3 in the next page reports the percentage of retweets for Schengen totals 68% over three periods, while for TTIP the number of retweets is 65.2%. Mentions represent organic and first-time tweets by users, including mentions to others. On the other hand, retweets represent unmodified tweets which have been spread through personal networks.

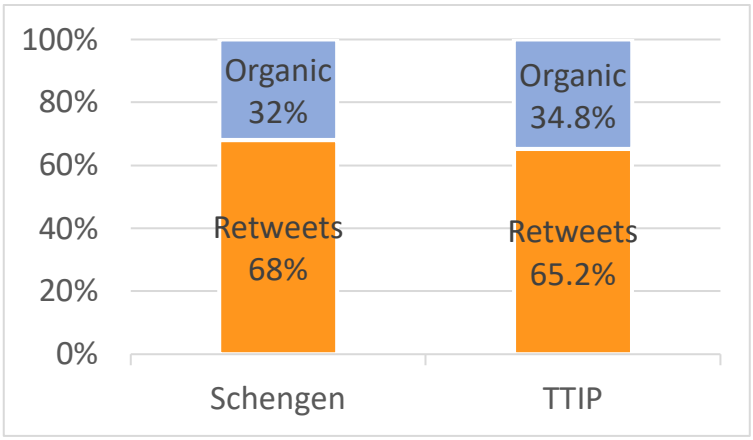


Figure 2.3. Amount of Tweets and Retweets for *#schengen* and *#ttip*

These results are in line with expectations on Twitter networks: retweets number higher than organic tweets with mentions (Bruns 2012). The results are the same for topics of European relevance. The consequence is that networks act as relay stations, spreading information, rather than creating or boosting conversations.

Tables 2.4 and 2.5 introduce the results for the classification of the most mentioned and retweeted accounts for both hashtags. The first row in each table reports the overall number of Twitter accounts per group, while the second row shows the sum per elite actors (Groups 1 and 2) versus non-elite actors (Groups 3 and 4). To enable comparison, the third row shows the percentage for each of the four groups and, in the fourth row, the percentage of elite actors and non-elite actors is given. Finally, the last row in the tables shows the number of potential bots.

In Table 2.4, for the *#schengen* hashtag, we observe that non-elite actors (Groups 3 and 4) represent most of most mentioned and retweeted accounts. Within each snapshot, their percentage goes from 53.5% in the network for April 2017 to the 57.5% for August 2016. Moreover, thirteen bots were identified for *#schengen*. Figure 2.4 gives us the aggregate number of accounts for the three periods. As it shows, a total of 345 accounts over the 600 most mentioned and retweeted (57.5%) are non-elite actors.

Table 2.4. Categorization by actors for *#schengen*

		Group 1	*Group 2*	*Group 3*	*Group 4*	*Total*
August 16	Number of Twitter accounts	50	35	18	97	200
	Elite vs. non-elite actors	**85**		**115**		**200**
	Percentage	25%	17.5%	9%	48.5%	100%
	Percentage of elite vs. non-elite actors	**42.5%**		**57.5%**		**100%**
	Bots	**3 (1.5%)**				-
December 16	Number of Twitter accounts	42	35	12	111	200
	Classic vs. new actors	**77**		**123**		**200**
	Percentage	21%	17.5%	6%	55.5%	100%
	Percentage elite vs. non-elite actors	**38.5%**		**61.5%**		**100%**
	Bots	**6(3%)**				-
April 17	Number of Twitter accounts	51	42	20	87	200
	Amount of elite vs non-elite actors	**93**		**107**		**200**
	Percentage	25.5%	21%	10%	43.5%	100%
	Percentage elite vs. non-elite actors	**46.5%**		**53.5%**		**100%**
	Bots	**4(2%)**				-

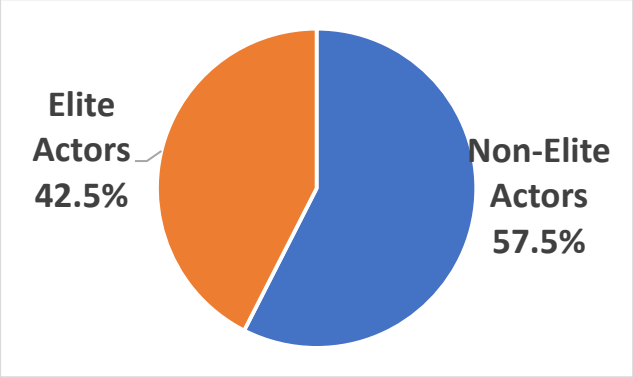


Figure 2.4. Elite actors vs. non-elite actors for *#schengen* (N=600)

In Table 2.5, for the *#ttip* hashtag, results are similar to those for *#schengen*: there is a majority of non-elite actors in the three time periods as they range from 50.5% in August 2016 to 64.5% in April 2017. However, the number of potential bots is lower than that in the *#schengen* network as only five accounts were classified as bots. In Figure 2.5, the aggregate number of accounts in the two elite and non-elite categories shows

that in the *#ttip* conversation there is a slightly higher number of accounts classified as non-elite actors (60%) compared to *#schengen*. Across the three periods, indeed, a total of 358 out of 600 are non-elite actors.

Table 2.5. Categorization by actors for *#ttip*

		Group 1	*Group 2*	*Group 3*	*Group 4*	*Total*
August 16	Number of Twitter Accounts	44	55	44	57	200
	Elite vs. non-elite actors	**99**		**101**		**200**
	Percentage	22%	27.5%	22%	28.5%	100%
	Percentage elite vs. non-elite actors	**49.5%**		**50.5%**		**100%**
	Bots	**2(1%)**				-
December 16	Number of Twitter accounts	52	20	47	81	200
	Classic vs. new actors	**72**		**128**		**200**
	Percentage	26%	10%	23.5%	40.5%	100%
	Percentage elite vs.non-elite actors	**36%**		**64%**		**100%**
	Bots	**1(0.5%)**				-
April 17	Number of Twitter accounts	45	26	58	71	200
	Elite vs non-elite actors	**71**		**129**		**200**
	Percentage	22.5%	13%	29%	35.5%	100%
	Percentage elite vs. non-elite	**35.5%**		**64.5%**		**100%**
	Bots	**2(1%)**				-

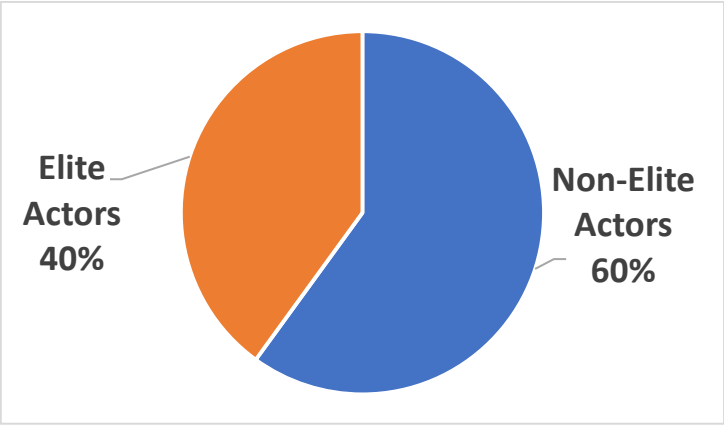


Figure 2.5. Elite actors vs. non-elite actors for *#ttip* (N=600)

In order to verify that these results do not respond to the structural configuration of the network, a random sample for each dataset was taken and analysed.[16] This random sample verifies that the results in Tables 2.4 and 2.5 correspond to bottom-up interactions and not to the proportional configuration of the respective network. In this case, a random selection of 200 nodes for each hashtag was taken, and then classified by actor type following the same manual coding as for the first 200 with highest in-degree score.

Table 2.6 presents the results of the classification of nodes in the random sample for each hashtag. As it shows, results are very similar for both hashtags, with over 87% (175 accounts out of 200) representing Group 4, i.e., individual accounts. In addition, the number of potential bots increases to 9.5% for #*schengen* and to 10.5% for #*ttip*, with 19 and 23 accounts respectively.

What is captured by the random samples confirms that the results in Tables 2.4 and 2.5 are genuine and valid. The random samples reveal the natural distribution by groups of the entire network, with Group 4 being the largest. If the results in the random sample were similar to those in Tables 2.4 and 2.5, it would mean that the random sample and the in-degree ranking merely replicate the configuration of the networks. However, this is not the case. Therefore, results reflect the actual interaction of accounts based on discretional choices of participants about who are the accounts that are considered more important or worth mentioning.

Table 2.6. Summary of accounts belonging to type of actor for random samples

		Group 1	*Group 2*	*Group 3*	*Group 4*	*Total*
Schengen	Number of Twitter accounts	8	7	8	177	200
	Elite va. non-elite actors	**15**		**185**		**200**
	Percentage	4%	3.5%	4%	88.5%	100%
	Percentage elite vs. non-Elite	**7.5%**		**92.5%**		**100%**
	Bots	**19(9.5%)**				**-**

[16] An additional robustness check was performed by calculating the mean of in-degree scores + Standard Deviation (SD). With mean of in-degree + SD threshold, the percentage results are very similar to the distribution by group of the random sample.

TTIP	Number of Twitter accounts	9	7	10	174	200
	Classic vs. new actors	**16**		**184**		**200**
	Percentage	4.5%	3.5%	5%	87%	100%
	Percentage elite vs. non-elite	**8%**		**92%**		**100 %**
	Bots	**23(10.5%)**				-

Figure 2.6 in the next page summarizes the overall indegree and outdegree scores for elite and non-elite accounts in the three snapshots. The overall score was obtained by summing up the total number of ties received by elite or non-elite groups. As the figure shows, non-elite actors receive a greater amount of attention in the #*ttip* conversation, while elite actors are more prominent getting attention in #*schengen*. Moreover, in both cases, the most mentioned and retweeted accounts are not very active, as shown by the overall outdegree scores. In general, these results suggest that most influential actors barely interacted with others in the network. Also, in both cases, accounts that have higher out-degree scores: nodes initializing more interactions are from Groups 3 and 4 – hence, from the civil society, including individual citizens. Nonetheless, their out-degree score is very low compared to their in-degree score.

An important remark is to observe how skewed are the top centile in the ranked 200 accounts with more in-degree score (see appendix for full results). The first 20-30 accounts sum together as much in-degree interactions as the rest 170-180 accounts. There is nothing we can do about it since it is how the users interacted. It is completely normal, and it is in itself a type of interaction observed in the literature. I elaborate in the discussion part this type of interaction network.

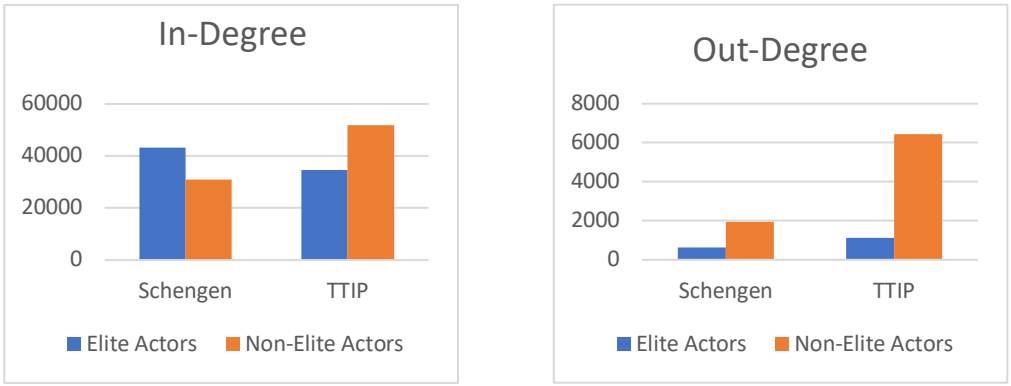


Figure 2.6. Amount of In-Degree and Out-Degree for Elite and Non-Elite Actors in *#schengen* and *#ttip*

Finally, table 2.7 introduces the total number of coincident accounts in the three periods of each hashtag. For Schengen, a total of 17 accounts that coincide in the three time periods. For TTIP, they are 29. We encounter a slightly difference within the two hashtags. While in Schengen the accounts that coincide are from Elite actors, in TTIP this is the opposite: non-elite actor accounts are the accounts that coincide more in the three periods analyzed: August 2016, December 2016 and April 2017.

Table 2.7. Coincidence of same accounts in the three time periods

Hashtags	*N. Accounts*	*Group 1*	*Group 2*	*Group 3*	*Group 4*
Schengen	17	11	3	0	2
TTIP	29	5	4	13	7

2.6. Discussion

2.6.1. European Issue Publics on Twitter

The calculated metrics and classification of accounts by actor groups presented above allow us to reconstruct the *#schengen* and *#ttip* issue publics on Twitter and, in this way, to elaborate on the type of interactions that users develop on Twitter while discussing European topics. In what follows, I read the results illustrated in the previous section to shed light on three different and yet interrelated aspects. First, I comment on

European issue publics on Twitter. Second, I compare results obtained from the analysis of *#schengen* and *#ttip*. Finally, I discuss results in relation to their importance for a more general discussion on the European public sphere.

In response to the research question in this empirical study, the *#schengen* and *#ttip* Twitter networks do in fact enhance the visibility of actors who have traditionally been listeners. The in-degree metric calculated suggest a de-hierarchization of traditional gatekeepers, opening up opportunities for non-elite actors to have more visibility, and to play a key role on European issues. The results are in line with what has already been observed in similar researches that, based on the categorization of accounts within online networks, showed the high presence of non-elite actors (Bennett, Lang, and Segerberg 2015; Bruns and Enli 2018; Benkler et al. 2015; Maireder and Schlögl 2014). Thus, results show that non-elite actors obtain attention and can become part of the set of actors that are taken as preferred interlocutors by participants in all six snapshots for both hashtags. Ultimately, non-elite actors, especially independent citizens, or individual accounts without any type of affiliation are mentioned and retweeted often and thus become alternative voices to those of traditional political and media actors. These findings challenge previous research that in the European community of communication, at least on Twitter, societal actors, including interest associations have a minimal presence (Díez Medrano 2009).

In terms of bots, the analysis has shown that very few nodes amongst the most central ones were 'non-real'. However, the number of bots in the random samples is similar to that identified in previous Twitter research – which is roughly around 12% (Martinez 2017). This result has two implications. First, when it comes to the discussion of the two European issues, interactions tend to occur between 'real people' than with automated accounts, despite these latter are often very effective in capturing attention and numbers of retweets (Michael 2017; Badawy, Ferrara, and Lerman 2018). Second, the lower attention given to bots shows that, in both cases, online issue publics have not been manipulated artificially. Although the number of bots in the entire networks was similar to that emerged in the study of other Twitter networks, automated accounts did not receive any particular attention in the discussion of examined European topics and, therefore, did not have a significant impact in terms of visibility.

The comparison between networks linked to the two hashtags reveals two main differences. The first relates to the size of the datasets (see Table 2.1). The size of the dataset for *#ttip* is 55% larger than that for *#schengen*. There are no technical explanations, for instance, limits on Twitter rates, that could explain the difference. It is simply that users employed the hashtag #*ttip* more frequently during the period of data collection. One of the reasons behind higher levels of discussion on TTIP are the declarations made by German official Sigmar Gabriel, Minister of Economic Affairs and Energy and Deputy to Chancellor Angela Merkel, about the failure of US–EU talks regarding the treaty in August 2016 (Ford 2016; Guida 2016). However, both datasets are smaller in comparison to those designed starting from other hashtags or topics (Hänska and Bauchowitz 2016; Whitehead 2015; Theocharis et al. 2015), indicating that European topics are not particularly interesting or popular across the European Twitter community.

A second difference can be observed for the total number of ties received by elite actors for *#schengen*. As shown above, while for both #*schengen* and #*ttip* non-elite actors are keener to interact with others, only in the discussion about the TTIP treaty they also managed to become a greater catalyzer of attention. Conversely, elite actors obtained more attention in the discussion about the Schengen treaty. One motivation behind this result is the highly contested nature of the TTIP treaty, which stimulated several bottom-up and civil society protest campaigns across Europe (Caiani and Graziano 2018), whereas the topics associated with *#schengen* are typically more discussed by politicians and institutions. This goes in line as well with the accounts that coincide in the three time periods in Table 2.7.

The results of the so-called European political Twittersphere go hand in hand with those produced by similar research conducted in other regions or countries and on other topics. Indeed, there is no remarkable difference with previous research and the results for the 'European context': within Twitter networks, non-elite actors can enjoy higher visibility that in other contexts and thus have a greater chance of being seen and heard.

Ultimately, results of empirical analysis suggest that Twitter has indeed the potential to boost European conversations between different national bubbles, acting as a bridge between different national spheres and allowing the participation of individual and organizational actors who did not previously have a place in which they

could be sufficiently visible. In this way, European citizens can discuss European issues of common concern and can also affect the contents that are associated with these issues, without being particularly manipulated (see the rather low presence of bots amongst most mentioned and retweeted accounts).

Nevertheless, the small size of the datasets compared to other hashtags researched in other studies indicates that political topics of European relevance lack in popularity and interest. This is correlated with Eurobarometer's findings and the lack of interest in European politics in general (European Commission 2013a, 2017b). This is not the case for European topics that are not political, such as Eurovision.[17] The lack of interest on political issues may constitute a barrier to boosting a European dialogue, or engaging citizens in European politics. In spite of the scant interest that there may be for European issues, our networks suggest also a certain degree of cohesion in online discussions around these topics. For both hashtags, very few Tweets become invisible since at least 91% of the collected tweets contain either a mention or a retweet, if we compare tables 2.1 and 2.2. Albeit of smaller scale than in other cases, issue publics forming around European issues are formed by a niche of interested and interaction-prone users.

2.6.2. An uncomplete digital networked public sphere

The Schengen and TTIP Twitter networks by mentions demonstrate that other actors (individual citizens and civilian society organizations) play an important role in terms of visibility and popularity, as evidenced in the metrics calculated. Before the rise of the Internet, mass media provided the space (a TV or Radio channel for example) and determined the agenda of what was being discussed (the topics). On the web, however, and especially via social media sites, anybody can bypass media, interacting directly with anyone else on the web, including politicians. However, I consider that instead of being wholly functional and interconnected public spheres, *#schengen* and *#ttip* behave more like networked public arenas. A public arena is a space, a forum, where interactions take place. While the centralities measured shows that some actors are more visible, these actors actually do not establish debate or conversations. One of the main characteristics

[17] On the day of the final in 2018 during my own data collection of Tweets using *#eurovision* hashtag, I gathered over 3 million Tweets.

in Habermas' classic definition of the public sphere (Habermas 1996, 1991), is that the public sphere must contain an exchange of viewpoints, 'a network for communicating information and points of view' (p. 360). These interactions must include an exchange of points of view, contestation, agreements and disagreements. The lack of exchanges of that nature, requiring a level of depth missing from the observed interactions, precludes *#schengen* and *#ttip* as viable networked public spheres online. Deeper insight into the structure of the networks confirm that.

First, this is because of the **type of interaction**. The data centered around the types of interactions taking place within these networks supports the idea that *#schengen* and *#ttip* behave more in line with public arenas. Figure 2.3 shows that there is a higher number of retweets than organic tweets. Indeed, the retweets count for 68% for Schengen, and 65,2% for TTIP. These numbers confirm that the majority of the interactions established simply spreaded information rather than carried conversations. In that sense, these are networks of diffusion, more than networks of discussion.

Following the type of interaction, the **level of interactions** observed further reveals the nature of the networks. The accounts with higher in-degree are passive accounts. A majority of the accounts posted very few tweets during the observed time periods. The result is that the out-degree scores do not serve as positive indicators of a public sphere where the actors establish interactions and exchange of points of view. However, it must be said that out of those having out-degree interactions are from 3 and 4 groups -*non-elite actors*, which means these accounts are more willing to interact with the rest of the users.

Indeed, the conversations follow an in-hub type of Twitter conversation (see figure 2.6) (Rainie 2014). The communities identified for both hashtags are separated from each other, as can be seen in the visualizations (in appendix). Although specific key users have their own 'bubble' or cluster, there is some interaction between these different groups idenfied. This correspond to some degree of homophily: users tend to stablish interactions with those that are similar. This goes in line with the results of the community detection using Walktrap algorhim (see appendix). The communities detected are around specific users as we can see in the different colours in the visualizations. These users are the ones with highest in-degree scores. While the algorhim detects main clusters, coloured and labelled with the random ID allocated to

the accounts, there are hundreds of isolated communities (in grey) detected as well. They form communities of 2-3 accounts with very few mentions or RTs.

Figure 2.7. In-Hub Type of Conversation

The in-hub type of Twitter conversation is often star-shaped around specific users, as little interaction exists among the users. That is why very few accounts received a high number of mentions and retweets, while the remainder of accounts received very low numbers. In fact, these network structures behaved similarly when elite actors dominated the arena. It is just that now non-elite actors are dominant by receiving more attention and visibility. The role and position of the actors have been inverted in these networks. It provides evidence that despite the presence and visibility of non-elite actors, a high amount of hierarchization exists on Twitter (Barberá et al. 2015).

The two theories presented as framework of this paper have in common that Internet technologies have changed the role of actors present in the public sphere, mixing heterogeneous actors vying for visibility. In addition, users filter the most important interactions by mentions and retweets upwards. However, the level of interaction is low, and the types of interaction are in line with the spread of information rather than with conversations. I do not have enough indicators to confirm that we have a functioning European networked public sphere, and instead, point to a European networked public arena.

Despite these -negative- results, this public arena has a huge potential to develop in a functional (networked) public sphere from the bottom up. Sphericules such as Schengen and TTIP could boost a bottom-up public discourse, where citizens have the possibility of interacting directly and without the mediation of the media and institutions. At the same time, they could at times act as the source of information for media, rather than being mere listeners (Bennett and Segerberg 2013).

A hopeful indicator for the development of a digital (networked) public sphere lies in the total number of interactions in the datasets. As mentioned in the data section of this paper, a decrease in the number of users occurs once the networks are created. This decrease, which can be clearly seen in Tables 2.1 and 2.2, corresponds with the elimination of accounts making use of the hashtag, but not conducting any interaction with another user. However, the number of total interactions in the datasets is still very high. More than 90% of the tweets tweeted under the hashtags had at least one interaction with another user. This does not mean these interactions are positive, since we do not know the content of the mentions; nor do we know if the retweets are endorsements. However, it is an indicator that brings a hope that despite the types and levels of interaction, the datasets show a high volume of total number of interactions. A will to interact with others, instead of tweets getting lost in the Twittersphere (Bruns 2012).

2.7. Conclusions

In this article I presented a number of insights concerning how the hashtags *#schengen* and *#ttip* on Twitter developed in specific periods of time. The main objective was to empirically explore the theories of bottom-up networked publics in a European context. I considered Twitter as a digital platform where users can interact directly and override media and politicians/political institutions. I applied in-degree centrality in order to highlight which actors are getting more mentions and retweets, and thus more attention. The manual classification of accounts with higher scores into four different types of actors shows that civil society and individual users (non-elite actors) can receive more attention than mass media, politicians and political institutions (elite actors) but that the type of issue discussed still play a role in determining the extent to which traditional hierarchies can be overcome.

With its exploratory take, this study makes three main contributions. First, it adds to ongoing discussions on the European Public Sphere by investigating in depth part of the European political Twittersphere. Second, it shows how European Twitter's issue publics are configured, taking *#schengen* and *#ttip* Twitter networks as a case study, and contrasting them with other research on Twitter issue publics. Third, it contributes to

the study of political communication using social media and big data. In this sense, this research is a tentative input to emerging studies based on larger-scale on European political communication and political participation.

The type of analysis presented here has, however, some limitations. The datasets I considered here must be taken for what they are: snapshots of communication flows between users located specific periods of time. In this sense, results could vary depending on the actual period selected. Another potential limitation pertains to the impossibility to unveil the role played by the internal algorithms of Twitter. Social media platforms are ruled by different algorithms that rank the content that users see. Some have argued that these implemented algorithms produce echo chambers of interest, as users see more and more of what they are interested in (Dunbar et al. 2015; Gerhards and Schafer 2010; Papacharissi 2009). Thanks to these algorithms, popular content is oftentimes emphasized, and thus a smaller number of actors are empowered, with the overall result that hierarchies are reinforced rather than overcome. However, the extent to which echo chambers threaten genuine debate in the public sphere remains a highly debated issue. Other scholars indeed stress that the multi-choice environment enabled by digital platforms makes it hard for users not to see information from 'the other side' (Dubois and Blank 2018). Or simply that online echo-chambers foreground geographic dependencies and proximity (Bastos, Mercea, and Baronchelli 2018). We do not know whether the accounts receiving a higher number of interactions in the results of the analysis were favored by the platform itself. In any case, if this promotion occurred, it gave often higher visibility to accounts that were traditionally considered listeners or which played a secondary role.

Despite these limitations, the outcomes presented are still valid as they demonstrate the interaction on European topics for a concrete period of time. Further research could explore other topics of European relevance, and an expansion of the timespan of data collection may also yield different and more complete insights. In addition, analysis on the types of interactions opens up a potential field of research, where interactions can be examined in relation to their capacity to span across different national contexts, this contributing to the emergence of a transnational European Public Sphere, as well as with regards to their contents, in order to dissect how European citizens characterize these European topics.

3. Article 2

European Twitter Networks: Where are They? Towards a Transnational European Public Sphere?

3.1. Introduction

The European Public Sphere (EPS) has been a frequently discussed topic, especially since the emergence of the notion of EU citizenship in connection with the Maastricht Treaty in 1992 and a growing recognition of the need for a space where Europeans can discuss common matters (European Union 2010). However, there is a lack of consensus regarding the existence of an EPS, or even its importance, within the literature. In addition, its study is made more difficult because of the peculiarities of European publics (e.g., differences in national media, languages, and cultures), which have added another layer of complexity to this research field.

One of the discussions in the literature concerns the question of whether a transnational EPS exists. Research on the possible existence of a transnational EPS—encompassing several national public spheres—has so far been limited. Investigations have mainly focused on the content of national mass media and on whether the same topic has been simultaneously covered in different media (Koopmans and Statham 2010; Pérez 2013; Fossum and Schlesinger 2007; Pfetsch and Heft 2015; Heinderyckx 2015).

My study focuses on citizens' digital communication beyond the mass media. I mapped specific Twitter hashtags and reconstructed networks of interactions around them. This research angle, entailing an exploration of citizens' own bottom-up initiatives within a European context remains relatively under-examined, which is problematic, especially given the reported gap between European institutions and citizens (Morganti and Bekemans 2012, Pérez 2013; Michailidou 2007). There is a notable deficit in understanding relating to a common and public online space where the European *demos* is able to talk and deliberate about common European concerns (Morganti and Bekemans 2012).

I empirically tested whether interactions on Twitter relating to two European topics—Schengen and the TTIP—occurred transnationally. This article aims to elucidate the extent of interactions across countries (the degree of Europeanization) within the European Political Twittersphere (EPT). Specifically, I examined the extent to which Twitter users from across Europe were connected and how they interacted, that is, the extent of transnational communication on the selected topics. To assess these interactions, I examined cross-border flows of tweets, including retweets.

This article is organized as follows. In the first part, I present and discuss the main theoretical strands that are relevant for conceptualizing the structural form of the EPS. These are divided into two categories: (1) Europeanization of national public spheres and (2) a transnational and supranational EPS positioned above the national level. The angle and approach of previous—and future—research is modified according to the approach that is applied to understand the EPS. The other part of my discussion relates to the contextualization of research question(s) and hypotheses. I tested a set of hypotheses regarding the structure of the networks, network users' modes of engagement, and the degree of their transnational interaction. I next describe the methodological approach employed to answer the research question and to test my hypotheses. Finally, I present the results of the analysis. The article concludes with a discussion that relates the results obtained from the data analysis to the theoretical EPS framework.

This article focuses on the second characteristic described in the introductory chapter, namely, transnational interactions. In light of the findings of the previous article on the composition of these Twitter networks, the analysis presented in this article is aimed at measuring the extent of transnational interactivity.

3.2. The Debate on the Existence of a Transnational European Public Sphere

The theoretical framework of this article centres on the concept of an EPS. There is an extensive literature that has focused on the form and characteristics of an EPS. In this section, I identify the two main theoretical strands relating to this field of study.

The main components of a public sphere we find in the main literature are (1) the participants, such the state (including all of its political institutions), civil society, and individual citizens; (2) public spaces, such as television, radio, and online news portals that constitute the means and channels of political communication; and (3) topics generated through the content of public communication (Sicakkan 2016b, 3; Habermas 1991). Acknowledgement of these components implies that there is no unique definition of a public sphere (Adam 2016). The presence of different elements that constitute a public sphere vary depending on how this is measured (Bee 2014; Beers 2006).

Following this rationale, it can further be argued that there is no unique definition of an EPS. This is especially the case because the context of an EPS is even more sophisticated and ambiguous than that of a national public sphere (entailing differences in national media, languages, and cultures within Europe). The literature reveals two main tendencies relating to definitions of an EPS. On the one hand, the 'optimists' suggest that development of an EPS is possible or that it already exists (Trenz and Michailidou 2014; Michailidou and Trenz 2010; Eriksen 2005; Risse 2010a; Conrad 2010; Koopmans and Statham 2010; Risse 2015). On the other hand, the 'pessimists' suggest that an EPS is an impossibility (Kaitatzi-Whitlock 2007; Pérez 2013).

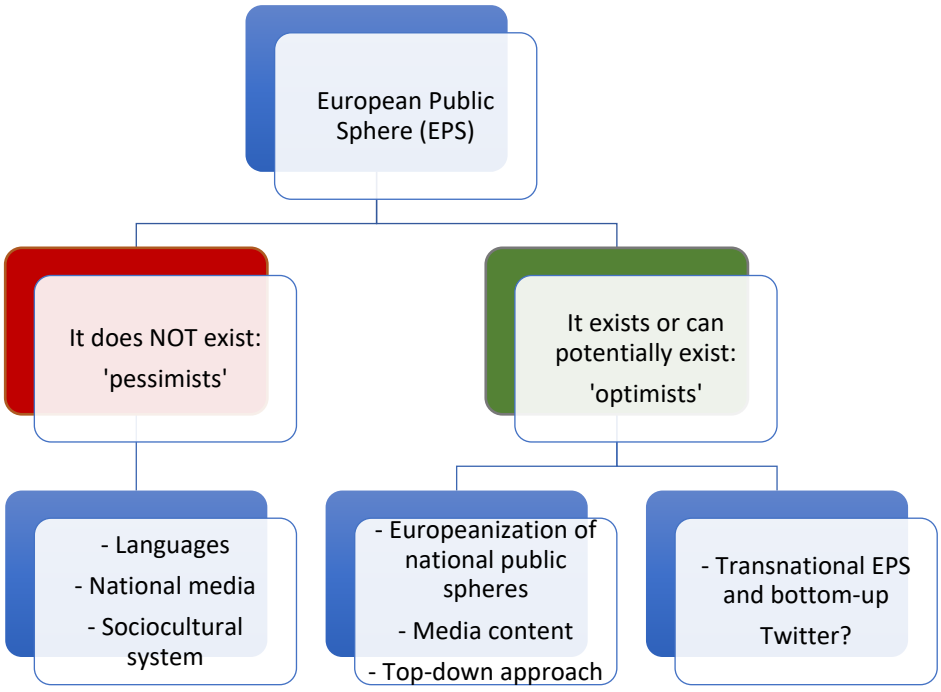


Figure 3.1. Prevailing Views in the Literature on the European Public Sphere

Following the mainstream definition of what comprises a public sphere in the European context, the participants could be identified as the (European) civil society; a (European) citizenry that acts as a public capable of generating (European) public opinion and a (pan-European) mass media (Sicakkan 2016a). The two other required elements would be a (European) space and (European) topics. Previous attempts to test empirically for the presence of these elements as a firm indicator of the existence of the EPS have met with little success. The conclusions of these studies were that an EPS does not and perhaps cannot exist. For the 'pessimists', an EPS is not impossible to achieve because the three main barriers, namely different languages, national media, and socio-cultures cannot be overcome (Kaitatzi-Whitlock 2007). Thus, individuals speaking different languages cannot communicate. Further, topics are filtered and customized by the media according to the peculiarities of the particular national society and its interests. Finally, cultures and ways of being differ considerably moving from Northern to Southern Europe and Western to Eastern Europe.

'Optimists' who consider an EPS to be possible are divided into two groups. The first group of scholars posits that while the EPS does not yet exist as a transnational sphere, all of the necessary elements are in place to prompt its development (Tarta 2009; Michailidou and Trenz 2013). The second line of thought is that the EPS already exists and is functional (Sicakkan 2012). However, because of significant barriers constraining its development (languages, socio-cultures, and national media), it actually entails Europeanization of national public spheres rather than a genuine transnational EPS. Some have argued that EPSs exist at different levels and that different topics coexist. Accordingly, these scholars theorize that it is not possible to extend beyond the Europeanization of national public spheres to form a transnational EPS (Eriksen 2005; Risse 2010; Koopmans and Erbe 2004; Vesnic-Alujevic 2011).

To clarify, the main difference between the two optimistic perspectives is that in the view of the first group of academics, a transnational EPS is possible, and the starting point for its development is the current situation. They suggest that a Europeanized national public sphere would represent the first step towards a genuine horizontal transnational public sphere (Wessler 2008). By contrast, the second group of optimists affirms that an EPS already exists in the form of Europeanized national public spheres, or overlapping EPSs that cannot be developed any further. This group believes that

existing barriers (differences in languages, socio-cultures, and national media) are too large to overcome, as do the 'pessimists'. Both agree, however, that traditional theories of the public sphere focused on nation-state oriented concepts do not take into consideration the existence of a post-national entity such as the EU.

Because the Internet is, by definition, borderless and transnational, it seems reasonable to argue that online interactions, and, more specifically, those occurring on a digital platform such as Twitter, could generate transnational interactions (Sicakkan 2016b; Barisione and Michailidou 2017). Transnational communication is conventionally understood as the communicative exchange of arguments and counter-arguments across borders (Liebert 2013; Splichal 2012b; Triandafyllidou, Wodak, and Krzyżanowski 2009). It occurs when at least two culturally-rooted public spheres begin to intersect and overlap (Bohman 2004). In other words, transnational political communication can be conceptualized as a process that enables ordinary citizens who are part of different national media arenas to interact and discuss issues of mutual relevance that are not confined within national borders (DeBardeleben 2011).

The national media that have so far been investigated may not be able to provide the necessary foundations for transnational interactions because they are associated with individual states and languages. A better understanding of a transnational EPS necessitates a consideration of the singular features of the European context: its non-homogenous nature, multilingualism, a lower degree of institutionalization compared with national public spheres, and a polycentric and multi-level structure (Sicakkan 2016a; Hepp et al. 2016a). As a borderless digital platform, Twitter could provide an opportunity for transnational interactions among individuals, because these messages entail common public spaces (hashtags) where users are free to interact in different languages (Dutceac Segesten, Bossetta, and Trenz 2016).

The importance of a transnational EPS is related to the creation of a space that differs from those of national systems where citizens interact and engage directly with issues that affect them all. A transnational EPS could counter the democratic deficit that is reportedly associated with the EU (Conrad 2010). A transnational EPS contributes to a more democratic and participatory EU, reflecting a step further from the Europeanization of national public spheres. It entails the formation of cross-country linkages among citizens belonging to different national publics. Indeed, as early as 2005,

Wallström, the European Commissioner at the time, suggested that the Internet in general and social media in particular could support enhanced transnational engagement of citizens and recommended that European institutions should focus on these (then) new digital tools to boost such a model of a transnational EPS (Wallström 2005).

In this article, I present empirical evidence to support the possible existence of a transnational EPS. Specifically, I conduct a case study of a social media platform, Twitter, and two hashtags of European relevance. I apply network analysis to address the following research question:

To what degree has the discussion of European issues on Twitter remained within a nationally-bound communication space or transcended this space to become transnationally Europeanized? What is the significance of this mode of public interaction for a European Public Sphere?

The process of transnational Europeanization can be assessed according to the extent to which a portion of public debate extends beyond a particular national political space (Koopmans and Statham 2010, 43). By contrast, a completely closed national public sphere is characterized by communication flows that remain confined among national actors discussing European issues included within this scope, which can be conceptualized as Europeanization within national public spheres.

The Internet and various online tools that are currently available, especially social media platforms, have opened up opportunities for individual users to connect and interact with other users (Ruiz-Soler 2018). These new communication possibilities are characteristically bottom up and occur at the individual user level. However, the findings of previous studies indicate that the extent of transnational interaction is limited or non-existent (Schünemann, Stier, and Steiger 2016). It seems feasible that in recent years, the balance may have changed to incorporate more transnational communication. A bottom-up platform such as Twitter demonstrates where transnational encounters could be established. Although there are embedded networks within the countries themselves, *the majority of interactions could be cross-national, boosted by social media platforms with the characteristics of Twitter* (Hypothesis I). Indeed, transnational

interaction was weakly detected or found to be intermittent within earlier studies on the EPS (Risse 2015; Koopmans and Statham 2010; Hepp et al. 2016b). At the same time, the transnational potential of the communicative construction of Europe in citizens' online forums is thought to be highly promising (Rasmussen 2013; Bennett, Lang, and Seberberg 2015). The question that is raised is whether transnational interaction is weak in itself, or whether it is simply not captured in analyses that have been conducted until now (Bennett 2012). I suggest that part of the answer may be found in the latter explanation. In order to analyse transnational dimensions of the EPS, it makes sense to look beyond national spheres to the increasingly common alternative forms of public communication that citizens may be using.

According to a purely statistical logic, large countries within the EU that have comparatively larger populations than others are simultaneously those evidencing higher number of transnational interactions. These identified transnational networks are concentrated in large countries within Western Europe (the UK, Germany, Spain, Italy, and France). Despite the expectation of Western countries accounting for a higher number of transnational interactions, these countries do not exhibit the highest levels of transnationality. According to previous studies, countries where membership support for the EU is greater could evidence more transnational interest (Risse 2010c). The rationality behind is that because they support the participation in the EU project, the population in these countries are more eager to interconnect with others transnationally, since the EU is a common project for everybody. In Risse's argumentation of how different models of the EPS could develop, despite there are few mentions about the Internet's role, there nothing explicit about the use of social media, and Twitter in particular. I take up this aspect as missing in his pathbreaking study of the EPS to be tested here.

Therefore, it is expected that in line with the Eurobarometer (2017b), the *highest level of transnational interactions occur in countries where there is more support for the EU (Luxembourg, Ireland, Germany, Netherlands, Denmark and Malta)* (Hypothesis II). I take the Eurobarometer Question 23 to check this hypothesis as it provides data on how supportive populations are of the EU (see figure 3.2 in the next page).

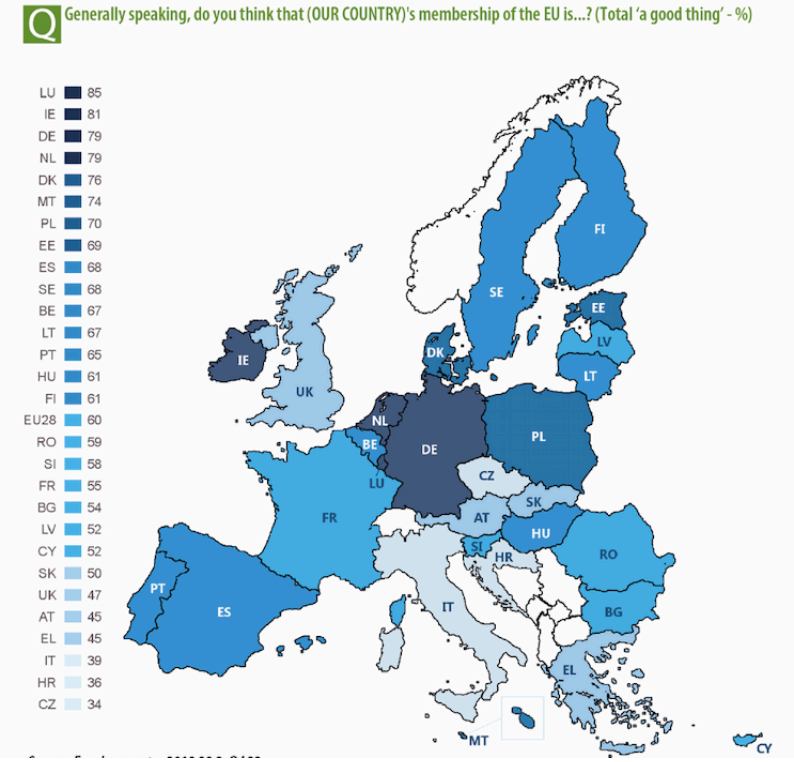


Figure 3.2. Support of the EU membership. Source: Eurobarometer 2018 89.2, QA23

It is further expected that *the networks are dominated by the English language* (Hypothesis III). English functions as a *lingua franca* that transcends the national level, serving as a vehicle for Twitter users from different countries and cultures to communicate (Leetaru et al. 2013). I deemed that English dominated the networks when 50% or more of the total number of transnational tweets were in this language. In addition, I hypothesized that *networks would be dominated by retweets (the spread of information) instead of mentions (genuine conversations among users)* (hypothesis IV). Previous studies applying Twitter data have shown that the number of retweets exceeds that of organic tweets or mentions (Cherepnalkoski and Mozetic 2016). In this regard, the analysis of networks of European topics should not differ from analyses conducted in other countries or on other topics (Cherepnalkoski and Mozetic 2015; Benkler et al. 2015). In addition, despite having analysed the tweet type in Article 1, I found it convenient to repeat this analysis to see if there was any general change between the networks in Article 1, and the geolocated networks in this Article 2. There could be more deliberation geolocated in Europe or, alternatively, even fewer deliberative conversations compared with those identified in Article 1.

3.3. Motivation and Scope

3.3.1. Why Study Twitter?

Studies conducted on the transnational EPS have been limited by the predominant focus of media content analysis on national media systems (offline and/or online). As Splichal (2012) has argued, the results of media content analysis can hardly provide a valid and reliable 'representation' of the public sphere, as media coverage constitutes only one dimension of the public sphere. Analytical dimensions other than mass media are therefore necessary.

The need for other methodological alternatives that can be applied for less institutionalized actors suggests that research on the EPT could illuminate new practices. A social network such as Twitter, comprising user-generated content, can be considered the ultimate expression of online interaction (Bruns and Burgess 2015). Indeed, digital media technologies associated with user-generated content and interaction, such as Twitter, have the potential to constitute more grounded spheres than those of mass media and institutions because of the myriad capacities for information transmission and enabling public inputs that they entail.

There is a notable scarcity of studies addressing possible transnational tendencies within political online communication. Although in recent years, analyses of Twitter communication have developed dynamically within the social sciences, most of these studies have focused on election campaigns and other political events within national contexts (Schünemann, Stier, and Steiger 2016). What it is evident is that the number of cross-country comparative analyses on political actions or movements has increased (Barberá 2015; Theocharis et al. 2015a). Some of these recent studies reveal processes of transnational interaction and the diffusion of information. For example, Twitter usage relating to participation in protests during the Egyptian and Tunisian revolutions (Lotan et al. 2011) and in support of anti-austerity movements in Spain (the Spanish Indignados movement) and Greece (Theocharis 2016) have been apparent. Indeed, scholars have argued that given its unique characteristics, Twitter may be a more suitable platform than other forms of social media for promoting transnational encounters and stimulating cross-country political participation (Dutceac Segesten and Bossetta 2016).

In spite of this potential, there is a paucity of literature on the specific topic of the EPT. Indeed, only two projects have dealt with this issue. The first was not academic per se; rather, it was a marketing report on interactions relating to the European Parliament election held in 2014 (Maireder et al. 2014). This report is of particular interest because it proposes feasible future research that is addressed in this Article. The second research project examined how the circulation of the *#austerity* hashtag within national public spheres became Europeanized (Hänska and Bauchowitz 2018). In addition, I interviewed bloggers within a case study of the Euroblogosphere (Ruiz-Soler 2014). The main conclusion of my study was that bloggers wanted to connect transnationally in order to reach wider audiences, especially through social media. In sum, several studies have been conducted on Twitter. While some of these studies suggest an exploration of transnational interactions, only a few come close to the research topic addressed in this article: an examination of transnational interactions within Twitter networks relating to European topics.

3.4. Data and Methods

3.4.1. Twitter Data

For the purpose of this analysis, I collected all of the tweets posted during the period from 1 August 2016 to 30 April 2017 on two hashtags: *#schengen* and *#ttip.* I used the Twitter Capture and Analysis Toolkit (TCAT) available from the University of Amsterdam, installed on an Amazon EC2 server, to gather the data through the Twitter Stream API. Table 3.1 shows the total number of tweets for each hashtag and the number of unique users. This information gives an indication of the size of the datasets. Although there are some Twitter rate limits, the number of tweets shown represents 99% of the tweets published during the time of data collection using either of the two hashtags.[18]

[18] According to the TCAT estimation of rate limits.

Table 3.1. The Schengen and TTIP Datasets

	Hashtag	*Nature*	*Tweets*	*Users*
The treaty that led to the creation of Europe's borderless Schengen Area.	#schengen	Political	232,113	114,295
The Transatlantic Trade and Investment Partnership.	#ttip	Economic	796,721	222,696

After gathering the data, I constructed the networks according to the type of interaction (retweets or mentions, including replies),[19] one for each dataset. Table 3.2 shows the precise numbers of interactions for each of the networks. There were 111,136 unique users, who had at least one interaction with other users, and a total of 232,768 links for the *#schengen* hashtag. For the *#ttip* hashtag, there were 207,437 unique users within the network and a total of 774,200 interactions.

The tweets compiled through the Twitter Public Streaming API included metadata such as the number of followers and the language used for the tweet. Given the study's objective, not all of the indicators were required. However, the type of tweet (mention or retweet) and the language were included in the datasets for the analysis.

3.4.2. Geocoding Process

The number of geocoded tweets was very low. Users normally do not share their locations when they tweet. In each of the datasets, the number of geolocated tweets was less than 5% of the total number of tweets. However, latitude and longitude coordinates are just one of the options available for determining the original location of tweets. There are several other methods that can be used to identify the coordinates of tweets and users, the use of which increased the results to 34% for city locations and almost 80% for country locations (Leetaru et al. 2013; Cheng, Caverlee, and Lee 2010). For this study I employed a geocoding strategy using the Google geocoding API (Kulshrestha et al. 2012; Van der Veen et al. 2015). First, I identified the 'location' field

[19] Mentions (@mentions) include replies (@replies). See https://help.twitter.com/en/using-twitter/mentions-and-replies

of the users in order to extract their location (e.g., Madrid, Italy, or New York). Next, I checked whether the location matched the time zone (e.g., Madrid and the Central European Time [CET] time zone). If the location and time zone did not match, then they were discarded (e.g., Madrid and West Africa Time [WAT]). As a final step, I obtained the latitude and longitude coordinates of the extracted locations, thereby completing the geocoding process. As Table 3.2 shows, not all of the tweets were successfully geocoded. However, the geocoded tweets were sufficient for the purpose of this study.

The question of how many tweets needed to be geocoded for the dataset to be valid was not a concern in light of the study objective. My aim was not to compare and discuss geolocating strategies and their effectiveness, or to geocode entirely the datasets; rather, it was to determine whether the geocoded tweets included any transnational interactions and the extent of these interactions. A sample of geocoordinated interactions was deemed sufficient.

Table 3.2 shows the final figures of the dataset. For the *#schengen* hashtag, the number of successfully geocoded nodes was 84,268, entailing 166,709 interactions. For the *#ttip* hashtag, the geocoded network encompassed 155,048 unique users who engaged in a total of 557,271 interactions. In my analysis, the percentage of geocoded tweets indicated the size of the successfully geocoded network. The nodes represented Twitter users, while the edges reflected their interactions comprising tweets, retweets, or mentions.

Table 3.2. Networks before and after Geolocation

	Network before geolocation		*Network after geolocation*		*Percentage of geocoded*	
	Nodes	Edges	Nodes	Edges	Nodes	Edges
#schengen	111,136	232,768	84,268	166,709	76.3%	71.6%
#ttip	207,437	774,200	155,048	557,271	74.7%	72%

Although the two issue publics organized under Twitter hashtags appeared ideal, they also presented a major challenge relating to the following questions: What is

Europe? Where are the borders of an EPS? Are users, located in South America, North America, or Asia, who engage in online discussions on EU-related topics part of the EPS? Moreover, within Europe, Norway is not a member of the EU but belongs to the Schengen area. The UK was a member of the EU (at the time of this research), but is not part of Schengen. Similar situations arise in relation to the TTIP. At the time of data compilation, the United States had an important role as one of the two political bodies (with the EU) involved in negotiations relating to this treaty. And certainly, the TTIP was going to have a global impact. Thus, different countries and publics are involved in each of these hashtags. The question of the borders of an EPS is a highly complex one. There is no consensus on this question within the literature, which further increases the challenge of framing this research in a transnational EPS. Thus, I limited the scope of the study to the 28 members of the EU. I am aware that this approach is problematic and certainly does not represent the only way of framing the boundaries of an EPS in an analysis of this kind. This is especially relevant when European politics take places in the context of globalization, such as Schengen for citizens outside Europe visiting one of the countries in the Schengen area. Or the TTIP signed with the United States, and with a global impact. However, I take the frame of the study within the members of the EU as a case study of a transnational EPS.

Because this study decided to provide empirical evidence of a transnational EPS that was confined to EU member countries, I limited the number of countries included in the study to these states. That is, once the datasets were geocoded as far as possible (see Table 3.2), I selected tweets between users in the 28 EU member states. The tweets, which did not originate in one of these 28 EU member states, or were directed outside of these states, were discarded. Table 3.3 shows the users (nodes) and interactions (edges). A total of 61.8% for *#schengen*, and 60.1% for *#ttip* of the geocoded data reflected interactions among the 28 EU member states. The percentages indicate the quantities of tweets geolocated within the 28 countries compared with the total amount of nodes and edges I was able to geolocate, shown in Table 3.2. These figures indicate that more than 60% of the geocoded interactions originated from and travelled to one of the 28 EU member states, demonstrating the European relevance of the issue publics that were mapped. This is of particular importance in the case of the TTIP, as this issue

is important to and impacts on the United States. Consequently, a higher number of tweets from the United States deploying this hashtag would have been expected.

Table 3.3. Networks of the 28 European Union Member Countries

	Networks of 28 countries geolocation		*Percentage from geocoded data*	
	Nodes	Edges	Nodes	Edges
Schengen	47,477	103,029	56.3%	61.8%
The TTIP	88,710	334,731	57.2%	60.1%

3.4.3. Methodology

To address the research question framing the study, a network of 28 nodes—one for each EU member—was created. Twitter data collected from each hashtag were embedded within each node, forming two weighted networks (one for each of the two hashtags) with the same number of nodes, namely the 28 EU members. The networks contained tweets, retweets, and mentions obtained from the dataset (for which location data were available).

The second step was to determine the extent of the transnationality of the hashtags. For this purpose, the out-degree was calculated. Out-degree denotes outgoing interactions to any of the 28 countries, including national-level interactions. Applying this procedure, I analysed the main characteristics and patterns for each of the two hashtags and compared these in relation to the integrity of the network of 28 nodes and the amount of transnational interaction.

In addition, language and the type of interaction were included as variables for investigation. These two variables relate to hypotheses III and IV. The reason for including the language variable was to ascertain whether there was any relation between the transnational interaction and the language used. The language of the tweet is very important, as multilingual users are key nodes facilitating the transmission of information among different language communities (Cheng and Wicks 2014).

The purpose of including the tweet type was to explore the type of interaction within the geolocated networks. Specifically, my aim was to determine whether the networks evidenced information transmission through retweets or whether they revealed genuine conversations through the use of mentions. If the majority of tweets were retweets, this would indicate that the network served as a relay station. However, if the majority of tweets were mentions, this would indicate a conversation among users.

3.5. Analysis

This section is divided into four parts. In the first part I introduce a representation of the two networks embedded within a European map. In the second part I analyse the total amount of national and transnational interactions, and the number of transnational interactions per country. In the third part I discuss the findings regarding the extent of transnational interaction and identify which countries contributed more to the transnational EPS on Twitter. In the final part of the analysis I present the distribution of languages and the typology of tweets in mentions and retweets.

3.5.1. Cross-national Engagements

Figure 3.3, in the next page, depicts a directed graph of the interactions between EU countries. To enhance the clarity of the visualization, loops, which result from the interactions within one country (e.g., from the UK to the UK), were not included.

This visualization enabled a graphical illustration of the state of the transnational network for each of the hashtags. In the graph, the nodes were ranked, sizewise, by the in-degree centrality: the bigger the node, the more interactions were received. Edges were ranked by the out-degree centrality: the thicker the edge, the greater the number of interactions emanating from a specific country.

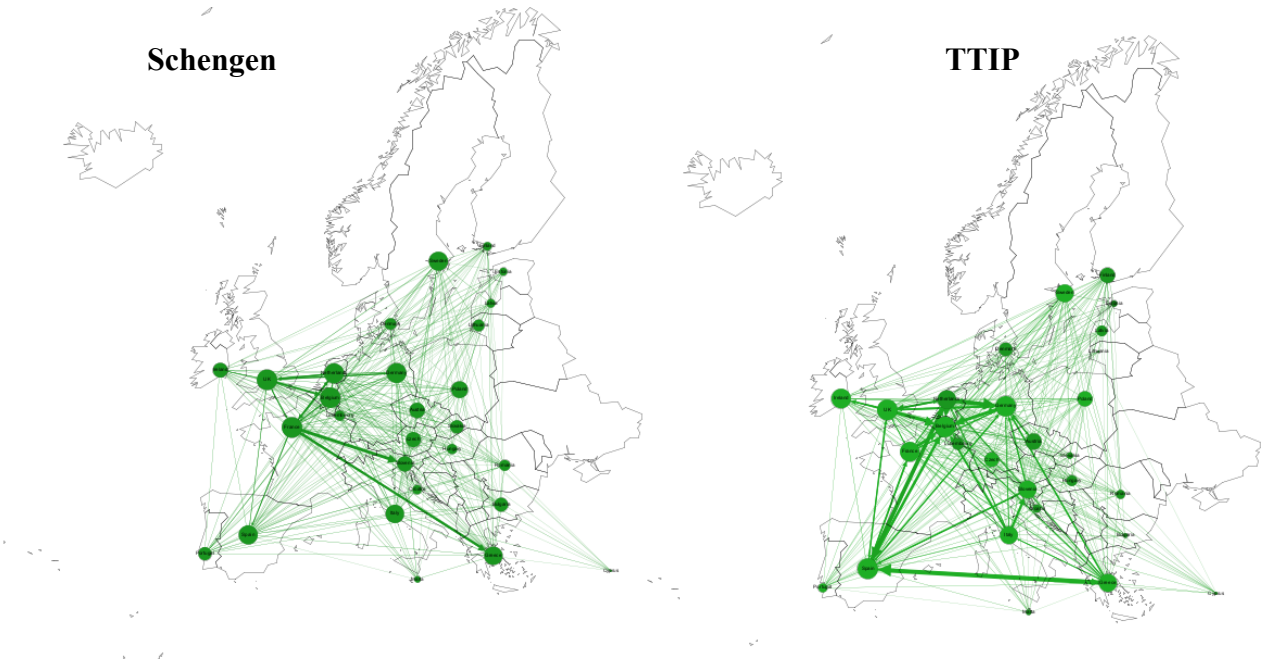


Figure 3.3. Visualizations of European Interactions

The 28 nodes were connected within the visualizations plotted for each of the hashtags. None of the nodes (countries) was separated from the others and all of them had more or less interconnections, revealing their interactions with others. There were no clusters formed among specific countries or regions, such as the Baltic countries or southern Europe. However, it is important to clarify that even a single interaction between one of the countries and another will show up in the visualization. Therefore, the quantity of interactions of each node needs to be analysed in order to quantify the extent of its transnational interactions. These visualizations indicated that whereas some countries captured more attention (evidenced by node size), others were more active (as revealed by edge thickness).

3.5.2. Hypothesis I: Transnational versus National Interactions

Tables 3.4 and 3.5 depict interactions divided into those occurring within one country (national-level interactions) and cross-country interactions (transnational-level interactions). Both tables reveal the total quantities of nodes and edges within both datasets. The first column shows all of the geolocated tweets (nodes and edges) within

the 28 EU member states. The second column shows the numbers of nodes and edges relating to national-level interactions, while the third column records the numbers of nodes and edges referring to transnational-level interactions.

Table 3.4. National versus Transnational Interactions under the Schengen Hashtag

	Geolocated tweets within the dataset of 28 EU countries	*National*	*Transnational*
Nodes	47,477	25,600	21,877
Edges	103,029	65,617	37,412
Percentage of nodes	100%	52.6%	47.4%
Percentage of edges	100%	63.7%	36.3%

Table 3.5. National versus Transnational Interactions under the TTIP Hashtag

	Geolocated tweets within the dataset of 28 EU countries	*National*	*Transnational*
Nodes	88,710	47,423	41,692
Edges	334,731	226,203	108,528
Percentage of nodes	100%	53%	47%
Percentage of edges	100%	68%	32%

The percentages of national and transnational interactions were similar in the two datasets: transnational interactions among the 28 EU countries were 36% and 32%, respectively, for the Schengen and TTIP hashtags. This finding indicates that more than one-third of the interactions took place at the transnational level (see Figure 3.4 in the next page). However, more than 60% of interactions were national for each of the hashtags.

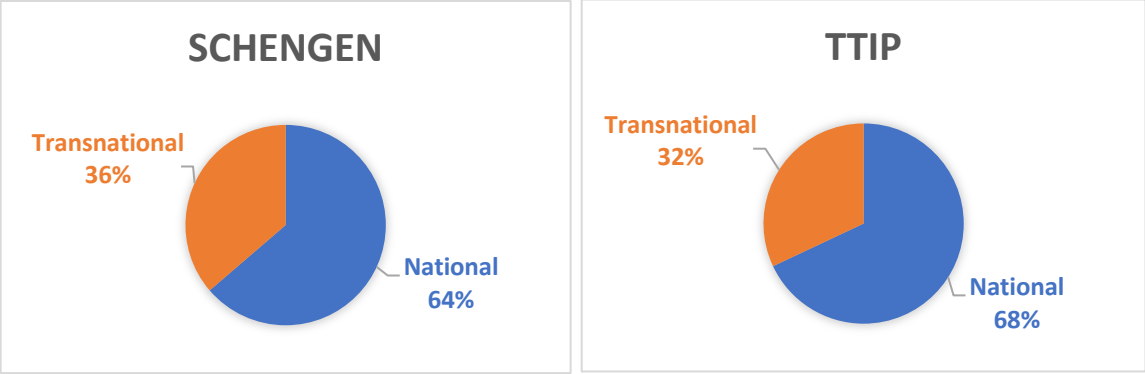
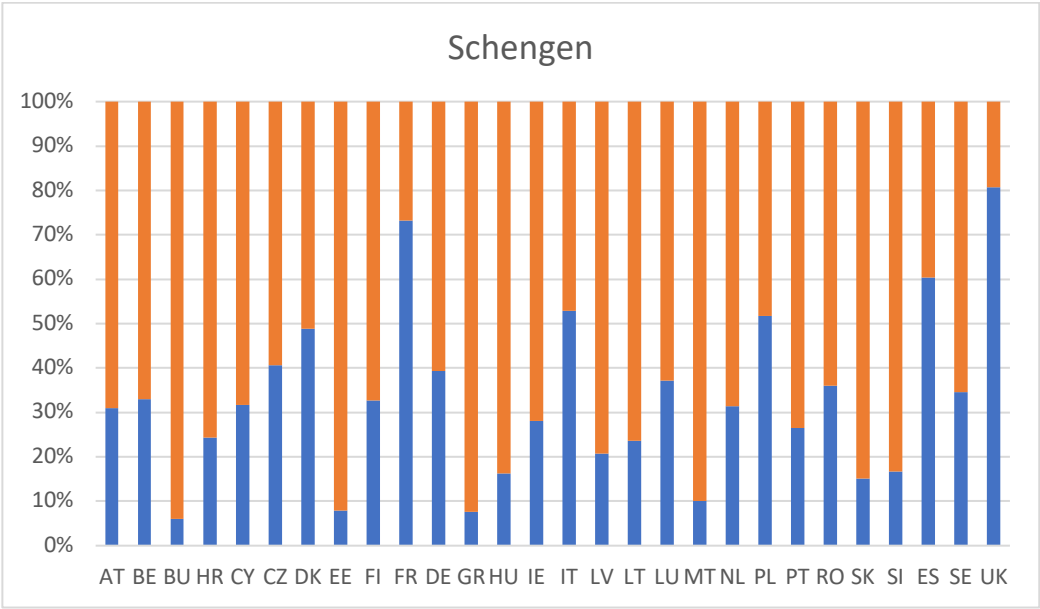


Figure 3.4. A Graph Depicting Transnational versus National Interactions for the Schengen and TTIP hashtags

Figure 3.5, both in this and in the next page, provides a more in-depth depiction of interactions per country. It reveals that for the Schengen hashtag, there were more national than transnational interactions in the case of 5 out of the 28 EU countries (France, Italy, Poland, Spain, and the UK). For the remaining 23 countries, transnational interactions accounted for more than 50% of the total interactions. For the TTIP hashtag, the number of countries with a majority of national as opposed to transnational interactions increased to 13 out of the 28 states (Austria, Belgium, Denmark, Finland, Germany, Ireland, Italy, Latvia, the Netherlands, Poland, Spain, Sweden and the UK).



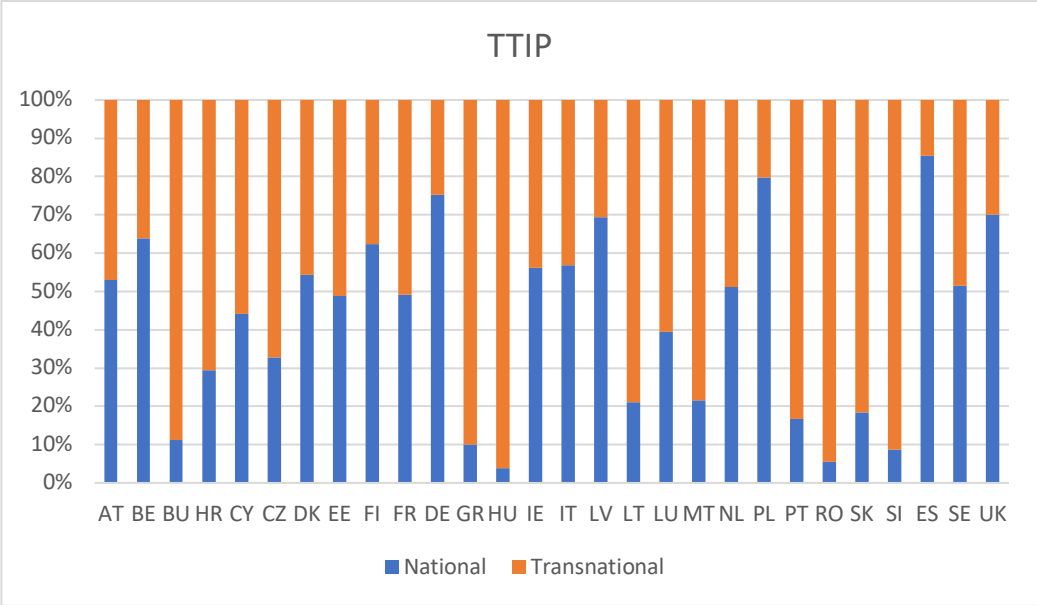


Figure 3.5. National and Transnational Interactions per Country

Three issues emerge from the graphic depiction of national and transnational interactions per country in Figure 3.5. First, for both hashtags, the majority of countries had transnational rather than national interactions. In some cases, some countries have around 90% of transnational interactions (e.g., Bulgaria for the Schengen hashtag, or Romania for the TTIP one). Second, a few countries, especially those evidencing a greater number of interactions within the dataset, skewed the result for the total number of interactions towards national interactions in Figure 3.4. The discrepancy between the results shown in Figure 3.4, indicating that transnational interactions accounted for just one-third of the total number of interactions, and those in Figure 3.5, which showed that more than half of the interactions of a majority of the countries, especially in relation to the Schengen hashtag, were transnational, can be attributed to the weight of some countries. For instance, big countries, such as France, Germany, and the United Kingdom, evidencing large numbers of interactions, shifted the balance towards national interactions, as shown in the total numbers in Figure 3.4. This explains why, for example, 64% of the interactions were national in relation to the Schengen hashtag, but national interactions above 50% occurred in only 5 countries. Third, a comparison of interactions under the Schengen and TTIP hashtags, revealed that the sum of national interactions (Figure 3.4) and the number of countries evidencing more

national than transnational interactions (Figure 3.5) were both higher for the TTIP than for Schengen. This finding indicates a lower quantity of cross-country interactions for the TTIP compared with Schengen.

In order to compensate the skewed result in which a high number of tweets in some countries affected the total sum of national and transnational interactions, I calculated the external-internal (E-I) index (Krackhardt and Stern 1988). The E/I index is a measure of group embedding based on a comparison of the number of ties existing within and between groups. In this case, the following calculation was performed: the number of ties of a country to outsiders (*E* denotes external ties), subtracts the number of ties to other country (*I* denotes internal ties), and divides by the total number of ties of a country (Esteve del Valle and Borge Bravo 2018; Huitsing et al. 2012):

$$x = \frac{E - I}{E + I}$$

Applying the E/I, the extent to which hashtag-related networks are internal (national) or external (transnational) within the 28 countries can be calculated, considering the weight of each node and its interactions. In sum, this is a feasible way to normalize network data. The E/I index values ranges from -1 (all ties are internal, in this case, they are national) to +1 (all ties are external, or, in this case, transnational), while 0 denotes equal quantities of national and transnational ties.

Table 3.6. External and Internal Indexes of *#schengen* and *#ttip*

Hashtag	*E/I Index*
Schengen	0.27
TTIP	-0.33

Table 3.6 shows mixed results from the application of the E/I index to the networks. Whereas Twitter conversations about Schengen tended to entail cross-country interactions and were therefore transnational, the TTIP scores were negative, thus revealing a tendency towards national interactions. This result confirms what is shown

in Figure 3.4, indicating more national-level discussions under the TTIP hashtag and in more countries (see Figure 3.5). However, the TTIP score revealed that while the majority of communication flows remain confined within national borders, some amount of transnational interactions did occur. Otherwise the score would have been -1, indicating the complete confinement of interactions to national borders. In sum, the E/I index values show that the majority of interactions were transnational for the Schengen hashtag, for the TTIP hashtag it was the opposite. Nevertheless, transnational interactions did occur for the TTIP hashtag, even if they were fewer compared with national interactions. These findings provide empirical evidence that a space exists above the national level where transnational interactions on EU affairs occur.

3.5.3. Hypothesis II: The Biggest Contributors to Transnational Interactions

3.5.3.1 The Amount of Transnational Interactions

One question remains to be answered. Which of the countries in this study contributed more to transnational interactions on Twitter for the above-mentioned hashtags? Table 3.7 shows the five countries with the highest number of outgoing interactions for both hashtags. These five countries accounted for 71% of the total interactions for the Schengen hashtag, with 26.9% of the total outgoing transnational interactions (10.054 edges) involving France, which ranked highest. In the case of the TTIP, these five countries accounted for almost 60% of the total number of interactions, with the greatest amount of activity associated with the Netherlands (16,814 edges).

Table 3.7. Total Interactions of Countries by Out-Degrees

Most Active Countries					
Schengen			*The TTIP*		
France	10,054	26.9%	The Netherlands	16,814	15.5%
The UK	6,264	16.7%	Spain	14,099	13%
The Netherlands	4,949	13.2%	Germany	11,923	11%
Germany	2,913	7.8%	The UK	11,423	10.5%
Greece	2,445	6.5%	Greece	10,653	9.8%
Total	**26,625**	**71.1%**	**Total**	**64,912**	**59.9%**

The results indicate that a few countries accounted for a high proportion of outgoing interactions. This was anticipated and especially true for countries associated with higher numbers of tweets in the dataset, such as the UK, France, or Germany.

3.5.3.2 The Quantity of Transnational Interactions by Userbase

Although Table 3.7 provides information on which countries had more outgoing interactions, in total, compared with other countries, these numbers provide very little information about the actual level of transnationality. Bigger countries with bigger populations will have a higher number of Twitter users, and therefore, statistically, they will account for a higher number of the total interactions. Therefore, a further calculation was performed in which the number of transnational interactions was divided by the unique users in each country. The application of this procedure illuminated those countries with more transnational activity, independently of the size of the dataset per country. This new data is presented in Table 3.8. The score represents the number of transnational tweets per individual user in each dataset.

Table 3.8. The Most Active Countries by Userbase

	Country	*Score*		*Country*	*Score*
Schengen	Slovenia	31.21	**TTIP**	Slovenia	16.91
	Bulgaria	14		Belgium	11.03
	Greece	11.76		Ireland	7.63
	Belgium	8.96		Greece	6.5
	Lithuania	5.62		France	5.17

The results show that three countries were common to both hashtags: Slovenia, Belgium, and Greece. Twitter users in these countries demonstrate a high degree of transnational mobilization. However, these countries differ from those featured on the Eurobarometer with the highest degree of membership support for the EU, namely Luxembourg, Ireland, Germany, Netherlands, Denmark and Malta. Despite the fact that citizens of these countries are not the strongest supporters of the EU, they evidence high levels of transnational mobilization, at least on Twitter. This finding may be

expected for Belgium because of the strong presence of European institutions, international organizations, and white collars workers in Brussels, but it is surprising for Slovenia and Greece.

3.5.4. Hypotheses III and IV: A Typology of Interactions and Languages Used in Transnational Interactions

Figure 3.6 presents a scrutiny of the typology of tweets (mentions and retweets) and the languages used transnationally. Mentions represent organic and first-time tweets by users, including mentions to others, and replies. Retweets represent tweets that have spread through personal networks, without being modified, within what can be conceived as a sort of relay station.

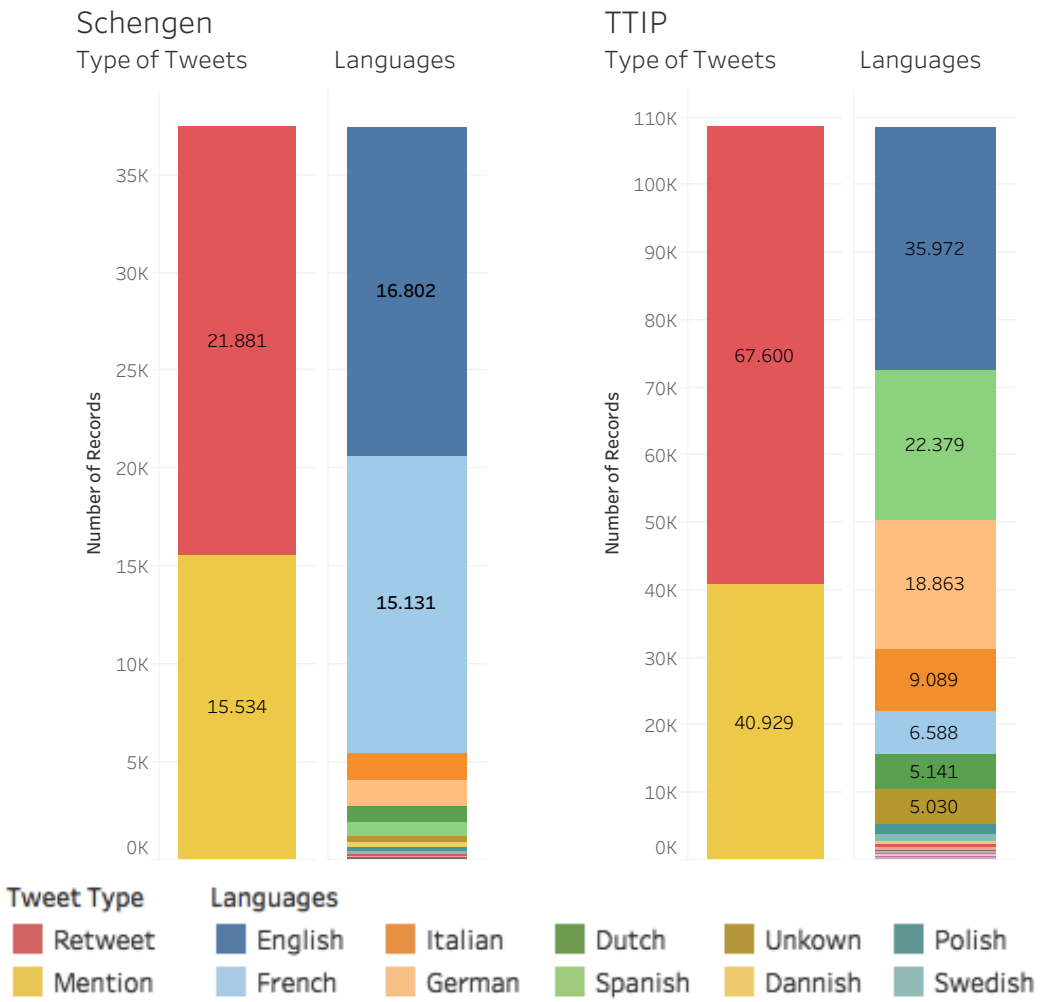


Figure 3.6. A Typology of Tweets and Languages

In both datasets, the majority of tweets (around 60%) were retweets. In the case of Schengen, 58.5% were retweets and 41.5% were mentions. Similar results were obtained for the TTIP: 62.3% were retweets and 37.7% were mentions. These results are not surprising, as retweets, in contrast to organic tweets, are very common on Twitter (Cherepnalkoski and Mozetic 2016). In addition, an examination of the distribution of tweets/retweets per country (see the appendix) reveals that retweets predominated in the majority of countries. There were a few countries that were exceptions for the Schengen hashtag, such as Austria, Denmark, Estonia, Finland, Greece, Latvia, and the Netherlands. In these countries, there were more mentions than retweets, indicating a trasnational conversational effort or intention to establish a dialogue on the part of Twitter users in these countries. In the case of the TTIP, Estonia, Lithuania, Malta, Romania and Slovakia were the exceptions.

In terms of languages it was apparent that for the Schengen hashtag, English and French were the most widely used languages transnationally. Italian was ranked third but was used much less often than English and French. In the case of the TTIP hashtag, there was more language diversity: English was ranked highest as the most widely used language, followed by Spanish and German. Italian and French were the fourth and fifth most used languages. This diversification of languages for the TTIP hashtag reveals that the discussion on the TTIP is more widely distributed, occurring in different languages.

At the country level, few of the countries in the study evidenced a majority of transnational interactions in a language other than English (see the appendix). For the Schengen hashtag, the most widely used language, transnationally, was not English in eight countries (Austria, Croatia, Denmark, France, Greece, Italy, Slovenia and Spain). For the TTIP hashtag, this figure increased to twelve countries (Austria, Croatia, the Czech Republic, France, Germany, Greece, Italy, the Netherlands, Poland, Portugal, Slovenia, and Spain). In sum, 45.3% and 36.8% of transnational tweets on Schengen and the TTIP, respectively, were in English. For each of these hashtags, the total number of transnational tweets in English did not exceeded 50% of the total.

3.6. Discussion

The above analysis was aimed at developing an understanding of Twitter interactions on the two selected European topics. Its findings reveal not only the geolocated network's external structure but also the types of interactions that users have when interacting in relation to these specific European issue publics. It is now possible to respond to the research question: *To what degree has the discussion of European issues on Twitter remained within a nationally-bound communication space or transcended this space to become transnationally Europeanized*?

The empirical data mapped in this paper reveal that users on this digital platform interact transnationally in relation to the European topics under investigation. Clear transnational networks created from different national clusters and engaged in cross-national interactions were identified. These results are of critical importance for a discussion on the emergence of a transnational EPS that transcends national public spheres. The question of the degree or 'amount' of transnational activity is addressed below.

The transnational Twitter-based EPS is apparently small in comparison to nationally-bounded interactions. Both datasets revealed that transnational interactions constituted less than 40% of the interactions. The percentage was slightly higher for the Schengen dataset (36%) compared with that for the TTIP dataset (32%). However, further analysis shows that the low level of transnational interactions resulted from the large number of tweets from specific countries that skewed the results towards national interaction. The countrywise analysis revealed that for the Schengen hashtag, only 5 out of 28 countries evidenced more national than transnational interactions. This figure increased to 13 for the TTIP hashtag. Nevertheless, more than half of the countries evidenced a majority of transnational interactions for the TTIP. This finding accords with the E/I index result: whereas a positive score was obtained for users interacting with each other in different countries for the Schengen hashtag, the corresponding score for the TTIP hashtag was negative. That is, the majority of TTIP-related interactions were conducted at the national level. Thus, overall, Hypothesis I was partially confirmed. More than 50% of interactions for a majority of countries under both hashtags were cross-national. New digital technologies, in this case Twitter, open up possibilities for

transnational encounters. However, the sum of the total interactions showed that national interactions accounted for two-thirds of the interactions because of the weight of some countries with high numbers of users.

Preliminary results revealed that of the countries demonstrating higher levels of transnational activity, those with higher numbers of tweets in the dataset had higher total numbers of transnational interactions. The highest scores were recorded for 'core countries, namely the UK, Germany, and Belgium. In fact, five countries accounted for 70% and 60% of all outgoing interactions related to Schengen and the TTIP, respectively. The results further showed that the interactions were concentrated in Western Europe. The identification of these five countries (the UK, Germany, France, Spain, and Italy) in the analysis confirms the expectation that these interactions are concentrated in the largest Western countries. However, the normalization of the data by userbase according to the number of unique users in each of the countries revealed a discrepancy between those countries with the highest numbers of transnational interactions attributed to the volumes of tweets and those in which their userbases were more active in establishing transnational interactions. The countries evidencing high levels of transnationality in terms of their userbases were Slovenia, Bulgaria, Greece, Belgium, Lithuania, Ireland, and France. However, levels of membership support for the EU are not the highest for these countries according to the Eurobarometer (2017b) (they are Luxembourg, Ireland, Germany, Netherlands, Denmark, and Malta). Therefore, Hypothesis II was not confirmed: countries with higher levels of transnational interaction were not the most supportive of the EU. This outcome contradicts previous studies. In previous studies it was theorized that countries with higher membership support to the EU would have at the same time the highest level of transnational interactions (Risse 2010c). The results here show that, at least on Twitter, membership support to the EU does not correlate with transnational interaction -with the exception of Ireland. However future research should explore this phenomenon in order to revise that is not necessary, for the emergence of transnational interactions about EU affairs, to be the most supportive of the EU.

In terms of languages, it was expected that English would be the dominant language for these two hashtag discussions. The results showed that English is indeed the preferred language used in transnational interactions in 20 out of 28 countries for

discussions on Schengen, and 16 out of 28 countries for discussions on the TTIP. However, aggregation of the results revealed that only 45.3% and 36.8% of transnational tweets on Schengen and the TTIP, respectively, were in English. Despite the indication in the results that English is the most widely used language, it was not the dominant language. For both hashtag discussions, English did not account for more than 50% of the total interactions. It was the most widely used language for transnational tweeting, but it was not predominant. Therefore, Hypothesis *III* was partially confirmed: the majority of transnational interactions are conducted in English, but they count for less than 50% of the total.

Evidently, users interact transnationally to some degree. This raises the question of whether they are discussing the topic or merely acting as relay stations for others. The analysis revealed that there were more retweets (60%) than mentions (40%). This finding suggests that the level of discussions is low, with interactions comprising more of information transfer than actual conversations. The distribution of mentions and retweets indicated that the conversations followed a relay-station model, where users disseminate what they considering relevant without entering into discussions. This finding is aligned with that in Article 1. Although the retweets indicate information dissemination rather than engagement in conversations, this result is still important because at a minimum, it shows transnational awareness.

While the two datasets differed in size, they shared a similar structure, and the results obtained indicated that the characteristics of the two networks were similar. However, a comparison of networks linked to the two hashtags revealed one main difference: the TTIP appeared to generate more national-level conversations than did Schengen, as indicated by three points. First, in terms of the total amount of national versus transnational interactions shown in Figure 3.4. The TTIP has 4% more of national interactions. Second, as Table 3.7 shows, compared with Schengen-related interactions, those for the TTIP showed a decrease of 11.2% in the volume of outgoing interactions in the top five countries (from 71.1% for Schengen to 59.9% for the TTIP). This finding accords with the results shown in Figure 3.5, which show an increase in the number of countries with the majority of the interactions being held nationally for the TTIP compared with Schengen. Finally, the results of the E/I index calculation confirm

conclusively that Twitter users making use of the TTIP hashtag tend to interact with other users in the same countries.

The finding that more national interactions occur in relation to the TTIP compared with Schengen is surprising. This is not only because of the nature of the topic, with Schengen border control matters being expected to be of more concern to national audiences but also because the TTIP is a transatlantic topic shared with the United States. In fact, 60% of the geolocated tweets are based in the 28 EU members. The result for Schengen was very similar (62%). However, it can be argued that while Schengen is a topic that matters more to European countries, the TTIP is a concern shared with the United States, which would presumably account for a significant proportion of TTIP tweets. Consequently, the number of geolocated tweets for the TTIP hashtag in Europe would be expected to be much lower than that for the Schengen hashtag. Consequently, the similarity of the results for geolocated tweets on the TTIP and Schengen only shows that the economic treaty had a very important impact on national audiences in the member states. Indeed, previous studies showed that the TTIP was highly contested at national levels across Europe (Caiani and Graziano 2018; Ruiz-Soler 2018).

3.6.1. The Significance of Transnational Twitter Networks for the European Public Sphere

The emergence of an EPS has been extensively disputed in the literature. However, this discussion has mainly focused on analyses of mass media. Internet, and more specifically social media such as Twitter, provides a new and more comprehensive way of interacting wherein single users have a say and are able to interact at the same level as traditional and elite actors, as previous research has shown (Ruiz-Soler 2018).

The results presented here provide evidence that interactions have occurred across different national public spheres. They advance understanding on how the EPS is evolving and how it contributes to increasing participation and exchanges among different national publics. Moreover, it fosters new insights on how Twitter can contribute to more genuine and democratic participation, addressing one of the criticisms levelled against the EU, namely that of a democratic deficit and lack or participatory public spaces. It can be inferred that part of the public contestation in discussions centring on these two Twitter hashtags extends beyond national political

spaces. In the case of Schengen, this portion constitutes the majority. In the case of the TTIP, communication flows remain confined to national borders. However, TTIP-related discussions still entail transnational interactions, even if their numbers are lower than those for interactions on Schengen.

A review of the different discussions on the EPS (see figure 3.1) indicates that the networks analysed here and the results of the analysis are indicative of the 'optimists'' model of a transnational public sphere rather than the Europeanization of national discussions. As shown in the literature, Twitter enables citizens to interact and engage in conversations in different countries. The EPT has gone one step beyond simply achieving the Europeanization of national conversations. It can therefore be concluded that the mapping of these two issue publics on Twitter constitute an example or model of a transnational EPS.

Nevertheless, the same literature does not arrive to a consensus with the geographical limits of the EPS, even more when topics of European relevance, such as the ones analysed here, have a global impact. Where starts and where ends the EPS is highly controversial in the literature. In this study, as argued in the methodological part, I have used one method to frame geographically the EPS. Since the aim was to measure the transnationality of the EPS in a European context, I took as a frame the members of the European Union. However, this is not the only framework where the EPS can be embedded.

What is clear is that two of the three barriers identified in the literature by the 'pessimists' as an impediment to the emergence of an EPS are discarded on the EPT. The reasons are as follows. First, national media does not play an important role in these networks, as shown in the analysis presented in Article 1. Second, despite English being the most widely used language transnationally, the results reveal the use of diverse languages, especially in interactions on the TTIP.

In addition, based on the results of the analyses performed to test the hypotheses, the transnational EPT that has been mapped here presents two additional characteristics. First, users in specific countries are more engaged transnationally. Twitter users in these countries contribute actively to the development of a transnational EPS on Twitter. This is especially significant for countries that are featured for both the Schengen and TTIP hashtags (Slovenia, Greece, and Belgium). Second, some

countries demonstrated higher levels of deliberative discursiveness,[20] that is, a higher level of mentions than retweets.

Nevertheless, there are indicators that the level of engagement and deliberation relating to these hashtags is not very positive. Although measuring the level of deliberation and discussion was not the primary objective of this study, data used in the analysis indicated that users interacted transnationally through the use of retweets. This finding confirms that of previous studies on other topics (Cherepnalkoski and Mozetic 2016; Benkler et al. 2015), and on the EPT, per se, including the findings presented in Article 1 (Ruiz-Soler 2018; Hänska and Bauchowitz 2018). It can be argued that transnational European networks rather than a functioning transnational EPS have emerged. The EPT facilitates the inclusion of non-elite actors (Ruiz-Soler 2018) and their transnational interactions through information dissemination. However, if the number of tweets versus mentions is considered, the level of deliberation remains low.

3.6.2. Limitations of the Study

One issue that requires consideration was the noise in the data. The data were limited by the number of locations that could be geolocated. The Google API is not perfect, and at times, the application is unable to identify a location's coordinates. Studies conducted to test the geolocations of tweets have shown that the different methods used to conduct such a complex task are not free of problems (Leetaru et al. 2013; Cheng, Caverlee, and Lee 2010). The process of geolocation inevitably entails a number of errors. Complete accuracy is impossible to attain. I tried to reduce the number of errors by selecting two variables that had to match. This would decrease the number of false positives of tweets within the 28 countries mapped in the study. In addition, because I was interested in the national level rather than the local or regional levels, I avoided possible misinterpretations entailed in the use of the Google Maps geolocation API. A higher level of accuracy was attained by focusing on the national level than those attained in similar analyses conducted at the regional or local levels, which would have resulted in much higher numbers of false negatives or positives. Despite all

[20] These countries were Austria, Denmark, Estonia, Finland, Greece, Ireland, Latvia and the Netherlands for Schengen-related interactions. Estonia, Lithuania, Malta, Romania, and Slovakia for those on the TTIP. For details see the appendix.

of the possible measures taken, some false positives evidently did occur. Despite this limitation, I am confident that the results of the geolocation process are accurate for a vast majority of the interactions established by Twitter users in the 28 EU member countries.

In any case, an assessment of the feasibility of the Google API as the most effective system for locating coordinates is beyond the scope of this article. The aim of this paper was to empirically test whether transnational interactions are taking place on topics of European relevance on Twitter using data for which locations are available. Evidently, a finely-honed methodology for identifying geolocations could increase the accuracy of the identified number of interactions from the 28 EU member countries reviewed in this study.

In addition, future studies could include *non-EU European* countries to enhance the networks. In this study about 60% of the interactions in the geocoded dataset are within the EU. It is easy to imagine that this percentage would increase if we take other countries in the network such as Norway, Switzerland or the Balkan countries.

Indeed, the discussion in the literature of framing the EPS inside or outside the EU is unfinished. This is even more relevant when issues of European relevance have a global impact. Previous literature analysed how national topic became Europeanized within Europe (Hänska and Bauchowitz, 2018). Future research could explore how topics of European relevance become global as well.

3.7. Conclusions

In this empirical study, I have explored two European issue publics of the EPT relating to the *#schengen* and *#ttip* Twitter hashtags. To date, research on Twitter has focused on networks in specific countries as well as different national topics such as *#sopa* and *#outcry* (Cantijoch 2014). Studies have been confined to specific territories or have relied on comparative designs that are also tied to a methodological nationalism: a framework that is exclusively oriented to the nation-state, which is too narrow to account for the interconnections created through transnational interactions (Schünemann, Stier, and Steiger 2016). This study overcame that limitation through an exploration of the transnationality of topics of European relevance by applying network

analysis to specific issue publics where users can interact directly with each other. The results showed that there are in fact transnational interactions. However, in light of the findings of Article 1, the level of deliberation is evidently low.

My approach in this empirical study has differed from the structural-functionalist approach that has been prevalent in earlier EPS research. I focused on a communication platform (Twitter) that is already more deterritorialized than the national media investigated in previous studies of the EPS. My findings relating to a study on the EPT not only complement those of previous studies on the EPS but they also open up avenues for future research on other digital platforms where such transnational networks may be evolving or could be boosted.

The next step is to analyse the content of these networks and associated sentiments to develop a better understanding of them. So far, it has been established that bottom-up transnational interactions on digital platforms such as Twitter do exist. Two of the three barriers against the emergence of the EPS, namely languages and national media, have been shown to be false ones. As Article 1 has shown, national media does not play an important role in these networks. Non-elite actors as opposed to those who gain media attention, such as individual users and civil society organization, are gaining prominence. In addition, different languages can be seen to interact transnationally, especially in the case of TTIP-related interactions. The third barrier, namely socio-cultures, has to be analysed in the content of the tweets. Article 3 focuses in this aspect.

4. Article 3

Commenting on Political Topics through Twitter: Is European Politics European?[21]

4.1. Introduction

Questions of whether the EU is characterized by a democratic deficit, and whether a European *demos* is necessary for efforts underway to evolve the EU project are at the heart of contemporary debates. Normative questions and propositions for a European *demos* have abounded in recent years. Examples of these questions include the following. Does Europe really need a *demos*? What are the requirements for a *demos* to exist within Europe? Do the peculiarities of the European project necessitate a different definition of *demos* in the European and global context? (Katzenstein and Checkel 2009; Risse 2010a)

The aim of this study was to explore social media, and specifically Twitter's potential to generate a European *demos.* Our use of data derived from social media complements the traditional use of mass media and survey data within existing studies. We selected two Twitter hashtags of European relevance: *#schengen* and *#ttip* to test several theories on a European *demos* and to determine which of these theories was most applicable in the case of Twitter. For this purpose, we used the integrated sentiment analysis algorithm (iSA), which was designed specifically for the analysis of social media content.

This study addresses the question of the extent to which discussions on Twitter focusing on topics of European relevance reflect European or national identities. In other words, do Twitter users perceive themselves as nationals of particular countries or as Europeans when tweeting on topics of European relevance? This study illuminates whether policies relating to the concerned issue publics that are mapped in this paper are perceived by users from a national or European standpoint. The answer to this

[21] This article was co-authored with Professor Luigi Curini and Assistant Professor Andrea Ceron from Milan University.

question has implications not only for theorizing the emergence of the European *demos* but also for the democratic development of the EU project. Thus, it has a crucial bearing on the future of an EU-centred European project.

The paper is organized as follows. In the first part, we present three distinctive theoretical approaches to the European *demos*, followed by the introduction of the research question and hypotheses. In the second part of the paper, we present the data and results of applying sentiment analysis. In the final part of the paper, we discuss the results, framing them in the context of the literature and outlining their significance with regard to the formation of a European *demos*.

This paper is the last of three sequential articles constituting my doctoral dissertation and focusing on the three elements of a European Political Twittersphere (EPT) identified in the Introduction. This paper presents an analysis of the third element of an EPT, namely a sense of community. It is highly unlikely that a European Public Sphere (EPS) can emerge in the absence of a 'European public' that raises topics of societal concern. Therefore, in light of the identification of the actors who compose the networks (Article 1), and an assessment of the scale of their interactions as national or transnational (Article 2), the aim of this study is to investigate Twitter users' sentiments relating to Schengen and the TTIP, as expressed in their tweets.

4.2. The Discussion on the European *Demos* in the Literature

In recent years, the literature has reflected extensive discussions on a European *demos*, and even its existence. What is incontestable is that at a time when the EU is under increasing strain, and nationalism seems to be growing exponentially throughout Europe, the topic of a European *demos* has become more pertinent than ever. The existence of a European *demos* is important for the success of the EU political project. Democracy and *demos* cannot be understood in isolation from each other: a *demos* is a prerequisite of democracy, and of self-government (Marti 2015), and a *demos* requires a democratic system for its survival (Ruiz-Soler 2014). The EU cannot be fully democratic in the absence of a European *demos* (Horizons 2015). Similarly, unless a shared sense of community exists within populations, a democratic political unit, such as the EU, cannot be viable. Without the support of citizens, and their sense of ownership of the project,

such a political unit cannot endure (Dahlberg 2004). Moreover, a community also entails communication among its members and their ability to debate issues of common concern. The above discussion therefore points to the linkages among *demos*, collective identities, and public spheres.

Discussions on the European *demos* have been sufficiently broad to encompass different academic disciplines. Scholars within the disciplines of political science, history, communications, and even linguistics have engaged with this issue (Risse 2010e). Two opposed groups can be identified in these discussions independently of discussions on the reason for the existence—or lack thereof—of a European *demos*. Thus, there are scholars who argue that there is no European *demos* (e.g., Bellamy and Castiglione 2012; Bellamy and Kröger 2013; Jolly 2005; Kaina and Karolewski 2013; Grimm 1995), others who argue for the existence of a European *demos* (Martí 2015; Risse 2010a; Fligstein 2008), and still others who posit the existence of a European '*demoicracy*' (Lacey 2016; Cheneval and Schimmelfennig 2013).

4.2.1. The 'No-*Demos*' Thesis

The majority of scholars argue that Europe lacks a *demos*. They contend that a European *demos* does not exist or that it cannot exist, thus endorsing the 'no-*demos* thesis' (Grimm 1995; Kraus 2008; Greven 2000). The reasons given for the lack of a European *demos* can be summarized as follows:

1. Citizens across Europe do not share the same identity (Grimm 1995; Kaina and Karolewski 2013). There is no common collective of 'we Europeans' that European societies can refer to. Indeed, social scientists have attempted to locate or conceptualize that 'we' without much success (Wessler et al. 2008; Van de Steeg 2005; Sifft et al. 2007). Thus far, the European project has remained a political entity that is devoid of people with a mutual understanding of how the EU benefits them. As Eder (2014:211) has pointed out, 'as long as European society is not more than a sum people, there will not be a *demos* beyond the nation state'.
2. Europe lacks a Europeanized party system that integrates the different EU member states. In theory, the existing European Parliament represents the

people of Europe. However, the different groups represented at the European Parliament are nourished by national parties, thus representing national interests at the European level (Bellamy and Kröger 2013).

3. The absence of a *lingua franca* or common language among the members makes communication impossible (Heidbreder 2012). Indeed, the emergence of a united European *demos* is almost inconceivable given the existence of multiple languages.
4. The emergence of a European *demos* is further hampered by the absence of a European public media or communications system. Such a system remains a gap. Despite the support provided by European institutions and their efforts to develop diverse European media, European topics continue to be framed around national 'stories'. This is because European issues are filtered through national media to reflect national identities and interests (Innerarity 2014).
5. The absence of genuine European civil associations or citizens' movements (Liebert 2013; Kröger 2013) is a further constraining factor. A sense of European belonging among different populations cannot be engendered in the absence of an operative network of civil society organizations, the activities of which are coordinated at the European level.

In sum, whereas the EU has extended its authority and competences, a European *demos* has not taken shape. There is no collective identity, no public sphere, and no political structure encompassing political parties and civil society organizations at the European level, with national entities continuing to predominate (Cheneval, Lavenex, and Schimmelfennig 2015). The reasons for the absence of a European *demos* are evidently interlinked. Thus, the non-formation of a European identity can be attributed to the absence of a European public sphere or of European media. At the same time, a European civil society cannot be engendered in the absence of a transnational political system.

4.2.2. *Demoicracy*, as a Solution in the Absence of a European *Demos*?

The above discussion suggests that the establishment of a European *demos* is not possible. Moreover, scholars have argued that even attempting to establish one can be

detrimental, as efforts to overcome some divisions may lead to the creation of new ones within Europe (Nicolaïdis 2013). In reality, there appears to be a conglomeration of *demoi* rather than a single *demos* (Cheneval and Schimmelfennig 2013; Lacey 2016). Instead of a horizontal *demos* existing above national *demos*, there appears to be a vertical European *demos*, which, some scholars argue, is the closest approximation to a European *demos* that can be developed by the EU. In brief, because a horizontal European *demos* positioned above national systems is not conceived to be possible, or may be even be counterproductive, the Europeanization of national systems could serve as a feasible possible solution that is aligned with what researchers have described as the Europeanization of national public spheres. Specifically, they have argued that a European *demos* cannot exist in the absence of a transnational—or supranational—EPS; at the most, the EU can achieve the Europeanization of national public spheres. Previous studies have found that there are multiple European identities as opposed to one unique and robust European identity (Katzenstein and Checkel 2009). Moreover, studies have confirmed that citizens have primarily national orientations and hold different visions of Europe and the EU (Beetz 2015; Hurrelmann 2015; Fligstein 2008).

In addition, it has been argued that a multilingual European *demos* contributes to the development of both vertical and horizontal EU communication. Countries such as Canada and Switzerland have received attention because of similarities in their political configurations entailing differences in political regions and languages; a situation paralleled by some EU members (Lacey 2014). Some EU member states, such as Belgium and Spain, share similar characteristics of multilingualism. Thus, four languages are officially recognized in Spain (Castilian, Galego, Catalan, and Basque). All of these examples point to the success of multilingual democracies. In fact, most countries in the world are multilingual (Risse 2010d).

4.2.3. The Argument for a Pan-European *Demos*

Some researchers are more positive about the existence of a pan-European *demos* (Martí 2015; Risse 2010a; Fligstein 2008). They argue that firstly, Europe and the European project have their own characteristics and particularities and require the use of a different conceptual lens. This is because attempts to locate a European *demos* have

entailed the use of an overly narrow nationalistic lens premised on the assumption that a European *demos* has the same characteristics as a national *demos* (Wolkenstein 2018). To challenge this assumption, scholars have developed new, more flexible definitions of the *demos* in contrast to those formulated for nation-states. Such definitions have been specifically framed for the European project. Put simply, these scholars have refuted or responded to each of the arguments provided by supporters of the no-*demos* theory as follows.

1. If a *demos* is theorized as a group of people sharing identical elements (such as a passport, flag, political entity, and citizens' rights), then a European *demos* (in addition to the national *demos*) does exist (Martí 2015). Moreover, the concept of 'inclusive nationalism' (Risse 2010a) has been proposed to further clarify the notion of a European *demos*. Scholars advocating this concept concur with advocates of the *demois* that citizenship is not confined solely to national borders. European citizenship is not a substitute for national identity; both forms of identity can coexist harmoniously. Indeed, according to the results of a survey conducted by the Eurobarometer, around 78% of people identified themselves as *citizens of Europe,* of whom 29% 'definitely' identified as European citizens and 49% identified as European citizens 'to some extent' (Eurobarometer 2018a). In addition, 56% of respondents expressed an attachment to Europe; of these, 14% felt 'very attached' and 42% felt 'fairly attached' to Europe (Eurobarometer 2017b).
2. To address the absence of a Europeanized party system, a voting system entailing transnational electoral lists has been proposed (Bright et al. 2016). The intention is to provide the people of Europe with a voice through the establishment of a more participatory and grassroots-based electoral system.
3. Linguistic differences may not initially pose a problem for the emergence/development of a European *demos.* In fact, different languages could cohabit in harmony. However, studies have confirmed that the establishment of English as a *lingua franca* is the only solution for enabling transnational communication among individuals whose native languages differ (Risse 2010a).

4. Proponents of a pan-European *demos* have argued that a European civil society network does in fact exist at the European level, especially with regard to issues of concern involving different countries. Researchers have proven the existence of transnationally organized networks and associations that coordinate their activities in Europe through their institutional headquarters in Brussels (Bennett 2012; Marshall and Staeheli 2015; Bouza Garcia 2015). More recently, demonstrations organized to protest against the TTIP have shown a high level of mobilization and contestation at the European level (Caiani and Graziano 2018).

It is too early to witness the complete formation of a European identity. The European project, entailing efforts to achieve European integration, which commenced in the 1960s, is only 20–25 years old, whereas the process of identity formation evolves over centuries. In any case, demography is working in the EU's favour. The section of the population with the strongest European identity is young, educated, and possesses highly valued skills relating to the labour market. This demographic is not only occupationally engaged across national borders but it also consumes other types of European media as well as popular culture originating from national, American, and European sources. This group is part of and connected to social fields and can facilitate the formation of a European society. Studies on the 'Erasmus Generation' have confirmed these characteristics of young cosmopolitan European citizens (Mitchell 2015; Stoeckel 2016). In addition, Fligstein (2009a) provided evidence of the existence of a European society comprising mobile, educated, and middle or upper-middle class people.

4.3. Sources of the European *Demos*: Empirical Evidence of a European *Demos* in the Making

Previous studies found a lack of common European sentiment expressed in mass media reports on European affairs (Wessler et al. 2008; Van de Steeg 2005; Sifft et al. 2007). Despite this reported absence of a 'we Europeans' sentiment, or very weak expressions of it, subsequent studies found increasing levels of 'Europeanness', especially amongst those who claimed both national and European identities (Risse

2010b). This finding has further been endorsed by the findings of Eurobarometer surveys (Eurobarometer 2017b). These surveys showed that the EU became more 'real' for the average European during the 2000s following the introduction of European symbols, such as the flag, passport, and euro. The establishment of symbols is an important precondition for the emergence of an imagined European community (Risse 2010e; Anderson 2006). Previous studies reveal an emerging European *demos,* with the majority of EU citizens identifying both with their respective nation-states and with Europe (Fligstein 2009b; Risse 2010d). This phenomenon, which has been termed inclusive nationalism, or 'European identity lite', entails the simultaneous possession of two compatible identities: national and European.

What then are the sources of a European *demos*, apart from the above-mentioned symbols? These sources comprise a multitude of activities, events, and initiatives. Different activities, events, or projects, whether political or cultural, could foster a European identity and *demos*. Various initiatives have been implemented by European institutions, such as the .eu first-level Internet domain, which is only accessible to residents of EU countries (EURid 2018), or the Erasmus educational and training programme funded by the European Commission that provides opportunities for participants to spend a certain period of time in another European country receiving training (Stoeckel 2016). Most recently, the European Commission launched an initiative aimed at establishing a network of 'European Universities' across Europe in 2019 (European Commission 2018). Further, the DiscoverEU initiative provides young people with an opportunity to travel around Europe (European Commission 2018). Even private sector organizations in Europe have begun to promote a sense of European belongingness among their clients.[22]

There have also been initiatives originating in civil society. For instance, Café Babel, Eurozine, and Vox Press Europe have all contributed to the formation of an online EPS (Cafébabel 2018; Eurozine 2018; VoxEurop 2018, Brüggermann 2008). Moreover, think tanks such as the European Democracy Lab and Talos have framed strategies for developing projects targeting a pan-European audience (European Democracy Lab 2018; Talos 2018). Events or initiatives relating to sports and entertainment also target

[22] For example, the N26 Bank claims to be 'Europe's leading mobile bank and [a] truly pan-European bank' (N26 2017).

a European audience and promote a European identity. Such events include, for example, the Eurovision Song Contest, European Film Awards, and European Olympic Games. The conclusions emerging from this discussion are clear: transnational contact creates a sense of European belonging and identity in addition to increasing knowledge of Europe and focusing attention on European news (Mitchell 2015; Stoeckel 2016; Ieracitano 2014).

The literature reveals that apart from these different sources of Europeanization that promote the positive aspects of a united Europe, negative events, such as economic crises, terrorist attacks, and Euroscepticism could also contribute to the building of a European *demos*. This is attributed to the fact that these problems, crises, and events are shared within Europe, and possible solutions also require collective implementation (Fossum and Schlesinger 2007; Hepp et al. 2016b; Risse 2010e; Dutceac and Bosetta 2018 forthcoming). In sum, even if they appear to be anti-European, topics that are of common concern may contribute to the development of a European *demos*.

It is important to consider the possibility that citizens organize themselves in relation to specific topics of European relevance or those that have become Europeanized (Hänska and Bauchowitz 2018). This is especially true for digital communications tools, such as social media. Topics or policies of European relevance discussed online could also constitute a 'source of European *demos*'. Internet and social media could, therefore, contribute to the development of a European *demos*, even if the comments posted are negative and opposed to the EU. Indeed, social media could even be a source of Europeanization. Different studies focusing on the question of identity have shown that social media enable the organization of users into communities of belonging (Seargeant and Tagg 2014); this could also be true for the European case (Kaplan 2016). This study is aimed at exploring this possibility.

Moreover, our intention is to complement previous research conducted on the European *demos* through an analysis of the content of the EPT, which constitutes the object of study. The contributions of this study are as follows. First, the EPT is considered a digital public space (Schäfer 2015), and attention is focused on users' freely expressed opinions and comments on topics of interest within this public space, where their potential audience is unlimited. These opinions expressed in the EPT add a new layer to research on the European *demos.* Second, this approach enables a study of an explicitly

European digital public sphere. Indeed, previous research on the European *demos* has barely touched on online environments and social media. Thus, Michailidou (2016) indirectly explored the question of whether a European *demos* is evolving within social media, concluding that a sense of Europeanization among social media users is discernible.

4.4. Research Question and Hypotheses

The study's objective was to address the question of *whether the discussions occurring under hashtags of European relevance are national or European in their orientation*. In other words, the study was aimed at determining whether these topics are considered to be of national or European relevance and whether European politics affect them as members of a national or European society. Our aim was to identify which of the three theories on a European *demos* that have been discussed in the literature applies to the content of the tweets: the no-*demos* thesis, European *demoicracy*, or pan-European *demos*. The study was also aimed at testing the following hypotheses:

- **Hypothesis 1a:** *Type of framing:* The issue publics (hashtags) are considered European rather than national. When Twitter users tweet about these issues, they do so as 'we Europeans', that is, as members of a collective European society whose sentiments reflect how the topics affect them.
- **Hypothesis 1b:** *Language discourse.* English is more 'European' than other languages in Europe. Discussions on issue publics on Twitter in other languages reflect a more nationalistic orientation. According to the literature, English is the *lingua franca* of a hypothetical European *demos* (Risse 2010a), serving as a bridge between different discursive bubbles (Bijsmans 2011). Studies have shown that those who identify more strongly with 'Europe' use English to communicate with those situated within different European publics (Fligstein 2009a).
- **Hypothesis 2:** *Sentiments towards the issue publics:* It is posited that perceptions regarding the selected topics would be negative and that users would have counter-opinions. Previous studies have shown that political topics on social

media demonstrate high levels of contestation and opposition (Pew Research Center 2016). I would also expect this to apply to European topics, which are highly contested (Caiani and Graziano 2018).

- **Hypothesis 3:** *Support for the EU*: Negative comments that oppose the issue publics are not correlated with feeling less European and/or being anti-EU. Even tweets that are very critical about the issue publics are made within a Europeanized framework and can, therefore, contribute to the formation of a European *demos* and public sphere (Fossum and Schlesinger 2007).
- **Hypothesis 4**: *Effects of events on public sentiments towards the issues.* European events that took place during the period of data collection would be expected to affect sentiments towards the topic that would either become more negative or more positive. Perceptions of social media change rapidly in response to global events (Tait 2017; Nurbekov and Khalandovsky 2015). These events have immediate effects on sentiments towards the topic in question. Changes in sentiments that are matched with important events occurring coincidentally and affecting the issue topic at a European scale were therefore anticipated. Such events could subsequently be identified through an analysis of changes in sentiments expressed in the languages considered in the study. Events or problems such as terrorist attacks, which are Europe-wide concerns and require a collective response, constitute one of the factors promoting Europeanization.

4.5. Data and Methods

4.5.1. Data

We used Twitter's streaming application programming interface (API) and the Twitter capture and analysis toolkit (TCAT) software to gather the data required to trace online conversations centring on the two hashtags (Borra and Rieder 2014). The collected data covered the period extending from August 2016 to the end of April 2017. All tweets containing *#Schengen* and *#TTIP* that were posted during this period in Spanish, English, and Italian were collected.

Table 4.1 introduces the datasets for both hashtags, showing the number of tweets collected in each language, the number of users, and the proportion of retweets (RT), represented by their percentages.

Table 4.1. Datasets

Schengen

Language	Tweets	Users	RT	% RT
Spanish	10,956	7,891	5,732	52.3
English	112,667	61,055	72,093	63.9
Italian	9,355	4,798	5,557	59.4

The TTIP

Language	Tweets	Users	RT	% RT
Spanish	177,993	48,353	123,645	69.4
English	263,183	97,491	158,907	60.3
Italian	48,344	14,944	29,532	61.0

The period of the data collection is relevant and meaningful because of the occurrence of various events during or close to the periods of data gathering. Both Schengen and the TTIP were prominent topics of concern throughout the period of data collection because of one or more events that occurred, and in all three languages.

The following timeline of events applied to Schengen.

- In August 2016, the wave of refugees, especially those coming to Europe from Syria dominated the news and discussions. Further, reverberations of the terrorist attack in Nice in July of that year were still being felt (Rubin et al. 2016).
- In December 2016, an event of vital importance for Schengen took place. A terrorist attack was launched in a Christmas market in Berlin, and the perpetrator was subsequently killed by the Italian police in Milan. The suspect was able to escape from Germany by taking advantage of the lack of border controls in the Schengen area (CNN 2016).

- In April 2017, there were extensive discussions about the new regulations introducing border checks in the Schengen area (Müller 2017).

The above-mentioned events prompted a proliferation of reports and publications about a possible modification or suspension of the Schengen Area Rules (Traynor 2016; Vela 2015).

The timeline of events associated with the TTIP was as follows:

- In August 2016, Sigmar Gabriel, Germany's minister of economics and labour announced a possible breakdown in the conversations between EU and US authorities (Ford 2016).
- In December 2016, the conversation centred on Donald Trump's election as the president of the United States and his open rejection of the TTIP and similar agreements, such as the NAFTA (Moore 2016).
- In April 2017, the news about a possible resumption of the TTIP negotiations, despite Trump's executive order to abandon the treaty, brought the topic back into the spotlight and sparked widespread discussion (Donnan and Beesley 2017). In addition, during the entire period of data gathering, Greenpeace and Wikileaks were responsible for several leaks of documents and negotiating texts (Guida 2016).

In addition, during the entire period of data collection, several demonstrations were organized to protest against the TTIP in Europe. These demonstrations were organized on the same day in different European cities as a show of unanimous opposition against the TTIP. In sum, both Schengen and the TTIP were widely discussed as a result of one or more events and circumstances that occurred during the entire period of data collection.

4.5.2. Methods

In order to answer the research question and test the above hypotheses, we performed sentiment analysis, which is a text mining method applied in the field of computational social sciences that has recently gained prominence. Sentiment analysis enables the determination of individuals' perceptions of a product, service, or a social, economic, or political topic. Sentiment analysis performed on data gathered on

social media platforms, such as Twitter, constitutes an alternative methodological approach to more formal surveys (e.g., Eurobarometer) and mass media content analysis. Using this method, we were able to collect and analyse political opinions entailing bottom-up perspectives obtained first hand from citizens. The use of a public platform, such as Twitter, for obtaining bottom-up perspectives can yield knowledge on the content of users' discussions on these issues and how they conduct them. Indeed, the use of social networking sites and other digital media platforms has expanded the public space for expressing opinions and mobilizing citizens (Barisione and Ceron 2017).

Among all of the available algorithms for conducting sentiment analysis, integrated sentiment analysis (*iSA*), developed by the Voices from the Blogs at the University of Milan (Ceron, Curini, and Iacus 2016b) was selected for the data analysis. This is a novel supervised algorithm that was specifically designed for analyses of social networks and the Web 2.0 sphere (Twitter, blogs, etc.), taking the abundance of noise within digital environments into consideration.

There are two main reasons why this algorithm was selected for the analysis. The first pertains to its demonstrated efficiency and robustness, as verified in previous analyses of social media data. Its efficiency in comparison to that of other algorithms has been conclusively demonstrated (Ceron, Curini, and Iacus 2015). Moreover, the algorithm has already been used in various studies, (Ceron, Curini, and Iacus 2016a; Barisione and Ceron 2017) with remarkable success. Second, *iSA* is a supervised machine-learning algorithm. Supervised and unsupervised computatational methods have been discussed extensively within the literature. Although we do not intend to engage in this discussion, for the purpose of this study, we deemed that the supervised method was a better fit. There are some advantages entailed in the use of supervised versus unsupervised natural language techniques or dictionaries. The main advantage is that human supervision enables all of the nuances in the data to be captured, whereas unsupervised techniques for capturing the categories and variables present in the data do not account for the distinctive characteristics of the data or the particular research perspective. It was necessary to capture and understand all of the possible nuances of the data, given their complexity and the presence of different languages. Prior to the conduct of an analysis of the entire dataset, a hand coded training set was produced.

English, Spanish, and Italian were selected as the languages to be considered in the analysis. There were two methodologically oriented reasons for selecting these three languages. First, the trainer(s) or coder(s) must be fluent in the languages. This is of vital importance for effective coding, as tweets could express ironies, jokes, or reappraisals. Accordingly, three different training sets were coded, one for each language. For this study, a single coder was in charge of the training sets. Second, the use of the three languages provided a comparative base, as each of the selected languages represents a particular national public sphere (Spanish and Italian), or serves as a *lingua franca* for a pan-European sphere (English). Instead of geolocating the tweets' locations within different countries (Spain, Italy, and the UK), we deemed their treatment as language audiences to be more logical and rational, as languages break through the barriers of individual countries. For instance, English is spoken in the UK and in the United States, while Spanish is the official language in more than one country, notably those in South America.

The data might contain some noise because a number of tweets could be posted from outside Europe. However, the rationale to include them is that we take the datasets as containers or chambers of discussion of topics of European relevance. Both hashtags -*#schengen* and *#ttip*, are hashstags of European relevance, not that they are European hashtags. In the Introduction chapter of this dissertation it was explained why I took the hashtags, instead of the keywords. Taking the hashtags for the analysis fits better the purpose of the dissertation. The use of the hashtags by the users is a conscient and intentional choice to be included in the 'container' or 'chamber of discussion' on the topic. Therefore, independently where the tweets are posted, the hashtag represents the topic of discussion, and all the tweets are taken for the analysis (in the languages analysed).

4.5.3. Operationalization of the Dimensions and Training Sets

Three dimensions were coded: (1) sentiments towards the issue public, (2) sentiments towards the EU, and (3) the type of framing. These three dimensions were

investigated to test the previously described hypotheses.[23] In order to extract the sentiments and the framing of the tweets, a codebook (see appendix) was written. The aim of the codebook is to code coherently data for the training sets in each of the three languages according to the sentiments and the framing expressed by the users in the tweets.

The process of hand coding and training of the *iSA* algorithm was the following. First, a random selection of 400 tweets per language was extracted from the data. These 400 tweets in each language, making a total of 1,200 tweets, were coded following the codebook designed for the analysis of this paper. If the meaning of the tweet in one of the dimensions was not clear, it was left blank. It is advisable to leave it blank instead of coding it without a clear reason or meaning identified in the tweet. This way, the hand coded is coherent with the tweets and meanings of the dimensions, and the algorithm is more precise when learning from the training set.

The manual coding of the tweets was done using Voices from the Blogs platform. It is a user graphic interface platform allocated in an external server where the *iSA* was installed. The platform displays one by one the tweet, metadata information, and the dimensions to code with the predefined options written in the codebook. The coder, in this regard, reads the tweet and tags the sentiment towards the topic (positive, neutral, negative), the sentiment towards the EU (pro, neutral, against) and the type of framing (national or European), following the instructions and examples in the codebook.

In the codebook I provide several examples of how the dimensions were addressed in the coding of the tweets. It should be noted that a neutral sentiment was also incorporated as a possible variable for the first two dimensions. The third dimension, namely the type of framing, was dichotomous because of the algorithm's internal operations. Thus, on the one hand, content was coded as neutral if it did not demonstrate a positive or negative sentiment for the first two dimensions. On the other hand, if a particular tweet could not be coded as European or national for the third dimension, this option was left blank.

Once the tweets were tagged with the dimensions, the training sets were ready to be used with the *iSA* to extend these training sets to the rest of the data for the analysis.

[23] Hypothesis 4 was tested by observing temporal variations in sentiments relating to the issue throughout the months of data collection.

4.5.4. Validation of the tagging and accuracy estimation

The *iSA* provides for a standard error (SE) when extending the scores from the training set to the entire dataset. In general, the SE enables the researcher to infer the extent to which the sample mean matches the population mean. Consequently, the reliability of the data collected in a sample can be ascertained. The SE is an indicator of the accuracy of the results. The smaller the SE, the more accurate the results from the training set will be. If the coding of the training set has been poorly performed, then the SE will be high. The SE was incorporated for each of the three dimensions of analysis in each language for both hashtags in order to depict the accuracy of the results.

In addition, it is advisable to run a cross-validation of the results to prove accuracy estimation. In this regard, a 5 *k*-fold cross-validation was conducted. The training sets were randomly partitioned into 5 test sets of equal size. They are then tested within each other as if they were new unseen data. With this process, it is tested that the tagging and results are similar and robust of those of the full training sets. Once *k*-fold cross-validation was conducted, I computed the mean absolute error (MAE) across all *k* trials to forecast accuracy. Table 4.2 provides the MAE in percentage for each of the dimensions and languages. All results provided less than 5%, which indicates a solid performance and accuracy estimation.

Table 4.2. Mean absolute error (MAE) from the cross-validation

	English	*Spanish*	*Italian*
	Sentiment towards the issue		
Schengen	2.2	3.2	3.5
TTIP	4.2	4.6	1.0
	Sentiment towards the EU		
Schengen	4.7	2.4	1.8
TTIP	4.3	3.9	4.1
	Type of framing		
Schengen	2.8	3.6	3.9
TTIP	4.0	3.9	3.5

4.6. Results

Table 4.3 presents a summary of the results for the three dimensions coded for the entire period of data collection. In some case, the number of neutral tweets accounted for more than 50% of the total tweets. This was particularly apparent in the case of sentiments towards the EU. A closer examination of the dataset revealed that this was because the tweets contained retweeted media news, that is, headlines that did not convey any sentiments towards the EU. However, because the focus of this paper is on the signal rather than on the polarization of the sentiment, neutral tweets were excluded from the plots in the subsequent pages of this paper and the percentages of tweets that respectively expressed positive and negative sentiments towards the issues and the EU were recalculated (see appendix for full results). The aim was to capture the overall signal that indicates how these issue publics are being treated by Twitter users.

Table 4.3. Summary of the results

		Schengen		
		English	Italian	Spanish
Sentiments towards Schengen	Negative	47.28	73.19	23.43
	Positive	9.04	5.06	22.49
	Neutral	42.66	21.73	54.03
	Total (%)	100	100	100
Sentiments towards the EU	Against	32.56	14.99	13.74
	For	6.84	15.76	30.98
	Neutral	60.36	68.98	55.30
	Total (%)	100	100	100
Type of framing	National	45.33	21.26	17.16
	European	54.65	78.42	82.21
	Total (%)	100	100	100

		The TTIP		
		English	Italian	Spanish
Sentiments towards the TTIP	Negative	67.40	46.08	77.02
	Positive	8.08	26.44	15.00
	Neutral	24.50	26.50	7.95
	Total (%)	100	100	100

Sentiments towards the EU	Against	16.02	28.84	7.14
	For	20.35	30.30	34.16
	Neutral	63.61	30.30	58.67
	Total (%)	100	100	100
Type of framing	National	25.86	37.46	25.36
	European	73.10	62.31	74.42
	Total (%)	100	100	100

Sentiments towards the issue publics and the EU are plotted in Figures 4.1 and 4.2, respectively. Both figures depict recalculated percentages of each type of tweet after removing neutral tweets, with the aim of determining the overall signal.

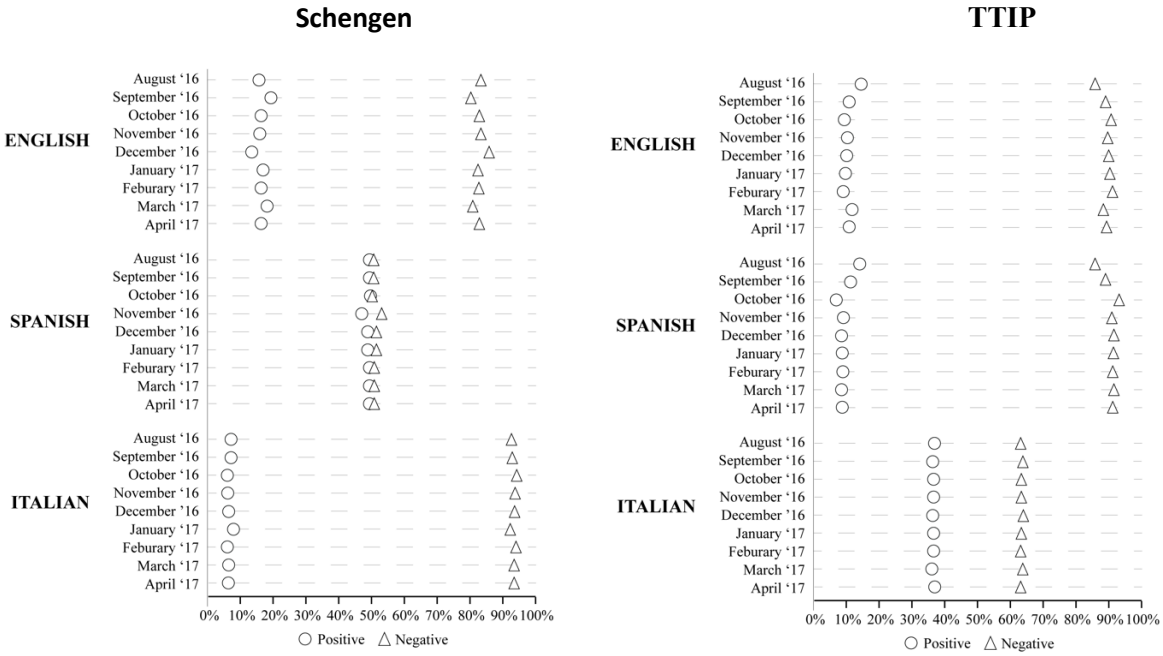


Figure 4.1. Sentiments towards the issue publics[24]

As depicted in Figure 4.1, all six datasets, in all three languages, conveyed negative sentiments about both Schengen and the TTIP, with no exceptions. The results were close for tweets on Schengen in Spanish, but still reflected the negative sentiment of the majority of users (an average of 51%) towards the issue public. The average results for

[24] The standard errors for English, Spanish, and Italian tweets on Schengen were 2.29, 0.48, and 1.4, respectively. The standard errors for English, Spanish, and Italian tweets on the TTIP were 5.04, 2.85, and 0.56, respectively.

the entire period of analysis ranged from 63% (for tweets in Italian on the TTIP) to 90.8% (for tweets in Spanish on the TTIP).

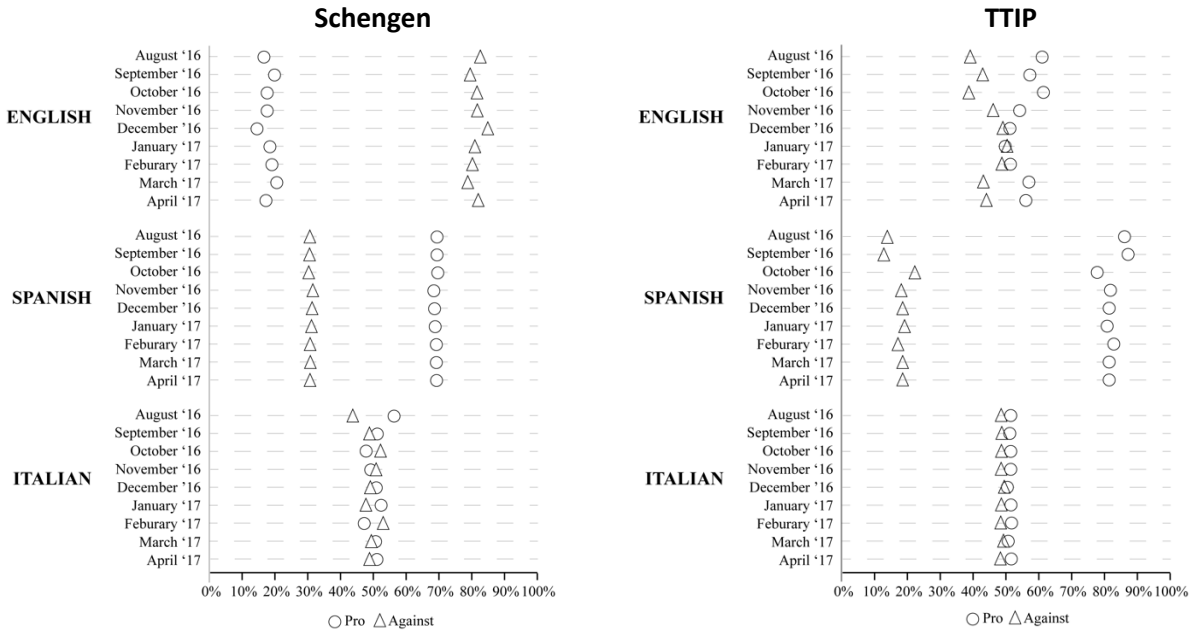


Figure 4.2. Sentiments towards the EU[25]

Figure 4.2 depicts sentiments towards the EU. For the Schengen hashtag, the analysis of the English language dataset clearly showed that the majority of Twitter users (an average of 81.8% of tweets) were opposed to the EU project. By contrast, the majority of users writing in Spanish (69.2%) were supportive of the EU, while the results for the Italian dataset were very close, with 50.7% of tweets being in favour of the EU. However, results obtained for the TTIP hashtag indicated that sentiments towards the EU were positive for the datasets in each of the three languages. As for the Schengen results, Spanish tweets were the most supportive of the EU (82.3%) followed by English tweets (55.3%), with Italian tweets being the least positive towards the EU (51.2%).

If we compare the results of this dimension with the previous (sentiment towards the issue public) we can observe the tendency is to hold negative sentiment towards the

[25] The standard errors for English, Spanish, and Italian tweets on Schengen were 2.36, 0.37, and 1.56, respectively. The standard errors for English, Spanish, and Italian tweets on the TTIP were 5.63, 3.98, and 0.57, respectively.

issue, but positive sentiment towards the EU (except Schengen English). However, we have to point the high number of neutral tweets in this respect (see Table 4.3 and the appendix for full results). In any case, since the interest was focused in those showing negative/positive and pro/against, we considered more pertinent to focus in this aspect. In addition, the results here presented are recalculated and computed taking out the neutral tweets. Following, I include some tweets with these two dimensions coded:

1. Example of tweet in English with negative sentiment towards the issue, and positive sentiment towards the EU:

RT @XXXXX: @XXXXX @XXXXXXXX This dictator supported by USA ruling #Turkey will be the Atomic Bomb of Europe #EU #Schengen Leaders have screwed us😑EU Parliament needs to be real to stop them.

---

2. Example of tweet in Spanish with negative sentiment towards the issue, and positive sentiment towards the EU:

Desperttando con Pablo Echenique: sobre la austeridad en Europa, los peligros del #TTIP, otra Europa es posible, y mucho más. VIDEO https://t.co/1exfKtaqlJ

---

3. Example of tweet in Italian with positive sentiment towards the issue, and positive sentiment towards the EU:

"Torniamo a #Schengen" di Federico Bonomi #FederalEurope #FederazioneEuropea #Europe https://t.co/sc8cTgI0I0

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4. Example of tweet, in English, with negative sentiment towards the issue, and negative sentiment towards the topic:

> *MT @XXXXXX: If the man shot in Milan is the Berlin killer, then the #Schengen Area is proven to be a risk to public safety. It must go, together with the EU.*

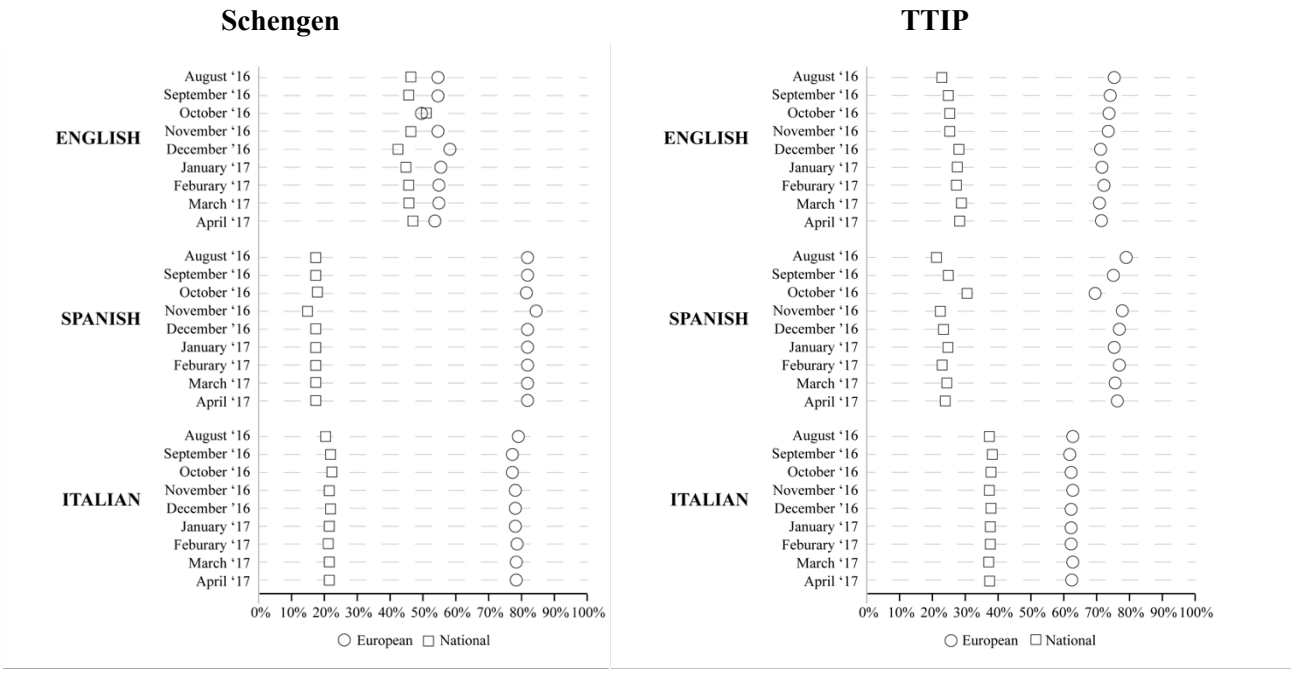


Figure 4.3. Type of Framing: European versus National [26, 27]

Figure 4.3 depicts the results for the third dimension, revealing whether the topics under investigation affected Twitter users as citizens at the European or national levels. Overall, in all six networks, these topics affected users as citizens of Europe rather than as nationals of particular countries. For Schengen, the percentages of Spanish and Italian tweets that reflected a perception of European citizenship were almost identical for

[26] Standard errors for English, Spanish, and Italian tweets on Schengen were 1.87, 0.9, and 1.35, respectively. Standard errors for English, Spanish, and Italian tweets on the TTIP were 6.11, 3.74, and 0.58, respectively.

[27] Off-topic content in English, Spanish, and Italian tweets on Schengen accounted for 0.21%, 0.62%, and 0.31% of the total number of tweets on this topic. For the TTIP hashtag, the percentages of tweets with off-topic content in English, Spanish, and Italian were 1.02%, 0.21%, and 0.23%, respectively.

Schengen at around 80% (Table 4.4 shows the average percentages for the 'Europeanness' of each language). Although the majority of tweets in English on Schengen still reflected a European rather than national identity, the average score was considerably lower at 54% for the entire study period. In the case of the TTIP, 60–75% of tweets within the three networks evidenced a European rather than a national framing. In this regard, some tweets reflecting this are listed:

1. Example of tweet in English with European framing:

Authorization to enter the #Schengen area, a facility or another division line with EU citizens? - https://t.co/Xv7uVUU7EM

---

2. Example of tweet in Spanish with European framing:

RT @XXXXXXX: Juncker defiende con ahínco el #TTIP y el #CETA. No quieren reconocer que la gente los está enterrando. #SOTEU https://t.co/Bvi3wLWmei

---

3. Example of tweet in Italian with National framing:

RT @XXXXXXXXXl: In Italia il popolo non conta.Cacciamo il #PD. .83% d. italiani:abolire #Schengen -😡 IlGiornale.it https://t.co/sY1GPGStk7 via @ilgiornale

---

Table 4.4 reveals how 'European' the three languages under investigation are in relation to the type of framing. The rows in the table show the average values over the

entire period of data collection, and the ranking for the 'most European' language for each of the issues. For Schengen, Spanish ranked highest as a 'European' language, followed by Italian, with English having the lowest ranking. For the TTIP, Spanish was again ranked highest, followed in descending order by English and Italian. For both hashtags, a European framework was most evident for discussions in Spanish.

Table 4.4. The 'Europeanness' (in percentages) of the languages under investigation

	Schengen			*The TTIP*		
	English	Italian	Spanish	English	Italian	Spanish
Average	54.06	78.31	82.21	72.64	62.31	75.73
Ranking	3rd	2nd	1st	2nd	3rd	1st

Finally, an examination of Figures 4.1, 4.2, and 4.3 did not reveal any common pattern emerging simultaneously among the three languages. In an earlier section of this article, I identified major events that occurred during the period of data collection in order to test Hypothesis 4. Although the events and the news published about them affected both datasets at the European level, scores were similar for all of the months. A simultaneous change in the scores for the three languages was not discernible. However, although there were no coincident variations for the three languages in relation to either of the two hashtags, small variations did occur for some of the languages (e.g., for English tweets on the TTIP shown in Figure 4.2). Evidently, some national events have had some influence in the sentiments.

4.7. Discussion

4.7.1. Research Question and Hypotheses

In the previous section, I presented the results of applying the iSA algorithm to the content of tweets relating to two hashtags: *#schengen* and *#ttip* for three different dimensions and in three different languages. Three main discussion points emerge from these results. The first, which relates to the testing of Hypotheses 1a and 1b, concerns

the type of framing, and the question of how the results relate to the existing literature on the European *demos.* The second point of discussion, which responds to Hypotheses 2 and 3, concerns sentiments towards the issue publics and the EU, respectively. The final point, which relates to Hypothesis 4, concerns the correlation of the previously described European events with the temporal plots.

First of all, the results provided empirical evidence that these issue publics, expressed in the three languages (English, Spanish, and Italian) affected users who identified as European rather than on the basis of their nationalities. Therefore, a common understanding of these topics, which affected them as a European community, independently of the language spoken, was apparent. When tweeting about these two issue publics (*#schengen* and *#ttip*), users referred to themselves as 'we Europeans'. This is an important finding because it confirms that users tweeting within these issue publics see themselves as citizens of Europe. Moreover, it confirms that social media data provide another indicator of Europeanization that is different from that obtained from mass media and survey content examined in previous studies on the European *demos*.

The two Twitter topics were selected and analysed as topics that affect users who tweeted as Europeans, thus addressing the research question framed for this study and validating Hypothesis *1a.* However, Hypothesis *1b* relating to the language discourse was not validated. Contrary to expectations, English is not considered more European than Italian or Spanish. An extensive literature has reported that the English language can be considered as the *lingua franca*, of a possible European *demos,* serving as a bridge between different national publics (Risse 2010; Bijsmans 2011; Fligstein 2009a). However, the results of this study did not show that English was more 'European' than Italian or Spanish (see Table 4.3). Indeed, for the Schengen dataset, the results indicated that English was actually ranked third (last) among the three languages in terms of the extent of its 'Europeanness'. For the TTIP dataset, English was ranked second after Spanish, which in both datasets was the 'most European'. These results evidently contradict those of previous studies that found that English was the *lingua franca* of a European *demos*. Instead, the results obtained here are indicative of a multilingual European *demos.* Different languages can co-exist and interact when deployed by citizens, revealing a greater degree of European identification than that relating to English within prevailing conceptions. This is particularly apparent when the finding that

transnational interactions are as well established in languages other than English, as discussed in Article 2, is considered.

How these issue publics are seen (negatively or positively), and what these users think about the EU (whether they are for or against it) is a second discussion point. The analysis revealed that sentiments towards the issue publics in all languages, and in both issue publics, were negative. This finding is not surprising, as previous studies have shown that when individuals do not like something or want to complain, especially in relation to highly contested political topics, they generally express their opinions easily and freely on social media platforms (Pew Research Center 2016). The results of this study were in line with expectations and confirmed Hypothesis 2. The issues examined in this study have generated high degrees of controversy and mobilization and were expected to garner a high volume of negative comments and critics. I would ascribe the close results for Spanish tweets to the polarization of the debate about the provision of asylum for refugees and the Schengen policies in South American countries. There was a significant volume of data generated through tweets in Spanish by South American citizens, talking about Schengen rules, thereby balancing the score in relation to positive sentiments.

Despite the prevalence of negative sentiments towards Schengen and TTIP, tweets in all three languages demonstrated remarkably positive sentiments towards and support for the EU. Bad news and negative events, such as economic and political crises, triggered a transcultural public discourse, as reported in previous studies (Fossum and Schlesinger 2007; Hepp et al. 2016b). Accordingly, Hypothesis 3 was confirmed. There was no correlation between negative or very negative sentiments towards Schengen and the TTIP in all three languages, and sentiments towards the EU, the European project, or European institutions. Despite users' negative perceptions relating to the two topics under discussion, they still believed in or approved of the EU project, and considered themselves European rather than foregrounding their nationalities, as evidenced by the type of framing they used. These results reveal that as of now, support for the EU and its continued viability as a multilevel polity are apparent.

The final discussion point concerns Hypothesis *4* and changes in scores in the three languages that coincided with events impacting on Europe that may have affected them. Despite a few variations in the scores observed for some months, it can be concluded

that the above events did not change or modify the overall trends relating to both dimensions of sentiments (towards the issue publics and towards the EU) as well as the framing of the topics (national versus European). I expected events requiring a common response (e.g., terrorist attacks and the declarations of high-profile politicians) to be simultaneously reflected in the scores for the three languages. However, there were no instances of a European event or news that coincidentally affected the scores in the three languages, notwithstanding organized demonstrations held against the TTIP in different European cities at the same time. These and other offline events are not reflected in the scores. However, small variations in some languages in some months were observed that are not correlated with changes in the other two languages. It is possible that national events and news media about these topics may have had some influence. Future research should include an examination of temporal trends for individual languages to identify possible national events that could have affected the scores.

A comparison of the results for both the Schengen and TTIP issue publics revealed that there was very little difference between them. Although scores differed from language to language, both issue publics demonstrated the same three general characteristics: users' engagement with the topics reflected their perceived impacts on them as Europeans rather than as individuals of particular nationalities; their sentiments towards both topics were negative rather than positive; and in both cases, they demonstrated support for the EU, with the exception of English tweets on Schengen. However, these results have to be put in perspective, as there were large numbers of neutral tweets and retweets. More than half of the content did not reveal any particular opinion relating to the two coded dimensions of sentiment. Such tweets originated from media outlets and headlines that did not convey any kind of opinion about the issue public or the EU. In addition, the large number of retweets could have impacted on the results, which though not unusual on Twitter, skewed the results to one side. For example, hundreds of retweets of a tweet expressing a positive sentiment towards Schengen would result a positive score using the *iSA,* as the algorithm considers each tweet/retweet as a separate unit within the dataset. In any case, despite the high number of neutral tweets and retweets, the results can be considered valid because the intention was to capture the signal and overall sentiment.

4.7.2. A European *Demos* on Twitter?

The question that arises is whether a European *demos* can be discerned on Twitter. An examination of the results clearly shows that for these two hashtags, the results were more aligned with the *demoicracy* and 'European lite identity' models than with the model of a pan-European *demos* (Lacey 2016; Risse 2010a; Fligstein 2009a). Twitter users do evidently discuss European topics from a European perspective, but it is difficult to ascertain whether they are aware of what is being said in other languages. The Europeanization of national public spheres separated by linguistic bubbles thus appears to be in evidence. Language bubbles, which in this case are Spanish and Italian, appear to be more European than English, which is considered within the literature to be the *lingua franca* of a pan-European *demos* bridging different public spheres. In conclusion, what appears to have emerged is a collectivity of individuals (Twitter users) belonging to Europe and not a *demos* existing beyond and above the nation.

Framed in terms of the concept of a 'European lite identity' (Fligstein 2009b; Risse 2010d), the results both complement and contradict previous findings in the literature. On the one hand, it has been posited that two identities, national and European, can coexist, with the primary one being national and the secondary one being European. However, the results indicate a reverse order: a European identity is the primary one reflected in the type of framing of the majority of users (see Figure 4.3), whereas the national identity is secondary. However, we do not know 'who the Europeans are'. Fligstein (2008, 2009a) theorized that those who espoused a stronger European identity were generally young, skilled, and educated, belonging to the category of white-collar workers. The extraction of socio-demographic indicators could possibly confirm Fligstein's theory in relation to the data. This would show whether or not they are the same type of users identified by Fligstein and other scholars as 'the Europeans'. However, socio-demographic indicators are not available at this point in time, necessitating reliance on data showing how users perceived these two issue publics: as Europeans or as nationals of individual countries.

Overall, the results of this study indicate that one of the barriers identified as an impediment to the emergence of the EPS in the literature was not found. Three main barriers have been identified in the literature: different languages spoken within

Europe, national media that control and filter information to national publics, and different cultures and values within Europe that impede the development of a common sentiment of belonging to Europe (Kaitatzi-Whitlock 2007; Bohman 2004; Pérez 2013). The results of this study revealed that the third barrier (different cultures and values within Europe) was not in evidence. Different cultures and values, at least in relation to the three languages mapped in the study, are not an impediment to Twitter users seeing and recognizing that they are all part of a community and that the topics affect them all as a European community.

These results reinforce the position in the literature that negative comments against the issue publics do not imply a lack of support towards the EU. As a parallel example, a very nationalist German can be in line with the government but can oppose a law or policy introduced by that government. That is, an individual can be very proud of his or her government, while still being very critical of one or more of the policies adopted by an executive branch of government. Why should Europe be different? Indeed, 41% of Europeans tend to trust the EU, while only 35% trust their national governments (Eurobarometer 2017b). Therefore, legitimacy issues facing the EU are no worse than those faced by national institutions and governments. It can be the proof to demonstrate that even negative comments against the issue publics can be viewed positively, as in many cases they express demands for a better or different EU: 'Another Europe is possible' (Varoufakis 2016b).

From a normative perspective, negative comments towards the EU or the issue publics are constructive. They reveal the will to change the status quo regarding the EU and the issue publics to bring about improvements. Even when the comments were opposed to both the EU and the issue publics, the identity frame with which they were associated was European. This shows that irrespective of whether the comments were positive or negative, they revealed a European perspective, and targeted a European audience. This can be viewed positively in relation to the construction of a European *demos* from a normative perspective. However, unless such negative perceptions are addressed, they will not be beneficial for Europe in the long term. The rise of Euroscepticism, mainly promoted by right-wing parties, even when framed in a way that target European audiences, can be dangerous for the EU project and can erode its legitimacy.

4.8. Conclusions

This study complements previous studies on the European *demos* by applying sentiment analysis, an innovative computational methodology, to analyse the *Europeanism* of Twitter data comprising discussions on certain European issue publics. In addition, the consideration of three different languages enabled a comparative analysis to be performed, aimed at elucidating the characteristics and configurations of overlapping language bubbles. The analysis has shown that users perceived the impacts of the mapped issue topics, *#schengen* and *#ttip*, as European citizens rather than as nationals of individual countries, thus revealing the existence of a European consciousness. In addition, the results showed that a highly critical stance on the topics under discussion was not correlated with criticism directed at the EU or European institutions. From a more practical perspective, the ideal approach would be to avail of the results of the analysis, showing how Twitter users think about certain European issues and policies, to promote and enhance direct conversations among European institutions, citizens, and officials.

The research presented here is a first attempt to apply Twitter data and a supervised computational method for assessing the extent to which an EU identity and Europeanization exist and contribute to the emergence of a European *demos*. To date, studies on the European *demos* and identity have relied on mass media and survey data. This study demonstrates that social media data, and specifically Twitter data, open up new avenues for investigating the European *demos*. However, the specificities of Twitter data must be taken into consideration. They are not comparable in scale to data on the general population or even data derived from the Eurobarometer. Issue publics are shaped by the technicalities of networked platforms. Nevertheless, the results of this study on two discussion topics indicate that a sense of European belonging can be fostered through the application of Twitter technology on digital platforms. European institutions need to acquire more experience engaging with grassroots audiences as another source of a European *demos*.

The study has opened up three new potential avenues for future research. The first entails the inclusion of more languages in future studies. Comparative studies could focus on different languages—and also on different time periods relating to the same

languages—analysed here to advance understanding in this field. Other languages connected with a more Eurosceptic national public opinion (e.g. German, Dutch or Swedish) could be analysed, and they could provide new comparative insights. This was not possible in the present study, as language proficiency is a required skill for the individual who codes the training set for the algorithm. In this case, my fluency did not extend beyond English, Spanish, and Italian. Future studies could also benefit of comparing located data in the continental Europe and outside Europe in these languages. Although it was argued that the hashtags were taken as chamber of discussion of topics of European relevance independently where the tweets were posted, future studies could explore the possibility of comparing any difference within the languages with geolocate data. This is increasing relevant in the context of globalized politics.

Nevertheless, the results of this study incorporating these three languages constitute a first step towards developing an understanding of how hashtags of European relevance are discussed and treated by Twitter users. In addition to including more languages, the analysis could be repeated with different sentiment algorithms, as this could provide complementary or different results. Evidently, social scientists need to take advantage of new data sources and methods, especially computational methods.

The second avenue of inquiry relates to developing improved methods for identifying common reference points. This study examined how Twitter users spoke about the two issue publics but did not investigate what they said. Therefore, the application of unsupervised content analysis to attempt to find similar reference points in different languages appears to be feasible. This would significantly contribute to a discussion on the emergence of transnational European public spheres through the identification of common topics within the issue publics in different languages. Third, as noted in the discussion section, national events could have affected the scores. An attempt was made to identify events at the European level that could have affected the scores. The results did not show a coincident change in the scores for the three languages, despite the fact that some of events or news reported had impacts at the scale of Europe. However, there were small changes in the scores for each of the languages. Therefore, future studies could attempt to identify national events that could have affected these scores.

5. Conclusions

5.1. Research Questions

Can Twitter contribute to the emergence of a transnational networked European Public Sphere (EPS) and a European *demos*? This thesis has attempted to answer this question through its examination of the contribution of the European Political Twittersphere (EPT) to their formation. I approached this topic from a political communication perspective, focusing on individual Twitter users. I deemed Twitter to be one of the most effective platforms currently available for hosting public discussions and interactions. Accordingly, I formulated a series of research questions, each of which entailed the use of a different methodological approach, although the same data collected under two Twitter hashtags: *#schengen* and *#ttip* were used in all three studies. The first sought to identify the actors, according to their types, who are garnering more attention on Twitter. In light of this knowledge of their identities and importance at the micro level, I then investigated the macro-level structure to obtain an answer to the second question, which related to their types of interactions, that is, whether they are national or transnational. Having identified the actors and the kinds of interactions among them, I addressed the last question: What sentiments are expressed by users when they tweet their opinions about the topics mapped in this study? In particular, do users tweeting under these hashtags consider the EU favourably or unfavourably? Moreover, when tweeting about the effects of the selected topics of European relevance on Twitter, do they frame these topics from a national or a European perspective?

Citizens can avail of Internet-based technology, and, more specifically, social media to communicate and interact with others without the mediation of third parties. In this doctoral thesis, I have argued that online interactions on Twitter, given its unique characteristics (networked issue publics, transnational reach, and an asymmetrical structure), can foster and complement the formation of a strong and democratic EPS and European *demos*. To support this argument, each of the three component articles of this thesis, while focusing on the same research object, namely the EPT, entailed the application of a different theoretical framework and methodological design to respond

to the respective research questions. This research is important for elucidating current practices of online engagement with European politics. Acquiring this understanding is all the more important given the current rise of nationalism and populism across Europe. Through my investigation of how users interact on Twitter on issues of European relevance, I have attempted to advance understanding on the current situation and the emergence of an EPS.

In these sequential empirical studies, I captured three characteristics of these interactions framed in a European context: they are constructed from the bottom-up; they are transnational, that is, transcending national public spheres; and they reflect European attachment or a feeling of belonging to Europe. These three elements were integrated into the respective theoretical frameworks used in the thesis, as described in the articles. Thus, in Article 1, I examined bottom-up interactions through an exploration and analysis of networked publics. In Article 2, I explored the transnationality of these interactions through an analysis of their geolocations. Finally, Article 3 presents an analysis of sentiments of belonging to Europe in relation to a European *demos*. The three articles complement each other in terms of the research outcomes that they present. Considered together, they can broaden understanding of the configuration and characteristics of the EPT.

For these studies I availed of the Twitter API to collect data for a specific time period. A different method approach was applied for each of the three studies. I examined the data using network analysis and sentiment analysis. I further defined criteria based on a review of the literature on each of the three theoretical frameworks, aimed at empirically demonstrating the main normative concept for each of the theories. In the first article, network analysis revealed that non-elite actors who use Twitter are attracting more attention from other participants in hashtag discussions. Geolocation of the networks, presented in Article 2, showed that a considerable number of interactions are established transnationally within discussions under the two selected hashtags. Lastly, the application of sentiment analysis in Article 3 showed that users' opinions on the topics conveyed their sense of belonging to the EU and to Europe. Further, I ascertained whether they considered these two topics to affect them as members of a European society or as citizens of their respective countries.

5.2. Main Findings

The overall findings, based on a collective consideration of those of the three empirical studies presented in the articles in this thesis, can be summarized as follows. First, my case study of Twitter data on topics of European relevance revealed the construction of bottom-up, transnational European networks comprising a multilingual *demoi*. In Articles 1, I showed that non-elite actors exert a meaningful influence, serving as leaders getting most of the attention in the networks, as indicated by the numbers of retweets and mentions that they received, and that users interacted transnationally. In Article 2 I showed empirical evidence of transnational networks of European related topics. In addition, Article 3 provides evidence that users considered themselves to be affected by the topics as European citizens rather than as nationals of their respective countries.

The main finding presented in Article 1 related to the role of users in garnering attention and role players. I found evidence that non-elite actors (civil society actors and individual users) are attracting more attention than elite actors (mass media, journalists, politicians and political institutions). Whereas elite actors from political and media organizations are also present within the networks mentioned by other users, and continue to play a key role in the articulation of information and ideas, their role is changing. Within these networks, non-elite actors accumulate the majority of mentions and retweets by other users, thereby playing an important role in the configuration of the network. However, it is notable that the findings presented in Article 1 follow similar trends to those reported in other studies that have assessed the roles of non-elite actors on online platforms (Benkler et al. 2015; Maireder and Schlögl 2014). Therefore, these findings on the European context, examined in Article 1, do not differ from those reported in the literature on networked publics for other regions and topics on Twitter. Rather, they complement them. Thus, the first key finding confirms that trends at the European level are similar to those observed for other Twitter topics and for different regions in the world described in Article 1.

The second empirically demonstrated finding, presented in Article 2, on the transnational interactions of Twitter users tweeting on the two hashtags that were mapped, challenges the findings derived from a prominent strand of research. Previous

studies on the EPS, focusing on the mass media, have revealed sporadic simultaneity effects (the same topic featured simultaneously within different public spheres) on elite actors that indicate the Europeanization of public spheres (Koopmans and Statham 2010). However, the findings presented in Article 2 reveal what are clearly transnational networks encompassing different national clusters that have been built by non-elite actors engaged in cross-national interactions from the bottom up. What these findings reveal are not just discussions on the same issues taking place at the same time among these users, as previous studies have demonstrated, but also the transnationality of these interactions. Thus Article 2 adds a further layer to the existing knowledge base on the EPS, focusing on an online social media platform such as Twitter. Moreover, it shows how a platform with the characteristics of Twitter can boost transnational encounters.

The final empirical study, presented in Article 3, sheds light on what the users (previously identified along with the types of interactions that they establish) express when commenting on the hashtags of the issue publics mapped in the study. I attempted to use social media data to detect a feeling of European belonging. Article 3 shows that users referred to the selected topics as issues that affect them as European citizens rather than as issues that affect them as citizens of their respective countries. Despite conveying that these issues impacted on them as Europeans rather than as nationals of particular countries, they tended to express dislike, or a very negative view, of the topics concerned. In fact, the analysis presented in Article 3, taking out those tweets that did not express any sentiment (neutral), users can simultaneously hold negative sentiments towards the issue publics and positive sentiments towards the EU and European institutions[28]. Thus, a negative sentiment relating to the topic did not correspond to a very negative opinion of the EU and European institutions. This finding is in agreement with the finding reported in the literature that negative and critical comments about certain EU policies or treaties highlight the commonality of problems, thereby strengthening a sense of belonging to Europe. Moreover, users conveyed that while they wanted a better or different Europe, they still wanted a Europe, at least on Twitter.

Furthermore, the findings presented in Article 3 cast a positive light on social media as another source of data for conducting identity research. Until now, investigations on

[28] In Article 3 it is stated that the results are computed taking out the tweets with neutral sentiment, and therefore only those with positive/negative and pro/against sentiment are taken.

identity and a sense of community were traditionally confined to survey and mass media data. However, social media data were applied in this study in conjunction with a computational method, namely a supervised machine-learning algorithm for performing sentiment analysis, thus demonstrating a complementary source for measuring the extent to which a European identity and European *demos* exist.

In addition to the main research outcomes, there are also important secondary findings. Three findings contribute to a better understanding of the subject of this doctoral dissertation. The first is the absence of automatic accounts or bots, as shown in Article 1. This does not mean that they do not exist, as evidenced during the performance of random samples. However, bots or automatic accounts did not accumulate a high number of mentions or retweets, either for Schengen or for the TTIP within the first 200 accounts. This finding is of particular interest because it shows that differing from other discussions, these conversations were not affected or influenced by bots and the corresponding misinformation that they might have caused (Howard, Woolley, and Calo 2018). The percentage of bots present within the entire network was the same (about 10–12%) as that reported in previous studies on Twitter. However, while bots evidently do exist, they did not accumulate mentions or retweets by other users within the network.

The second of these secondary findings is that the results for English, considered as a *lingua franca*, were not as strong or conclusive as expected. English was not found to be the dominant or the most 'European' language in either the second or the third study. This is an insightful finding that diverges from the traditional conception prevailing within the literature that English serves as a bridge between different language bubbles and is used by those with a stronger attachment to Europe (Leetaru et al. 2018, Risse 2010, Bijsmans 2011, Cherepnalkoski and Mozetic 2016). The results presented in Article 2 showed that despite the fact that English was the most widely used language among users, it was not dominant, with users interacting transnationally in other languages. Moreover, in eight countries for Schengen and twelve for the TTIP, English was not the primary choice of users as their transnational language. In Article 3, with reference to European issues, English was not the language in which users expressed a stronger European framing. Therefore, the findings point to multilingual transnational interactions, in which English was the most widely used language overall, but was not

exclusively used or predominant. This was especially apparent in the case of the TTIP hashtag, for which a fragmentation of languages used in transnational interactions was evident. Up to five languages accounted for 80% of transnational interactions.

The third finding relates to differences in the results of the two datasets. Although the results for the datasets did not differ significantly, I did capture one major difference under the TTIP hashtag. Different indicators pointed to a more national conversation on the TTIP. This is indicated, first, by the score for the network of national versus transnational interactions obtained using the External and Internal index (E/I index) (Krackhardt and Stern 1988) and the number of single countries with more national than transnational interactions, discussed in Article 2. Although some transnational interactions occurred under the TTIP hashtag, the result of the application of the E/I index show that interactions among users within their respective countries exceeded transnational interactions. Second, the finding in Article 1 of a higher number of non-elite actors in the conversations on the TTIP compared with the number of these actors discussing Schengen, indicates that the former conversation was dominated by non-elite actors, as they were the ones receiving more mentions and retweets. Civil society has been strongly mobilized to oppose the TTIP. Evidently, the conversation on the TTIP is more nationally oriented and entails a higher level of mobilization of non-elite actors on Twitter.

Overall, the three main barriers indicated in the literature as impediments to the emergence of an EPS (different languages, national media filtering EU issues according to national interests, and different socio-cultures within Europe) have been refuted. First, different languages were observed to interact transnationally, especially in relation to the TTIP. Second, the national media does not play an important role within these networks. Actors who are getting more attention are not media personalities; rather, they are non-elite actors, such as individual users and civil society organizations. The control and filtering roles of the media are not evident here. Non-elite actors interact directly within these networks from the bottom up, bypassing the control exerted by elite actors. Third, it is apparent that despite living in different countries and cultures, users are evidently affected by the mapped issues. Users communicating in the three languages framed the topics as ones that affected them collectively as a European society, despite cultural differences. Therefore, the study demonstrates that the EPT is

contributing to the emergence of the EPS. Thus, the impediments identified in the literature can be overcome within social media.

5.3. Contributions and Limitations

The original contribution of this dissertation is the study of the European Political Twittersphere, for the first time, in three diferent aspects in each of the three papers that compose the thesis. It contributes to the study of European political communication using social media. The outcomes in the three articles indicate that what may be emerging is a transnational EPS built from the bottom up and composed of a multilingual *demoi.* All of the findings taken together are important and contribute to a better understanding of the current trend of online political communication in a European context, with the EPT constituting the focus of the research. In addition, this thesis contributes to the existing literature on the three main theoretical frameworks that have been applied, testing their main normative concept: networked publics, the EPS, and a European *demos*. Each of the three empirical articles contributes to the respective theoretical area that it engages with. Moreover, these articles contribute to an understanding of online political European communication and elucidate how users interact online on common topics concerning the EU.

First, through the focus on networked publics on issues of European relevance, this research complements previous studies focused on other topics or regions. We have now knowledge of the situation with European topics on Twitter hashtags, and the potential for allowing the participation of individual users and alternative voices, following the theories of networked public spheres and collective action (Benkler 2006, Bennett and Segerberg 2011, boy 2011). The results of the so-called European political Twittersphere go hand with those produced by similar research conducted in other regions or countries and on other topics. Indeed, there is no remarkable difference with previous research and the results for the 'European context': non-elite actors can enjoy higher visibility that in other contexts and thus have a greater chance of being seen and heard. However, although we can say that bottom-up interconnectivity appears, as theorized in the Introduction capter, the level of interaction is low. In addition, the type of interaction is in line with the spread of information rather than with conversations.

Second, the transnationality of the networks, framing them in the theory of the EPS. Indeed, Twitter facilitates online communication and acces to international audiences, due to the high degree of transnationalization of Twitter (Hansen, Schneiderman, and Smith 2011). The results in this paper are indicative of an 'optimist' model of a transnational public sphere (Tarta 2009; Michailidou and Trenz 2013). As shown in the literature, Twitter enables citizens to interact and engage in conversations in different countries, and in different languages. The EPT has gone one step beyond simply achieving the Europeanization of national conversations, confirming the second element of the EPT addressed in the Introducction chapter. However, the discussion does not end there. This paper has addressed briefly the increasing normative discussion of what can be considered Europe, and what model of transnantional EPS is out there. Certainly, more research needs to be conducted in this regard. This study opens up for possible further investigation of transnational public spheres in Europe. For instance, to define normatively what transnational or supranational Europe is, and to test it empiricaly.

Last, by taking social media data as another indicator of the possible development of a European sense of belonging, it contributes to research on the notion of a European *demos*. For these two hashtags the results were more aligned with the *demoicracy* and 'European lite identity' models than with the model of a pan-European *demos* (Lacey 2016; Risse 2010a; Fligstein 2009a). Twitter users do evidently discuss European topics from a European perspective, but it is difficult to ascertain whether they are aware of what is being said in other languages. The Europeanization of national public spheres separated by linguistic bubbles thus appears to be in evidence. It confirms that social media data provide another indicator of Europeanization that is different from that obtained from mass media and survey content examined in previous studies on the European *demos*. The third element of the EPT in the Introducction chapter is also given here: social media platforms such as Twitter, with its particular technical capabilities, can prompt a shared sense of community. Because the topics under consideration are of common concern.

In fact, the three elemets or features of the EPT analysed here open new paradigms in the concept of virtual public spheres, networked publics and identity using social media data. This dissertation opens new lines of discussion in the literature not only

because the dissertation is focused in the European context, but the outcomes here presented and the impact they have in their corresponding literature.

In addition, the results can help European and national institutions to understand better how users, and, more concretely, citizens, interact on, engage with, and discuss European issues on a platform with the characteristics of Twitter. How European institutions and politicians might tackle the increasing use of social media is unclear. Nonetheless, online discussions, and specifically Twitter networks, provide useful barometers for gauging interactions and sentiments on different topics in the European mindset. The ideal approach would be to take advantage of these communication tools to promote direct conversations among European citizens and among citizens and officials. Thus, the EPT can contribute to closing the gap between European institutions and citizens.

However, not all of the findings are promising. Despite the finding of the three main features (bottom up, transnational and a sense of community) in the three empirical papers, and the refusal of the main limitations for the emergence of the EPS (different languages, different national media and different socio cultures) described in previous literature, the results also showed that there were some substantial caveats to these optimistic initial conclusions. There were more retweets than mentions and genuine conversations among the interactions. Although I tested the typology of tweets twice, as shown in the first and second articles, to see whether there were any differences associated with non-geolocated and geolocated networks, this result remained the same.

A higher number of retweets than tweets with mentions is a general characteristic of Twitter communication, so this finding did not differ from those of other investigations (Bruns 2012; Cherepnalkoski and Mozetic 2016; Hänska and Bauchowitz 2016). However, its impact related to the theoretical perspective of considering these results as indicative of a digital EPS. It appears to be very difficult to establish genuine conversations on Twitter. Twitter seems to have prompted the development of a public arena, conceived as a space, room, or virtual platform where citizens/users can meet and interact, rather than a functional and operative online public sphere for

deliberation,[29] the absence of which was indicated by a larger number of retweets than mentions. Thus, information transfer is more prevalent than actual conversations. However, although the retweets reveal that information dissemination predominates over engaging conversations, this result is nevertheless important because it indicates that transnational awareness does exist. Nevertheless, a functioning public sphere, as theorized by Habermas and discussed in the literature, is absent. There are indicators that users interact within them and that they do so transnationally. These interactions, however, entailing a predominance of retweets over conversations are more akin to a public arena in which users are able to interact. However, deliberation, which is one of the characteristics of the functioning public sphere, was not found.

Despite their innovative methodological approach and focus on the EPT, the studies conducted for this doctoral thesis had a number of weaknesses and limitations. In each article, I have identified the limitations of the specific study that I conducted. In addition, there are a few limitations that apply to all three studies. While these limitations do not affect the findings, they shed light on the current state of the use of computational methods and of the use of social media data within the social sciences.

The main drawback applying to all of the studies was the lack of sociodemographic indicators in the data. Obtaining more details on the individuals behind the accounts (their sex, education, age, income, etc.) would have yielded valuable insights. However, such information was not available in the Twitter data. Nevertheless, there are some programmes and algorithms that can predict sociodemographic indicators by categorizing the behaviour of users according to different variables, such as the frequency of tweets, vocabulary, geographic location, and links included in tweets. However, because these algorithms are experimental and could be inaccurate, I decided not to include them in the study. Future research should address sociodemographic indicators extracted from metadata.

The possibilities for research conducted using Twitter data are enormous, as demonstrated by the increasing number of studies based on Twitter.[30] However, data collected for this analysis is as good as it can be from the Streaming API. There were

[29]According to the literature, a public sphere is constituted by three elements: the participants, the space, and the topic.

[30] A simple search conducted on Google Scholar generated hundreds of articles.

associated limitations, as the Twitter API is like a black box with little information available on how the data are processed (Driscoll 2014; Tromble, Storz, and Stockmann 2017). Direct access to the data with the Firehose API would have been useful. However, the economic cost of doing so was prohibitive (Ruiz-Soler 2017). If I was in a position to introduce a change in social media API(s), I would consider introducing academic licenses for universities and research centres. In any case, the software used to collect the data communicates with the Twitter API if any rate limit is exceeded and the average of data missed because of rate limits from the API. Fortunately, there were not many rate limits for these two hashtags, and the datasets were almost (99%) complete.

However, at the time of writing (November 2018), the public APIs of different social media platforms are experiencing changes that will make it very difficult to obtain valid data for research purposes. There is uncertainty as to what will happen to Twitter's public APIs in the future, but there is a consensus within the research community that access to the APIs will definitely be limited in the future. APIs are already being shut down, as in the case of the Facebook API after the Cambridge Analytica scandal (Change 2018). Lively discussions on this subject are ongoing, especially in areas of research that rely on social media data. Examples include the initiative for building industry–academy partnerships (Social Science One 2018), an open letter submitted by the wider research community against the closure of the APIs (Bruns 2018), and discussions on prospective difficulties of conducting social media research in the post-API world (Freelon 2018). Therefore, despite the limitations involved in this doctoral study, I consider myself fortunate to have been able to collect these data. I was advantageously positioned at a time when the Twitter API was most accessible. Researchers are beginning to face increasing difficulties in gaining access to social media data through public APIs, and this problem will intensify in the future. Data collection for the same period of time that was mapped for this study cannot be repeated, unless the Firehose API can be accessed or special permission is obtained from Twitter. In sum, this study has benefitted from the use of public APIs: though my study is not without limitations, I did have access to the data.

Another factor to consider is the size of the datasets. Despite the fact that these datasets were considerably smaller than other datasets, such as *#brexit* or *#eurovision*,[31] this did not pose a problem. Datasets are based on the actual numbers of tweets using the hashtag. The small size of the dataset indicates that political topics of European relevance are of less interest and are less popular compared with other topics. This finding is correlated with those of the Eurobarometer, revealing a lack of interest in European politics in general (European Commission 2013a, 2017b). In addition, researchers have focused on collecting enormous quantities of data from social media platforms without considering API rate limits. Bigger datasets are not necessarily better or more representative (Ruiz-Soler 2017; González-Bailón, Wang, Rivero, Borge-Holthoefer, and Moreno 2014). In fact, when data collection is conducted properly and limitations are acknowledged, *small big data* are as valid as *big big data.*

In the Introduction, I explained why I used hashtags rather than keywords for the analyses. Both methods of data collection have their strengths and weaknesses. A very important limitation of the dataset derived from either of these methods (hashtag or keyword collection) relates to missing numbers of mentions (@mention) and conversational threads in which neither the hashtag nor a keyword was used. However, the opposite situation also occurs: the dataset can include original tweets that do not make use of the hashtag but entail mentions or replies with the hashtag or keywords. I acknowledge that the issue of missing mentions could have impacted on the previously discussed lack of deliberation within these networks. As the data-gathering process was limited to tweets making use of the hashtag, first, and the hashtag or keyword, second, for the mentions, it is possible that some conversations may have been missing. Unfortunately, there is little that can be done about this issue, as it is pertains to how the Twitter API provides data. This issue has to be taken into consideration in future studies of hashtags that are constitutive of public spaces and possible deliberations and exchanges of comments. For example, a possible solution for overcoming this issue would be the inclusion of preselected accounts and conversational threads (with or without a hashtag or keyword) in the datasets to enable an assessment of the level of possible deliberation.

[31] By the end of my data collection in 2018, I had gathered over 3 million Tweets for the *#eurovision* hashtag and 100 million tweets for the #*brexit* hashtag.

Finally, we need to consider the internal Twitter algothrim. There is no public acess in order to understand how it works and what impact it might have to research based on Twitter data, despite there has been some research tryng to shed light on this issue (Lua 2018). The possible changes to the algothrim adds another layer of difficulty. Twitter might modify the algorthim depending of their internal pirotities. Popular content, or specific user, in this kind of internal algothrims is oftentimes emphasized, and thus a smaller number of actors are empowered, with the overall result that hierarchies are reinforced rather than overcome. In Article 1 I described the possible impact this might have for the results. We do not know whether the data and the results might have differed with different internal algorthim. In any case, if this occurred, it reinforced the features this dissertation was hoping to find. However, it would be interesting to replicate similar reseach conducted here in the future, to asses as well, whether internal algothrims in the social media platforms have an impact in the type and nature of interactions.

5.4. Final Thoughts

In conclusion, I return to the question of whether a transnational European public sphere composed of a multilingual European *demoi* can be discerned on Twitter. The reality is that within the literature, an extensive discussion on Twitter and topics constituted under hashtags is evident, without yielding any clear and concise answer as to whether or not these can be constructed on Twitter. The findings of this set of studies indicate, in principle, an affirmative response to the previous question. The three empirical studies presented in this doctoral thesis provide evidence and indicators that non-elite actors do in fact interact with each other transnationally using different languages, and with a common understanding of European society. However, in my view, the indicators presented within the two case studies do not suggest the presence of a functional and engaging public sphere within the EPT. Users, and especially non-elite ones, evidently do interact with each other, and their interactions entail a certain level of transnationality as well as the use of diverse languages. However, the extent of their deliberations, considered by Habermas as one of the requirements of a public

sphere, is very weak. The majority of these interactions were retweets, entailing information dissemination as opposed to actual engagement and deliberation.

Although my aim in this doctoral study was not to assess and compare a deliberative versus participatory model of a public sphere (Dahlgren 2005; Fiket, Olsen, and Trenz 2014; Kies 2010), future studies could extend in this direction, especially as some specific countries, described in Article 2, showed more mentions than retweets, and therefore greater efforts at deliberation. In light of these empirical results, can the main interactions of users (retweets) on a platform such as Twitter be considered deliberative? After all, retweets function as echoes conveyed throughout Twitter networks, spreading information, content, and even action (Cherepnalkoski and Mozetic 2016; Theocharis et al. 2015b; Margetts et al. 2016). Modified retweets could even be considered a second and more sophisticated type of engagement differing from basic retweets. Perhaps this type of interaction is the most that can be achieved given the existing technical capacities of Twitter, leading to the requirement of a new or different definition of a public sphere in the context of social media platforms. The quality of deliberation on Twitter, and on other social media platforms, is rapidly emerging as an important field of research (Steiner 2012; Kies 2010; Oz, Zheng, and Chen 2018) and is gaining prominence, especially in the European context (Eriksen and Fossum 2018). Advocates of deliberative democracy have always hoped that the Internet would provide the means for developing an improved public sphere. But what are the particular features of a platform needed to promote deliberative debate online? Some studies have examined which particular platform features promote deliberative online debates (Esau, Fries and Eliders 217). Accordingly, after the number of characters permitted per tweet was doubled, researchers observed that there was a discernible and growing orientation towards deliberation, evidenced by less casual and more analytical content, leading to healthier online discussions with less hate speech. However, concerns regarding the quality of political deliberation are ongoing notwithstanding these changes (Jaidka, Zhou, and Lelkes 2018).

Following this discussion, seems pertinent to revise the very own concept of public sphere itself. In the current world of global politics, new communication technologies favour the direct participation of citizens with different and new types of engagement and deliberation. This dissertation contributes, with the European context, to the new

trend in the literature of post national and virtual public spheres (Benett and Pfetsch 2018). The concept of public sphere received revisions in the past. Perhaps it is the moment to define, with the use of the Internet, social media, and new communications tools that are going to happen in the future, new meanings and concepts.

Figure 5.1. New meanings of the public sphere

Nevertheless, a consideration of the EPT as a public arena rather than as a public sphere should not be taken to indicate *failure*. Twitter is just one platform within an ecosystem of digital tools and social media that can be accessed through the Internet. Although Twitter has contributed to some extent to the debates and conversation on European affairs, it would be a mistake to consider Twitter as the ultimate platform. It is only one platform that citizens can avail of, in conjunction with other social media tools and traditional media, to interact publicly. After all, usage of Twitter is not as broad as usage of other platforms such as Facebook or Instagram. Indeed, all of these platforms and media, with their various strengths and weaknesses, should be considered as part of the public sphere. In the contemporary environment entailing *multiple displays* (Vaccari, Chadwick, and O'Loughlin 2015), the simultaneous use of different platforms by citizens to become informed, interact with each other, and discuss issues has become the norm.

In Article 2 of this thesis, I developed an analytic framework in which Europe was conceptualized as comprising current EU member states (which, at the time of the research included the UK). The question that arises is what would the results look like if

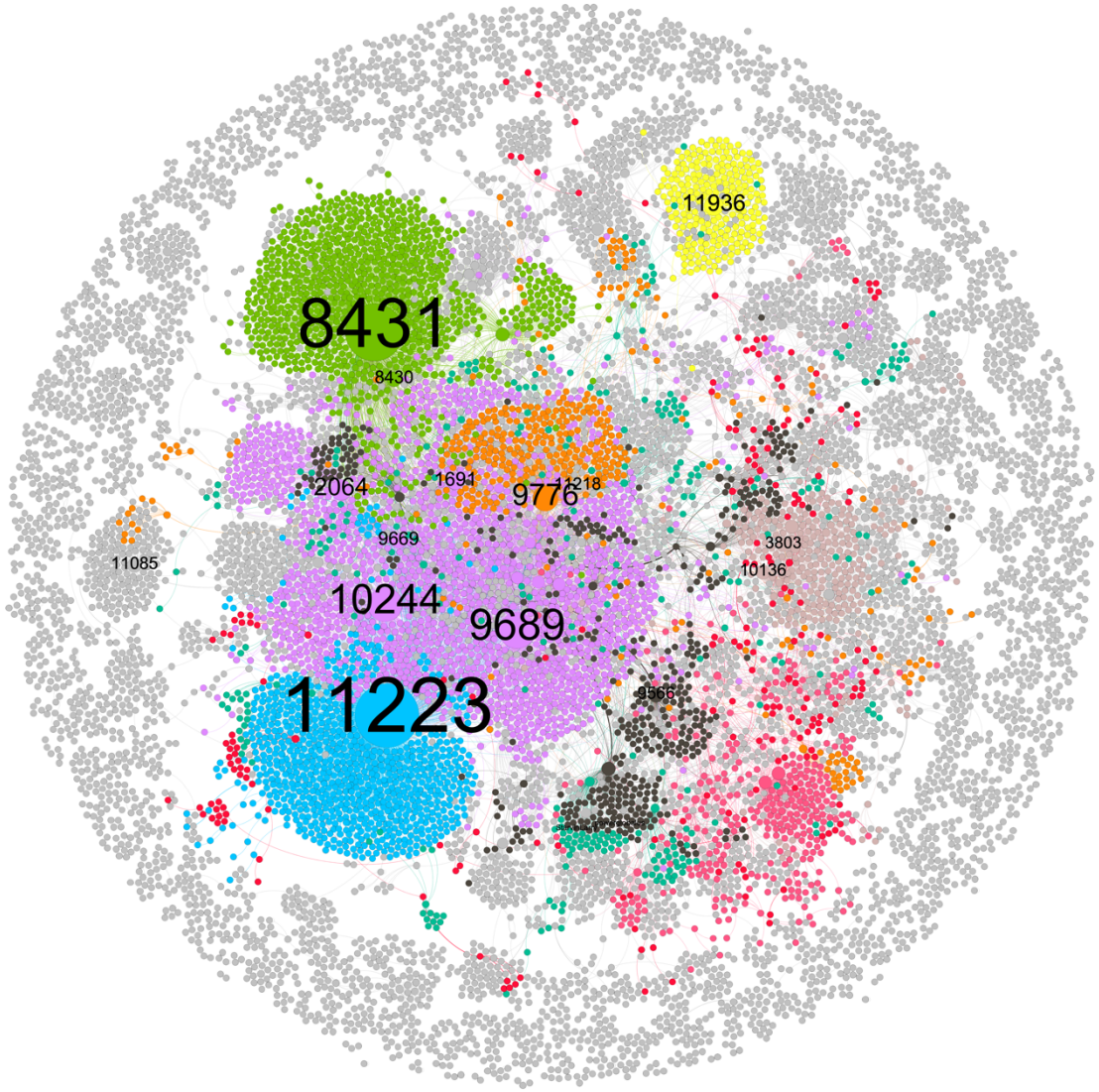
the UK was to be excluded from the analysis? Future studies could investigate this question. However, a brief review of the data suggests that the exit of the UK from the EU could prove advantageous in terms of the research questions addressed in this doctoral study. A higher number of transnational interactions, entailing more interactions in a wider range of languages and fewer transnational tweets in English may be found. Thus, a new avenue for comparative research that arises concerns the question of whether Brexit (the UK's exit from the EU) has been beneficial for the emergence of a transnational EPS and *demos*.

All three empirical articles, with their findings as well as their limitations and weaknesses, are generative of new questions. Like all studies, they entail flaws; however, they have yielded valuable insights on the characteristics of the EPT. To enhance the findings presented here, a greater number of studies, or more studies on different European topics, are needed. In sum, this doctoral study provides a snapshot of a discernible EPT at a particular point in time. This is an unavoidable aspect of any study conducted on a dynamic space, such as social media platforms in general, and Twitter in particular. Complementary research on the EPT would shed light on changes in the results that have been presented in this dissertation. Twitter, with its inherent characteristics, advantages, and limitations represents an important platform within the overall ecosystem comprising all of the existing digital platforms. It is important to watch closely how these platforms develop and how they are used. This is especially pertinent given increasing discussions on how instead of promoting democracy, social media may be adversely affecting it (The Economist 2017; Sunstein 2017).

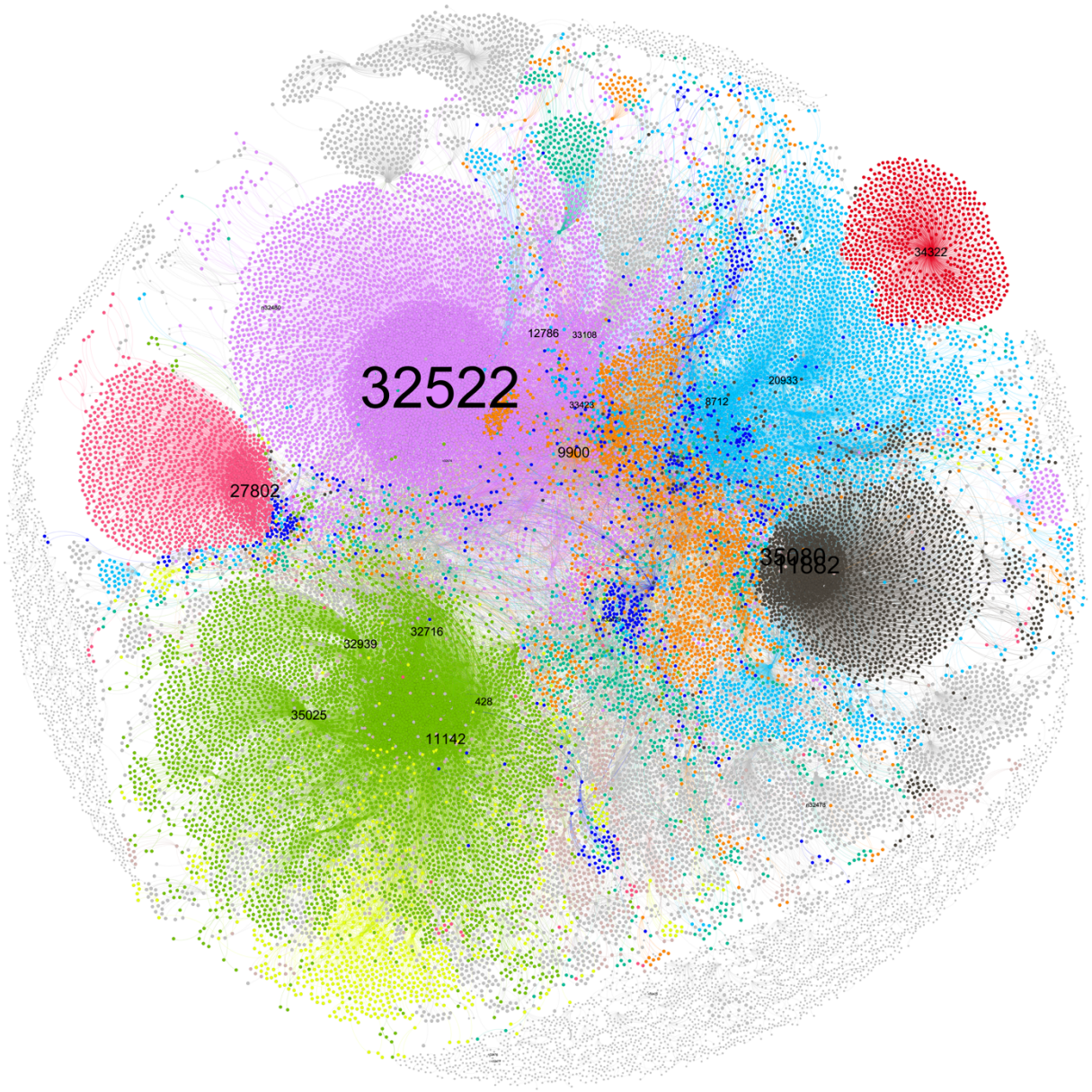
Appendix

1. Article 1

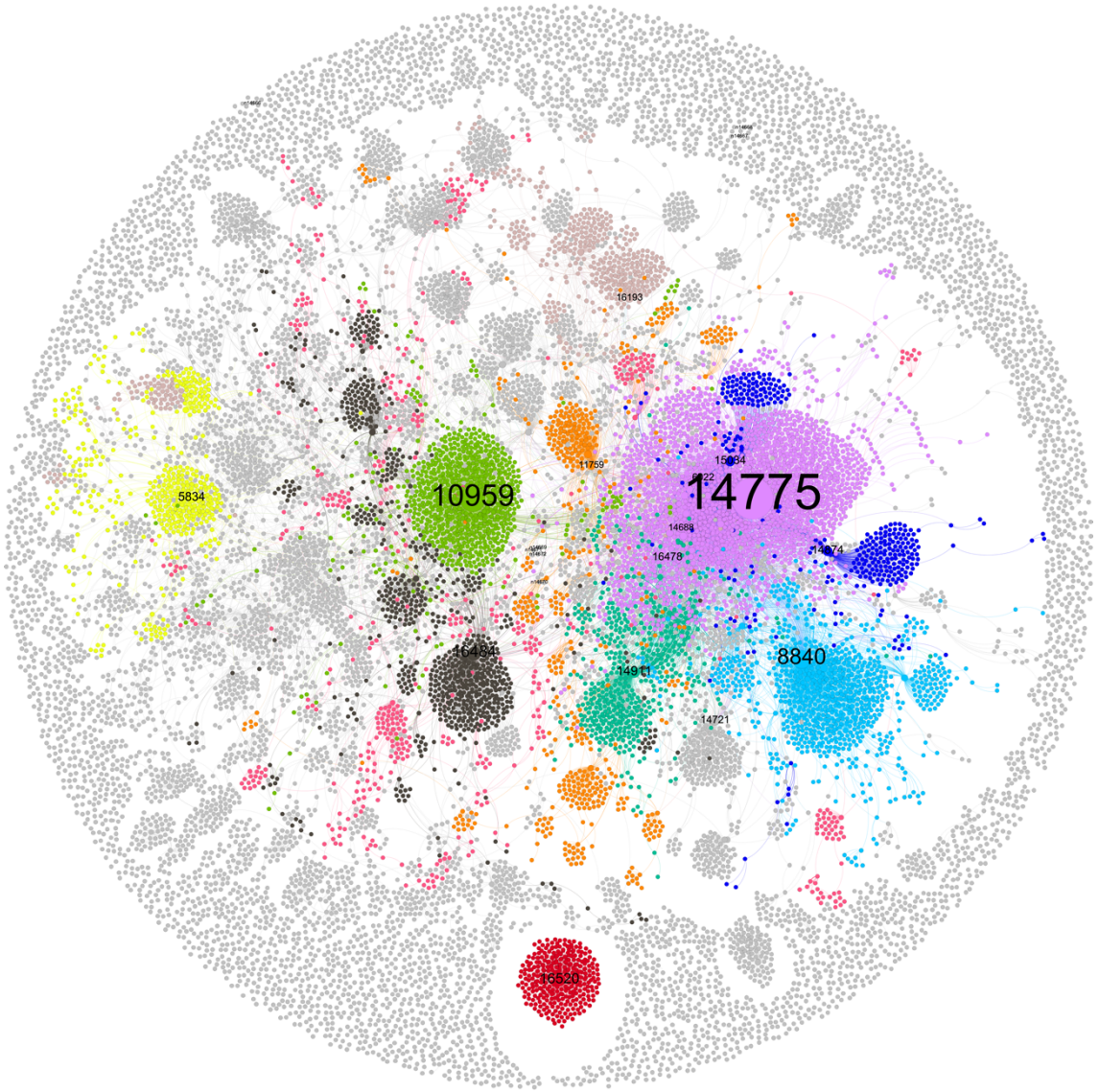
1.1. Schengen August 2016 Visualization



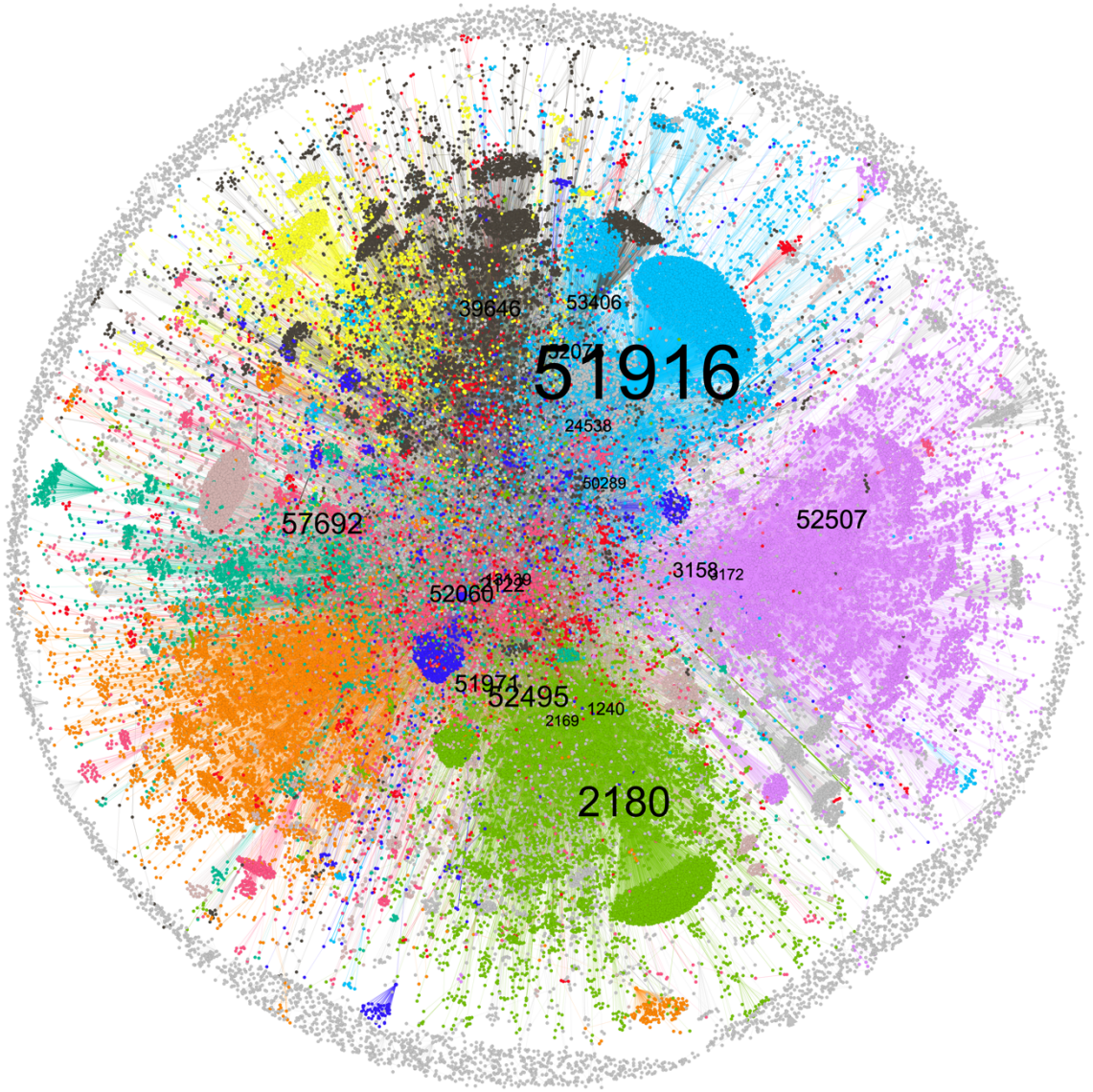
1.2. Schengen December 2016 Visualization



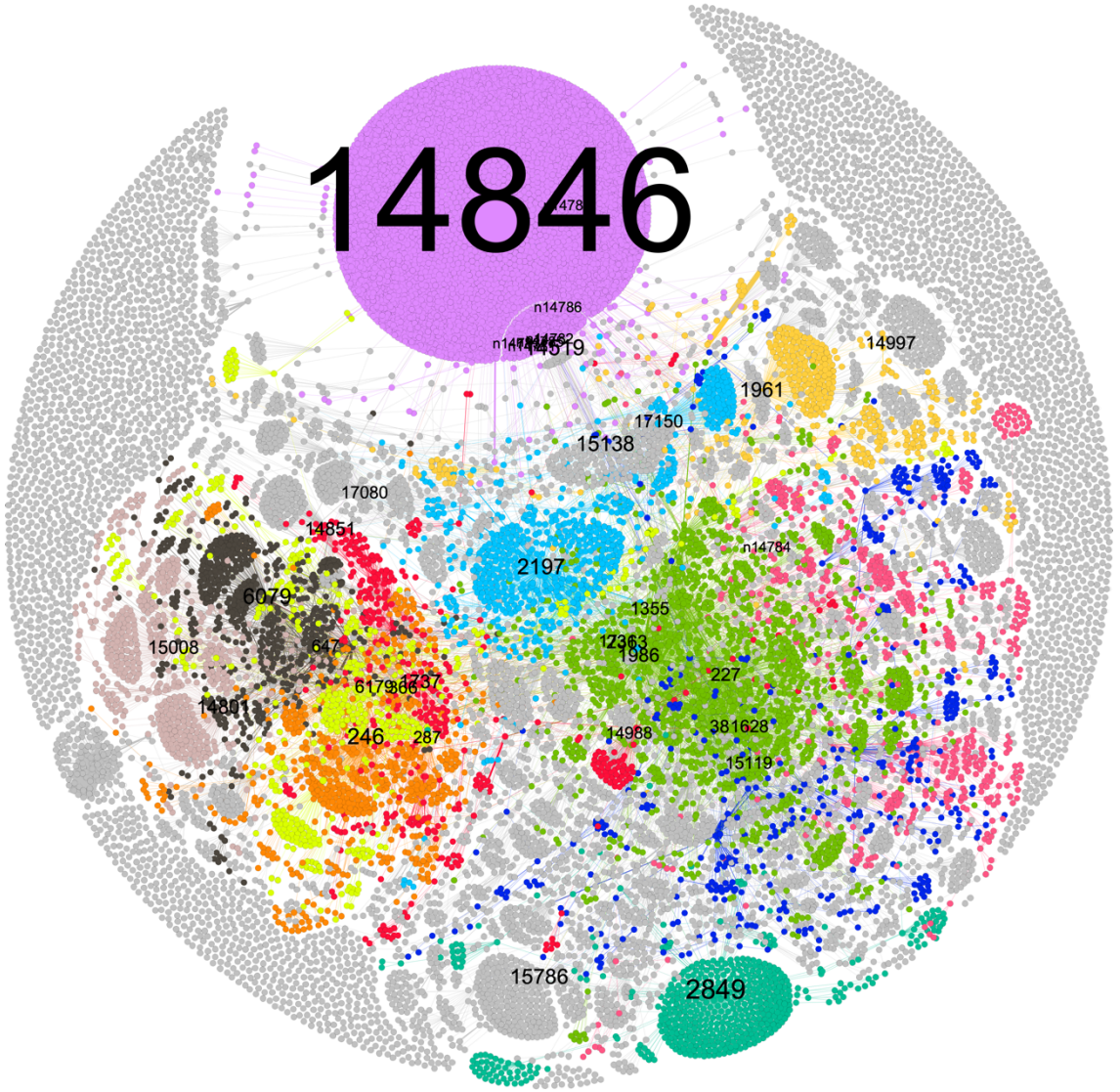
1.3. Schengen April 2017 Visualization



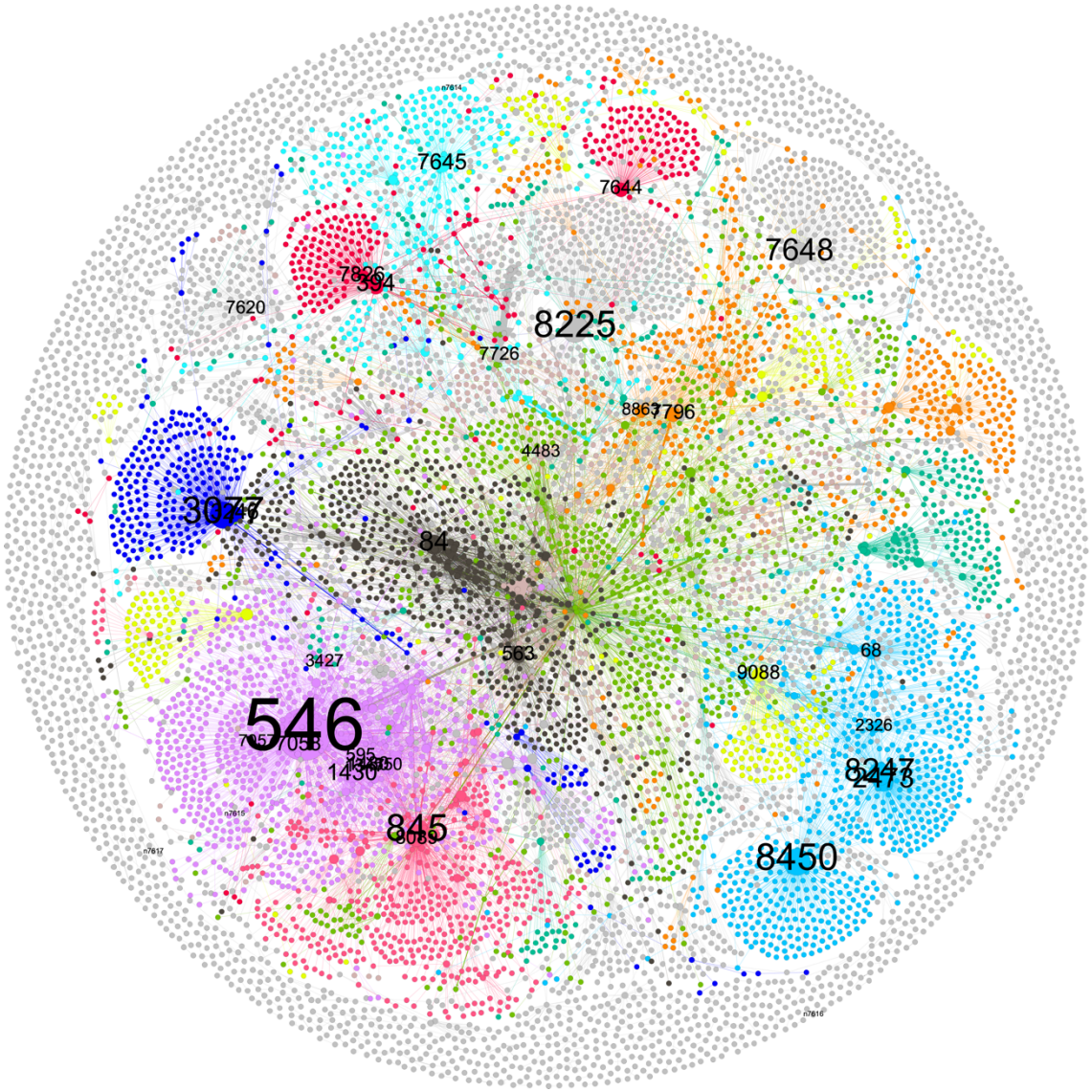
1.4. TTIP August 2016 Visualization



1.5. TTIP December 2016 Visualization



1.6. TTIP April 2017 Visualization



1.7. Schengen August 2016 Metrics Table

Rank	ID	In-degree	Out-degree	Actor	Bot
1	8431	1212	2	1	59%
2	11223	1040	0	2	23%
3	9689	577	0	1	17%
4	10244	511	0	1	31%
5	9776	374	0	2	53%
6	11936	360	0	4	39%
7	2064	253	3	4	46%
8	1691	232	9	4	40%
9	9669	180	0	1	59%
10	9566	153	0	4	31%
11	3803	150	9	1	40%
12	9680	150	0	1	39%
13	8430	147	1	1	45%
14	10136	145	0	2	22%
15	11218	140	0	1	27%
16	11085	139	0	2	27%
17	8290	138	5	1	36%
18	9665	137	0	4	48%
19	3744	125	1	1	27%
20	10090	125	0	2	60%
21	8928	124	1	1	27%
22	11772	124	0	1	45%
23	11908	116	0	2	31%
24	3354	111	2	1	44%
25	8215	105	15	1	41%
26	9659	104	0	2	44%
27	1528	91	56	1	53%
28	6023	83	2	2	33%
29	9775	78	0	1	39%
30	11407	78	0	4	42%
31	9577	77	0	2	22%
32	294	74	1	4	16%
33	9826	66	0	4	26%

Rank	ID	In-degree	Out-degree	Actor	Bot
34	8334	65	10	1	56%
35	2516	64	7	4	8%
36	5102	64	2	4	46%
37	3316	61	8	4	40%
38	9816	61	0	4	43%
39	3884	57	3	1	55%
40	7140	54	3	3	55%
41	10001	52	0	4	59%
42	1502	50	40	4	22%
43	5953	49	1	4	20%
44	9727	49	0	2	41%
45	10022	49	0	2	40%
46	9782	44	0	3	59%
47	8222	43	18	3	39%
48	5931	42	1	4	32%
49	10002	40	0	4	49%
50	11857	40	0	3	39%
51	10326	38	0	4	32%
52	10897	38	0	4	58%
53	11643	38	0	4	44%
54	10531	37	0	1	34%
55	918	36	2	1	57%
56	10009	35	0	1	21%
57	10967	35	0	4	41%
58	3913	34	2	4	38%
59	9604	34	0	4	57%
60	10095	34	0	1	50%
61	3745	33	2	2	48%
62	881	31	12	4	32%
63	5824	31	4	4	48%
64	10056	31	0	4	34%
65	10414	31	0	4	45%
66	2342	30	1	4	58%
67	10051	30	0	4	59%
68	10467	30	0	2	33%

Rank	ID	In-degree	Out-degree	Actor	Bot
69	9601	29	0	1	28%
70	10217	29	0	4	44%
71	11264	29	0	3	39%
72	9681	28	0	4	37%
73	10943	28	0	4	42%
74	11598	28	0	3	61%
75	6502	27	1	4	18%
76	10727	27	0	4	43%
77	7103	26	1	4	42%
78	8243	26	4	4	35%
79	9897	25	0	1	40%
80	4288	24	20	3	61%
81	10598	24	0	3	51%
82	3914	23	7	1	26%
83	9570	23	0	1	54%
84	9622	23	0	1	64%
85	9687	23	0	1	32%
86	10004	23	0	4	40%
87	91	22	6	2	28%
88	451	22	10	4	42%
89	4047	22	6	4	44%
90	6500	22	1	4	46%
91	10222	22	0	4	21%
92	11578	22	0	2	59%
93	6760	21	1	1	42%
94	9572	21	0	1	36%
95	9609	21	0	4	43%
96	11654	21	0	2	47%
97	930	20	10	1	26%
98	4539	20	6	4	38%
99	8257	20	7	1	42%
100	9848	20	0	3	32%
101	10042	20	0	4	43%
102	3938	19	2	1	46%
103	5077	19	1	2	48%

Rank	ID	In-degree	Out-degree	Actor	Bot
104	9690	19	0	2	29%
105	10403	19	0	2	50%
106	9568	18	0	1	43%
107	9922	18	0	2	55%
108	10021	18	0	2	48%
109	11277	18	0	4	41%
110	11376	18	0	2	41%
111	11410	18	0	4	29%
112	6526	17	2	2	32%
113	8484	17	5	4	42%
114	9135	17	1	1	29%
115	9637	17	0	3	50%
116	9661	17	0	3	53%
117	10078	17	0	1	33%
118	10232	17	0	2	33%
119	10267	17	0	1	39%
120	10340	17	0	1	40%
121	11257	17	0	4	55%
122	11267	17	0	2	35%
123	1247	16	8	4	26%
124	3352	16	19	4	38%
125	3810	16	3	1	24%
126	6072	16	1	4	33%
127	9751	16	0	4	57%
128	10339	16	0	2	37%
129	10922	16	0	1	49%
130	11272	16	0	1	37%
131	11922	16	0	1	44%
132	404	15	2	3	27%
133	1887	15	6	4	17%
134	3847	15	11	4	38%
135	6506	15	2	4	22%
136	6637	15	2	4	29%
137	8939	15	2	4	52%
138	9255	15	1	4	25%

Rank	ID	In-degree	Out-degree	Actor	Bot
139	9602	15	0	4	45%
140	9786	15	0	4	54%
141	11035	15	0	1	41%
142	11413	15	0	4	38%
143	11517	15	0	2	58%
144	11746	15	0	4	29%
145	11811	15	0	3	72%
146	104	14	12	3	55%
147	558	14	2	1	46%
148	1180	14	1	4	26%
149	1951	14	5	4	37%
150	6123	14	1	4	21%
151	6623	14	1	3	14%
152	8266	14	3	4	27%
153	9469	14	3	4	36%
154	9594	14	0	1	61%
155	9603	14	0	2	18%
156	9979	14	0	4	59%
157	10138	14	0	4	47%
158	10662	14	0	2	50%
159	10697	14	0	4	49%
160	10729	14	0	2	36%
161	11667	14	0	4	35%
162	12026	14	0	4	46%
163	12075	14	0	4	31%
164	3564	13	11	4	9%
165	3794	13	4	4	47%
166	4596	13	3	4	20%
167	9739	13	0	1	20%
168	10349	13	0	4	26%
169	10474	13	0	4	14%
170	10620	13	0	2	44%
171	11037	13	0	4	45%
172	11265	13	0	4	39%
173	11502	13	0	4	69%

Rank	ID	In-degree	Out-degree	Actor	Bot
174	11717	13	0	3	33%
175	11878	13	0	4	35%
176	93	12	13	4	44%
177	572	12	7	4	43%
178	2050	12	6	4	51%
179	2422	12	1	1	32%
180	3684	12	1	2	37%
181	4794	12	1	4	70%
182	5483	12	6	4	18%
183	9437	12	6	3	57%
184	9567	12	0	3	43%
185	9795	12	0	4	47%
186	9808	12	0	2	54%
187	10177	12	0	2	56%
188	10226	12	0	4	22%
189	10705	12	0	4	42%
190	452	11	2	2	18%
191	766	11	2	4	33%
192	895	11	1	1	50%
193	1243	11	2	4	45%
194	1254	11	3	4	35%
195	1870	11	1	2	45%
196	2877	11	1	1	63%
197	3514	11	35	4	23%
198	3644	11	1	4	42%
199	4825	11	1	4	43%
200	5691	11	1	4	31%

1.8. Schengen December 2016 Metrics Table

Rank	ID	In-degree	Out-degree	Actor	Bot
1	32522	8273	0	1	32%
2	11884	2403	7	4	33%
3	35080	2378	0	3	28%
4	11142	2245	4	1	17%
5	27802	1565	4	4	15%
6	9900	1404	1	2	53%
7	35025	936	0	3	40%
8	32716	906	0	1	36%
9	428	872	26	1	44%
10	34322	855	0	4	44%
11	12786	834	9	4	45%
12	32939	811	0	1	26%
13	8712	655	3	4	36%
14	20933	641	12	4	26%
15	33423	480	0	2	49%
16	4568	423	5	4	81%
17	3982	421	5	1	27%
18	33108	408	0	2	50%
19	276	407	7	1	30%
20	110	359	83	4	40%
21	35456	359	0	2	44%
22	12949	357	8	1	49%
23	33434	349	0	2	57%
24	8447	347	2	2	18%
25	17631	339	1	1	31%
26	32714	329	0	1	38%
27	34883	325	0	2	23%
28	658	321	1	3	69%
29	32853	305	0	2	35%
30	35319	289	0	1	42%
31	30247	279	33	4	46%
32	1171	269	5	1	43%
33	22297	239	3	4	28%

Rank	ID	In-degree	Out-degree	Actor	Bot
34	14820	236	2	1	28%
35	33413	227	0	4	42%
36	2643	226	1	4	44%
37	8307	223	53	1	52%
38	311	215	16	4	35%
39	31573	210	1	2	48%
40	34992	192	0	4	28%
41	1338	186	8	3	53%
42	20262	186	2	4	20%
43	3930	184	3	4	30%
44	662	182	8	4	31%
45	10290	182	3	2	38%
46	33403	176	0	3	51%
47	15983	173	2	4	13%
48	34136	170	0	1	47%
49	24254	167	1	2	28%
50	34782	166	0	4	23%
51	34754	164	0	1	19%
52	36350	163	0	1	25%
53	31698	162	1	1	48%
54	32641	160	0	2	50%
55	34613	153	0	1	59%
56	4065	152	9	4	31%
57	34256	148	0	4	35%
58	3498	146	7	4	45%
59	32566	146	0	4	52%
60	6957	141	2	3	40%
61	16625	141	3	3	62%
62	14292	135	1	4	44%
63	1147	134	2	1	46%
64	12330	133	1	4	31%
65	32885	133	0	2	56%
66	4067	130	51	4	22%
67	209	129	3	1	40%

Rank	ID	In-degree	Out-degree	Actor	Bot
68	17765	128	1	4	20%
69	721	126	15	4	31%
70	29789	123	1	4	26%
71	12393	117	8	4	31%
72	979	116	3	4	25%
73	16054	116	4	4	45%
74	32916	114	0	4	20%
75	5942	113	7	1	27%
76	19258	113	2	3	72%
77	25114	113	7	4	20%
78	59	112	78	4	29%
79	9746	112	4	4	29%
80	28189	110	1	1	48%
81	9595	107	12	2	17%
82	33086	102	0	4	35%
83	12659	101	31	4	44%
84	17162	101	37	2	35%
85	30813	100	4	2	22%
86	34443	97	0	1	41%
87	32775	92	0	1	59%
88	2344	91	13	4	39%
89	5884	91	23	4	33%
90	4002	89	3	4	32%
91	22195	89	4	4	32%
92	22589	89	3	4	30%
93	34157	87	0	2	35%
94	22283	86	2	4	29%
95	4193	82	23	4	26%
96	33621	82	0	1	48%
97	4985	81	10	4	44%
98	19827	81	3	4	46%
99	29001	79	1	4	21%
100	1153	78	11	1	52%
101	1635	78	4	2	40%

Rank	ID	In-degree	Out-degree	Actor	Bot
102	32874	78	0	1	41%
103	33959	78	0	1	50%
104	35009	75	0	4	32%
105	2115	74	9	4	53%
106	2270	74	11	4	29%
107	4526	74	4	1	35%
108	8693	74	8	4	41%
109	21938	73	2	4	24%
110	9191	72	1	2	40%
111	3281	71	3	4	37%
112	33955	71	0	4	40%
113	2778	70	30	4	65%
114	27011	70	6	2	43%
115	33424	70	0	2	66%
116	4151	69	8	4	42%
117	13305	69	3	4	24%
118	32560	68	0	2	48%
119	32873	68	0	1	69%
120	36633	68	0	4	41%
121	32951	67	0	2	30%
122	33162	66	0	4	40%
123	35232	66	0	4	46%
124	35298	66	0	4	10%
125	32485	65	0	3	27%
126	33121	65	0	2	47%
127	35271	65	0	4	53%
128	33493	64	0	4	54%
129	9984	63	5	1	39%
130	10877	63	2	1	35%
131	35005	63	0	1	45%
132	34742	62	0	4	45%
133	8808	61	7	4	57%
134	13122	60	5	4	49%
135	26143	60	1	4	38%

Rank	ID	In-degree	Out-degree	Actor	Bot
136	15867	58	2	4	33%
137	35183	58	0	3	34%
138	8445	57	1	2	37%
139	15301	57	4	4	33%
140	26191	57	1	4	58%
141	2127	55	47	4	33%
142	35024	55	0	4	20%
143	9055	52	4	4	51%
144	13020	52	2	4	46%
145	33388	52	0	4	20%
146	34829	52	0	2	28%
147	34	51	35	4	20%
148	1129	51	12	1	53%
149	2354	51	1	4	36%
150	6629	51	5	4	34%
151	16990	51	3	4	21%
152	32529	51	0	2	33%
153	32673	51	0	2	35%
154	33023	51	0	2	23%
155	36592	50	0	4	58%
156	9251	49	10	4	33%
157	19275	49	3	4	51%
158	34668	49	0	1	38%
159	35146	49	0	4	54%
160	10530	48	11	4	28%
161	14810	48	6	4	23%
162	15144	48	2	4	49%
163	28171	48	1	4	57%
164	32675	48	0	2	42%
165	36494	48	0	2	65%
166	32683	47	0	3	42%
167	34699	47	0	2	43%
168	4452	46	1	4	26%
169	10744	46	1	4	50%

Rank	ID	In-degree	Out-degree	Actor	Bot
170	28066	46	7	4	31%
171	9943	45	2	4	23%
172	11356	45	4	4	18%
173	16303	45	4	1	31%
174	32788	45	0	3	32%
175	2405	44	80	4	54%
176	6547	44	5	4	36%
177	35240	44	0	1	34%
178	35359	44	0	2	45%
179	1377	43	5	4	44%
180	15682	43	17	4	27%
181	31636	43	1	1	21%
182	36133	43	0	4	68%
183	508	42	71	1	53%
184	8532	42	38	4	36%
185	32597	42	0	4	40%
186	36214	42	0	2	50%
187	4414	41	6	4	40%
188	32832	41	0	1	42%
189	35943	41	0	4	31%
190	146	40	66	4	35%
191	8550	40	3	4	16%
192	12353	40	7	4	32%
193	26933	40	1	1	25%
194	33734	40	0	2	29%
195	1013	39	1	4	46%
196	3544	39	4	4	62%
197	5301	39	1	4	24%
198	10615	39	14	4	39%
199	16387	39	3	4	28%
200	33426	39	0	4	64%

1.9. Schengen April 2017 Metrics Table

Rank	ID	In-degree	Out-degree	Actor	Bot
1	14775	2884	0	1	36%
2	10959	1038	1	2	53%
3	8840	814	2	1	38%
4	16484	441	0	2	24%
5	14911	416	0	1	27%
6	16520	371	0	4	36%
7	5834	292	3	4	40%
8	14874	268	0	4	42%
9	16478	251	0	4	50%
10	15034	249	0	1	26%
11	6022	237	2	1	21%
12	14721	230	0	1	27%
13	14688	215	0	1	17%
14	5612	207	7	4	20%
15	16193	186	0	1	42%
16	1267	185	11	1	44%
17	1686	185	27	1	26%
18	11335	182	1	2	18%
19	11759	174	2	2	42%
20	11760	171	2	1	35%
21	8514	152	5	4	31%
22	16868	148	0	1	28%
23	16869	148	0	1	33%
24	4833	140	9	4	34%
25	7398	131	2	4	30%
26	8815	129	1	3	40%
27	14675	128	0	1	31%
28	3204	127	4	4	28%
29	16425	126	0	2	27%
30	2681	124	15	4	60%
31	11615	121	4	1	52%
32	14751	118	0	4	69%

Rank	ID	In-degree	Out-degree	Actor	Bot
33	8498	117	1	4	42%
34	9617	116	6	4	58%
35	15589	110	0	1	42%
36	4409	107	30	4	46%
37	9721	105	2	1	19%
38	6700	102	41	4	29%
39	15967	102	0	4	28%
40	14803	99	0	1	43%
41	16199	98	0	2	45%
42	1707	96	11	1	33%
43	15748	93	0	2	24%
44	16046	92	0	4	1%
45	1266	91	4	4	33%
46	7384	91	1	4	45%
47	13214	91	1	2	59%
48	18021	90	0	3	53%
49	18383	87	0	4	31%
50	15837	79	0	2	41%
51	8828	78	7	4	53%
52	9789	76	4	4	29%
53	17289	75	0	1	27%
54	15025	73	0	2	41%
55	3892	72	42	4	27%
56	14706	72	0	1	56%
57	2793	71	2	4	32%
58	1605	68	114	4	32%
59	10446	66	1	3	27%
60	7069	64	1	4	48%
61	14873	63	0	1	53%
62	2596	61	3	4	36%
63	15595	61	0	1	26%
64	15419	60	0	2	48%
65	18012	60	0	4	52%
66	5058	59	1	4	31%

Rank	ID	In-degree	Out-degree	Actor	Bot
67	14256	59	2	4	56%
68	14683	59	0	3	42%
69	15976	59	0	4	44%
70	16344	58	0	4	34%
71	7237	57	2	2	43%
72	5183	55	22	4	41%
73	843	54	7	4	81%
74	14812	54	0	4	38%
75	14235	52	1	4	33%
76	6707	50	1	1	42%
77	6319	49	1	4	23%
78	16567	48	0	2	35%
79	6706	47	13	4	20%
80	11220	47	1	2	22%
81	14756	47	0	1	32%
82	14708	46	0	3	61%
83	3151	45	4	1	20%
84	6627	45	2	1	54%
85	15165	45	0	4	18%
86	15295	45	0	2	51%
87	3510	44	2	4	11%
88	10919	44	1	4	70%
89	13651	44	1	4	48%
90	14707	43	0	4	42%
91	1234	42	30	4	22%
92	17047	41	0	3	49%
93	578	40	34	3	55%
94	3610	37	1	4	54%
95	15079	37	0	2	36%
96	15181	35	0	1	28%
97	898	34	1	4	28%
98	13929	34	2	2	47%
99	15099	34	0	2	56%
100	16635	34	0	1	56%

Rank	ID	In-degree	Out-degree	Actor	Bot
101	17274	34	0	2	41%
102	44	33	3	4	37%
103	6148	33	3	1	35%
104	9479	33	1	2	36%
105	10473	33	1	4	23%
106	14709	33	0	1	50%
107	16593	33	0	4	21%
108	6029	32	10	3	49%
109	15091	32	0	4	44%
110	15418	32	0	1	58%
111	1420	31	13	4	39%
112	14977	31	0	1	53%
113	15526	31	0	2	46%
114	1118	30	3	1	42%
115	14686	30	0	2	27%
116	15173	30	0	2	49%
117	15432	30	0	2	43%
118	1709	29	11	4	32%
119	14914	29	0	4	51%
120	17172	29	0	1	56%
121	2333	28	4	4	10%
122	6938	28	1	4	59%
123	1660	27	3	1	36%
124	15517	27	0	2	40%
125	15631	27	0	2	38%
126	16115	27	0	3	51%
127	16594	27	0	4	48%
128	17127	27	0	2	47%
129	3417	26	3	2	41%
130	3200	25	21	4	46%
131	4094	25	6	4	44%
132	4411	25	8	4	36%
133	9003	25	3	4	27%
134	15123	25	0	2	43%

Rank	ID	In-degree	Out-degree	Actor	Bot
135	16203	25	0	4	41%
136	16314	25	0	2	45%
137	16901	25	0	4	16%
138	17712	25	0	4	46%
139	521	24	7	4	25%
140	6643	24	1	1	40%
141	14758	24	0	3	53%
142	15024	24	0	3	41%
143	15741	24	0	4	35%
144	18464	24	0	1	47%
145	18465	24	0	1	57%
146	2224	23	2	4	46%
147	2824	23	4	4	30%
148	14417	23	2	1	45%
149	15203	23	0	1	52%
150	15985	23	0	2	35%
151	1089	22	16	4	33%
152	1187	22	7	4	29%
153	6092	22	2	2	29%
154	11224	22	2	2	29%
155	15088	22	0	1	59%
156	15262	22	0	3	19%
157	15494	22	0	3	48%
158	16138	22	0	4	45%
159	18019	22	0	4	33%
160	2020	21	11	4	21%
161	2727	21	12	1	64%
162	3081	21	1	4	34%
163	4744	21	17	1	53%
164	7976	21	1	3	44%
165	9709	21	3	4	44%
166	14427	21	1	1	61%
167	14800	21	0	4	50%
168	15023	21	0	4	23%

Rank	ID	In-degree	Out-degree	Actor	Bot
169	15764	21	0	2	57%
170	16504	21	0	2	33%
171	17687	21	0	1	45%
172	2927	20	6	4	33%
173	3696	20	1	2	22%
174	5821	20	7	4	36%
175	6063	20	1	4	24%
176	6806	20	13	4	35%
177	14147	20	6	1	47%
178	15557	20	0	2	33%
179	15715	20	0	3	40%
180	16040	20	0	3	50%
181	14839	19	0	3	32%
182	15669	19	0	1	56%
183	17171	19	0	1	44%
184	17400	19	0	1	42%
185	2978	18	1	4	38%
186	4412	18	3	4	24%
187	14613	18	1	3	58%
188	15096	18	0	3	61%
189	15511	18	0	1	26%
190	15528	18	0	2	33%
191	16935	18	0	4	67%
192	17311	18	0	2	47%
193	194	17	13	2	39%
194	407	17	2	4	54%
195	1076	17	1	4	29%
196	3441	17	6	3	51%
197	5770	17	9	4	36%
198	6716	17	1	2	50%
199	12900	17	1	4	45%
200	14771	17	0	2	48%

1.10. TTIP August 2016 Metrics Table

Rank	ID	In-degre	Out-degree	Actor	Bot
1	51916	4278	0	3	52%
2	2180	2684	13	3	26%
3	52495	1451	0	1	54%
4	57692	1247	0	1	49%
5	52507	1125	0	2	42%
6	1240	1077	20	3	43%
7	51971	1065	0	3	42%
8	52060	1018	0	2	50%
9	3158	1013	60	4	32%
10	2122	889	109	1	62%
11	39646	854	1	1	63%
12	52075	755	0	4	47%
13	53406	690	0	2	49%
14	13139	661	4	1	55%
15	2169	637	28	3	43%
16	50289	615	1	3	58%
17	24538	589	1	3	39%
18	3172	581	47	3	41%
19	39411	555	1	2	47%
20	84	531	101	3	50%
21	14852	510	13	3	34%
22	998	506	163	3	45%
23	98	503	432	3	30%
24	36235	497	6	1	49%
25	51920	480	0	2	35%
26	4482	475	8	4	40%
27	14708	465	4	2	51%
28	16719	382	6	2	31%
29	7765	379	47	4	36%
30	13824	375	12	3	44%
31	44616	344	2	2	59%
32	6477	342	3	4	48%
33	51876	341	0	1	51%

Rank	ID	In-degre	Out-degree	Actor	Bot
34	167	340	43	3	46%
35	29578	334	28	3	46%
36	1801	326	2	3	58%
37	22266	310	8	2	27%
38	15358	307	7	2	39%
39	17817	299	14	1	47%
40	3228	297	70	4	39%
41	48521	295	1	2	34%
42	26528	289	9	1	49%
43	19650	284	13	2	34%
44	14196	278	3	3	30%
45	1826	276	9	2	39%
46	10291	269	23	4	39%
47	45443	264	1	1	20%
48	945	256	2	1	52%
49	18543	252	1	1	58%
50	4508	248	4	3	36%
51	46406	246	12	2	38%
52	52665	244	0	2	53%
53	5017	243	31	3	41%
54	52103	240	0	4	42%
55	57409	237	0	2	41%
56	30093	236	3	1	33%
57	57422	236	0	2	60%
58	52096	230	0	2	35%
59	19917	229	2	4	57%
60	52064	227	0	2	47%
61	45458	226	6	1	38%
62	7958	223	3	4	56%
63	1796	222	59	4	43%
64	53750	221	0	2	23%
65	55497	221	0	1	34%
66	29508	220	1	1	52%
67	56982	220	0	1	27%

Rank	ID	In-degre	Out-degree	Actor	Bot
68	51972	219	0	1	32%
69	38022	218	2	2	36%
70	1474	216	38	1	28%
71	12077	216	5	4	55%
72	47273	212	6	4	61%
73	54382	212	0	2	34%
74	49686	208	1	4	31%
75	53881	208	0	4	46%
76	13307	206	25	4	11%
77	16124	206	2	3	47%
78	57324	206	0	4	59%
79	47106	204	2	4	35%
80	5854	195	5	2	35%
81	57170	195	0	4	20%
82	58009	193	0	1	7%
83	54886	192	0	4	44%
84	52805	191	0	2	54%
85	12446	190	9	1	42%
86	7454	189	60	4	41%
87	196	187	10	3	45%
88	51000	186	3	3	39%
89	52439	184	0	4	40%
90	6395	181	2	3	23%
91	179	180	165	3	51%
92	55528	180	0	4	33%
93	31102	179	17	2	32%
94	19	178	1	2	24%
95	7538	176	14	4	26%
96	52319	176	0	3	51%
97	29771	174	2	2	38%
98	53251	174	0	1	57%
99	57420	174	0	1	29%
100	872	173	3	3	47%
101	13229	173	12	4	31%

Rank	ID	In-degre	Out-degree	Actor	Bot
102	51877	172	0	4	38%
103	503	170	66	4	65%
104	7522	170	26	4	45%
105	7566	170	15	2	30%
106	51970	168	0	1	37%
107	53899	168	0	4	53%
108	10109	165	16	4	42%
109	48180	165	1	4	38%
110	113	164	3	3	34%
111	7663	163	23	1	14%
112	23235	162	10	2	43%
113	53110	160	0	3	40%
114	17284	159	14	1	27%
115	17493	159	4	4	39%
116	30520	158	2	4	46%
117	52910	158	0	2	55%
118	47102	157	3	1	50%
119	52532	157	0	1	52%
120	54097	156	0	2	32%
121	53371	155	0	2	57%
122	54912	154	0	4	57%
123	57417	154	0	2	48%
124	2542	153	5	4	25%
125	32790	152	1	2	30%
126	46423	148	1	2	24%
127	54077	147	0	4	41%
128	14700	146	68	4	33%
129	16948	146	9	1	41%
130	52089	146	0	1	47%
131	58567	146	0	2	50%
132	12571	145	9	2	46%
133	54026	144	0	3	27%
134	19137	142	3	2	51%
135	34162	142	1	2	2%

Rank	ID	In-degre	Out-degree	Actor	Bot
136	57771	142	0	3	45%
137	59501	140	0	4	60%
138	392	139	16	1	43%
139	14455	139	6	4	47%
140	16713	137	9	4	50%
141	14966	136	10	4	29%
142	51941	136	0	3	55%
143	52029	136	0	1	46%
144	54262	136	0	2	57%
145	54211	135	0	2	41%
146	54350	134	0	1	46%
147	6583	133	9	4	60%
148	23593	133	3	4	14%
149	30923	133	1	3	58%
150	14235	132	2	4	43%
151	4175	131	2	3	43%
152	4427	131	4	1	37%
153	7738	131	18	2	45%
154	23689	131	2	4	32%
155	24844	130	2	1	33%
156	16403	128	21	3	40%
157	52043	128	0	2	27%
158	8575	127	16	3	43%
159	14971	127	32	2	57%
160	13191	125	23	1	32%
161	48491	124	2	1	37%
162	53745	123	0	2	43%
163	563	118	20	4	19%
164	5608	118	10	4	73%
165	8538	118	9	4	24%
166	17046	118	20	1	20%
167	57169	118	0	2	64%
168	49789	117	2	4	44%
169	13194	116	23	3	57%

Rank	ID	In-degre	Out-degree	Actor	Bot
170	53756	115	0	2	35%
171	54566	115	0	1	28%
172	816	114	33	3	63%
173	1453	114	53	4	31%
174	5381	113	50	1	26%
175	38927	113	3	2	42%
176	12514	112	25	1	41%
177	32657	112	4	2	60%
178	48390	111	1	1	35%
179	53837	111	0	4	33%
180	5656	110	11	1	22%
181	52192	110	0	2	56%
182	58775	110	0	2	25%
183	19620	109	2	4	31%
184	54017	109	0	3	51%
185	28594	108	1	2	63%
186	52211	108	0	1	59%
187	16119	107	11	3	40%
188	54023	107	0	4	53%
189	59422	106	0	2	37%
190	10055	105	4	3	37%
191	43464	105	10	3	28%
192	16846	104	10	4	35%
193	19656	104	8	2	20%
194	9399	103	5	4	20%
195	9476	103	8	4	41%
196	51886	103	0	2	43%
197	52691	103	0	4	41%
198	254	102	218	3	48%
199	4249	102	32	3	34%
200	11260	101	15	3	41%

1.11. TTIP December 2016 Metrics Table

Rank	ID	In-degree	Out-degree	Actor	Bot
1	14846	4286	0	3	52%
2	2197	465	56	3	46%
3	2849	410	1	1	31%
4	1486	349	144	4	41%
5	246	312	28	2	32%
6	6079	293	10	1	43%
7	1448	267	884	4	50%
8	14519	243	1	3	44%
9	227	242	102	3	30%
10	15087	240	0	4	40%
11	1962	231	17	4	39%
12	1986	220	30	1	50%
13	15138	220	0	4	47%
14	15786	211	0	2	41%
15	38	201	20	3	45%
16	14801	199	0	1	38%
17	278	172	19	4	34%
18	2364	172	4	3	40%
19	1737	168	8	3	41%
20	647	160	26	1	43%
21	14852	159	0	3	42%
22	1355	144	3	3	58%
23	15008	133	0	1	34%
24	1628	122	21	3	26%
25	16275	120	0	4	67%
26	14997	118	0	4	41%
27	6179	111	14	4	43%
28	17150	109	0	4	42%
29	17080	107	0	1	45%
30	366	105	4	4	32%
31	459	101	26	3	40%
32	15119	101	0	1	48%
33	14825	95	0	3	27%

Rank	ID	In-degree	Out-degree	Actor	Bot
34	1731	94	6	3	47%
35	287	91	23	4	19%
36	14988	89	0	1	46%
37	1081	88	60	4	36%
38	1318	87	7	3	46%
39	1487	87	147	4	43%
40	14898	86	0	1	55%
41	3867	85	7	1	24%
42	16203	84	0	3	57%
43	1377	83	37	4	38%
44	4455	82	6	3	58%
45	2344	79	109	4	47%
46	11792	78	3	3	58%
47	16080	78	0	1	27%
48	7480	76	1	3	37%
49	144	75	1	1	20%
50	11324	75	2	2	39%
51	102	71	135	4	18%
52	13517	69	1	4	31%
53	15763	69	0	4	43%
54	6910	68	3	1	43%
55	4274	67	6	1	36%
56	15056	66	0	2	59%
57	4387	65	8	4	45%
58	155	64	27	3	51%
59	12653	64	1	1	35%
60	4786	63	2	3	51%
61	2544	62	64	4	48%
62	3535	61	5	3	41%
63	15455	61	0	1	61%
64	16255	61	0	3	48%
65	1237	60	7	1	47%
66	1610	60	12	3	41%
67	15581	60	0	3	43%

Rank	ID	In-degree	Out-degree	Actor	Bot
68	530	58	2	1	47%
69	13440	58	1	2	31%
70	2198	57	26	4	43%
71	190	56	6	4	32%
72	12150	56	10	1	35%
73	14808	55	0	4	39%
74	150	53	51	4	39%
75	437	53	19	3	41%
76	1043	53	4	3	30%
77	12390	53	1	3	31%
78	16240	51	0	2	51%
79	17305	51	0	3	43%
80	14790	50	0	4	48%
81	7038	49	1	1	62%
82	2807	48	76	4	47%
83	5123	48	3	4	22%
84	5117	47	6	4	30%
85	15774	47	0	2	23%
86	622	46	3	4	43%
87	5712	46	3	3	49%
88	17377	46	0	2	43%
89	4112	45	23	2	55%
90	14893	45	0	4	25%
91	15128	45	0	1	46%
92	15713	45	0	4	38%
93	15784	45	0	2	32%
94	16130	45	0	1	37%
95	2671	44	3	4	40%
96	16266	44	0	3	44%
97	700	43	3	1	26%
98	15177	43	0	1	47%
99	15524	43	0	3	50%
100	2628	42	3	3	39%
101	7423	42	1	4	54%

Rank	ID	In-degree	Out-degree	Actor	Bot
102	14794	42	0	1	47%
103	15032	42	0	4	49%
104	254	41	11	1	38%
105	16896	41	0	1	49%
106	14795	40	0	1	59%
107	870	39	3	4	35%
108	1742	39	3	1	18%
109	5775	39	5	1	37%
110	7204	39	1	4	25%
111	17036	39	0	3	36%
112	17888	39	0	2	32%
113	11903	38	3	4	51%
114	13925	38	3	3	55%
115	2758	37	2	4	22%
116	4381	37	4	4	36%
117	14405	37	1	1	28%
118	15849	37	0	4	52%
119	16869	37	0	4	61%
120	2541	36	31	4	30%
121	7039	36	1	1	37%
122	15162	36	0	2	49%
123	15331	36	0	4	53%
124	1481	35	13	3	30%
125	1943	35	5	3	62%
126	4082	35	4	4	34%
127	8342	35	1	2	27%
128	935	34	5	3	49%
129	2493	34	3	1	30%
130	5083	34	4	4	44%
131	14956	34	0	2	30%
132	14957	34	0	4	55%
133	14958	34	0	4	38%
134	15088	34	0	4	51%
135	1785	33	7	1	28%

Rank	ID	In-degree	Out-degree	Actor	Bot
136	5135	33	1	1	38%
137	15064	33	0	4	41%
138	16312	33	0	3	51%
139	16455	33	0	1	33%
140	16853	33	0	1	31%
141	17117	33	0	3	46%
142	7376	32	5	4	37%
143	15790	32	0	4	46%
144	343	31	5	1	46%
145	696	31	7	4	53%
146	788	31	24	4	37%
147	3330	31	2	1	53%
148	4749	31	7	4	48%
149	15850	31	0	2	24%
150	16733	30	0	3	46%
151	17496	30	0	1	59%
152	830	29	25	1	45%
153	4722	29	21	4	35%
154	5294	29	4	4	37%
155	15551	29	0	1	45%
156	16334	29	0	2	33%
157	749	28	16	1	34%
158	5967	28	1	2	50%
159	14625	28	2	4	37%
160	14883	28	0	4	40%
161	15200	28	0	4	50%
162	1258	27	2	4	32%
163	4266	27	16	4	8%
164	5635	27	15	1	41%
165	5768	27	2	4	45%
166	12093	27	16	4	46%
167	14133	27	2	4	26%
168	15025	27	0	2	26%
169	16066	27	0	1	36%

Rank	ID	In-degree	Out-degree	Actor	Bot
170	17097	27	0	4	39%
171	780	26	3	1	56%
172	877	26	3	4	27%
173	1102	26	1	1	38%
174	1798	26	19	4	44%
175	2174	26	8	4	38%
176	3156	26	1	3	46%
177	4450	26	26	3	41%
178	16680	26	0	4	39%
179	192	25	14	4	40%
180	899	25	9	4	60%
181	1103	25	5	4	26%
182	4997	25	5	4	27%
183	5229	25	12	4	18%
184	5890	25	7	1	41%
185	13726	25	1	3	26%
186	14873	25	0	3	27%
187	1478	24	3	2	34%
188	3709	24	16	1	22%
189	4346	24	17	4	58%
190	5303	24	1	3	57%
191	15760	24	0	4	59%
192	16994	24	0	4	52%
193	17390	24	0	4	45%
194	17747	24	0	4	20%
195	17881	24	0	3	35%
196	215	23	7	3	29%
197	668	23	17	1	34%
198	1065	23	11	4	36%
199	2459	23	6	2	47%
200	14824	23	0	1	32%

1.12. TTIP April 2017 Metrics Table

Rank	ID	In-degree	Out-degree	Actor	Bot
1	546	1049	30	3	41%
2	845	395	29	3	41%
3	84	336	24	3	45%
4	3077	260	3	2	31%
5	8450	251	0	1	24%
6	8225	248	0	4	36%
7	8247	214	0	3	39%
8	7648	200	0	4	47%
9	1430	183	31	3	57%
10	4285	172	53	3	48%
11	2473	170	1	1	28%
12	7726	162	0	3	42%
13	394	161	4	2	37%
14	82	153	100	4	23%
15	7645	144	0	1	33%
16	1480	142	52	4	13%
17	7796	138	0	1	46%
18	4483	137	4	3	58%
19	563	128	9	3	26%
20	3246	124	2	4	17%
21	68	123	8	2	30%
22	550	121	89	3	22%
23	1347	119	35	1	28%
24	8089	117	0	1	38%
25	7826	113	0	2	45%
26	7058	109	3	3	46%
27	1349	108	53	4	31%
28	7644	101	0	1	41%
29	8863	101	0	1	49%
30	9088	101	0	1	40%
31	7620	97	0	1	57%
32	3427	95	8	3	31%
33	178	91	59	3	34%

Rank	ID	In-degree	Out-degree	Actor	Bot
34	595	89	8	4	32%
35	2326	84	3	1	20%
36	7691	80	0	1	53%
37	1470	78	3	1	47%
38	1155	77	15	4	31%
39	7057	77	2	3	39%
40	1119	76	10	4	20%
41	7083	76	2	3	51%
42	8897	76	0	4	47%
43	602	74	12	1	26%
44	467	73	9	3	31%
45	6302	73	10	4	41%
46	8148	71	0	3	53%
47	8994	70	0	2	27%
48	1110	69	6	1	45%
49	3547	68	13	3	37%
50	6978	68	8	4	31%
51	7914	65	0	1	59%
52	8390	65	0	2	51%
53	182	64	81	3	30%
54	7700	61	0	3	52%
55	435	60	116	4	52%
56	2324	60	2	4	61%
57	41	58	59	3	41%
58	6938	57	2	4	25%
59	9204	56	0	2	46%
60	2182	54	7	3	46%
61	2066	53	1	4	22%
62	2402	52	2	3	34%
63	5620	52	1	4	53%
64	8087	52	0	2	52%
65	9616	52	0	1	29%
66	447	51	13	2	38%
67	4359	49	2	2	42%

Rank	ID	In-degree	Out-degree	Actor	Bot
68	8798	49	0	4	25%
69	476	48	15	3	41%
70	3712	48	5	3	26%
71	9366	48	0	4	25%
72	7650	47	0	3	53%
73	8199	47	0	1	50%
74	7955	46	0	3	41%
75	8146	46	0	3	30%
76	8881	46	0	4	20%
77	9517	46	0	2	32%
78	9727	46	0	3	26%
79	1210	45	8	2	40%
80	6008	45	4	3	45%
81	9359	44	0	4	32%
82	9526	44	0	1	22%
83	8989	42	0	3	58%
84	187	39	11	3	46%
85	361	39	17	3	43%
86	8023	39	0	1	35%
87	8846	39	0	1	38%
88	253	38	5	2	39%
89	1351	38	18	4	27%
90	2542	37	4	4	40%
91	8953	37	0	3	61%
92	8015	36	0	4	43%
93	2460	35	10	1	50%
94	3687	35	2	1	28%
95	9774	35	0	2	32%
96	1467	34	3	1	40%
97	4479	34	1	3	50%
98	6089	34	9	4	52%
99	8002	34	0	4	58%
100	8241	34	0	4	66%
101	1229	33	27	2	38%

Rank	ID	In-degree	Out-degree	Actor	Bot
102	1732	33	13	1	33%
103	2816	33	25	3	48%
104	8911	33	0	4	27%
105	402	32	8	4	31%
106	1358	32	4	4	15%
107	8268	32	0	1	43%
108	9125	32	0	3	33%
109	7979	31	0	4	13%
110	8760	31	0	1	43%
111	7	30	78	4	51%
112	232	30	11	4	51%
113	599	30	22	4	28%
114	7775	30	0	1	46%
115	8766	30	0	1	31%
116	977	29	48	3	25%
117	1365	29	16	2	27%
118	3723	28	5	1	39%
119	7718	28	0	1	55%
120	7915	28	0	3	34%
121	8397	28	0	1	42%
122	8789	28	0	3	42%
123	9190	28	0	2	50%
124	10010	28	0	3	55%
125	293	27	13	3	44%
126	3715	27	8	4	26%
127	4606	27	6	4	16%
128	2010	26	9	4	43%
129	6787	26	4	1	50%
130	6846	26	6	1	29%
131	7192	26	8	4	31%
132	7842	26	0	2	43%
133	9287	26	0	2	36%
134	140	25	46	3	41%
135	1149	25	3	4	36%

Rank	ID	In-degree	Out-degree	Actor	Bot
136	1573	25	5	4	38%
137	4244	25	15	2	33%
138	6377	25	3	1	44%
139	7630	25	0	4	40%
140	9288	25	0	2	32%
141	9289	25	0	2	34%
142	9615	25	0	3	47%
143	958	24	1	4	50%
144	2173	24	3	4	36%
145	5098	24	4	4	64%
146	9235	24	0	2	33%
147	81	23	2	1	30%
148	7692	23	0	4	43%
149	9210	23	0	2	30%
150	735	22	2	3	77%
151	1572	22	2	1	33%
152	6881	22	1	1	37%
153	7619	22	0	4	23%
154	8440	22	0	4	39%
155	9019	22	0	3	47%
156	9758	22	0	3	62%
157	85	21	3	3	28%
158	1165	21	1	4	39%
159	2731	21	1	2	28%
160	3685	21	2	4	46%
161	4435	21	2	3	53%
162	4436	21	2	3	58%
163	4825	21	4	3	46%
164	8768	21	0	3	50%
165	8769	21	0	3	45%
166	9050	21	0	4	55%
167	9339	21	0	4	35%
168	9406	21	0	4	45%
169	9501	21	0	4	29%

Rank	ID	In-degree	Out-degree	Actor	Bot
170	193	20	11	4	34%
171	3673	20	9	4	21%
172	4465	20	7	4	40%
173	4592	20	1	4	28%
174	8366	20	0	4	41%
175	9171	20	0	1	48%
176	9865	20	0	1	26%
177	9866	20	0	3	34%
178	424	19	51	4	41%
179	731	19	61	4	36%
180	822	19	3	4	18%
181	7837	19	0	1	51%
182	8848	19	0	3	52%
183	8967	19	0	4	33%
184	2482	18	13	4	24%
185	3981	18	11	4	30%
186	4253	18	6	4	39%
187	6355	18	21	4	59%
188	6758	18	7	4	39%
189	7741	18	0	3	38%
190	7958	18	0	2	51%
191	8178	18	0	3	35%
192	8179	18	0	4	60%
193	8278	18	0	4	34%
194	8843	18	0	3	41%
195	8872	18	0	1	43%
196	8873	18	0	1	29%
197	8874	18	0	1	35%
198	8882	18	0	4	37%
199	9020	18	0	1	61%
200	194	17	166	3	45%

1.13. Random sample Schengen Metrics Table

Number	ID	In-degree	Out-degree	Actor	Bot
1	319	1	5	4	21%
2	7137	0	1	4	45%
3	13206	0	1	4	44%
4	9573	1	1	4	26%
5	11286	0	1	4	35%
6	9110	1	2	4	33%
7	216	0	7	4	67%
8	7634	0	1	4	19%
9	14997	6	0	4	60%
10	9620	0	1	4	49%
11	7579	0	1	4	38%
12	6387	0	1	4	36%
13	6333	0	1	4	35%
14	15531	9	0	4	17%
15	14990	1	0		70%
16	6635	0	2	4	32%
17	16638	1	0	2	39%
18	7792	0	2	4	80%
19	5448	0	2		70%
20	2314	0	3	4	58%
21	3410	0	1	3	53%
22	9203	0	2		39%
23	16796	2	0	4	31%
24	10024	0	2	4	12%
25	7165	0	2	4	31%
26	1476	0	2	4	39%
27	916	0	2	4	32%
28	4097	1	1		27%
29	14977	31	0	1	48%
30	9321	0	1	4	25%
31	2519	0	2		56%
32	3228	0	1	4	85%
33	14325	0	1	4	35%

Number	ID	In-degree	Out-degree	Actor	Bot
34	17799	1	0	4	29%
35	15326	9	0	2	37%
36	6430	0	1	4	56%
37	4732	0	1		70%
38	12696	0	2	4	19%
39	8913	0	1	4	26%
40	18418	1	0	1	22%
41	12018	0	1	4	42%
42	10772	0	1	4	47%
43	12492	0	1	4	21%
44	10832	0	1	4	31%
45	3841	0	1	4	28%
46	11576	0	2	4	29%
47	15649	1	0	4	51%
48	8851	0	3	4	18%
49	17400	19	0	1	31%
50	4823	0	3	4	37%
51	13384	0	2	4	38%
52	10327	0	1	4	43%
53	3831	0	1	4	39%
54	15947	1	0	2	39%
55	12853	0	1	4	30%
56	7192	0	3	4	55%
57	9638	0	1	4	36%
58	13423	0	1	4	33%
59	17170	1	0	4	19%
60	1434	0	3	4	18%
61	16415	1	0	4	9%
62	12210	0	1	4	37%
63	7100	0	2	4	35%
64	11441	0	3	4	38%
65	13095	0	1	4	35%
66	16324	2	0	2	19%
67	5489	1	2	4	35%

Number	ID	In-degree	Out-degree	Actor	Bot
68	12721	0	1	3	34%
69	9439	0	1	4	33%
70	18512	2	0	3	27%
71	15914	1	0	4	9%
72	13852	0	1	4	27%
73	11479	0	1	4	24%
74	2406	0	1	4	50%
75	3001	0	1	4	45%
76	5130	0	2	4	34%
77	9703	0	4	4	18%
78	7527	0	1	4	42%
79	10525	0	1	4	29%
80	15386	1	0	4	8%
81	10416	0	1	4	37%
82	14065	0	3	4	34%
83	12668	0	1	4	43%
84	12169	9	1	4	6%
85	15387	3	0	4	32%
86	486	0	1	4	15%
87	11121	0	1	4	23%
88	17561	1	0	4	27%
89	3618	2	1	2	35%
90	5731	0	1	4	38%
91	15391	1	0	1	33%
92	13156	0	1	4	30%
93	5373	0	1	1	48%
94	9013	0	1	4	50%
95	1011	0	1	4	38%
96	12902	0	1	4	30%
97	6776	0	6	4	34%
98	11432	0	1	4	29%
99	3552	0	1	2	29%
100	7664	0	1	4	32%
101	16038	1	0		75%

Number	ID	In-degree	Out-degree	Actor	Bot
102	9692	0	1	4	27%
103	17395	1	0	4	37%
104	9345	0	1	4	45%
105	15402	7	0	2	50%
106	15077	1	0	4	19%
107	4066	0	1	1	37%
108	9390	0	2	4	43%
109	18281	1	0	4	22%
110	15486	1	0	2	52%
111	8510	0	1	4	38%
112	18203	1	0	4	9%
113	1267	185	11	1	45%
114	16775	3	0	3	34%
115	11694	1	1	4	32%
116	4002	0	1	4	31%
117	14024	0	2	4	35%
118	13880	0	1	4	19%
119	9696	0	1	4	21%
120	4372	0	1	4	31%
121	4829	0	2	4	37%
122	778	0	1	4	19%
123	4527	0	1	4	43%
124	12439	0	1	4	37%
125	310	0	2	4	44%
126	11489	0	2	4	31%
127	15987	1	0		80%
128	11912	0	1	4	23%
129	13499	1	1		69%
130	2530	0	2	4	30%
131	13461	1	1	4	18%
132	11123	0	1	4	17%
133	1430	0	3	4	20%
134	18187	1	0	4	30%
135	2983	0	1	4	17%

Number	ID	In-degree	Out-degree	Actor	Bot
136	10875	0	1	4	48%
137	9950	0	1	4	48%
138	3693	0	1	4	41%
139	13357	0	2	2	50%
140	4660	0	2	4	23%
141	9757	0	1	4	70%
142	17337	1	0	2	31%
143	3538	0	1	4	19%
144	14603	0	2	4	19%
145	16633	1	0	4	20%
146	10463	0	1	4	85%
147	15857	2	0	4	19%
148	6517	0	2	4	24%
149	18402	1	0	4	67%
150	6994	0	1	4	34%
151	13468	0	1	4	35%
152	4025	0	1	4	67%
153	471	0	2	4	66%
154	18008	1	0	2	52%
155	3334	0	4	4	38%
156	13052	0	1	4	35%
157	12022	0	2	4	30%
158	9164	0	2	4	62%
159	14801	1	0	4	16%
160	16374	1	0	4	10%
161	15734	1	0	4	22%
162	692	0	1	4	38%
163	3632	0	1	4	23%
164	4546	0	2	4	32%
165	4640	0	6	1	35%
166	8878	0	2	4	31%
167	15451	1	0	4	30%
168	12182	0	2	4	22%
169	5538	0	5	4	26%

Number	ID	In-degree	Out-degree	Actor	Bot
170	14948	3	0	2	37%
171	8833	0	9	4	28%
172	14209	0	1	4	36%
173	5333	5	9	4	29%
174	8123	0	1	4	68%
175	7615	0	1	4	44%
176	10054	0	2	4	37%
177	11250	0	2	4	57%
178	7882	0	1	4	37%
179	18193	1	0	4	37%
180	10499	0	1	3	37%
181	737	0	1	4	44%
182	3010	0	2		68%
183	17215	1	0	4	22%
184	15472	5	0	2	55%
185	4955	0	8	4	38%
186	823	0	1		70%
187	12575	0	1	4	38%
188	1821	0	2	4	8%
189	15361	1	0	4	19%
190	9251	0	1	4	73%
191	15831	1	0	2	53%
192	7256	0	1	4	14%
193	14824	2	0	2	36%
194	6909	0	1		66%
195	3713	1	1	4	15%
196	10344	0	8	4	40%
197	8506	0	1	4	16%
198	16555	1	0	3	58%
199	11063	0	1	4	31%
200	285	0	1	4	35%

1.14. Random sample TTIP Metrics Table

Number	ID	In-degree	Out-degree	Actor	Bot
1	7940	1	0	4	34%
2	755	0	2	4	74%
3	5294	0	2	4	35%
4	7402	0	1	4	23%
5	8462	1	0	4	70%
6	7910	1	0	4	67%
7	4509	7	4	4	67%
8	9227	1	0	4	29%
9	6801	0	1	4	80%
10	8759	1	0	3	48%
11	606	1	22	4	26%
12	967	0	1	4	23%
13	5810	0	2	4	25%
14	6565	11	1	4	77%
15	5084	1	2	1	39%
16	2485	0	2	4	26%
17	5174	0	1	4	38%
18	7459	0	1	4	65%
19	7799	1	0	4	32%
20	8590	2	0	4	83%
21	81	23	2	1	43%
22	9213	1	0	2	50%
23	9753	1	0	4	44%
24	8832	1	0	3	31%
25	2004	2	2	4	23%
26	4257	0	7	4	71%
27	8320	1	0	2	43%
28	7823	2	0	4	69%
29	5981	0	1	4	43%
30	2742	0	1	4	42%
31	9770	1	0	3	55%
32	7158	0	1	4	23%
33	1384	0	1	4	24%

Number	ID	In-degree	Out-degree	Actor	Bot
34	9071	1	0	4	30%
35	9802	1	0	4	51%
36	7945	2	0	2	35%
37	4377	0	1	4	77%
38	10013	1	0	4	23%
39	1421	1	2	1	57%
40	6224	1	4	4	54%
41	8776	6	0	1	43%
42	797	0	1	3	40%
43	3685	21	2	4	46%
44	7392	0	2	4	28%
45	4369	0	1	4	23%
46	1398	0	1	4	46%
47	1070	0	1	4	32%
48	9875	3	0	1	48%
49	9870	1	0	3	58%
50	8283	2	0	4	39%
51	8911	33	0	4	36%
52	8224	2	0	4	18%
53	4504	0	6	4	32%
54	919	0	3	3	36%
55	5189	0	1	4	25%
56	5720	0	3	4	72%
57	3653	0	1	4	29%
58	1220	0	2	4	38%
59	9050	21	0	4	74%
60	2174	0	1	3	49%
61	4431	0	3	4	33%
62	9198	1	0	4	21%
63	6127	0	4	4	44%
64	10071	2	0	3	33%
65	9750	2	0	4	47%
66	7864	1	0	2	47%
67	1753	0	2	4	13%

Number	ID	In-degree	Out-degree	Actor	Bot
68	6997	0	2	2	42%
69	3346	0	1	4	53%
70	2818	0	6	4	22%
71	2317	0	1	4	14%
72	5582	0	2	4	70%
73	2316	1	18	4	26%
74	7507	0	1	4	15%
75	3578	0	1	4	42%
76	2738	0	1	4	31%
77	1630	0	1	4	30%
78	8052	11	0	1	59%
79	6178	0	1	4	54%
80	6740	0	1	4	22%
81	8818	3	0	4	34%
82	4744	0	2	4	11%
83	9073	2	0	4	44%
84	145	0	7	4	38%
85	2688	6	3	4	18%
86	4834	5	7	4	31%
87	5359	0	3	4	28%
88	9004	1	0	4	75%
89	8847	1	0	4	59%
90	1929	0	1	4	29%
91	6300	1	1	4	18%
92	3994	0	1	4	32%
93	5078	0	1	4	27%
94	6931	0	5	4	29%
95	9876	1	0	4	72%
96	3293	0	1	4	34%
97	5417	0	1	4	30%
98	2689	0	1	4	42%
99	5463	0	1	4	43%
100	3620	0	2	4	28%
101	9329	3	0	2	50%

Number	ID	In-degree	Out-degree	Actor	Bot
102	9382	2	0	4	19%
103	5177	0	1	4	22%
104	8604	6	0	4	45%
105	3665	0	2	4	27%
106	5713	0	3	4	36%
107	4587	0	1	4	22%
108	2552	0	1	4	26%
109	6057	0	1	4	36%
110	6310	0	1	4	66%
111	4862	0	4	4	38%
112	4708	0	2	4	42%
113	456	1	9	4	43%
114	3756	0	1	4	29%
115	7179	0	1	4	58%
116	5827	0	1	4	45%
117	6166	1	1	4	37%
118	2620	0	5	4	30%
119	3686	0	1	3	28%
120	7806	2	0	4	11%
121	6973	0	1	4	29%
122	6278	0	1	4	71%
123	8961	1	0	4	41%
124	8272	1	0	4	30%
125	4480	0	3	4	41%
126	8004	1	0	3	30%
127	3492	0	7	4	16%
128	1780	0	1	4	14%
129	1230	0	2	4	29%
130	6703	0	1	4	68%
131	3497	0	1	4	22%
132	174	0	1	4	39%
133	9035	3	0	4	30%
134	1897	2	9	4	16%
135	2936	0	2	4	28%

Number	ID	In-degree	Out-degree	Actor	Bot
136	8960	1	0	4	28%
137	336	0	2	4	42%
138	2429	0	3	4	22%
139	7429	0	1	4	30%
140	7649	6	0	2	50%
141	7048	0	1	4	28%
142	6579	2	2	4	27%
143	2274	2	2	4	36%
144	6118	0	1	4	65%
145	2962	0	1	4	70%
146	2733	0	1	4	17%
147	2500	0	1	1	37%
148	4645	0	1	4	48%
149	936	0	1	4	46%
150	3020	0	2	4	18%
151	1000	2	5	4	32%
152	5712	0	2	4	43%
153	1843	0	1	4	33%
154	4967	0	13	4	37%
155	8312	2	0	4	23%
156	8977	1	0	4	22%
157	2122	0	2	4	25%
158	3892	0	4	4	15%
159	4524	0	2	4	35%
160	4437	2	2	4	28%
161	1577	0	1	4	28%
162	894	0	1	4	21%
163	9101	1	0	4	29%
164	4842	0	1	4	46%
165	7883	8	0	4	46%
166	9138	1	0	4	30%
167	1658	0	1	4	25%
168	1019	0	1	4	30%
169	3647	0	1	4	23%

Number	ID	In-degree	Out-degree	Actor	Bot
170	5090	0	1	4	31%
171	5332	0	2	4	43%
172	6879	0	1	4	34%
173	8260	1	0	4	26%
174	9640	4	0	1	26%
175	4236	0	1	4	10%
176	6467	0	1	4	88%
177	6468	0	1	4	27%
178	9957	2	0	4	22%
179	2663	0	5	4	26%
180	7629	5	0	4	13%
181	7639	6	0	1	42%
182	4726	0	2	4	14%
183	3050	2	1	4	17%
184	7468	0	2	4	12%
185	1549	0	1	4	32%
186	6810	1	1	4	18%
187	2906	2	2	4	53%
188	7641	14	0	4	47%
189	235	0	1	4	23%
190	4717	0	1	4	38%
191	10063	1	0	4	67%
192	8040	3	0	4	48%
193	6527	0	1	4	32%
194	669	0	1	4	43%
195	6335	0	7	4	21%
196	4956	0	2	4	35%
197	8292	1	0	4	38%
198	2884	0	2	4	32%
199	1558	0	1	4	6%
200	165	0	6	4	32%

2. Article 2

2.1. Schengen Types of Tweets

	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech	Denmark	Estonia	Finland	France
Mentions	135	1773	59	67	1	20	81	23	58	2323
Retweets	104	3346	176	85	2	59	50	4	28	4298
SUM	239	5119	235	152	3	79	131	27	86	6621
Percentage mentions	56,48	34,63	25,10	44,07	33,33	25,31	61,83	85,18	67,44	35,08

	Germany	Greece	Hungary	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta
Mentions	1199	1865	32	286	368	16	5	36	10
Retweets	1337	1534	36	161	509	8	40	55	24
SUM	2536	3399	68	447	877	24	45	91	34
Percentage mentions	47,27	54,86	47,05	63,98	41,96	66,66	11,11	39,56	29,41

	Netherlands	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	UK
Mentions	2561	141	47	18	11	1556	385	125	2333
Retweets	1763	275	106	28	35	2002	1421	293	4102
SUM	4324	416	153	46	46	3558	1806	418	6435
Percentage mentions	59,22	33,89	30,71	39,13	23,91	43,73	21,31	29,90	36,25

2.2. TTIP Types of Tweets

	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech	Denmark	Estonia	Finland	France
Mentions	764	6865	11	111	10	107	174	30	189	2233
Retweets	1507	8992	12	182	33	180	213	19	235	2500
SUM	2271	15857	23	293	43	287	387	49	424	4733
Percentage mentions	33,64	43,29	47,82	37,88	23,25	37,28	44,96	61,22	44,57	47,17

	Germany	Greece	Hungary	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta
Mentions	5015	899	23	319	1060	28	9	77	27
Retweets	8906	1840	28	1851	1498	31	7	80	17
SUM	13921	2739	51	2170	2558	59	16	157	44
Percentage mentions	36,02	32,82	45,09	14,70	41,43	47,45	56,25	49,04	61,36

	Netherlands	Poland	Portugal	Romania	Slovakia	Slovenia	Spain	Sweden	UK
Mentions	2470	379	68	36	22	1023	5165	379	2794
Retweets	4525	398	195	24	21	2566	8713	494	5273
SUM	6995	777	263	60	43	3589	13878	873	8067
Percentage mentions	35,31	48,77	25,85	60	51,16	28,50	37,21	43,41	34,63

2.3. Schengen Languages

		Countries									
		Austria	**Belgium**	**Bulgaria**	**Croatia**	**Cyprus**	**Czech**	**Denmark**	**Estonia**	**Finland**	**France**
Languages	**bg**										
	cs	1	2				9				2
	da		71					58			6
	de	120	112				8	4	1	1	145
	el		4								
	en	94	3874	111	6	2	56	53	24	54	815
	es		65					2		1	28
	et									1	1
	eu										1
	fi		1							17	1
	fr		592	14	1		2	7	2	4	5400
	ht										
	hu										1
	in		7								
	it	12	95		124	1	1	1			128
	lt										
	nl	5	243		14		1			5	17
	no		4					2		1	
	pl		10				2	1			23
	pt		5								2
	ro	1	6								2
	sl	1			1						1
	sv		7	2				1		2	10

	tl										
	tr	5	3		1						4
	und		18	108	5			2			34

		Countries									
		Germany	**Greece**	**Hungary**	**Ireland**	**Italy**	**Latvia**	**Lithuania**	**Luxembourg**	**Malta**	**Netherlands**
Languages	**bg**	1									
	cs	2	1								4
	da	6	22								56
	de	447	65	4	11	11	1	1	12	1	195
	el	2	8								
	en	1686	98	45	423	256	14	33	52	33	2140
	es	37	36		3	6					14
	et										
	eu										
	fi	1	2		1						5
	fr	161	2708	2	4	31			22		1342
	ht	1									
	hu	1		1							
	in								1		
	it	51	304	12	1	467			2		172
	lt							1			
	nl	75	65			93	1				307
	no	1	3			1					1
	pl	5	21			3	2				39

	pt	3			1		1		1		7
	ro	6		3		2			1		1
	sl	4									
	sv	26	47	1							13
	tl										1
	tr	11	7		1	1	1	10			8
	und	9	12		2	6	4				19

		Countries							
		Poland	**Portugal**	**Romania**	**Slovakia**	**Slovenia**	**Spain**	**Sweden**	**UK**
Languages	**bg**								
	cs				1	3			
	da	2				1	7		4
	de	6	2	3		37	7	5	62
	el								2
	en	255	109	22	40	51	168	319	5969
	es	4	2		1	5	321	1	136
	et								1
	eu						1		
	fi			1				2	1
	fr	68	7	2	1	3407	1165	33	156
	ht								1
	hu								
	in					1			
	it		6	1		14	1	2	35

	lt									
	nl	3	1			7	13		31
	no						1	2		
	pl	74	2			5	5	4	15
	pt		24		1		19		8
	ro			9	2					
	sl	1				18				
	sv	2				2	3	48		
	tl									
	tr			8			2	2	2	
	und	1				7	93		12	

2.4. TTIP Languages

		Countries									
		Austria	**Belgium**	**Bulgaria**	**Croatia**	**Cyprus**	**Czech**	**Denmark**	**Estonia**	**Finland**	**France**
Languages	**bg**	2	2								1
	cs	1	37				54				1
	cy										
	da		58		1			137		2	3
	de	1943	1837	5	1	5	132	46		5	507
	el	1	79			6				1	1
	en	260	7487	10	23	6	68	142	41	230	1272
	es	4	296					16		2	199
	et		4						5	4	2

	eu		2								
	fi		69							169	11
	fr	8	2341	1		21	3	2		1	2041
	hi		2								
	ht		2				1				3
	hu		19								
	in	4	27		2			5			3
	it	30	1478	7	237	5	2	4			365
	lt										
	lv		1								2
	nl	5	1589		1		18	3		1	104
	no	3	8					9			7
	pl	6	77				7				80
	pt		190					2			20
	ro		2								2
	ru										
	sl	1	52		3						
	sv	1	27					6		5	7
	tl										
	tr	1	11					1	3		4
	und	1	160		25		2	14		4	97

		Countries									
		Germany	**Greece**	**Hungary**	**Ireland**	**Italy**	**Latvia**	**Lithuania**	**Luxembourg**	**Malta**	**Netherlands**
Languages	**bg**										
	cs	7	15								
	cy										
	da	38	78		4	1					48
	de	9298	622	15	29	75			56	1	1460
	el	16	87		1						12
	en	2989	385	21	1962	194	45	15	84	42	1383
	es	111	205	2	16	54					285
	et			1							
	eu		3		1						7
	fi	16	9		5						8
	fr	460	135		45	7			9		626
	hi										
	ht				57						1
	hu			9							
	in	44	15			1					35
	it	164	755	1	4	2079	2		5		711
	lt							1			
	lv	2				1	10				11
	nl	451	209		1	25	1		2		2063
	no	11									5
	pl	65	99	1	3	8					167
	pt	4	4		6	1					2
	ro	3				1					3
	ru	5	2								2

	sl	7	13								6
	sv	11	6		1	1	1				14
	tl				31						1
	tr	16	6	1		7			1		9
	und	203	91		4	103				1	136

		Countries							
		Poland	**Portugal**	**Romania**	**Slovakia**	**Slovenia**	**Spain**	**Sweden**	**UK**
Languages	**bg**								
	cs				11	14			7
	cy								2
	da					4	23	8	4
	de	20	6	12	1	392	156	72	450
	el			15			2		16
	en	79	49	18	19	68	332	361	6679
	es	5	9	1		230	10816	5	143
	et			1	1				
	eu					2	199		5
	fi			1			1	1	19
	fr		6			95	110	7	47
	hi								
	ht		1			1	9		3
	hu								
	in	2	3			2	39	2	9

	it	1	2	3		2554	37	58	128
	lt								
	lv						4	1	2
	nl	3	17	5		33	32	27	228
	no							4	
	pl	654	134	2		26	18	21	211
	pt		22			1	54		14
	ro			1		1			
	ru	3							
	sl				1	63			11
	sv				1	2	1	294	3
	tl						1		2
	tr		2				5	1	22
	und	10	12	1	9	101	2039	11	62

3. Article 3

3.1. Codebook

Sentiments towards the Issue Publics

Positive

When the content of the tweet was supportive of the topic concerned, or highlighted its positive characteristics, it was considered positive. Examples of such tweets are provided below:

- *'Schengen allowed us to travel without restrictions. Five countries in two weeks. Best holidays!'*
- *'The TTIP will create more jobs and will strengthen relations with our ally, the USA'.*
- *'Draghi is an expert in stimulating the eurozone. We should all thank him'.*

Neutral

When the content of tweets did not express any particular feelings towards the issue, or when it was impossible to discern whether it was for or against the topic, it was deemed neutral. Examples are given below:

- *'The EU is thinking of restricting the Schengen Area'.*
- *'Trump has stopped the TTIP'.*
- *'Draghi will hold a press conference today'.*

Negative

When the content of the tweet was evidently opposed to the topic or described its negative aspects, it was deemed negative.

- *'Schengen only brings problems. Let's take back the control of our borders!'*
- *'We must stop TTIP! It will destroy jobs. It's like a Trojan horse #stopttip'.*

- 'Can somebody tell me why Draghi is the president of the central bank? I will tell you: because of the euromafia!'

Sentiments towards the EU

The content or author of the tweet could either be supportive of or opposed to the European project, the EU, or European institutions (including European values).

Tweets in favour of the EU and European institutions:

- 'Schengen is part of Europe. Europe, a project of peace [that] can't be understood without Schengen'.

- 'The TTIP is voted for and approved by national parliaments. It is democratic and shows respect for European democracies'.

-Neutral tweets:

When the content of tweets did not express any particular feelings towards the issue, or when it is impossible to discern whether the content was for or against the topic, it was deemed neutral.

- 'The EU is thinking of restricting the Schengen Area'.

- 'Trump has stopped the TTIP'.

- 'Draghi will hold a press conference today'.

Tweets against the EU and European institutions:

- 'With Schengen we will actually lose European values if all these people with beards come in'.

- 'The TTIP is against the workers, environment, and human rights'.

- 'The decisions taken in the European Parliament are undemocratic and illegal. Look at the TTIP'.

Type of Framing: National versus European

National framing:

When the content of a tweet addressed the topic as a national issue, or contained references to national rather than international institutions, it was deemed national. Examples include the following:

- *'The PM said in the parliament that with Schengen, we can bring new talent to our country with less paperwork. It helps our economy'.*
- *'The TTIP will destroy jobs and our exports will decrease'.*
- *'Draghi controls our national inflation. Three cheers to him!'*

European framing:

When the content of the tweet addressed the topic as a European issue, or contained references to European rather than national institutions, it was deemed European.

- *'We need a new agreement for the European borders, and especially a new role for FRONTEX'.*
- *'Thanks to the largesse of European institutions, we will have this undemocratic TTIP working in a few months. Shame!'.*
- *'Draghi thinks about economic incentives at the European scale. His decisions will always make some unhappy'.*

3.2. Table of results for Schengen with neutral tweets in percentages

	Sentiment towards Schengen								
	Positive			Neutral			Negative		
	English	Italian	Spanish	English	Italian	Spanish	English	Italian	Spanish
August	8.94	5.43	22.73	44.11	23.19	53.34	46.91	70.98	23.47
September	10.91	5.34	22.81	42.45	21.02	53.31	46.32	71.91	23.34
October	8.35	4.37	23.06	49.48	20.37	53.16	42.21	74.88	23.28
November	8.81	4.74	20.17	44.83	20.79	56.63	46.31	74.25	22.73
December	8.11	4.86	22.72	40.41	21.51	52.81	51.35	73.48	23.91
January	9.63	5.86	22.51	42.85	21.39	53.18	47.15	72.5	23.86
February	9.2	4.61	22.73	44.37	20.46	53.28	46.25	74.8	23.45
March	10.27	4.98	22.77	44.04	21.44	53.21	45.58	73.41	23.51
April	9.26	4.86	22.82	43.42	21.85	53.13	47.03	73.17	23.58

	Sentiment Towards EU								
	Pro			Neutral			Against		
	English	Italian	Spanish	English	Italian	Spanish	English	Italian	Spanish
August	6.43	17.99	31.19	61.56	67.66	53.87	31.9	13.96	13.7
September	7.71	15.85	31.16	61.08	68.27	53.85	30.81	15.11	13.65
October	6.18	14.04	31.44	65.15	70.26	53.63	28.49	15.35	13.61
November	6.8	14.57	28.94	61.75	70.17	56.74	31.43	15.06	13.28
December	6.22	15.26	31.02	57.25	69.93	53.5	36.4	14.73	14.08
January	7.44	16.58	31.13	59.55	68.05	53.66	32.62	15.11	14.02
February	7.36	14.19	31.07	61.72	69.77	53.87	30.73	15.95	13.72
March	8.04	15.47	31.11	61.12	69.36	53.82	30.74	15.06	13.75
April	6.79	15.77	31.36	60.76	69.08	53.57	32.05	15.06	13.82

	Type of framing					
	European			**National**		
	English	Italian	Spanish	English	Italian	Spanish
August	54.14	79.19	82.06	45.81	20.3	17.31
September	54.21	77.25	81.96	45.29	21.88	17.35
October	49.27	77.68	81.68	50.54	21.89	17.72
November	54.06	78.34	84.58	45.91	21.42	14.83
December	57.91	78.33	81.95	42.01	21.57	17.46
January	54.99	78.34	82.02	44.55	21.4	17.36
February	54.4	78.82	81.92	45.44	21.08	17.4
March	54.41	78.4	81.93	45.44	21.47	17.38
April	53.17	78.45	81.85	46.57	21.44	17.54

3.3. Table of results for TTIP with neutral tweets in percentages

	Sentiment towards TTIP								
	Positive			Neutral			Negative		
	English	Italian	Spanish	English	Italian	Spanish	English	Italian	Spanish
August	10.56	26.7	11.21	24.46	27.27	18.04	63.39	45.96	70.5
September	8.37	26.22	9.34	20.46	27.26	14.01	70.09	46.42	76.17
October	7.63	26.64	5.94	16.51	27.25	11.71	74.75	46.06	81.89
November	7.52	26.26	7.42	25.83	28.02	16.43	65.73	45.62	75.84
December	7.83	26.2	6.95	21.13	27.19	16.2	70.63	46.54	76.73
January	6.95	26.51	7.17	27.03	27.46	14.95	65.55	45.97	77.71
February	6.72	26.68	7.33	23.53	27.23	15.37	69.45	45.99	76.99
March	8.87	26.13	7.01	23.41	27.63	15.27	67.45	46.16	77.57
April	8.04	26.66	7.28	24.28	27.49	15.39	67.46	45.76	77.19

	Sentiment Towards EU								
	Pro			Neutral			Against		
	English	Italian	Spanish	English	Italian	Spanish	English	Italian	Spanish
August	24.66	30.54	40.71	58.08	40.28	52.52	15.8	28.83	6.52
September	20.63	30.18	36.31	63.03	40.7	57.91	15.45	28.75	5.31
October	19.03	30.45	29.89	68.27	40.38	61.14	11.98	28.81	8.53
November	18.39	30.09	34.81	64.98	41.12	57.22	15.65	28.42	7.68
December	18.93	29.89	33.06	62.52	40.49	59.33	18.13	29.32	7.5
January	18.23	30.41	33.3	62.7	40.57	58.66	18.43	28.7	7.86
February	18.1	30.68	34.19	64.39	40.2	58.55	17.18	28.74	7.04
March	21.08	29.89	33.03	62.63	40.72	59.41	15.94	29.03	7.47
April	20.36	30.68	33.08	63.37	40.22	59.27	15.98	28.73	7.51

	Type of framing					
	European			**National**		
	English	Italian	Spanish	English	Italian	Spanish
August	75.22	62.41	78.83	22.7	37.37	20.99
September	74.31	61.8	74.84	24.64	37.98	24.84
October	73.87	62.28	69.36	25.17	37.5	30.23
November	73.59	62.5	77.66	25.09	37.16	22.14
December	71.03	62.13	76.83	27.95	37.67	23.12
January	71.53	62.37	75.26	27.46	37.4	24.58
February	72.24	62.13	76.93	27.21	37.6	22.89
March	70.66	62.74	75.65	28.74	37.05	24.27
April	71.35	62.4	76.22	28.12	37.34	23.7

3.4. Table of results for Schengen without neutral tweets in percentages

	Sentiment towards Schengen					
	Positive			Negative		
	English	Italian	Spanish	English	Italian	Spanish
August	16	7.1	49.19	83.99	92.89	50.8
September	19.06	6.91	49.42	80.93	93.08	50.57
October	16.51	5.51	49.76	83.48	94.48	50.23
November	15.98	6	47.01	84.01	93.99	52.98
December	13.63	6.20	487	86.36	93.79	51.27
January	16.96	7.47	48.54	83.03	92.52	51.45
February	16.59	5.80	49.22	83.4	94.19	50.77
March	18.38	6.35	49.2	81.61	93.64	50.79
April	16.45	6.22	49.18	83.54	93.77	50.81

	Sentiment Towards EU					
	Pro			Against		
	English	Italian	Spanish	English	Italian	Spanish
August	16.77	56.3	69.48	83.22	43.69	30.51
September	20.01	51.19	69.53	79.98	48.8	30.46
October	17.82	47.77	69.78	82.17	52.22	30.21
November	17.78	49.17	68.54	82.21	50.82	31.45
December	14.59	50.88	68.78	85.4	49.11	31.21
January	18.57	52.31	68.94	81.42	47.68	31.05
February	19.32	47.08	69.36	80.67	52.92	30.63
March	20.73	50.67	69.34	79.26	49.32	30.65
April	17.48	51.15	69.41	82.51	48.84	30.58

3.5. Table of results for TTIP without neutral tweets in percentages

	Sentiment towards TTIP					
	Positive			Negative		
	English	Italian	Spanish	English	Italian	Spanish
August	14.27	36.74	13.71	85.72	63.25	86.28
September	10.66	36.09	10.92	89.33	63.9	89.07
October	9.261	36.64	6.763	90.73	63.35	93.23
November	10.26	36.53	8.91	89.73	63.46	91.08
December	9.979	36.01	8.3	90.02	63.98	91.69
January	9.58	36.57	8.44	90.41	63.42	91.55
February	8.82	36.71	8.69	91.17	63.28	91.3
March	11.62	36.14	8.28	88.37	63.85	91.71
April	10.64	36.81	8.61	89.35	63.18	91.38

	Sentiment Towards EU					
	Pro			Against		
	English	Italian	Spanish	English	Italian	Spanish
August	60.94	51.44	86.19	39.05	48.56	13.8
September	57.17	51.21	87.24	42.82	48.78	12.75
October	61.36	51.38	77.79	38.63	48.61	22.2
November	54.02	51.42	81.92	45.97	48.57	18.07
December	51.07	50.48	81.5	48.92	49.51	18.49
January	49.72	51.44	80.9	50.27	48.55	19.09
February	51.3	51.63	82.92	48.69	48.36	17.07
March	56.94	50.73	81.55	43.05	49.27	18.44
April	56.02	51.64	81.49	43.97	48.35	18.5

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