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Networked discontent: The anatomy of protest campaigns in social media

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ABSTRACT

We analyze the communication network that emerged in social media around an international protest campaign launched in May 2012. Applying insights from network science and the theory of brokerage, we examine the cohesion of the network with community detection methods, and identify the users that spanned structural holes, creating bridges for potential information diffusion. We also analyze actual message exchange to assess how the network was used to facilitate the transmission of information. Our findings provide evidence of fragmentation in online communication dynamics, and of a distribution of brokerage opportunities that was both uneven and underexploited. We use these findings to assess recent theoretical claims about political protests in the digital age.

1. Introduction

The terms 'networked politics' and 'networked social movements' have become very salient in the study of political protests and collective action in the digital age (Bennett and Segerberg, 2013; Castells, 2012; Earl and Kimport, 2011; Faris, 2013; Juris, 2008). Recent political events – from the Arab Spring or the Occupy movement in 2011, to the more recent protests emerging in Turkey, Brazil and Hong Kong (2013–2014) – have spurred much interest in how online technologies are helping coordinate large numbers of people in the absence of central organizations. Theoretical accounts of those events often rely on implicit assumptions about how online networks operate – assumptions that are rarely put to an empirical test and that are often not consistent with well-established findings in network science (Easley and Kleinberg, 2010; Newman, 2010; Newman et al., 2006; Watts, 2003) and the analysis of social networks (Carrington et al., 2005; Diani and McAdam, 2003; Kadushin, 2012; Monge and Contractor, 2003; Wasserman and Faust, 1994). This article applies the analytical tools of network theory to evaluate how online networks mediate collective action efforts.

Networks reflect organic forms of organization and they create a structure through which information flows (Monge and Contractor, 2003; Wasserman and Faust, 1994). A growing body of research suggests that online networks fall far from the decentralized structures to which new social movements are often metaphorically compared. In addition, online technologies offer no guarantee for a fast and broad diffusion of information: only when the structure of connections is conducive to chain reactions and cascading effects can online networks encourage diffusion (Easley and Kleinberg, 2010; Newman, 2010). Most online networks are sparse, which means that they are organized around structural holes that hamper diffusion and information spreading. The existence of bridges spanning those holes and the willingness of information brokers to facilitate diffusion are necessary conditions for information to travel. This requirement is not specific to online networks: social research has long identified the relevance of those features for diffusion in a number of contexts, including political mobilization (Burt, 1992; Gould, 1989; Gould and Fernandez, 1989; Granovetter, 1974; Kim and Bearman, 1997; Rogers, 2003; Valente, 1995; Watts, 2003). In spite of that evidence, network mechanisms are barely considered in recent theoretical accounts that describe how social media is used to organize collective action (Bennett and Segerberg, 2013; Castells, 2012; Faris, 2013; Gerbaudo, 2012). As a consequence, an important level of analysis is disregarded.

This article starts from the premise that, when seen through an empirical lens, networks are very diverse objects. As such, they need to be characterized before they can be linked to functions like

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the spread of information or the emergence of collective action. This exercise requires analyzing networks as structures of opportunity that might (or not) be realized. The analyses that follow show that the global connectivity often taken for granted in online networks depends on the existence of bridges (i.e. ties spanning structural holes) and the existence of brokers activating those connections. We provide evidence that online networks are highly centralized and fragmented, far from the horizontal and fluid structures they are often assumed to be (Castells, 2009, 2012). We show that only a minority of users bring online networks together and facilitate global dissemination in protest communication.

These empirical patterns, and what they reveal about digital mobilization and collective action, are obscured when theoretical accounts use networks as synonyms of 'social movements' and 'horizontal organizations'. Using network terms as shorthand for different slices of reality (i.e. social movements, decentralized action, communication structures) may be useful on a descriptive level, but it conceals how networks operate in practice. This paper focuses on the structure of one specific online network (Twitter), and on how it was activated to disseminate information about one specific global campaign ("United for Global Change", sponsored in 2012 by Indignados and Occupy members). The mechanisms and network features identified in this paper point, however, to generic principles behind the structure and function of many networks – and can therefore be generalized beyond our particular case study. The ability to generalize findings is core to any research endeavor; and it is, we argue, more difficult to attain under recent (but not necessarily compatible) theoretical accounts of how social media facilitates collective action. The following section elaborates on this point, fleshing out the conceptual elements behind the theory of networks as derived from network science and from studies on power.

We derive our working hypotheses from this theoretical discussion. Section 2 introduces the methods and data employed to test those hypotheses, and Section 3 presents the empirical findings. The results consider both the structural properties of the protest communication network (i.e. the opportunities for information flow) and the dynamic use of that structure (i.e. the extent to which those opportunities were realized to engage in actual communication). The final section concludes with a broader theoretical discussion of the findings and with the message that we need a more nuanced exploration of the network mechanisms underlying digital protests if we are to build theories that are both cumulative and generalizable.

2. The theory of networks

2.1. Networks as communication structures

Network theory offers a language and a method to understand patterns of organization and interdependence. Decades of analytical and empirical research have contributed to the development of the theory, which now stands as a solid common ground spanning many disciplines (Carrington et al., 2005; Monge and Contractor, 2003; Newman et al., 2006; Wasserman and Faust, 1994; Watts, 2003). Communication offers one of the main avenues for interdependence, creating ties that bring individuals together and channels through which information flows. Digital technologies have accelerated the speed of communication and amplified its reach; they have also made it easier to analyze connections and improve our understanding of how networks mediate the emergence of collective action. From a theoretical point of view, networks can be instrumental for two reasons: they open the paths for information to travel; and they place individuals at the crossroads of those paths, granting different abilities to control or promote information flows.

Actors with the ability to control the flow of information are, in network theory parlance, the brokers that create bridges and help maintain global connectivity. A common definition of brokerage in social networks relies on measures of structural constraint and betweenness centrality: brokers build networks with non-redundant connections, and they tend to lie in many of the paths that connect the other nodes in the network (Burt, 1992, 2005; Freeman, 1977, 1979; Girvan and Newman, 2002; Gould, 1989; Gould and Fernandez, 1989). Online technologies allegedly allow anyone with an internet connection to become an information broker and be in a position to trigger diffusion reactions. Network theory allows testing that assumption while answering two interrelated questions: How does this potential materialize? And what are the implications for how information flows online? In our context, the diffusion of information is relevant because it helps organize protests.

The idea that bridges in a network have important consequences for information flow is at least as old as the strength of weak ties argument (Granovetter, 1973). Weak ties bring socially distant groups together: they link parts of the network that would be unconnected (or less well connected) in their absence. The measure of structural constraint builds on this idea in the context of organizations: actors that span structural holes have lower constraint and are in a better position to manage information flow (Aral and Van Alstyne, 2011; Burt, 1992, 2005). When networks can be partitioned according to discrete categories (e.g. supporters of different causes or members of different organizations), the notion of brokerage adopts an additional dimension: it helps identify the actors that build bridges across groups, creating opportunities for information to travel beyond clusters of redundant communication (Gould, 1989; Gould and Fernandez, 1989). As Gould put it, "it may be misleading to analyze social structures under the assumption that all social ties have the same analytical status. Communication across sub-groups (...) may have profound effects on the relative power of individuals in social networks, while communication within such groups may be so frequent or unproblematic that its structure affords no insight into social processes" (Gould, 1989). The idea, in other words, is that the notion of brokerage can incorporate a criterion to group nodes in clusters where information is likely to be redundant.

Community detection methods offer a data-driven approach to such classification (Girvan and Newman, 2002; Newman, 2012). These methods also rely on the idea of betweenness but applied to the edges, not the nodes, which helps identify structural holes on a larger scale, i.e. beyond personal networks. Prior research suggests that communities identified on the basis of network structure often respond to exogenous attributes like ideological alignment or affiliations (Adamic and Glance, 2005; Conover et al., 2011; Grabowicz et al., 2012; Traud et al., 2011). Identifying communities in a network is important because they might make global information flows more difficult to attain: the relative absence of ties across communities means that information will, more often than not, be trapped in the areas of higher internal density.

Summing up, previous work suggests that networks facilitate the diffusion of information if some actors – the brokers – integrate with their ties communities and clusters. In the context of social movements, the absence of brokers means that networks would break into isolated components, separated by political or social barriers. Bridges, on the other hand, create paths for information diffusion – if and when they are activated. These bridges can be local, as captured by measures like structural constraint; or global, as captured by community detection methods. In addition, actors occupying brokerage positions need to engage in actual exchange to become information brokers. Networks afford but do not determine dynamics of information diffusion.