Dynamic social media affiliations among UK politicians

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A B S T R A C T

Inter-personal affiliations and coalitions are an important part of politicians' behaviour, but are often difficult to observe. Since an increasing amount of political communication now occurs online, data from online interactions may offer a new toolkit to study ties between politicians; however, the methods by which robust insights can be derived from online data require further development, especially around the dynamics of political social networks. We develop a novel method for tracking the evolution of community structures, referred to as 'multiplex community affiliation clustering' (MCAC), and use it to study the online social networks of Members of Parliament (MPs) and Members of the European Parliament (MEPs) in the United Kingdom. Social interaction networks are derived from social media (Twitter) communication over an eventful 17-month period spanning the UK General Election in 2015 and the UK Referendum on membership of the European Union in 2016. We find that the social network structure linking MPs and MEPs evolves over time, with distinct communities forming and re-forming, driven by party affiliations and political events. Without including any information about time in our model, we nevertheless find that the evolving social network structure shows multiple persistent and recurring states of affiliation between politicians, which align with content states derived from topic analysis of tweet text. These findings show that the dominant state of partisan segregation can be challenged by major political events, ideology, and intra-party tension that transcend party affiliations.

Elected politicians do not represent their constituencies in a social vacuum. Members of Parliament (MPs) elected to the House of Commons typically serve in parliament for several years, during which time they necessarily form social connections with their colleagues. It is reasonable to expect that their social networks will have effects on their opinions and behaviour, and indeed there is a broad literature on the importance of social network structure for many aspects of human behaviour. Of particular relevance to politics and political behaviour, peer influence in online and offline social networks is known to affect opinions and attitudes (Bond et al., 2012; Centola, 2010; Christakis and Fowler, 2007, 2008; Fowler and Christakis, 2008; Kramer et al., 2014; Muchnik et al., 2013; Salganik et al., 2006; Sunstein, 2007). Thus the pattern of who interacts with whom in political processes might be expected to give some explanatory power for actions such as voting, campaigning, and debating. A common finding in social networks of all types is the clustering of individuals that have similar attributes, known as 'homophily' (McPherson et al., 2001), which can arise from selectivity in the formation and maintenance of network connections (preferential linking to alike others) as well as from peer influence (linked individuals becoming more alike) (Shalizi and Thomas, 2011). When homophilic interactions aggregate to create partisan groupings within social networks, also known as 'echo-chambers' (Adamic and Glance, 2005; Conover et al., 2012; Williams et al., 2015), the amplification of like-minded views (and exclusion of alternate views) can prevent effective debate and make cross-party consensus difficult (Sunstein, 2007).

Data for reconstructing politicians' social networks and community affiliation – apart from their party membership – is limited. Since we cannot realistically observe the social interactions of politicians, we need to rely on indirect observations and inference. Voting records of elected politicians have previously been used to identify individual ideological positions in some legislative bodies, for example, the US Congress and Italian Parliament (Dal Maso et al., 2014; Waugh et al., 2009). However, attempts to use roll calls to capture variation in legislator positions within parties in systems with a high degree of party discipline, such as the UK, have not been successful (Hix, 2010; Spirling and McLean, 2006), since

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"... the positions of MPs are mainly determined by the positions of their parties" (Hix, 2010). This inability to use roll call votes to identify the positions of individual legislators generated a stream of papers that develop methods based on other types of data, such as Early Day Motions (Kellermann, 2012) or legislative speeches (Beauchamp et al., 2011; Lauderdale and Herzog, 2016). However, it is important to note the distinction between estimating legislator ideological positions and identifying the evolving structure of legislator social interactions, and evolving informal membership within peer communities. Our focus here is on capturing these informal affiliations using legislator social media interactions, with a specific aim of observing how they evolve over time in response to current events. Social interactions may indeed be strongly related to the underlying ideological positions of individual legislators, but testing this hypothesis is beyond the scope of this paper.

The widespread use of online social media by politicians (see Jungherr (2016) for a systematic review of the literature on the use of Twitter in electoral campaigns) provides a rich data resource for studying their interpersonal interactions. Previous studies on the use of Twitter by UK politicians have focused on: the characteristics which make candidates more likely to be active on the platform (Darren et al., 2010); differences in the way politicians use Twitter (Graham et al., 2013; Newman, 2010); and the content of their tweets (Baxter and Marcella, 2012; Theocharis et al., 2016). Despite of the importance of network-based approaches in understanding political phenomena (Lazer, 2011), no previous studies that we are aware of have looked at the networks of Twitter interactions between UK political elites. Outside the UK, a common finding across studies of politicians' social media interactions is that ideology plays a crucial role in the formation of Twitter links and communities. This finding holds across multiple countries and levels of elections. Boireau et al. (2015) analyse the network of Twitter interactions among candidates competing for federal, regional and European elections in Belgium, finding that interactions between candidates tend to be clustered around political ideology. Cherepnalkoski and Mozetic (2016) analyse the network of retweets among Members of the European Parliament (MEPs), showing that communities identified in social networks correspond to actual political groups. Other recent studies examine legislators' voting patterns, such as Cherepnalkoski et al. (2016), who study MEPs to show that there is considerable correlation between voting and retweeting patterns, and that the ideological left-to-right alignment of the political groups is reflected in the retweet network. Conversely, Cook (2016) analyses co-voting, bill co-sponsorship and diadic Twitter interactions between US Senators and Maine State Legislators, finding that Twitter ties are less partisan than voting and bill co-sponsorship.

A general challenge in use of social media to infer relationships amongst politicians is that the system under study is highly dynamic. Social media is a high-volume and high-velocity medium in which millions of utterances from millions of users form a complex web of communication. Gaining robust insights from such a dynamic complex system is challenging. A common approach in previous work is to identify a set of target users (typically elected politicians, in the field of political science) and then to aggregate content over some time period to form a single snapshot of their interactions. While this approach can be insightful, it ignores a key aspect of political discourse, which is the dynamics of communication and how the interactions between individual politicians are affected by events.

In this paper we make two unique contributions – one substantive and one methodological. First, we examine politician's networks over an eventful period spanning the 2015 General Election, in which the Conservative Party, led by David Cameron, won an unexpected parliamentary majority and the Scottish National Party, for the first time, gained a substantial share of MPs, and the 2016 Referendum on the UK's membership of the European Union, which saw a largely unforeseen majority in favour of withdrawal, so-called 'Brexit'. Outside of more formal interactions between legislators (votes, parliamentary questions, motions, debates), these networks of online interactions are important indications of less formal modes of party influence. Second, to study these networks a novel method of 'multiplex community affiliation clustering' (MCAC) is developed. This new method is necessary to both address challenges in the data and capture more accurately the dynamics of the interactions. Building on recent advances in multiplex network analysis, here we develop a novel method for tracking the evolution of community structure amongst a fixed set of nodes, referred to as 'multiplex community affiliation clustering' (MCAC). Although a thorough investigation of the sensitivity of the method to different implementations and algorithm choices would be valuable in establishing it as a robust analytical tool, this manuscript focuses on what we perceive as the least assumptive implementation, demonstrating its utility through application to the network of online interactions between MPs and MEPs across the study period.

The paper presents the first network analysis of online interactions between UK politicians, showing that analysis of online social networks can reveal party cohesion and patterns of affiliation between individual politicians in a case where more conventional methods (such as analysis of voting records) would fail. Importantly, the paper demonstrates that analysis of social media allows affiliations to be studied as a dynamic process, revealing major network restructuring and community formation to be driven by multiple factors, including major political events, ideology and party affiliation, concurrent with popular intuitions of the contemporary political landscape. In doing so, we can address two avenues of future research that Ringe et al. (2017) call for: new forms of data to study legislative networks and extending the empirical focus beyond the US case (p. 17).

Whilst not the focus of this paper, two sets of important theoretical questions can be addressed with an analysis of party communities over time. First, speaking to the literature on intra- and inter-party structures, we can examine the development of party factions and inter-party communities, and evaluate whether their formation is driven by current events or if they develop over a longer period of time in response to external pressure (e.g. shifts in public opinion). This question has motivated a body of research on intra-party coalitions (Sartori, 2005) but there have been recent calls for measures of intra-party factionalism to incorporate more dynamic elements (Boucek, 2009). Second, a study of party communities that incorporates both MPs and MEPs can address questions about the Europeanisation of national political parties (Hix and Goetz, 2000; Ladrech, 2002; Mair, 2008) and the extent to which MPs are responding to MEP communities or the other way around. Our analysis presents a method for detecting the community dynamics which makes it possible to answer the above questions.

1. Summary of methods

The primary object of study is a directed multiplex network of social media (Twitter) interactions between UK politicians (Members of Parliament, MPs, and British Members of the European Parliament, MEPs). Although these two groups occupy distinct political institutions and cannot be directly compared (for example, by parliamentary voting patterns), we include both MPs and MEPs in the analysis for the following three reasons;

1. Preliminary analysis showed that both MPs and MEPs share strong connections in the realm of Twitter.