Utilising interaction features on Twitter/now X to understand the 'messaging' of migration amongst non-elite users
by Bindi Shah

Abstract
Different aspects of interactions on social media — communication and action — imply distinctive ways of knowing the social world. I present a new methodological approach that utilizes 'big' social media data to understand politically salient issues such as the 'messaging' of migration on Twitter/now X. An iterative abductive interpretivist analytical strategy drawing on computational and qualitative social science techniques was applied to a corpus of 47,978 tweets created over five months around the time of lifting of temporary controls on free movement from Romania and Bulgaria to the U.K. in January 2014. Initial computational network analysis on the retweet action feature revealed a small number of highly influential users and a large proportion of isolated users (non-elites) who were never retweeted. Given paucity of understanding of how elite narratives on migration are absorbed, accepted or contested by non-elites, the next stage involved qualitative thematic analysis of a sub-sample of actual tweets (communication) from non-elites to understand meaning-making in views expressed. Qualitative analysis confirmed presence of highly polarised immigration attitudes amongst non-elites but also revealed their values and beliefs about national belonging. These findings prompted questions about what or who influences these values amongst non-elites and whether there are any structural differences in information flows amongst anti- and pro-immigration users. In the third stage, computational surface thematic mapping of different aspects of communication and action in the whole corpus revealed importance of the entire media environment but also differences in the presence or lack of echo-chambers amongst those expressing anti- or pro-immigrant sentiments. This article demonstrates the potential of cross-disciplinary analytical strategies when investigating politically salient issues on social media.

Contents

Introduction

The 2016 U.K. referendum on European Union membership exposed deep concerns about the impact of 'Europeanised' migration. Since the early 2000s, political and media debates about Europe have focused on immigration [1], and were reflected in the views of the British public. Britons have been concerned about the perceived economic strain of immigrants on the British welfare state (McLaren and Johnson, 2007; Larsen, *et al.*, 2018) and negative impact of non-British values on shared customs and way of life (McLaren and Johnson, 2007). Post-Brexit quantitative survey and opinion poll data suggested that while attitudes towards immigration had softened (Blinders and Richards, 2020), the political saliency of immigration has increased dramatically (Ford and Lymperopoulou, 2017). Such views highlight the linkages between migration/immigration and the symbolic boundaries of the national community. European migration has stirred up ideological questions about "British" identity: "who are we?" and who belongs to the British family. At a time of rising right-wing populism, nationalism and authoritarianism across the world that is producing challenges to democratic governance and social solidarity, it is important to understand how popular perspectives shape the cultural politics of belonging. Here, I argue that social media platforms offer the 'bottom-up' study of real-time public opinion of users on politically salient issues such as immigration. Specifically, I present a methodological approach to studying the 'messaging' of migration in the U.K. at the time of the lifting of transitional controls on Romanian and Bulgarian migrants in January 2014 on the social media platform Twitter/now X as a case study [2].

Survey data in extant migration research usefully highlights sentiments towards immigrants/immigration, and points to the cultural and symbolic significance of immigrants/immigration. However, the wording of questions and order influences the responses and reliability of answers (Blinder, 2015). Qualitative methods, though able to unearth meanings attached to particular views, involve the active role of researchers in the co-production of how national identities are talked about through the formulation of questions, the researcher's non-intervention/intervention on certain occasions, and potentially through participants' assumptions of shared national identity with the researcher (Mann, 2006). In contrast, digital social interactions (through connecting, interacting, informing, sharing and collaborating) leave digital imprints, so called 'big' social media data, without researcher interventions. However, such data raises methodological challenges for social science researchers and has led to the expansion of computational social science to study social behaviour (Edelmann, *et al.*, 2020) and the development of mixed methods approaches (see for example Murthy and Sharma, 2019; Andreotta, *et al.*, 2019; Su, *et al.*, 2017). But more importantly, social media data has prompted debate about whether a paradigm shift is occurring in how academic research is conducted and whether it spells 'the end of theory' (Anderson, 2008).

Here, I document a case study that adopted an *iterative* abductive interpretivist [3] strategy to social media data analysis. Such a strategy moves beyond inductive and deductive approaches and enables researchers to critically interrogate and generate meaning in the data that is available. I argue that an abductive approach promotes a data-driven but theoretically informed approach to understanding the 'messaging' of migration on the social media platform Twitter/now X. This analysis makes use of different aspects of interactions on social media — *communication* and *action* — each of which imply distinctive ontological assumptions or ways of knowing the social world.

Initial computational network analysis focused on the retweet *action* feature which provided a panoramic view to reveal a small number of highly influential users (mainstream British media outlets, migrant advocacy groups and a few individual influencers with high digital capital) and a large proportion of isolated users (non-elites with low digital capital) who were never retweeted.

Given the paucity of understanding of how elite narratives on migration are absorbed, accepted or contested by non-elites, the finding on the presence of a large number of non-elites in the data set prompted qualitative thematic analysis of a sub-sample of actual tweets (*communication*) from non-elites to investigate meaning-making on the topic. Qualitative analysis confirmed presence of highly polarised immigration attitudes amongst non-elites but also revealed their values and beliefs about national belonging.

These findings suggested the utility of further interrogation of the dataset to understand flows in information sharing and consumption that shape these attitudes and values. Surface thematic mapping of the whole corpus, using computational techniques, of different aspects of *communication* and *action* on Twitter/now X revealed importance of the entire media environment but also differences in the presence/lack of echo-chambers amongst those expressing anti/pro-immigrant sentiments.

This case study demonstrates the potential of an interpretivist abductive analytical strategy that utilizes cross-disciplinary mixed methods to analyse different facets of social media data. Such a strategy can generate new theoretical insights on the linkages between migration/immigration and the symbolic boundaries of the national community, and on the governance of migration and integration.

Below, I review debates on whether 'big' social media data has prompted a paradigm shift in academic research, and then outline the abductive interpretivist analytical strategy. This is followed by a discussion of the broad theoretical context for the case study and a reflection on the epistemological and ethical issues raised when using Twitter/now X data. The remainder of the article describes the dataset, and discusses application of the iterative abductive interpretivist analytical strategy, using computational and qualitative social science techniques, and research findings at each of the three stages of research. The conclusion draws out the contribution that such a data-driven but theoretically informed approach can make to understanding the 'messaging' of migration, which remains a politically salient topic.

Developing theoretically informed analytical strategies

One of the important themes in debates about 'Big Data' is whether it has ushered in a new paradigm in how social scientific analysis is conducted. Some have proclaimed 'the end of theory' (Anderson, 2008), suggesting that theoretical insights can be gleaned inductively from the patterns and relationships embedded within 'Big Data' free of human bias or framing [4]. Indeed, much research utilising 'big' social media data focuses on developing methodological tools to identify patterns in large volumes of digital content. However, others have warned that perceiving social media data 'as a reflection of an underlying "social" reinforces the ideology of dataism or the myth of big data' [5]. While an empiricist epistemology may be attractive, it ignores the socio-technical forces involved in the construction of data sets (Brooker, *et al.*, 2016b), the role of theory and human interpretation in extracting meanings in particular patterns and associations (Halford and Savage, 2017; Edelmann, *et al.*, 2020), and the importance of context and domain specific knowledge in assessing the significance of particular findings [6]. Scholars [7] advocate for an iterative abductive analytical reasoning in which existing theory, concepts and methodological expertise are used to direct the process of knowledge discovery. However, as Kitchin [8] argued, such a methodological approach must be employed within an epistemological framing that acknowledges research as a critical and reflective social practice and recognizes the implications of how research is framed, how data is generated and analysed and how knowledge is employed.

In the light of these debates, I implemented an abductive interpretivist (Brooker, *et al.*, 2016a) analytical strategy that draws on computational and qualitative social science analytical techniques. Such an analytical strategy is neither purely inductive or deductive, but one that follows a middle ground where the researcher engages with empirical data and existing theoretical understanding in parallel (Timmermans and Tavory, 2012; Rinehart, 2021). In pursuing an abductive methodology, prior theoretical knowledge both shapes data collection strategies and helps to identify unexpected findings in the data that point to gaps in the theory. The goal is then to develop plausible and appropriate explanations for the phenomenon (Tavory and Timmermans, 2014). As Edwards, *et al.* [9] succinctly summarise:

The abductive model involves an iterative filling of a theoretical gap in a particular substantive field, putting together theories from quite different fields, moving back and forth between data and theories, making comparisons and interpretations and rethinking and refining best possible plausible explanations.

Edwards, *et al.* [10] further observed that in practice, or perhaps planned, researchers often follow what Timmermans and Tavory (2012) described as retroductive logics, combing deductive, inductive and abductive analytical strategies 'in the oscillation, backtracking and creative process that is social research'. The case study presented below documents the reflective and iterative process that moved along retroductive lines as I adapted the 'breadth-and-depth method' for working with large amounts of qualitative data proposed by Davidson, *et al.* (2019) and developed strategies to analyse and extract meaning from 'big' social media data. Each stage of the iterative process was guided by theoretically informed research questions, which also shaped the initial data collection and subsequent analyses. The case study utilises different aspects of interactions on social media, communication and action, each of which imply distinctive ways of knowing the social world (Beneito-Montagut, 2019). We moved from breadth and surface using computational statistical analysis of action, to small-scale and depth using traditional qualitative analytical approaches to analyse communication, and back to breadth and surface using computational interpretivist approaches to analyse both communication and action to understand who is involved in social media conversations on migration, the values embedded in expressions of anti and pro-immigration attitudes, and how migration was 'messaged' around the time of the lifting of transitional controls on Romanian and Bulgarian migrants. I argue that such an abductive/retroductive interpretivist analytical strategy promotes a data-driven but theoretically informed investigations of 'big' social media data that can produce new substantive insights into politically salient social phenomenon such as migration/immigration debates.

Case study

On 1 January 2014, work restrictions were lifted for Romanian and Bulgarian migrants in the U.K. Leading up to this date and for several years afterwards, heated and emotive debate had ensued about the impact of this new migration. Discourses and images of the country being swamped by this new 'other' proliferated. A new anti-immigration discourse was evident in mainstream British media and amongst some politicians. I was interested in investigating whether a similar anti-immigration discourse prevailed on Twitter/now X or whether the platform also provided digital space to generate a sense of opposition and engaged participation to challenge this emerging anti-immigration consensus. When social media platforms first emerged, there was a lot of excitement about the potential for social media to nurture communities, build networks and promote democracy. Indeed, Murthy [11] described micro-blogging platforms such as Twitter/now X as representing a 'demotic turn' where 'ordinary people are able to break "news", produce media content and voice their opinions publicly'. Twitter/now X has become the primary space for individuals to publicly express their reactions to news and events [12]. The platform, with its capacity to combine elements of social networking and blogging, has the potential to capture people's unsolicited views on immigration/migration and articulations of the nation through terms chosen by themselves. However, scholars in communications studies, such as Papacharissi (2010), have argued that while platforms such as Twitter/now X facilitate the transmission of diverse perspectives and make visible previously marginalized voices, platform affordances and the privileging of those Internet savvy in online communication does not necessarily democratize political expression. Analysis of a Twitter/now X 'conversations' on migration at the time of lifting of transitional controls on Romanian and Bulgaria migrants in the U.K. afforded an opportunity to explore the potential of users on social media platforms to engage in open, dynamic dialogue.

Twitter/now X offers opportunities for the 'bottom-up' study of public opinion on immigration. Tweets provide 'spontaneous' or unsolicited insights into what users think and say on a given topic 'in an inductive way' and offers real-time opinions on 'rapidly evolving events' [13]. Tweets, as 'naturally occurring' mediated data [14], and the interaction the platform facilitates can be linked to both the on-going, everyday views on migration/immigration, and specific immigration-related events, such as the lifting of transitional controls on Romanian and Bulgarian migration to the U.K. on 1 January 2014, to understand discourses and

sentiments around who can and who is entitled to belong to the British nation. However, despite the opportunities, using Twitter/now X data for studying attitudes to immigration highlights several epistemological considerations. First, social media data often lacks important information such as the demographic characteristics of the users. Even when such information can be gleaned from metadata, such as user profiles, there is the question of how the self is presented and to what extent the user's online identity is crafted to perform a particular identity. Sloan (2017) has suggested the construction of demographic proxies to understand who participates on social media and therefore what claims can be made about researcher findings. Using this approach, Sloan (2017) suggested that British Twitter/now X users in 2015 were mostly male, and while the young were predominant, there were a growing number of older users than previously thought. Additionally, a disproportionately higher number of users tend to come from managerial, administrative and professional occupations relative to the U.K. population. In other words, British Twitter/now X users do not constitute a representative sample of the U.K. population. As Quan-Haase and Sloan (2017) urged, critical data studies require social scientists to acknowledge that there are limits to what can be claimed from analysis of 'big data'.

Second, the socio-technical affordances of the platform shape the interactions of users. For example, Twitter/now X's conventions structure how people communicate, what they use the platform for, and tweeting practices can serve to re-organize communication, such as the 'folk origins' of the hashtag [15]. I recognise that windows into user behaviours and attitudes are inherently shaped by the sociotechnical affordances of the platform, and social media data we as researchers curate (Brooker, *et al.*, 2016b). Further, as Beneito-Mantagut (2019) observed, 'social media expressions are performative social actions, so not free from observer or group effects ... For instance, publications in Twitter might be profoundly affected by reputation and promotion concerns'. Additionally, we cannot necessarily assume online behaviour (as captured in social media data) is reflective of offline behaviour and attitudes or the extent to which socio-technical affordances of platforms influence online behaviour (Beneito-Montagut, 2019).

I also want to acknowledge the ethical issues surrounding the use and repurposing of public Twitter/now X data. Traditional social science ethics principles are often at odds with the legal terms and conditions of data use on social media platforms (Quan-Haase and Sloan, 2017). An additional aspect of ethical use of such data relates to whether users understand and consent to the use of their data. While Twitter/now X data is public, users may not fully understand how their digital traces will be used or anticipate researchers making use of their tweets and metadata even if it is public. Markham (2012) and Williams, *et al.* (2017) advocated for the rights of social media users, and Markham (2012) use of a 'bricolage style' for reconfiguring the original tweet in ways that protects users' identities whilst still representing the intended meaning suggested.

Data

To investigate attitudes towards immigration, we targeted historical tweets posted in proximity to the lifting of transitional controls on Romanian and Bulgarian migration to the U.K. in January 2014. The project purchased public, undeleted tweets created between 1 October 2013 and 1 March 2014 containing the keywords "immigration," "immigrant," "migration" or "migrant" from a commercial company providing access to the full historical Twitter firehose (100 percent of tweets that matched our criteria) [16]. This initial collection yielded almost two million tweets, which we subjected to two further selections: we filtered the data using the keywords Bulgaria/Bulgarian or Romania/Romanian and England, U.K. or Britain (136,960 tweets), and by geo-location and time zone metadata to produce the corpus of 47,978 tweets posted by U.K.-based users [17].

Stage 1 — 'Breadth' work utilizing *action* features

Computational methods facilitate analytical focus on action such as Retweets, @-mentions, and @-reply, or likes, favouriting and tagging on other platforms, that occur within mediated conversations and represent the interactional functionalities of social media platforms. A co-researcher on the project at that time produced a social network analysis on all Twitter/now X accounts that had been retweeted using R programming language [18]. This visualisation revealed which accounts were powerful in the migration conversation, not because they were necessarily influential in a direct sense, but powerful because they provide certain clusters with access to other clusters and therefore act as 'brokers'. A small number of highly influential users were located in the centre of the whole retweet network diagram (Figure 1): mainstream British media outlets from the right and left of the political spectrum, a pro-migrant group and a network of academics and practitioners facilitating research on the lived experiences of border control. But the visualisation also revealed a large proportion of isolated users on the periphery of the network diagram. Computational analysis indicated that 95 percent of tweets were never retweeted during the five-month study period.
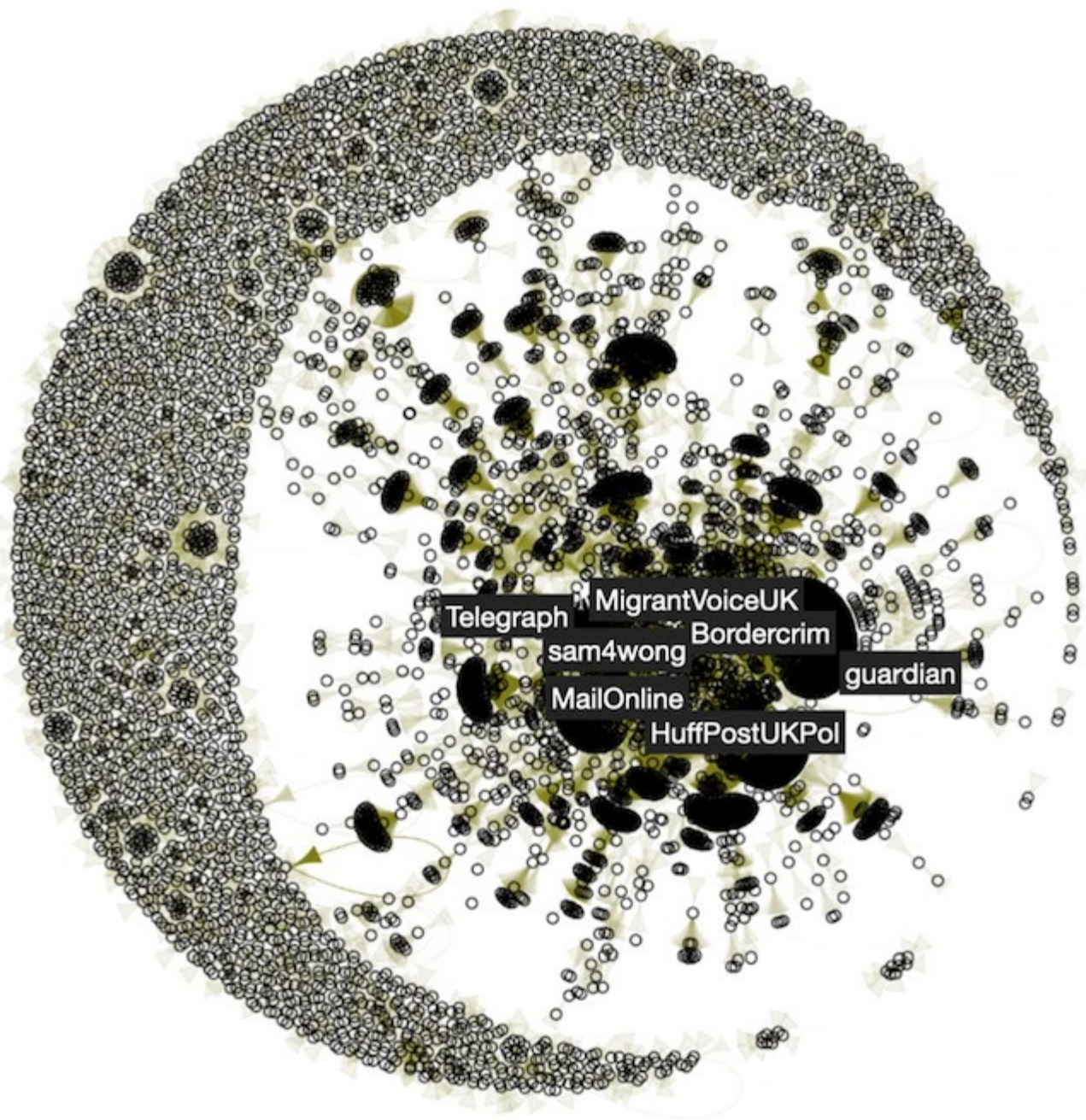
Figure 1: 1 October 2013 to 1 March 2014 retweet network showing a band of isolated 'non-elites' in the periphery of the network.

As Housely, *et al.* [19] observed, administrative and professional organizations have been among the early and enthusiastic adopters of social media communications. However, the interactional and networked properties of Twitter/now X afford opportunities for identifying non-elite users/tweets with limited reach and scale (Ignatow and Robinson, 2017) — where we define 'eliteness' as an emergent networked property of Twitter engagement rather than that linked to demographic or otherwise 'fixed' characteristics of users (Papacharissi, 2015).

The social network analysis revealed user behaviour that suggested a more theoretically significant line of inquiry and provided an entry point for further analysis. Based on their position in the whole retweet network, this led us to identify these isolated users as 'non-elites' or those with low digital capital (or low online network influence measured in terms of reach and scale) [20]. As explained below, this initial finding prompted me to refine my research questions on attitudes to immigration to focus on the *values embedded* in attitudes to immigration, and what these tell us about constructions and contestations of the symbolic boundaries of the nation amongst non-elites involved in the 'conversation' on immigration during the study period. As I note in a publication based on this analysis (Shah and Ogden, 2023), recent sociological research underscores the importance of scrutinizing elite (mainstream political elites and mass-media) discourses on immigration and their implications for the cultural politics of belonging. Scholarship on migration conversations on social media has also focused on elites (Bennett, 2018) or how Twitter itself structures conversations in ways that also still privileges established media, political and humanitarian NGO elites and narratives (Siapera, *et al.*, 2018). Other research illustrates how platform affordances (retweets, likes, recommender algorithms) 'organically' enable 'crowdsourced elites' that challenge mainstream media (Papacharissi and de Fatima Oliveira, 2012).

However, there is more limited understanding of how and whether elite discourses and values are simply absorbed and accepted, or indeed contested by the wider population. As Thompson [21] asserted, examining the values, beliefs, customs, conventions, habits and practices of the 'British nation' that individuals actively draw on to make sense of events, individuals or characters encountered can lead to a sociological understanding of how differences between 'us' and 'them' are conceptualised and the symbolic boundaries of the nation are constructed amongst non-elites. This theoretical understanding led to a re-framing of the initial research question, focus on a sub-sample of the dataset — non-elite actors online, and interrogation of a different aspect of the data corpus, that of *communication* by non-elite users through qualitative analysis.

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Stage 2 — 'Depth' work utilizing *communication* features

Attention to *communication* in the social media data corpus turns our focus to the actual tweets, including written expressions, emojis and visual data. The ontological assumption here is that we can analyse users' meaning making or social construction of the world in context. Specifically, we can utilise traditional qualitative interpretivist analytical strategies to investigate 'expressions of attitudes, intentions, identity, opinions, relationships, locations and representations' (Beneito-Montagut, 2019). However, given the time-consuming nature of manual analysis, sub-samples of 'big' social media data need to be created to manage the analysis.

We conducted thematic coding (Braun and Clarke, 2006) on a five percent random sample of tweets that had not been re-tweeted for each of the five months. The codes generated were based on my literature review and themes observed across the data. We began with general codes for identifying 'positive', 'negative' or 'neutral' sentiment in tweets using NVivo software. Where we could identify sentiment, approximately 60 percent of tweets were anti-immigration and 40 percent were pro-immigration. We then inductively (and iteratively) refined the set of codes within tweets exhibiting positive and negative sentiments to tag specific topics emerging across this sub-sample.

Details of findings from this qualitative interpretivist analysis of *communication* in the sub-sample are published elsewhere (Shah and Ogden, 2023). In brief, our analysis revealed a cohesive set of anti-immigrant/immigration sentiments linked to U.K. Independence Party (UKIP) and that express an exclusionary nationalism based on assumptions about race, 'whiteness' and entitlement. But also evident is a counter-narrative of pro-immigration sentiments that draw on multiple and sometimes contradictory values. Some of these values contest racialized understandings of the nation and construct more inclusive symbolic boundaries. However, the range of values embedded in pro-immigration sentiments do not

coalesce in ways to disrupt the dominance of right-wing anti-immigrant sentiments on Twitter/now X. While we acknowledge that our findings may be specific to non-elites participating in the 'conversation' on immigration during the study period, theoretically they demonstrate the importance of investigating values in immigration attitudes and what these values indicate about the possibilities of re-framing migration debates amongst non-elites in ways that construct more inclusive symbolic national boundaries.

These findings on the presence of both anti-immigrant and pro-immigrant sentiments in the sub-sample, and the values embedded in these sentiments, prompted further reflection on the role of social media platforms as sources of information and how Twitter's/now X's affordances shape political views, especially on politically salient topics such as immigration. The role of mass media in influencing opinion has been long documented by social scientists (see McCombs and Shaw, 1972), though in recent years there is much debate about the role of media in shaping attitudes in the context of new digital media and fragmentation of media markets (Bennet and Iyengar, 2008). However, if social media platforms represent a 'demotic turn', where 'ordinary people are able to break "news", produce media content and voice their opinions publicly' as Murthy [22] suggested, then it is important to understand the processes by which people's views on politically salient issues are shaped. Or, how information and communications on immigrants/immigration are created, disseminated and consumed by citizens via social media. An additional question that arises relates to the role of Twitter's recommender, trending and feed algorithms in shaping the 'conversation'. In this regard, social media platforms 'perform and produce sociality as much as they describe it' as Burrows and Savage [23] observed. So, for example, how do we interpret the fact that 60 percent of tweets were anti-immigration and 40 percent were pro-immigration among the tweets in the sub-sample where we could identify sentiment? Van Dijck [24] noted that tweets are most effective in conveying affective content such as gut-fired opinions and spontaneous reactions. And Phillip Brooker has observed that algorithms cannot account for rhetorical strategies like sarcasm, irony, and nuanced meaning when researchers use keywords to collect a corpus of tweets [25]. These reflections prompted the third stage in our abductivist interpretivist strategy of examining the 'messaging' of migration, and specifically the processes by which information and communications on immigrants/immigration are created, disseminated and consumed by non-elites in our whole data set.

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Stage 3 — 'Breadth' work utilizing *communication* and *action* features

In recent years, scholars have focused on the social structures and networks that develop online and have raised concerns about polarization and the development of filter bubbles or echo chambers that create fragmenting 'publics' (Bright, 2017; Shore, *et al.*, 2018). Lack of exposure to balanced, cross-cutting news and information undermine development of rational dialogue and well-informed citizens needed for a functioning democracy or to maintain public health at times of a global pandemic (Islam, *et al.*, 2020). However, Dubois and Blank (2018) have questioned earlier approaches to studying the development of online networks and have advocated a focus on the 'entire media environment' rather than on single platforms. Drawing on this scholarship, our interest in the 'messaging' of migration on social media prompted two further research questions: what are the patterns of information consumption & dissemination on the topic of migration/immigration among non-elite Twitter/now X users in the U.K.? And are there structural differences in information flows among non-elite users who are anti-immigrant and those who are pro-immigrant? These questions make use of *communication* as well as the interactional functionalities of Twitter such as @-mentions, but also broader engagement that the platform facilitates (Klinger and Svensson, 2015) such as @reply, retweeting and use of hashtags.

To investigate these new questions, we re-visited our whole corpus of tweets from non-elite users and harnessed computational approaches. For the first research question here, we again focused on *communication* and carried out recursive surface 'thematic' content analysis (Davidson, *et al.*, 2019). I labelled a 4.6 percent sample of the whole corpus as negative, positive or neutral in terms of sentiment towards immigration, which my co-researcher for this stage of the research used to train a machine learning

model to identify anti-immigration, pro-immigration and neutral tweets in the whole corpus of tweets by non-elites [26]. Through this computational analysis we found that 41 percent of tweets were anti-immigration, 20 percent were pro-immigration and 39 percent were neutral. We then used natural language processing (NLP) techniques to search for different keywords in the corpus of tweets expressing anti-immigration and pro-immigration sentiments related to media sources, political parties and/or political actors linked to parties, and to organisations and activists/individuals. Inclusion of multiple sources of information consumption and sharing among non-elites on Twitter/now X in the code-book was influenced by Dubois and Blank's (2018) argument that in the context of a high-choice media environment individuals may access political information through social media, televisions, online news sites and face-to-face communication, which could expose them to more diverse perspectives. However, in contrast to methods adopted by Dubois and Blank, we applied computational techniques to examine the actual digital traces of Twitter/now X users' practices of information consumption and sharing. Our goal was to a focus on the 'entire media environment' (Dubois and Black, 2018), or the online information ecosystem underpinning engagement with emotionally charged issues such as immigration, rather than single platforms, in the context of extensive media choice.

Content analysis, which originates in positivist ontological assumptions, offers a particular view of the nature of social reality, that human behaviour, in this case broad use of language and patterns of Twitter/now X communication, can be objectively measured. A count of the number of times each of these keywords appeared in the corpus was kept. As Figure 2 illustrates, analysis of media sources revealed that the BBC was the most popular source consumed or shared on the topic of immigrants/immigration during the study period, which is in line with Neuman and Levy's (2014) report on top news brands consumed in 2014. Right-wing British broadsheet and tabloids (*Telegraph, Daily Express, MailOnline*, and *Daily Mail*) were popular, and thriving online, as Chadwick, *et al.* (2018) found. Of left leaning media sources, as identified by Shore, *et al.* (2018), the online news outlet *Huffington Post*, and its national version *Huffington Post UK* are the most popular, followed by the *Guardian*. This analysis indicates that mainstream news media, whether distributed online or through traditional channels, continue to have a significant role in the public sphere. Carlson [27] noted that 'news sharing involves an evaluative component' involving a range of practices such as re-transmission of the news story link, retransmission with commentary or commentary about the news story. These practices not only contribute to the visibility of the news story but also adds a set of meanings to the newstory [28]. While content analysis conducted in this stage does not allow us to directly investigate what meaning non-elites add in the process of consumption and sharing news stories and links, it contributes to supporting findings in the stage two analysis, as I discuss below.

Mainstream Media (Tabloid, Broadsheet, On-line)	Raw count in Corpus	Percentage
BBC	6575	5
Telegraph	1662	1
HuffPost	1291	1
HuffPostUK	1233	1
Daily Express	1068	1
MailOnline	940	1
theguardian.com	780	1
Daily Mail	750	1
The Guardian	550	0
BBCNews	532	0
Youtube	458	0
SkyNews	449	0
Economist	253	0
CNN	176	0
Huffington Post	158	0
The Independent	140	0
Fox News	128	0
nytimes	126	0
The Times	79	0
guardiannews	71	0
Standardnews	45	0
VICEUK	40	0
DMail	17	0
NBCNewsBusiness	7	0
DailyStar	6	0
Daily Mirror	2	0
DMirror	2	0
DExpress	1	0

Figure 2: References to traditional news media, online news organisations and social media sites in the whole corpus.

Analysis of the political parties that non-elite users engaged with (Figure 3) reveals that there were 14,463 references to UKIP, constituting 12 percent of the corpus. Additionally, references to David Coburn and Nigel Farage, member of the Scottish UKIP and leader of UKIP respectively at the time of research, had combined mentions of 744. The UK Conservative Party, also referred to as Tories in some tweets, were referenced 2,368 times, constituting two percent of the corpus, and the far-right British National Party was referenced 471 times. These results indicate that the views of right and far right political parties dominated the 'conversation' on the topic of immigrants/immigration among non-elite users during the study period.
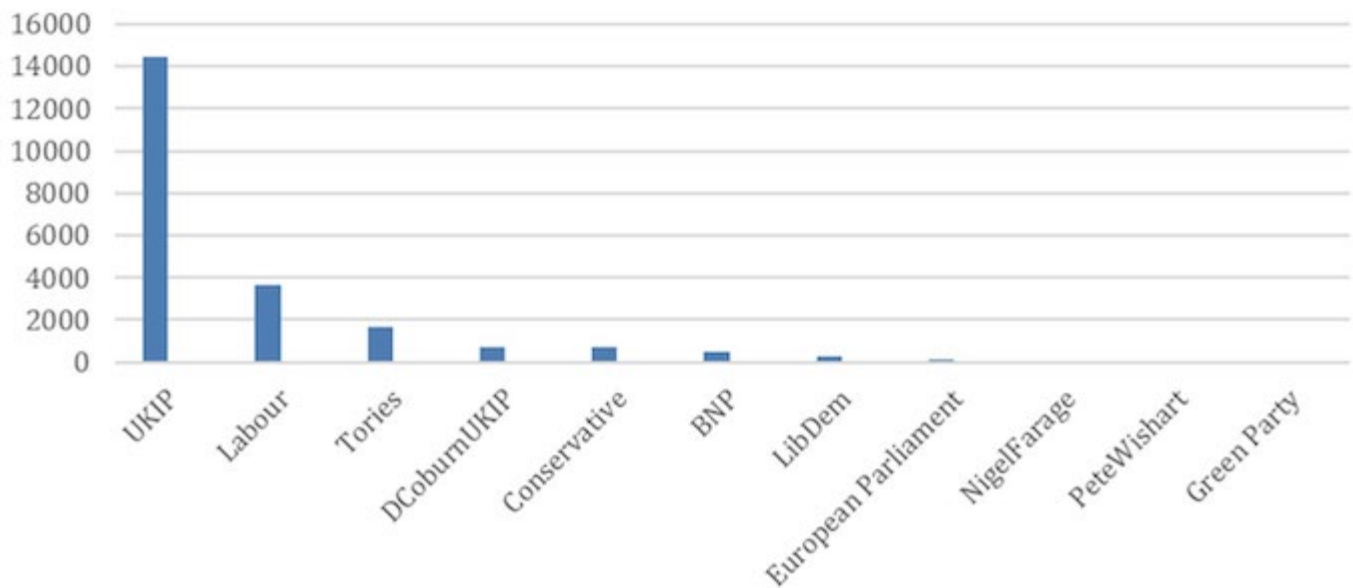
Figure 3: References to political parties and politicians in the whole corpus. Values as raw count in corpus.

With regard to the organisations, activists and individuals that non-elite users engaged with on the topic of immigrants/immigration during the study period, we found a larger proportion engaged with views promoted by extreme far right organisations such as the English Defense League (EDL) or right-wing organisations or individuals than with those promoting pro-immigrant/immigration views (Figures 4 and 5). Here we used metadata and/or Internet searches to determine whether the organisations and actors were promoting anti- or pro-immigrant/immigration views.
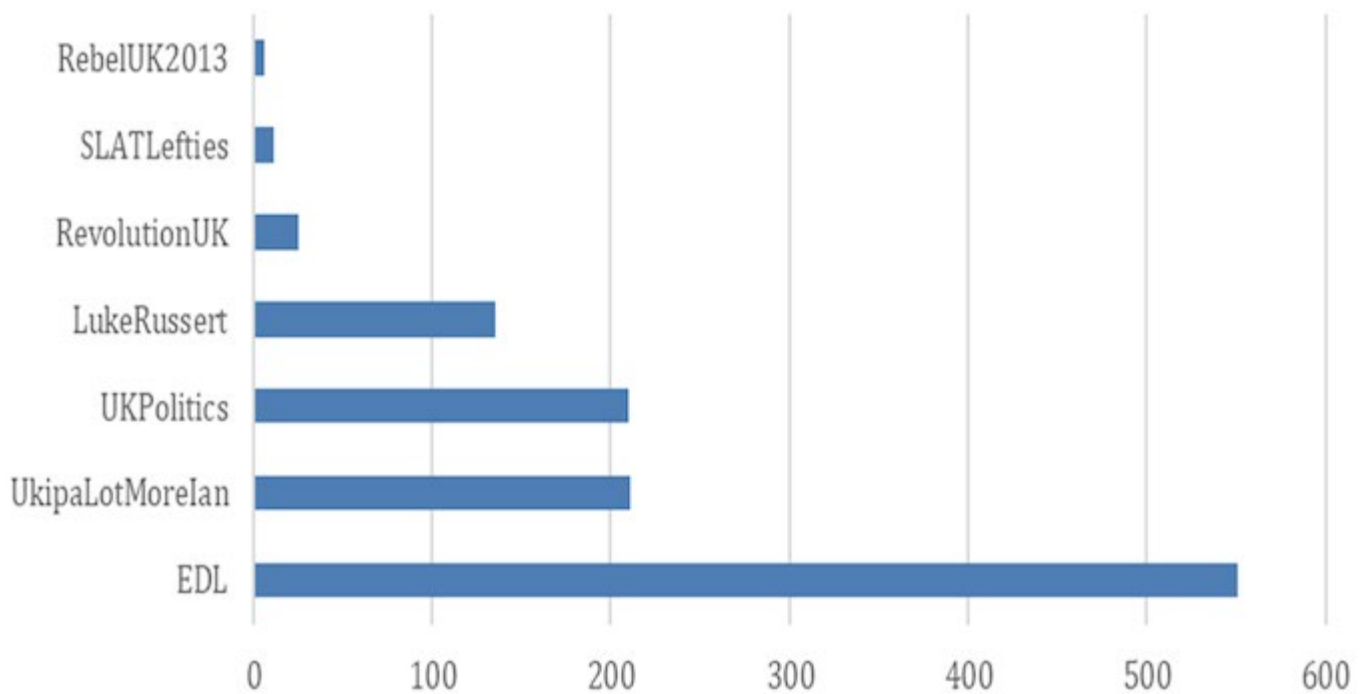
Figure 4: Organisations, activists or individuals promoting anti-immigrant/immigration views. Values as raw count in corpus.
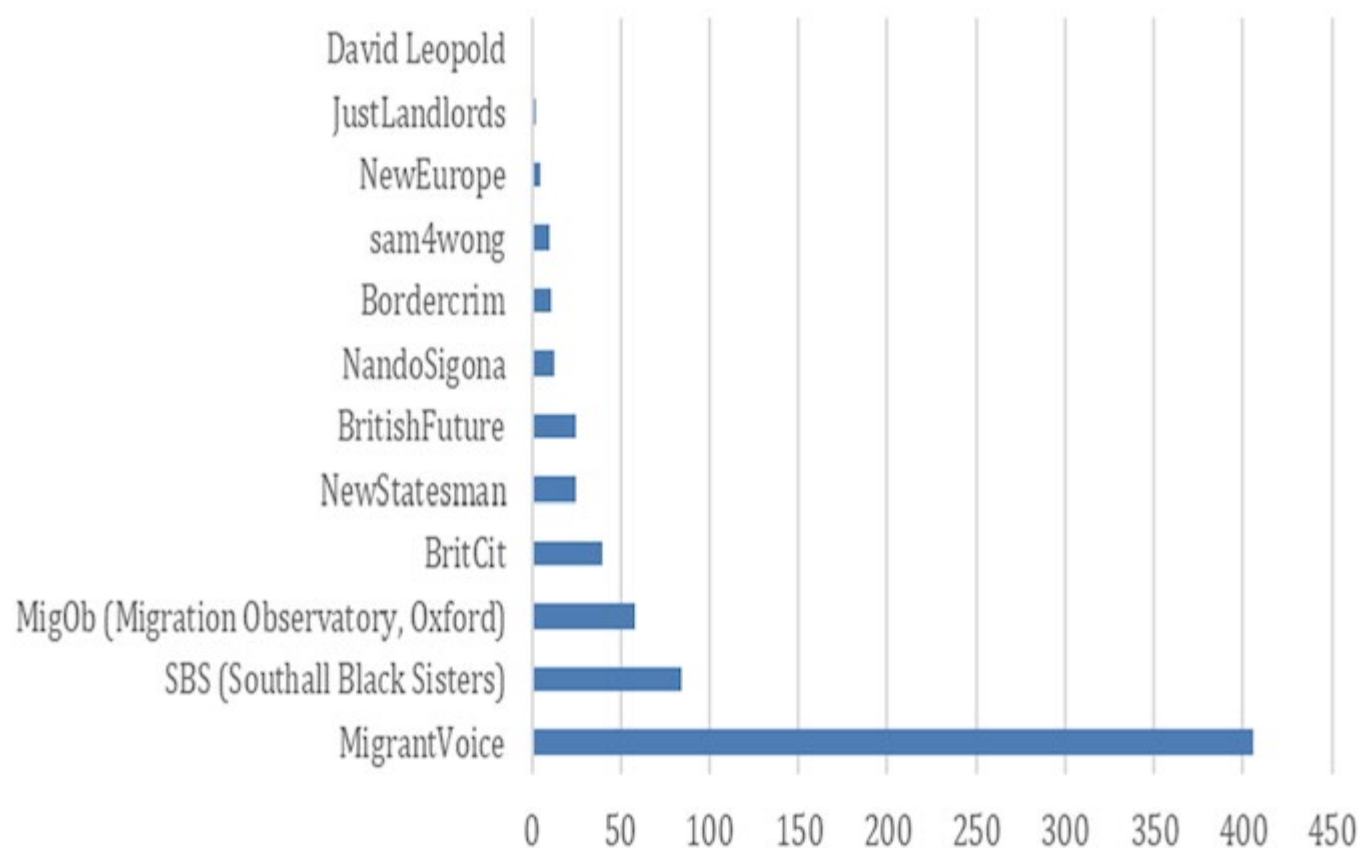

Figure 5: Organisations, activists or individuals promoting pro-immigrant/immigration views. Values as raw count in corpus.

Overall, this recursive surface thematic analysis revealed that while the BBC remained the most popular news source consumed or shared on the topic of immigrants/immigration during the study period, a predominance of non-elite users involved in the 'conversation' on immigration on Twitter/now X engaged with right leaning and right-wing populist politicians, and political parties and organisations.

To investigate whether there were structural differences in information flows, particularly consumption, among non-elite users who are anti-immigrant and those who are pro-immigrant, we focused on a different aspect of *communication* in social media data, that of hashtags, as well as action in the form of @ mentions. Both are part of the Twitter/now X organizational infrastructure, but they represent different pieces of information that organize the conversation. Hashtags curate and annotate content into specific topics, allowing the broader Twitter/now X network beyond that of the user's immediate circle of followers to tag and follow tweets that talk about a wider 'public' issue (Boynton and Richardson, 2014; Bode, *et al.*, 2014;

Jungherr, 2015). Mentions, the other organizational structure analysed at this stage of the analysis, allow users to tag other relevant individuals in tweets by replying to, responding to, or mentioning other users in the Twitter-sphere (Cha, *et al.*, 2010). Those mentioned frequently during a given time period suggests other Twitter/now X users see this actor as relevant to unfolding events during this time. As Jungherr [29] noted, such practices can be understood as collective filtering, which 'determines which messages, links, and users come to dominate the discourse …with regard to specific topics'. My co-researcher used machine learning techniques to carry out a regular expression search to find the range of hashtags and @mentions in tweets classified as expressing negative or positive sentiment towards immigration.

On the specific technique used: After completing data cleaning the co-researcher generated features using the TF-IDF (term frequent inverse document frequency) method from tweet text. Using these features, he trained a SVM (support vector machine) machine learning model to predict whether a tweet had positive, negative or neutral sentiment based on the TF-IDF features. Performance of this model was compared to off-the-shelf sentiment classification models such as VaderSentiment (https://github.com/cjhutto/vaderSentiment) and TextBlob (https://textblob.readthedocs.io/en/dev/). Our trained SVM had a classification accuracy of 60 percent, whereas VaderSentiment and Textblob had accuracies of less than 35 percent.

While many Twitter/now X users do not use hashtags (Ausserhofer and Maireder, 2013), hashtags provide structural communication cues to follow Twitter/now X conversations. There was a total of 2,686 hashtags in the anti-immigrant tweets with over 70 percent appearing only once in the corpus. There was a total of 1,515 hashtags in the pro-immigration tweets, with over 70 percent appearing only once in the corpus. Using a Python script, my co-researcher constructed word clouds of the top 100 hashtags in the anti- and pro-immigration tweets. Word clouds are a tool to visualize basic patterns in a dataset: types of words used in the hashtags, and the most common words are presented as relatively larger than less common words. Word clouds as a visualisation tool can reveal topics that might otherwise be missed. In Figures 6 and 7 we see that both anti- and pro-immigrant users are tagging and following tweets on immigration and immigrants as we would expect in this corpus.

Figure 6: Top 100 hashtags in the anti-immigrant/immigration tweets.

Figure 7: Top 100 hashtags in the pro-immigrant/immigration tweets.

In both word clouds we also see the #ImmigrationRow and #bigimmigrationr and the #BenefitsBritain and #benefitstreet. This suggests that both anti- and pro-immigrant users are engaging with a debate that occurred on Channel 5, the U.K.'s fifth largest commercial television channel, on 18 February 2014 called 'The Big British Immigration Row' and the documentary 'Benefits Britain' which followed the lives of those on welfare benefits living on a street in the British city of Birmingham, that aired also on Channel 5 in 2014. As Housely, *et al.* [30] observed, both non-elites on Twitter/now X and those representing anti-poverty campaigning groups and trade unions challenged misunderstandings about the numbers and characteristics of benefit claimants.

However, there are some differences between the two word clouds. In the anti-immigrant word cloud, we see the hashtags RT, UK, LIVE and SaraFirth, suggesting that a lot of anti-immigrant users followed Sara

Firth, a London-based correspondent in 2013–14 for RT, the Russian state-controlled TV network during the study period. These hashtags are present in the pro-immigrant tweets but to a smaller extent. The more prominent journalist we see in the pro-immigration word cloud is Tesa Arcilla, who contributed to BBC World, Al Jazeera and CNN in 2014. Another difference is that anti-immigration users are tagging UKIP to a greater extent, with the hashtags UKIP in upper or lower case, Nigel Farage, and voteUKIP. We also see hashtags linked to EDL, BNP, the former a far-right organisation and the latter a far-right political party in the U.K. Pro-immigration users are also tagging UKIP and EDL, though to a lesser extent. This suggests pro-immigration users follow and challenge their views, a point that I address below. Finally, in the pro-immigration word cloud we also see wider concerns with the public debate on an immigration and the immigration bill that was going through the U.K. Parliament in 2014 through hashtags such as #racist, #racism, #ethnicprofiling, #UNHCR, #migrant, #migration and #NHS. Overall, the word clouds indicate that during the study period non-elite users participating in the 'conversation' on immigration consumed and shared information and news on immigration from a wide range of online and offline sources, confirming the importance of examining the 'entire media environment' (Dubois and Blank, 2018).

Investigating action in the form of @ mentions is useful because users who are frequently @mentioned or retweeted are likely to be at the centre of dense networks. Users that are @mentioned or retweeted often not only have the capacity to influence others, but themselves are important markers in Twitter/now X discourse because other users have indicated their importance, for example by retweeting a post they made (Cha, *et al.*, 2010). Figures 8 and 9 illustrate the distribution of degrees of centrality for particular user accounts in anti-immigrant and in the pro-immigrant tweets.
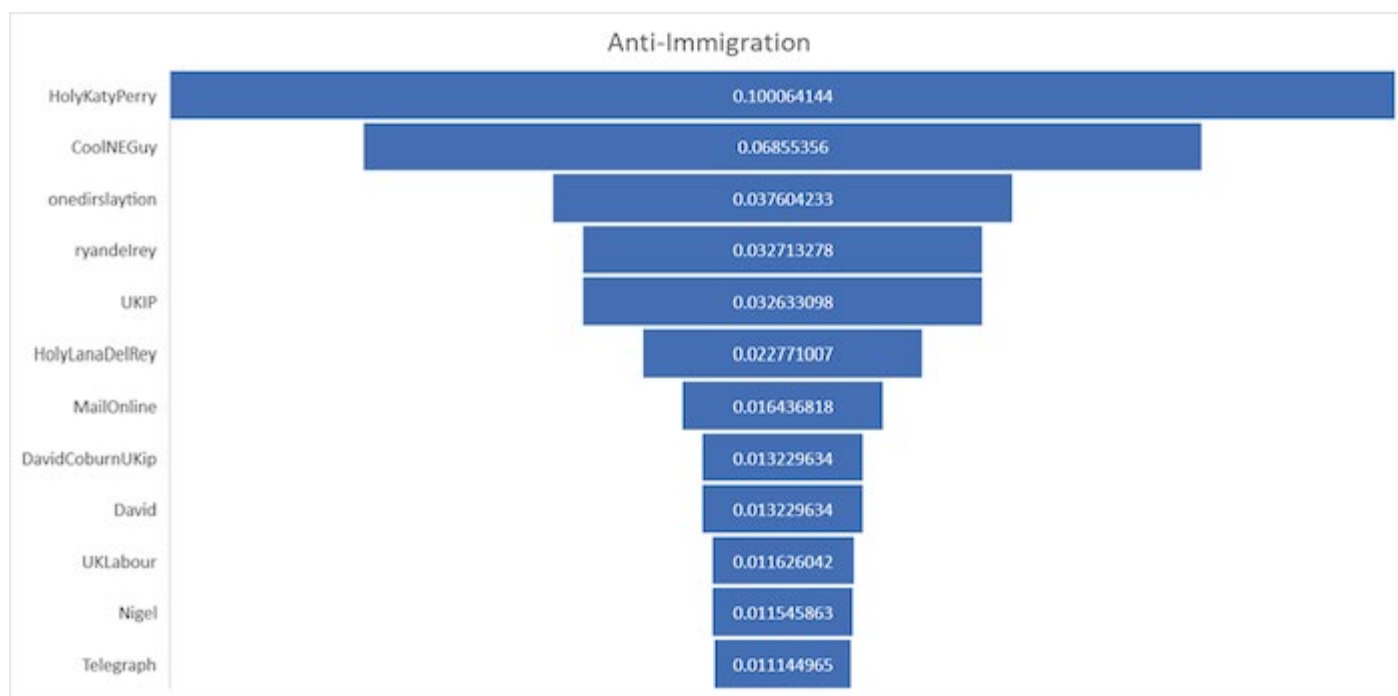

Figure 8: Degree of centrality of those @-mentioned in the anti-immigrant/immigration tweets.
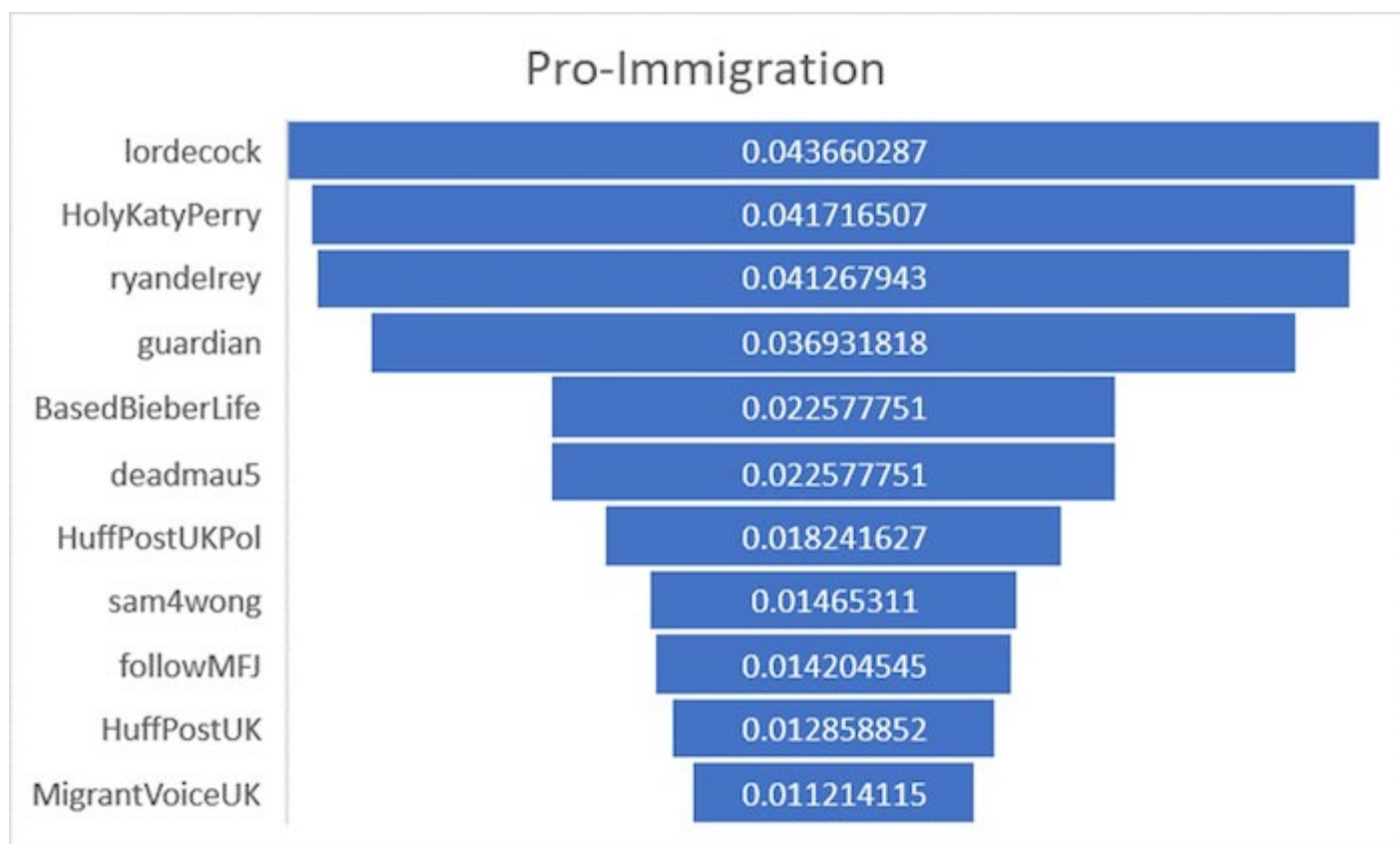
Figure 9: Degree of centrality of those @-mentioned in the pro-immigrant/immigration tweets.

For those non-elites who expressed anti-immigrant sentiments, the most influential users were American singers and influencers such as Katy Perry and Lana del rel and Ryan del rel. The next most influential was U.K. Independence Party (UKIP), either through the party, individuals within the party such as Nigel Farage or David Coburn a Scottish politician and UKIP member, or through UKIP views expressed in media such as *MailOnline* or the *Telegraph*. But anti-immigrant non-elites were also engaging with the Labour party, suggesting that they view Labour's policies on migration as the cause of a range of issues in Britain. Amongst non-elites expressing pro-immigrant attitudes, influencers such as Katy Perry and Ryan del rel were important in the Twitter conversation on migration, as well others such as musicians Justin Bieber and Joel Zimmerman, a Canadian electronic music producer whose Twitter handle was deadmau5. With regard to mainstream left media, the *Guardian* was also influential, as was the *Huffington Post*. Organisations on the left, such as Movement for Justice (followMFJ) and MigrantVoiceUK also had some influence. The prominence of celebrities who are @mentioned in our corpus is in line with that found by Cha, *et al.* (2010), though this analysis does not tell us whether non-elite users are agreeing or challenging the views of these celebrities, which would require further qualitative analysis of the tweets from the celebrities and those @mentioning them.

Overall, the surface thematic mapping of word clouds on Twitter hashtags and the @-mentions indicate that Twitter/now X non-elite users who expressed anti-immigration views during the study period were more likely to be influenced by politicians linked to UKIP or information sources promoting UKIP's positions, suggesting an explanation for the cohesive set of values among those who were anti-immigration we found in the in-depth qualitative interpretive analysis of the five percent sample in stage two. In contrast, Twitter/now X non-elite users who expressed pro-immigration views drew on a wider of range of actors and information sources to challenge anti-immigration attitudes and were concerned with a wider set of issues linked to immigration policies, which we also found in our in-depth qualitative analysis in stage two.

These patterns in the pro-immigration tweets also suggest an explanation for the multiple, and sometimes contradictory values embedded in those promoting pro-immigration sentiments.

This surface thematic mapping of the corpus of tweets from non-elite users during the study period strengthens the validity of our in-depth qualitative analysis and links to concerns amongst political scientists about the polarization of attitudes and opinions. Research by political scientists finds liberals are more likely than conservatives to participate in cross-ideological dissemination of political and non-political information (Barberá, *et al.*, 2015). But these findings on the entire media environment also suggest, as Bandy and Diakopoulos [31] have recently found, that though social media platform algorithms influence users' exposure to extremism, misinformation, and polarization, such algorithms play a minor role rather than a key amplifying role. Bandy and Diakopoulos argued for a broader sociotechnical systems approach and the need to look at upstream factors and feedback loops such as 'individual cognition (*e.g.*, motivated reasoning and media literacy), social contexts (*e.g.*, groups and communities), and structural incentives (*e.g.*, business models and platform affordances)' [32] that create input to the algorithm. I argue that our findings point to all three factors, but identification of the first two upstream factors in our data will be of interest to scholars and policy-makers concerned with fostering rational dialogue and well-informed citizens on politically salient issues such as immigration, but also concerned with preventing social fragmentation at a time when right-wing nationalist political movements have become a key feature of the European political landscape (Wodak, 2015) and are shaping the wider immigration debate in Europe and elsewhere.

■ ———————————————————

Conclusion

To extract meaning from 'big' social media data it is important to be aware of both epistemological and the ontological implications of our research decisions. These reflections influence the claims we can make in any study. Having acknowledged the epistemological implications in relation to the data corpus, in this case study I have drawn attention to how methods of data analysis shed light on the nature of social reality (ontology) (Edwards and Weller, 2012). Different analytical angles, in this case *communication* and/or *action* in 'big' social media data implies distinctive ways of knowing the social world (ontology) that can reveal different facets of user behaviour. Awareness of these different analytical angles helps the researcher devise theoretically informed analytical strategies for any social media platform and their ever-changing socio-technological affordances (Beneito-Montagut, 2019). Here I have documented a case study that demonstrates a reflexive and iterative abductive interpretivist analytical strategy, in practice retroductive strategies, that promotes a data-driven but theoretically informed approach to the analysis of 'big' social media data and draws on computational and qualitative social science techniques to analyse both *communication* and *action* on Twitter/now X. Applying an iterative abductive interpretivist analytical strategy to investigate the 'conversation' on immigration at the time of the lifting of transitional controls on Romanian and Bulgarian migrants in the U.K. in January 2014 among British Twitter/now X users revealed *who* was involved in social media conversations on immigration during the study period, the values embedded in expressions of anti- and pro-immigration attitudes among non-elite users, and *how* migration was 'messaged' during the study period.

Computational analysis of *action* in Stage 1, specifically on the networked properties that Twitter affords enabled us to identify different characteristics of users in the corpus in relation to their network influence, and particularly the surprising presence of a large number of isolated users who we identified as non-elites. Drawing on existing scholarship on the linkages between attitudes to immigration and construction of the symbolic boundaries of the nation, and particularly the limited understanding of these linkages amongst non-elites led to an analytical focus on *communication* aspect of tweets from a sub-sample of non-elites. This required adoption of qualitative interpretivist analysis to understand users' meaning making of the implications of lifting of transitional controls for Romanian and Bulgarian migrants. Specifically, findings from this analysis revealed *whether* and *how* elite discourses on the symbolic boundaries of the nation are

simply absorbed and accepted, or contested by non-elites participating in the 'conversation' on immigration on Twitter/now X during the study period. In so doing, our analysis extended existing research on British attitudes to immigration. We found anti-immigrant sentiments signalled a cohesive set of values linked to UKIP and expressing exclusionary nationalism. Pro-immigration attitudes signalled a wider range of, sometimes contradictory, values that appeared to be aligned with an array of established media and groups on the political left.

These findings prompted us to re-visit action and a different aspect of *communication*, that of hashtags in the Twitter/now X organisational infrastructure in the whole corpus to examine information flows and the processes by which information and communication on immigrants/immigration are created, disseminated and consumed by anti- and pro-immigration non-elites in our corpus. Understanding information flows on Twitter/now X can point to ways of building counter-narratives and disrupt the apparent dominance of right-wing anti-immigrant attitudes and expressions of exclusionary nationalism on the platform during the study period. Using computational techniques to carry out surface thematic mapping provided a panoramic view that not only strengthened the validity of our findings from the sub-sample in Stage 2, but also offered an opportunity to engage with scholarship on the development of online social structures and networks to highlight the relevance of the entire media environment (Dubois and Blank, 2018) and of upstream factors in addition to social media platform algorithms in influencing user views and opinions (Bandy and Diakopoulos, 2021). I argue that these findings suggest policy initiatives such as enhancing digital media literacy and encouraging cross-ideological online/offline interaction to policy-makers concerned with maintaining social cohesion in an increasingly polarised Europe.

This case study demonstrates the potential of an iterative abductive interpretivist strategy applied to different analytical angles in 'big' social media data for creating space to ask different research questions on the social phenomena under focus, generating new theoretical insights and developing research that has wider policy implications. Further, it is a methodological approach that can help researchers make decisions on analytical strategies for multimodal data generated from some social media platforms that include written text, images and captions, comments and hashtags (see Shah and Carr, forthcoming). I concur with Housely, *et al.* [33] who argued that user-generated big data through social media platforms has the potential to '"digitally re-master" classic questions about social organization, social change and the derivation of identity from collective life' for social scientists but it does require a collaborative cross-disciplinary and iterative abductive approach. **FM**

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Notes

1. Dennison and Geddes, 2018, p. 1,144.

2. After Romania and Bulgaria joined the European Union, transitional controls were introduced to mitigate the possible sudden increase in migration from these countries to the U.K. These controls required Romanians and Bulgarians wishing to work in the U.K. to obtain a valid work permit.

3. Halford and Savage, 2017, p. 1,143; Brooker, *et al.*, 2016a.

4. Kitchin, 2017, p. 31.

5. Couldry and van Dijck, 2015, p. 4.

6. Kitchen, 2017, pp. 31–32.

7. Kitchin, 2014; Brooker, *et al.*, 2016a; Halford and Savage, 2017, p. 1,143.

8. Kitchin, 2017, p. 34.

9. Edwards, *et al.*, 2021, pp. 1,278–1,279.

10. Edwards, *et al.*, 2021, p. 1,279.

11. Murthy, 2012, p. 1,064.

12. Williams, *et al.*, 2017, p. 3.

13. Flores, 2017, p. 344.

14. Housely, *et al,*, 2014, p. 3; quotation marks in original.

15. Brooker, *et al.*, 2016a, p. 2.

16. The harvest of Twitter data was funded by a University of Southampton Web Science Institute 'Stimulus Fund' grant.

17. We used U.K. place name data from Wikipedia, Office for National Statistics, and U.K. census data to establish relevant geographic entities.

18. Justin Murphy.

19. Housely, *et al.*, 2014, p. 12.

20. Ignatow and Robinson, 2017, p. 952.

21. Thompson, 2001, pp. 28–29.

22. Murthy, 2012, p. 1,064.

23. Burrows and Savage, 2014, p. 5.

24. Van Dijck, 2013, p. 77.

25. Phillip Brooker, personal communication on 19 July 2016 at the Social Media + Society annual conference.

26. Anirudh Shah.

27. Carlson, 2019, p. 396.

28. Carlson, 2019, p. 397.

29. Jungherr, 2015, p. 41.

30. Housely, *et al.*, 2014, p. 5.

31. Bandy and Diakopoulos, 2021, p. 13.

32. *Ibid.*

33. Housely, *et al.*, 2014, p. 4.

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Editorial history