

**Title:** Mapping civil society with Social Network Analysis: Methodological possibilities and limitations

**Authors:** David J. Marshall and Lynn Staeheli

**Abstract:**

This paper explores the possibility of using social network analysis and visualization as a tool for qualitative research in human geography. The approach uses formal network analysis in concert with ethnographic research methods. Specifically, we take a performative approach to network analysis that sees network visualization as a process that produces space for research. Using networks of civil society organisations as our example, this paper highlights the debates over what social network analysis allows and omits, focusing in particular on issues related to flows, power, boundary demarcation and abstraction. From a methodological perspective, much can be lost when the conceptual and theoretical arguments about networks are applied to the material and embodied practices that constitute network relations. Nevertheless, the formal analysis of such networks can provide a representation of relationships at a moment in time that can help to both express those relationships and to open new questions that can be explored using other methods. Just as abstraction is used in an iterative process to move between empirical evidence and conceptual and theoretical arguments, the representation of networks can be part of a methodological approach that moves between the representation of relationships and the ways that various agents express, experience, and remake those relationships. Using the example of research on NGOs and civil society organisations promoting citizenship for young people in divided societies, we explore the utility—and limitations—of working in the liminal space of formal network analysis and more ethnographic approaches.

**Keywords:** Civil society; social network analysis; actor-network theory; diagramming; abstraction; hybrid methods

## 1. Introduction

The term ‘network’ has become a pervasive spatial and organisational metaphor for describing sets of complex interactions. However, the pervasiveness of the term masks the different “analytical commitments” that underpin divergent conceptual and methodological approaches to the study of networks (Johnston, 2000, p. 498). Within sociology, the formal analysis of networks is a well-established subfield. In this area of research, Social Network Analysis (SNA) is used to uncover structural patterns of social relations. Formal approaches to network analysis have lately been taken up by geographers, mainly within economic geography (Broekel & Boschma, 2012; Gluckler, 2007; Ter Wal & Boschma, 2009; Yeung, 1994). In addition to mapping distribution networks, supply chains, and transnational financial streams, SNA has been used to analyse diffusion of industrial innovation, (Breschi & Lissoni, 2009; Howells, 2012; Howells & Bessant, 2012; Huggins & Thompson, 2013), and other forms of informational flow such as ‘buzz’ (Mould & Joel, 2010) and corporate knowledge transfer (O'Hagan & Green, 2004). In other areas of geography, formal approaches have been applied to mapping knowledge networks within the discipline itself (Socio, 2010)—a popular use of SNA across disciplines—while others have explored the potential in combining SNA with GIS (Luke, 2005; Radil et al., 2010).

Critics of social network analysis argue that this formal approach to the study of complex relationships risks confusing cause with effect. That is, analysis that emphasizes the structure of networks tends to offer deterministic explanations of social phenomena, without providing any insight into the processes by which network relations form, or the meanings and norms that govern their functioning (Fuhse & Mützel, 2011). Bucking against this tendency are more cultural and reflexive approaches to network analysis, such as those offered by relational sociology (Emirbayer, 1997; H. C. White, 1992), ethnographic studies of networks (Riles, 2001; White & Johansen 2004), and Actor Network Theory (Latour, 2005; Law, 1999). It has been largely through the latter vein that political and cultural geographers have engaged in the conversation on network ontologies. The network metaphor has been particularly useful to geographers in theorizing relational approaches to space and scale (Amin, 2002; Bulkeley, 2005; Dicken et al., 2001; Jones, 2009; Sheppard, 2002). As Latour (1999) explains, network ontology collapses the micro/macro dualism in its various incarnations (local/global, individual/society), through a methodological focus on the situated movement and mobility of actors. However, Marston et al. (2005, p. 423) warn against celebrating network fluidity and mobility while ignoring the “large variety of blockages, coagulations and assemblages (everything from material objects to doings and sayings) that congeal in space and social life.” Using ethnographic approaches geographers have interrogated the various social and material blockages that

constrain and enable network mobility by attending to the embodied practices produced by and that produce network imaginaries (Larner & Laurie, 2010; Routledge, 2008; Routledge & Cumbers, 2009).

Thus, despite the ubiquity of the term ‘network’, an often unacknowledged and unresolved tension exists between these different analytical, conceptual, and methodological approaches to researching different kinds of networks. Indeed, there would seem to be irreconcilable epistemological differences between the structuralist empiricism of quantitative, formal approaches using SNA and the post-structural constructivism of ANT and certain ethnographic approaches, which see networks as, in part, artefacts of the research process itself (Knox et al., 2006; Riles, 2001). Working within this tension between more formal, analytical approaches and more reflexive, ethnographic modes of network analysis, we argue that network analysis and visualization can be used as an iterative tool for qualitative research in human geography.

Our approach uses formal network analysis in concert with ethnographic research methods. Specifically, we take a performative approach to network analysis, viewing network visualization as process that produces a space for research. Taking networks of civil society organisations as our example, this paper highlights the debates over what social network analysis allows and omits, focusing in particular on issues related to flows, power, boundary demarcation and abstraction. From a methodological perspective, much can be lost when the conceptual and theoretical arguments about networks are applied to the material and embodied practices that constitute network relations. Nevertheless, sets of relationships at particular moments in time can be rendered visible through processes and representations that can open new questions amenable to exploration using other methods. In a fully iterative process, those new questions – and their ‘answers’ – can be used to refine the representations of the networks and to make qualitative and interpretive analyses more robust. In short, just as abstraction is used in an iterative process to move between empirical evidence and conceptual and theoretical arguments, the representation of networks enables the representation of relationships and the ways that various agents express, experience, and remake those relationships. We use the example of research on NGOs and civil society organisations promoting citizenship for young people in divided societies to explore the utility – and limitations – of working in the liminal space of formal network analysis and ethnographic approaches. Our goal in using this example is to explore the methodological implications of conceptualising networks and representations as performative in a broad sense and is not limited to – or even focused upon – our analysis of NGOs.

## **2. Networks as conceptual and analytical devices**

Within the social sciences, network analysis is best defined as “the disciplined inquiry into the patterning of relationships among actors” (Breiger, 2004, p. 505). Douglas White (2004, p. 173) emphasizes that social network analysis is specifically concerned with the study of “social and cultural phenomena” that “emerge” out of observable interaction, such as communication, exchange, and other forms of social relations unfolding over time. However, there is no singular methodological or theoretical approach to the study of networks in the social sciences. What does unify diverse approaches to network analysis, however, is a focus on relationships between actors. Network analysis is by definition relational. That is, the units of analysis in network studies are not aggregate social categories or individual actors, but rather, the interaction between actors in a given field. This is what Emirbayer and Goodwin (1994) refer to when they describe network analysis as being driven by an “anticategorical imperative,” rejecting attempts to explain human behaviour with reference to the social categories to which people are ascribed. Despite the shared focus on relationality, their anticategorical imperatives, and common roots in social anthropology, network analysis in the social sciences has been riven by deep inter- and intra-disciplinary divisions, almost since its inception (Foster, 1978; Knox et al., 2006). Formal SNA maintains an empiricist confidence in the actually existing nature of social networks structures: if they can be measured, they must be real, and have real effects. Indeed, as Emirbayer and Goodwin (1994) argue, the “forbidding self-presentation” of formal social network analysis projects a kind of quantitative explanatory certitude that puts off sceptical “outsiders.” This view conflicts with more reflexive and constructivist approaches that see networks as artefacts of network analysis itself. Although we share a certain scepticism about the explanatory potential of formal network analysis on its own, we nevertheless see great value in network visualization being used as part of an inductive research process. This section will tease out the tensions, as well as consonances, between the different approaches to network analysis described above. These tensions can be productively mediated, if not resolved, through a combined approach that utilizes network visualizations as conceptual diagrams that, in turn, open spaces for research, rather than constructing hermetically sealed research outcomes.

Most origin stories about the emergence of social network analysis trace its genesis to the Manchester school of social anthropology; specifically, J.A. Barnes (1954) and Elizabeth Bott (1971 [1957]) are credited with developing the network concept in anthropology. However, as early as 1940, A.R. Radcliffe-Brown was referring to social structure as a “complex network of social relations” that connected people and groups to one another (Breiger, 2004; Radcliffe-Brown, 1940). Initially an admirer of anarchist geographer Peter Kropotkin, Radcliffe-Brown

later drew upon the process philosophy of Alfred Whitehead (whose thought was developed in conversation with American Pragmatists like John Dewy, and later inspired French post-structuralists such as Gilles Deleuze) to argue for an anthropology focused on social processes rather than structures as such (Graeber, 2004; Ingold, 2007; Singer, 1984). In his oft-quoted 1940 address to the Royal Anthropological Institute Radcliffe-Brown (1940, p. 3-4) proclaimed: “In the study of social structure, the concrete reality with which we are concerned is the set of actually existing relations, at a given moment of time, which link together certain human beings.” Rather than explaining individual human behaviour through reference to abstract, overarching social structures like class or kinship, Radcliffe-Brown emphasized that the existence of such social relations can only be confirmed by observing social interactions. Around the same time, Norbert Elias’s figurational sociology sought to examine the complexity of interdependent social relations between actors, taking those relational processes rather than the actors themselves (or their aggregate characteristics) as the foundational unit of analysis (Elias, 2000 [1939]; Fuhse & Mützel, 2011). This focus on interaction and process remain key features of network thinking today, which sees individual and collective behaviour and identity as co-constitutive, rejecting the need to jump between micro and macro levels of analysis and explanation.

Although the network metaphor had gained conceptual coherence in anthropology by the 1950s, the concept did not gain much empirical purchase until the late 1960s. As Wolfe (1978) observes, the empirical interest in the study of networks was driven largely by anthropologists working in African cities. Traditional kinship models were ill-equipped for the complexity of familial, professional, and social connections that characterize urban life. Indeed, early ethnographic forays into network analysis share many commonalities with kinship studies, including attempts to map and model social relations within particular groups (Knox et al., 2006, p. 122). As Mitchell (1986, p. 17) argues, network thinking provided an alternative to the “heavily institutional” approaches that focus on “the behaviour of individuals” in relation to “some overall embracing cultural or institutional feature” like kinship or lineage structures. Mitchell (1986) suggests that network analysis is akin to an individual case study approach, in that it embraces the unique complexity of individual cases, but in a rigorous, systematic way that can sift through a larger volume of data. Network analysis provides a way of “systematically extracting” from and boiling down ethnographic data to reveal patterns and structures not otherwise apparent (Mitchell, 1986, p. 17). This focus on ego-centric networks and individual action contrasts with formal network analysis, which takes a “whole network” approach focusing on the form and structure of social relations within a particular bounded population (Foster, 1978). Nevertheless, both approaches present a challenge to rational choice theories dominant in

American social sciences by looking at networks as at once enabling and constraining action, and human agency as reproductive and potentially transformative of entrenched social relations (Emirbayer & Goodwin, 1994; Knox et al., 2006).

Network analysis within social anthropology was driven by a dissatisfaction with prevailing structuralist forms of explanation, as well as empirically by a need for new ways of understanding kinship in urban settings. By the 1970s these twin impulses—the conceptual and empirical—began pulling apart. New conceptual departures from foundational individual/society dualisms emerged through post-structuralism. At the same time, advances in computing and mathematics, including graph theory, topology and matrix algebra, enabled social scientists to define, delimit, and, importantly, to compare the attributes of complex networks (Breiger, 2004; Galaskiewicz & Wasserman, 1993; Wolfe, 1978). By the 1990s, formal network analysis had come of age as a subgenre of sociological research, heralding the arrival of a “second generation” of network studies (Galaskiewicz & Wasserman, 1993; Knox et al., 2006). The move toward formal network analysis was not solely the outcome of technological advances, but also part of an effort to understand the rise of the so-called “network society” (Castells, 1996). The renewed interest in networks was driven by the perceived expansion in the scale, complexity, and rapidity of social organization that characterized the post-Fordist era, marked by the rise of information and communication technology, and the increasing rapidity and reach of transnational trade and travel. Likewise, the sheer amount of data that became available in this time, along with new techniques for processing it, presented new challenges and opportunities for sociological inquiry.

Although formal SNA developed into its own more distinctly mathematical method than its ethnographic precursors in anthropology, SNA nevertheless maintains a focus on the relationships between actors, be they individuals, groups, institutions, or non-human entities. The focus on relationality makes it difficult to categorize formal SNA as a strictly quantitative tool. Social relations between groups and people, as the basic unit of network analysis, can often only be assessed qualitatively, even if those relations are analysed using quantitative techniques. While networks are often seen as analytical constructs of quantitative, algorithmic outputs, the qualitative nature of most social relations makes SNA essentially a hybrid method (Breiger, 2004; Fuhse & Mützel, 2011). Seeing qualitative methods and data as “inextricably intertwined” with the formal analysis of social networks, Fuhse and Mützel (2011) argue that statistical analysis of network characteristics alone cannot capture the way individual actors within a network create and make sense of their connections to one another, and the cultural meanings that constrain and enable such connections. Instead, the authors see potential in combining qualitative and

formal analytical approaches to the study of social networks (cf Mohr & Duquenne, 1997). While formal network analysis within sociology remains tied to more quantitative approaches, the cultural turn in Anglophone social sciences has seen a growing recognition for the need to attend to the cultural norms and meanings that produce, infuse, and hold together networks (Breiger, 2004; DiMaggio, 1997; Pachucki & Breiger, 2010; H. C. White, 1992).

Against the background of these cultural approaches to network analysis, Actor-Network Theory (ANT) emerged from the work of French sociologists Bruno Latour and Michel Callon, as well as British Sociologist John Law, working in the area of Science and Technology Studies. Drawing upon the relational philosophy of Michel Serres, and French post-structuralist theorists such as Michel Foucault and Gilles Deleuze, ANT offers a semiotic-materialist account of the way that assemblages of human and non-human entities within a network “hang together” enacting a kind of conceptual and material coherence (Mol & Law, 1994). According to ANT, networks form as actants are mobilized through a process of “translation” wherein their attributes and interests coalesce into coalitions (Callon, 1986). Consistent with other approaches to network analysis, ANT takes a relational approach that blurs any distinction between actor and network. Actors become recognizable by the networks they are enrolled within, and likewise networks are identified by the actors who constitute it. In ANT, an actor (or a network) is not to be seen as part of a whole, but rather a “*point of view* on all the other entities taken *severally* and not as a totality” (Latour et al. 2012, p. 598, emphasis in original). Latour et al. (2012) observe that this way of seeing has become commonplace for users of on-line databases and social networking sites. Users toggle between specific profiles, which are pinpointed based upon their network connections (institutions, friends, citations), and lists of profiles, which are grouped according to those connections. In this way, network analysis is merely a method for navigating data sets that are limited by the quality and quantity of information available and the technical ability to visualize this information.

This approach to network thinking, however, raises two commonly aired criticisms levelled against ANT. The first is that, despite its avowedly flat ontology which assigns equal potential agency to human and non-human actors, networks are inevitably “narrated” by their human constituents (Collins & Yearly, 1992; Czarniawska, 1997; Weick, 1995; Whittle & Spicer, 2008). Secondly, others have taken ANT to task for its commitment to detailed empirical description above all (Latour, 2005), taking greater and greater empirical detail as a form of, or substitute for, explanation. This risks evacuating ANT’s critical potential, taking things merely as they are, rather than asking how they came to be or could have been, thus reinforcing the status quo

(Amsterdamska, 1990; Lee & Brown, 1994; Leigh-Star, 1991; Whittle & Spicer, 2008). In this way, despite the great methodological and conceptual divergences between them, critiques of ANT are strikingly similar to those of formal social network analysis. That is, they both offer presentist accounts of assemblages without attention to their historical development within a wider field of power relations, and both take networks to be self-evidently explanatory.

ANT's focus on "translation" provides clues as to how networks come to be and change over time. Latour et al. (2012) argue that change within a network occurs gradually enough to allow for continuity, to the extent that actors within a network may be completely replaced overtime, though the network itself will have maintained a sense of continuity and coherence. This is due to "the ways participants have interlocked their definitions" so that "each change has inherited something from its predecessor through a channel that can now be traced" (Latour et al., 2012, p. 612). Participants may change but something of the original translation, the coalitions of meaning that brought them into relation, remains. Despite ANT's emphasis on non-human actants, then, the performativity of human language, including human-programmed machine codes and computer algorithms, clearly plays a key role in articulating what come to be seen as a coherent network. Such a view finds agreement with cultural approaches to network analysis, which view networks as constructed through webs of meaning (White, 1992). As Mische and White (1998) contend, networks must be understood within the context of the domains, or fields of meaning, in which they are embedded and made legible. Such domains can be identified through prevailing discourses or "stories" that organize actors and relations and delineate boundaries. This approach requires thinking of networks not as extant structure through which social relations flow, nor even descriptions of emergent patterns of social relations, but as cultural forms, or narrative devices, that shape and get shaped by social relations (Knox et al., 2006; Riles, 2001). As Knox et al. (2006, p. 130) contend, network analysis should start with "discursive unities in the form of stories" and proceed by seeing "how far they lead to organizational boundaries," as opposed to beginning with a set population and "using network methods to assess how this population is structured."

Visualizing networks can be a way of following stories in order to see to what extent organizational boundaries and boundaries of meaning coincide or conflict. Networks diagrams, in this way, can serve as maps that allow researchers to follow specific paths and identify junctures and gaps where translation may be occurring or failing. By following paths and intersections, researchers can examine how conflicting network stories are reconciled (or not), and how particular actors may play a role in (re)defining and disseminating dominant narratives.



Moving between representations of networks and the messy material world of network processes, this approach is attuned to the “aesthetics” and “art of networking,” or in other words, the forms of “activity and performance” that produce networks in relation to certain imagined ideals (Knox et al., 2006, p. 128). Thus, networks can be seen as performative in two ways. Network ethnographies have revealed how networks of activists and organizations mobilize around an idealized network aesthetic (Riles, 2001; Routledge & Cumbers, 2009). Secondly, as ethnographic and actor-network approaches underscore, researchers are embedded within, not outwith, the networks they analyse. We, too, oscillate between the messy social world of research, and the abstract, idealized images of the world we create in order to make sense of the mess. For some time now geographers have been questioning whether traditional methods in geography could be made to “dance a little” through performative approaches to knowledge production (Latham, 2003a, 2003b; Thrift, 2003, 2008). Rather than seek to interpret the world as a set of representations, performative approaches to research emphasize the partiality and plurality of knowledge, and the situatedness of research within its own particular temporality. This approach has been taken with visual methods in geography, such as photography, seeking to ask not just what images represent but what work they perform, and how images participate in the “processes and practices” of research (Latham & McCormack, 2009, p. 253). Such an approach can be applied to digital methods, which likewise assert a supposedly transparent and authoritative, if not always elegant, form of visual representation (Rose, 2007; 2013). Rather than seeing closed clusters of nodes and lines projecting a forbidding self-image of explanatory certitude, perhaps we can approach networks as an array of starting points, seeing it not as a complete and self-evidentiary story, but as one view on a variety of stories, and a variety of paths to navigate them. As networks form in relation to the image of themselves, a method for understanding networks should likewise move between systematic, visual representations of network relations, and grounded, ethnographic work examining those relational processes, and back again. As geographers turn to digital methods for visualizing networks of meaning abstracted from social media (Crampton et al., 2013), these debates within and between different strands of social network analysis carry renewed relevance.

### **3. Civil society networks**

Civil society presents an interesting case for attempting such an iterative, relational approach combining formal and ethnographic network analysis techniques. The network is a salient metaphor that researchers and practitioners alike have used to describe civil society. As we will see in this section, researchers have produced network models of civil society, and engaged in ethnographic explorations of civil society networks. This section of the paper explores the use of

the network metaphor within research on civil society, and the different approaches taken to researching civil society networks. Our purpose is to highlight the methodological implications of these approaches. We discuss the substantive implications for the analysis of civil society networks only insofar as this reveals the methodological significance of a performative approach to network analysis.

Networks, as both conceptual metaphors and analytical models, have been used to give shape to the ‘fuzzy and contested’ concept of civil society (Anheier et al., 2001, p. 11), the contours and edges of which are not easily defined. Like the network, civil society serves as both a normative concept and a descriptive term. That is, civil society is both an ideal to be achieved as well as an empirical category describing the actual work of various NGOs, intergovernmental agencies, and other organizations. The transnational networks that constitute civil society are difficult to untangle both analytically and conceptually due to the impenetrably high degree of interconnection (Roberts et al., 2005). Numerous relationships emerge within networks, including horizontal solidarities between grassroots organizations and vertical integration of local organizations within international NGOs. Network understandings of civil society highlight both these multiple forms of relations as well as the multiple types of actors that make up such relations, including private sector businesses and state institutions at all levels of governance. Our interest in applying social network analysis to civil society is to begin to understand the diverse sets of actors that cooperate around a particular issue, the forms of connections they make, and the circulation of knowledge, money, people, and “buzz” through these circuitous connections. Methodologically, visualizing networks can provide entry points for ethnographic research that can begin to analyse how these connections are negotiated, and how information and resources are used and understood in different ways. This ethnographic inquiry can in turn improve our understanding and representation of the networks that serve as the focus of study.

The network concept is useful to research on civil society not only because the network metaphor provides a tool for conceptualizing how connections between diverse actors create a particular field of interaction, but also because practitioners in this field often see their work as being situated within a broader network of relations. To understand how the network imaginary informs the construction and maintenance of civil society networks requires methods open to critical reflexivity and embodied proximity. Following the flows of funding, knowledge, practices and people through these networks, as they are understood by the actors within them, has been one such method. For example, Riles (2001) takes the network as both the object of study and her method of research in her examination of civil society networks produced through UN

world conferences. This networked ethnographic approach to civil society works to both ground and complicate the idealized and normative model of the network as a smooth plane through which knowledge freely circulates. As Thörn (2011) observes in his similar research on AIDS activism and global governance, normative understandings of networks often neglect the “structural context of a network and the fact that actors enter into networks with different material power resources acquired outside of the network (such as money, technology and other material resources” (Thörn, 2011, p. 437). It is the disparity in resources that has led many to raise doubts about the ability of local NGOs to set their own agendas and pursue their own interests in the face of international donor dominance. However, despite the uneven distribution of connections throughout a network, Roberts et al. (2005) find that the network metaphor is still analytically useful in disrupting hierarchical models of relations that imagine a unidirectional ‘top down’ flow of information, funding, and influence. Through meetings, trainings, conferences, and reports, knowledge has the potential to travel from project-oriented NGOs to international NGOs and donors, shifting their priorities and procedures. From this perspective, civil society actors are not ‘endpoints,’ but nodes situated in a network with relative degrees of influence, connectedness, and autonomy (Roberts et al., 2005, p. 1848).

Formal network analysis can illustrate the ways in which some local organizations are more successful at attracting donors, and positioning themselves as key intermediaries between international funding and local partners. However, ethnographic research is needed to understand the nature of these relationships, including the ways in which local organizations may subvert a donor’s agenda through tactically translating their own priorities and activities into donor jargon. Likewise, network analysis can illustrate uneven funding landscapes within civil society, while ethnographic methods help to illustrate how the ability (or inability) to adopt the professional standards of donors may determine access to those resources. This requires research into how network interactions are formed and negotiated, and how the knowledge that flows through them are blocked or translated by different actors to suit their own interests. Routledge (2008) provides an example of this in his research on grassroots peasant activist networks. This research illustrates how issues of race and inequality do not cease to be problematic in networks that attempt to organize along non-hierarchical and egalitarian principles. Such an approach requires that the researcher be aware of how he or she “becomes an actor in the practice of network constitution” through the very practice of researching the network” (Routledge, 2008, p. 204). This is what Riles (2001, p. 4) alludes to when she observes that researchers create networks by “studying, analysing, or communicating about them,” and that in this way the knowledge practices of the networks we study easily “fade into our own.”

An ethnographic approach to networks, then, involves researchers embedding themselves within the inner workings of a network, while also maintaining a critical awareness of the researcher's own role within the often uneven practices of network imagining and formation. Riles (2001) and Routledge (2008) take the network imaginary itself, as well as the situated practices and materials that reproduce these networks, as their objects of study. However, in both cases, the networks they study (UN networks, and peasant activist networks respectively) are more-or-less coherent and self-articulated, albeit geographically dispersed, in which all the actors within it could be said to be aware of, or in some way invested in, the network as a concept or goal. A single normative model of a non-hierarchical network is taken as given, and the ethnographic focus is instead on the spaces and practices through which this network model is produced, however imperfectly, and on the inequalities of access, resources, and mobility of actors within it. While the network metaphor continues to have significance amongst civil society organizations, there is no single civil society network into which participants can opt in or out. Instead, there is an amalgamation of different sets of network relations, variously and unevenly connected, that in the aggregate might be said to make up part of a broader civil society network. While the normative ideal of a network is one in which every node is equally connected to all others in perfectly non-hierarchical fashion, in practice there are many different kinds of network patterns that form and overlap in civil society organizing. This is due to the different strategies actors take in forming relationships with one another, and the specific historical and political contexts within which these network practices take place. As we have argued, what is needed is an approach that combines formal analysis of these network structures in order to map the different kinds of relationships that form among the many actants in civil society, as well as the embodied and discursive practices that create and sustain these relationships within specific contexts. The following sections will sketch out our application of this approach.

#### **4. Grounding Social Network Analysis**

Having provided background on the development of different approaches to network analysis, as well as having outlined the uses of the network concept in civil society research and practice, this section will provide an account of our own approach to exploring civil society networks in three case study countries. As part of a broader study on the promotion of youth citizenship and civic participation in so-called divided societies, we are examining the connections between various international donors, civil society groups, and community organizations. To do so we use SNA as a grounded, iterative methodological tool in conjunction with key informant interviews of NGO practitioners, institutional ethnographies with civil society organizations, and participatory research with youth (see Charmaz, 2000 and Corbin & Strauss, 2008 for more on

constructivist approaches to grounded theory). Diagramming civil society networks in the three case-study countries of Lebanon, Bosnia-Herzegovina, and South Africa, helps us to situate our ethnographic research in these three countries. We have found that network diagrams can highlight potentially influential actors within a network (whether a donor or NGO) that might otherwise have escaped notice. Likewise, these diagrams reveal interesting sets of thematic connections between different types of organizations, for example, the connections between environmental NGOs and organizations promoting youth citizenship. Finally, these networks also point to the many gaps in the network, the unconnected clusters and organizations that, perhaps strategically, have chosen not to connect up with larger donors or more visible civil society actants. In this way, initial research findings can be sketched out diagrammatically to guide further grounded research and ethnographic investigation into the questions that these diagrams raise.

Nevertheless, as this section will also demonstrate, our use of formal SNA for analysing civil society networks is confronted by methodological challenges that make it an insufficient tool for use on its own. These challenges include the demarcation of the relational, temporal and spatial boundaries of a network. Neat visualizations of static, coherent networks obscure the ambiguity surrounding who is in the network, when, and where. Another related challenge is the problem of self-reported information. The civil society networks diagrams we created are constructed using self-reported information gathered from public-facing websites and reports. What is depicted as a single network then, is in fact a series of ego-centric dyads, each captured at a different point in time, and pieced together to form a representation of an overall network. Still, it would be wrong to treat these sets of relationships, and the greater field of relations they comprise, as complete artifice. The funding and partnership connections that make up individual networks overlap and are maintained through embodied and material practices which have tangible, cumulative effects. Likewise, such practices are often undertaken as part of an explicit network strategy. Indeed, many of the NGO professionals we interviewed referred to their work as being situated within a broader network of actors working toward similar goals, sometimes even drawing diagrams of nodes and webs of relations to illustrate their point. As McCormack (2005) observes, “although it is abstract, the diagram can nevertheless be apprehended as a real organisation of forces through the way it gives the relations between these forces a kind of spatiotemporal consistency.” In this research, we use network diagrams to piece together these rough sketches of ego-centric networks in order to form a broader understanding of the overall field of meaning that these individual networks produce and the practices and information that flow through them.

The first challenge when seeking to examine networks of civil society organizations is determining where to draw the boundaries of a given network, including questions about which actors to include. Although perhaps especially challenging given its contested nature, these questions are not unique to analysing civil society networks. As Knoke (1993) advises, when undertaking network analysis, researchers must first specify the network they are researching by delineating the boundaries and identifying key actors in the network. As our research is specifically concerned with youth citizenship and civic participation, we initially compiled a list of organizations in each of our three case study countries dealing with these issues, using information collected from internet and database searches.<sup>1</sup> Our criteria for selecting an organization for including in the network analysis was that it 1) included youth either as a specific target population, a significant portion of participants in their activities, or as a significant portion of their organizational leadership; and 2) specifically promoted and sought to enhance youth citizenship, civic engagement, and participation (broadly conceived), or had the effect of enhancing youth participation through their activities and organizing around other related issues. Once an organization was selected for inclusion, we compiled a list of that organization's donors and partners. A particular donor or partner may not be a youth-focused organization, but by virtue of supporting an organization that is, it is included in the network. While partners and donors of a given youth organization are included, partners of partners are not. For example, the US-based International Youth Foundation may appear in the network because it donates to an organization in Lebanon, but we do not include in IYF's corporate sponsors in the network as they do not have any direct contact with the actors in Lebanon. This is a limitation, but a necessary one. For a network to be comprehensible, it cannot map every conceivable connection.

Beyond the challenge of drawing boundaries of inclusion and exclusion around the network to be analysed and visualized (and thus constructing the network itself), another, related challenge is information availability. It might be possible to achieve something like a full accounting of funding and partnership connections using a small sample of organizations. Our interest, however, was in gaining an appreciation of the number, variety, and geographic reach of youth citizenship promotion efforts. As such, our construction of the networks relies initially upon publically accessible data. Most of the organizations we identified provide a list of their donors, with some providing detailed annual reports, including budgets indicating how much funding

---

<sup>1</sup> Given our starting point, NGOs registered or active within one of our case studies, these networks are in a way nationally bound to our case study country. However, the presence of foreign donors, international donors, and intergovernmental agencies all point to the way that civil society actors are connected to other actors, activities, and processes which transcend national boundaries.

they received in a given year and from whom. However, many organizations do not provide any information about their sponsors or partners, either because they do not have any or they wish to keep them private. Likewise, some organizations may exaggerate the number of partners and donors they have in order to emphasize their organizational success and influence. Thus, some organizations might underreport their donors and partners while others may overstate their network connections.

In addition to issues of accuracy and consistence of self-reported information, there is also another related issue of the inconsistent timing of this information. Our data is based on information provided on websites, but it is not always clear when the websites had last been updated and if the information is still up-to-date. As Fuhse and Mützel (2011, p. 1078) remind us, networks, as sets of social relations, are constantly in flux, “continuously created, reproduce, and modified in the social process.” Every representation of a network is thus already problematic because it presents as fixed and stable something that is inherently fluid and changing. This is doubly problematic in the case presented here, as the networks we sought to construct were not just single snapshots captured at one point in time, but a series of snapshots pieced together as a single, coherent image. As such, these networks performatively produce their own research time-spaces.

These methodological challenges underscore the extent to which the networks analysed and visualized by researchers are artefacts constructed through the research itself more than they are representations of actually existing network structures. What we treat as a stable, coherent network is in fact a series of dyadic relationships taking place at different points of time. Yet, the network model helps give conceptual consistency and visual coherence to these relations, which are reproduced through temporal, tangible, and embodied practices, such as the production of monthly newsletters, annual reports, and regular meetings, gatherings and conferences. Moreover, these diagrammatic representations open up various questions regarding how and why certain organizations connect with each other, why some organizations seem barely visible within a particular network, and what kinds of work these connections (and disconnections) perform. Using these diagrams, we can map out our ethnographic explorations of the embodied, material and discursive practices that reproduce these networks, in seeking out answers to these questions. The following section will explore some of the questions and issues these diagrams raise.

## **5. Diagramming civil society networks**

As discussed above, our research on civil society organizations active in the field of youth citizenship promotion revealed sets of relationships between these actors based on funding and other forms of cooperation that might not otherwise have been readily apparent. Focusing on these relationships provides an entryway into the connections that constitute a given network. To visualize these connections two sets of network diagrams were produced for each of our three case study countries, one illustrating funding relationships between donors and recipients, and the other showing both funding and partnership connections.<sup>2</sup> Funding relationships potentially serve as the most straightforward way of determining whether a connection between two organizations exists. But organizations are connected in more ways than funding, such as through partnerships to carry out projects, events, campaigns, and activities. To gain a fuller appreciation of the different types of connections that produce civil society networks we created diagrams illustrating not only the connections between donors and recipients, but also the mutual connections between partner organizations. In both cases, as noted above, we relied on self-reported information from the civil society organizations in questions. This section will illustrate the kinds of questions that arise when illustrating these funding and partnership connections between civil society actors. Again, we emphasize how these diagrams are used to open up spaces, questions, and opportunities for further research, sketching out pathways for more grounded inquiry.

The initial donor-funding diagrams reveal some interesting features of the civil society landscapes in each of our three case study countries, while also raising some important questions (see for example Figure 1). First, the images highlight the most active donors in post-conflict youth citizenship promotion in the three countries. These include US government-funded organizations like USAID and the National Endowment for Democracy, as well as international civil society organizations like the Open Society Foundation. Other donors active across the case study countries include philanthropies such as the CS Mott Foundation, and German political party foundations like Konrad Adenauer Stiftung and Heinrich Böll Stiftung. The largest state agency donors are in the Republika Srpska, including the Ministry of Family, Youth and Sport. Unlike the Federation, the RS has an entity-wide umbrella youth council that serves to streamline state support. Beyond highlighting the key donors operating in each country, however, the donor

---

<sup>2</sup> Network diagrams were constructed using Gephi, an open source social network analysis program. On both sets of networks, we used Gephi's Force Atlas 2 algorithm which, through measures of gravity and repulsion, provides a layout structure for the arrangement of nodes, situating nodes in proximity to other nodes to which they are connected (Bastian et al., 2009).



diagrams also point to important differences between these civil society landscapes.<sup>3</sup> For example, in Bosnia-Herzegovina and Lebanon, the donor landscape primarily consists of funding from international civil society foundations, bilateral funds from international donor governments, and intergovernmental funding from UN agencies and, in the case of Bosnia-Herzegovina, the European Union. In contrast, South Africa, which many donors consider a development ‘success story’, has a donor landscape consisting of national grant-making agencies as well as private and corporate foundations. The latter may be the result of laws that mandate corporate giving and longstanding relationships between private foundations and South African NGOs. This difference in the types of donors active in civil society, and the different types of institutional relations that exist between donors and recipients, informed our line of inquiry when conducting interviews with international donors and NGOs. Indeed, these differences raise key questions about how a country’s political history, legal framework, and institutional governance structures work to shape civil society organizing within the country. Institutional ethnographies and analysis of legal and governance frameworks are needed to shed more light on how different civil society landscapes form the way they do.

While helpful as a tool for interrogating the flows of funding, network diagrams can also help illustrate other forms of cooperation and influence, as can be seen in the donor-partner diagrams (see for example Figure 2). By widening the scope of the network to include partnership relations, we get a better idea of the different ways that civil society organizations partner with one another beyond funding. Analysing both donor and partner connections helps illustrate which organizations may be influential in mediating relationships between international donors and other local organizations, as well as linking together various clusters of actors.<sup>4</sup> Some of the organizations that appear insignificant and disconnected from wider donor/partner connections, however, may be part of extensive networks connected to influential parties, personalities, and families. These connections and disconnections are best explored through ethnographic research, but these networks provide a route into, and a frame for analysis.

For example, our ethnographic experience in Lebanon has revealed to us that some nodes that appear as isolated dots in the network, because they are unconnected to institutional donors and

---

<sup>3</sup> Full-colour versions of all the network diagrams produced as part of this research can be view on-line as part of the supplementary data accompanying the electronic version of this article. Full-colour, interactive network diagrams with can be found on our research project website at [www.youcitizen.org](http://www.youcitizen.org).

<sup>4</sup> Here influence is visualized as a measure of centrality. These diagrams use Betweenness as a measure of centrality. Betweenness is determined by the number of shortest paths between nodes that pass through a particular node. High betweenness centrality means that a particular node acts as a highly trafficked bridged connecting other nodes together, giving that node a degree of influence. (Carrington et al., 2005). Although not displayed here, we also used Eigenvector centrality when analyzing these networks (Ruhnau, 2000).

have relatively few official partners, are in fact expansive networks within themselves. An individual node may comprise different charities, schools, clinics, families, personalities, politicians, and neighbourhoods, all vertically integrated into a single system of patronage, rather than spreading out in a horizontal network fashion. Similarly, in BiH, our interviews and ethnographic research led us to realize that arguably the largest and most recognizable youth actor on the ground was not even present in our initial network diagram. The organization, we learned, has a long-standing donor relationship and strong government connections, likely reducing the need to advertise to foreign donors (at the time of the initial research phase the English language version of their website was under construction.) The organization, it seemed, was more concerned with creating a robust internal network of youth organizations through local municipalities. Once we included this organization in the network, it took on the appearance of being the most central and well-connected actor in the field. Yet, further ethnographic research revealed that the strength of their network connections varies considerably. Some local partners complain of being marginalized and not receiving enough support from municipalities in the network. Finally, we encountered the opposite phenomenon in South Africa. One organization that appeared to be central to the youth citizenship network with many donors and local partners, we later learned through interviews, is largely excluded from official government efforts to promote youth citizenship education. This may have been due to the organization being largely staffed by non-South Africans, and perhaps lacking ANC party connections. All these examples point to the multiple and contested definitions of civil society, the multiple kinds of relationships, and the multiple forms of legitimacy and visibility that operate within this diverse field. This particular network view, focused on donor and partner information as presented on outward-facing websites, is just one story. By exploring these network connections ethnographically, other stories and contested narratives become apparent.

Along with the different patterns of relations and visibility that make up civil society networks, the donor-partner diagrams also help visualize the diverse sets of actors that participate in these networks. Rather than seeing civil society as distinct from other spheres, these images give an indication of the messy, contested, and leaky materiality of civil society networking. In this way, we have sought to iteratively mediate between idealized representations of civil society and a grounded perspective. The donor-partner networks illustrate the inter-sectorial relations that exist between NGOs, state agencies, intergovernmental organizations, and private sector capital, including banks, large corporate foundations, and multinational companies, thus complicating the view of civil society as a space distinct from market or state forces. Here too, however, the differences between the three countries are telling. Again, in South Africa, with a legal

environment conducive to corporate giving, we see a larger presence of state institutions and private businesses and foundations operating in the field of youth citizenship promotion. Foreign donors and international NGOs are relatively rare. This is in stark contrast to Bosnia-Herzegovina, where the field is made up almost entirely of international NGOs, international foundations, donor countries, and intergovernmental agencies (UN and EU), and very few little private sector funding. This raises questions about how the complex federal system in BiH, as well as its history of international intervention, both restricts and enables different forms of civil society organizing. Similarly, in Lebanon, we see very few governmental agencies involved in civil society, apart from a few relevant government ministries, and local municipal cooperation. This may be due to the relative weakness of Lebanon's government institutions in comparison to the influence of family and political party patronage and business connections. However, the field in Lebanon is highly varied, including a balance of international NGOs and foundations, foreign government funding, UN agencies, and private businesses. Many of these business and foundations may have their own links to prominent local politicians. Indeed, it is important to remember that each of these organizations in the network has its own strategy and agenda for building donors and partner relationship, meaning that there are not only general differences between the donor/partnership relationships across the three country networks, but within them as well. It is through later follow-up interviews and ethnographic research that these different network strategies can be examined.

It is worth remembering that these networks are only a reflection of the information publically available to us at the time. It is likely that, in actual practice, many more partnerships and informal relations exist connecting these organizations to one another. Likewise, it is just as likely that there are other organizations working on issues of youth citizenship outside this network entirely, organizing instead through other kinds of social networks, not easily detected by search methods mainly focused on certain kinds of visibility. This is why this research method serves as the first step in a research process that involves further grounded, ethnographic research tracing the connections between the well-connected nodes, as well as those groups and organizations outside the network or not visible in these particular representations of civil society.

## **6. Conclusion: The network as diagram**

As geographers more aligned with qualitative, critical, and feminist inflected methods, there is something both discomfoting and yet oddly satisfying about the network diagrams presented here. They are satisfying because the complexity of civil society is transformed into clearly legible lines and nodes that provide some substance to the fuzzy concept, and an entryway or a set of

paths through which to research it. However, they are also discomforting because we know that satisfaction derives from a process by which the world is flattened and presents itself to a disembodied observer. The network representations provide order and straight lines to a world of messy relations, neatly cropped here to form self-contained, national civil society spheres. We know that as representations of infinitely more complex, subtle, and fluid relations, these network diagrams are but an abstract simplification. And yet, the research process as such continuously moves between conceptual abstraction and empirical analysis, whether this is always explicitly acknowledged or not. These diagrams provide a useful visual way of formally expressing these abstractions, not as a final, definitive representation of an actually existing civil society, but as a starting point for further research to complicate this view. Using ethnographic methods we can trace the flow of bodies, money, knowledge and practices through these diagrammed lines, but also, crucially, we must seek out the kinds of relations and processes hidden by and in these networks. As we have seen above, this ethnographic research provides increasing detail and complexity to the networks, opening up new questions to explore with further interviews and ethnographic research.

In this way, we share McCormack's (2012; 2005) affirmation of abstraction as a necessary method of making sense of the world, and the use of diagramming specifically as a research tool or methodological device. As McCormack (2012, p. 717) argues, abstraction, including networks, "participates both in the worlds we inhabit and in our efforts to make sense of them." As Actor-Network Theory likewise contends, this abstraction performs constitutive and generative work, holding things together coherently, and providing spatial and temporal consistency (McCormack p. 727). Abstractions render complexity accessible, or more precisely in our case, the network metaphor allows us to "render the familiar accessible" (Riles 201, p. 6). As such, networks participate in this research both as familiar conceptual devices that give consistency to the work of NGOs (and globally mobile researchers), as well as abstract diagrams to make sense of this work. This is what we refer to when describing our use of network analysis as an iterative process. We begin with an idealized, simplified model of a civil society network. Through the process of gathering data on organizations represented in the network, and the relationship between them, we provide more substance, complexity and detail to the original diagram. This complexity itself then requires abstraction and visualization in order to comprehend, hence the network analysis and visualization. Yet the images we produce are still abstractions, diagrams of relational processes constantly in flux. To better understand these ongoing relationships and processes requires embodied, ethnographic research, which itself will necessarily involve a process of abstracting our data into generalizable findings. This is what we understand

McCormack (2012) to mean when he refers to abstraction as a process that is “provisional and prospective, intended to open up potential space-times rather than close them down.” With these networks we seek to create a provisional and prospective opening to our ethnographic research, which in turn will open new worlds very different from the ones created and represented by these diagrams. However, it is important to realize that, as part of this process, abstraction may open certain avenues of investigation, but it necessarily closes others. Our network abstractions, to be coherent and legible, place necessary limits around the organizations and relations represented therein. This renders invisible the types of organizations that do not conform to a particular, recognizable form as a civil society actor. These include more informal and loosely affiliated social movements, social media tag-clouds, and activist milieus. While researching the organizations in our network, we would catch glimpses of these other groupings, aware of their non-presence in the network, curious about what this means, and determined in our grounded, ethnographic research to find out. In this way, these diagrams draw a line, producing a space to be researched, while also inevitably producing an outside where more questions are raised and more lines of inquiry opened.

## References

- Amin, A. (2002). Spatialities of globalization. *Environment and Planning A*, 34, 385-399.
- Amsterdamska, O. (1990). Surely you are joking, Monnsieur Latour. *Science, Technology and Human Values*, 15(4), 495-504.
- Anheier, H. K., Glasius, M., & Kaldor, M. (2001). Introducing global civil society. In H. K. Anheier, M. Glasius & M. Kaldor (Eds.), *Global Civil Society 2001* (pp. 3-22). Oxford, UK: Oxford University Press.
- Barnes, J. (1954). Class and Committees in a Norwegian Island Parish. *Human Relations*, 7(39-58).
- Bastian, M., Heymann, S., & Jacomy, M. (2009). Gephi: An Open Source Software for Exploring and Manipulating Networks. *Proceedings of the Third International ICWSM Conference*, 361-362.
- Bott, E. (1971 [1957]). *Family and Social Network* (2nd ed ed.). New York: Free Press.
- Breiger, R. L. (2004). "The Analysis of Social Networks". In M. Hardy & A. Bryman (Eds.), *Handbook of Data Analysis*. London: SAGE.
- Breschi, S., & Lissoni, F. (2009). Mobility of skilled workers and co-invention networks: an anatomy of localized knowledge flows. *Journal of Economic Geography*, 9, 439-468
- Broekel, T., & Boschma, R. (2012). Knowledge networks in the Dutch aviation industry: the proximity paradox. *Journal of Economic Geography*, 12(2), 409-433.
- Bulkeley, H. (2005). Reconfiguring environmental governance: Towards a politics of scales and networks. *Political Geography*, 24, 875-902.
- Callon, M. (1986). Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St. Brieuc Bay. In J. Law (Ed.), *Power, Action and Belief: A New Sociology of Knowledge*. London: Routledge and Kegan Paul.
- Carrington, P. J., Scott, J., & Wasserman, S. (2005). *Models and Methods in Social Network Analysis*. Cambridge: Cambridge University Press.
- Castells, M. (1996). *The Rise of the Network Society, The Information Age: Economy, Society, and Culture Vol. 1*. Oxford: Blackwell.
- Charmaz, K. (2000). *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. Thousan Oaks, CA: Sage
- Collins, H. M., & Yearly, S. (1992). Epistemological Chicken. In A. Pickering (Ed.), *Science as Practice and Culture* (pp. 301-326). Chicago: Chicago University Press.
- Corbin, J., & Strauss, A. L. (2008). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Thousand Oaks, CA: Sage.
- Crampton, J. W., Graham, M., Poorthuis, A., Shelton, T., Stephens, M., Wilson, M. W., & Zook, M. (2013). Beyond the geotag: situating 'big data' and leveraging the potential of the geoweb. *Cartography and Geographic Information Science*, 40(2), 130-139.
- Czarniawska, B. (1997). *Narrating the organization*. Chicago: University of Chicago Press.

- Dicken, P., Kelly, P., Olds, K., & Yeung, H. W.-c. (2001). Chains and networks, territories and scales: towards an analytical framework for the global economy. *Global Networks*, 1(2), 89-112.
- DiMaggio, P. (1997). Culture and Cognition. *Annual Review of Sociology*, 23, 263-287.
- Elias, N. (2000 [1939]). *The Civilizing Process*. Oxford: Blackwell
- Emirbayer, M. (1997). Manifesto for a Relational Sociology. *American Journal of Sociology*, 103(2), 281-317.
- Emirbayer, M., & Goodwin, J. (1994). Network Analysis, Culture, and the Problem of Agency. *American Journal of Sociology*, 99(6), 1411-1454.
- Foster, B. L. (1978/79). Formal Network Studies and the Anthropological Perspective. *Social Networks*, 1, 241-255.
- Fuhse, J., & Mützel, S. (2011). Tackling connections, structure, and meaning in networks: quantitative and qualitative methods in sociological network research. *Quality & Quantity*, 45(5), 1067-1089.
- Galaskiewicz, J., & Wasserman, S. (1993). Social Network Analysis: Concepts, methodology, and directions for the 90s. *Sociological Methods & Research*, 22, 3-22.
- Gluckler, J. (2007). Economic geography and the evolution of networks. *Journal of Economic Geography*, 7(5), 619-634.
- Graeber, D. (2004). *Fragments of an Anarchist Anthropology*. Chicago: Prickly Paradigm Press.
- Howells, J. (2012). The geography of knowledge: never so close but never so far apart. *Journal of Economic Geography*, 12(2012).
- Howells, J., & Bessant, J. (2012). Introduction: Innovation and economic geography. *Journal of Economic Geography*, 12, 929-942.
- Huggins, R., & Thompson, P. (2013). A Network-based view of regional growth. *Journal of Economic Geography*, 1-35.
- Ingold, T. (2007). Anthropology is Not Ethnography. *Proceedings of the British Academy*, 154, 69-92.
- Johnston, R. J. G., Derek; Pratt; Geraldine; and Watts, Michael. (2000). *The Dictionary of Human Geography* (Fourth Edition ed.). Malden, Mass.: Blackwell.
- Jones, M. (2009). Phase space: geography, relational thinking, and beyond. *Progress in Human Geography*, 33(4), 487-506.
- Knoke, D. (1993). Networks of Elite Structure and Decision Making. *Sociological Methods and Research*, 22, 23-45.
- Knox, H., Savage, M., & Harvey, P. (2006). Social Networks and the study of relations: networks as method, metaphor and form. *Economy and Society*, 35(1), 113-140.
- Larner, W., & Laurie, N. (2010). Travelling technocrats, embodied knowledges: Globalizing privatisation in telecoms and water. *Geoforum*, 41, 218-226.

- Latham, A. (2003a). The Possibilities of Performance. *Environment and Planning A*, 35.
- Latham, A. (2003b). Research, performance, and doing human geography: some reflections on the diary-photograph, diary-interview method. *Environment and Planning A*, 35.
- Latham, A., & McCormack, D. (2009). Thinking with images in non-representational cities: vignettes from Berlin. *Area*, 41(3), 252-262. doi: 10.1111/j.1475-4762.2008.00868.x
- Latour, B. (1999). On Recalling Ant. In J. Law & J. Hassard (Eds.), *Actor Network Theory and After*. Malden, MA: Blackwell Publishers/The Sociological Review.
- Latour, B. (2005). *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press.
- Latour, B., Jensen, P., Venturini, T., Grauwin, S., & Boullier, D. (2012). 'The whole is always smaller than its parts' - a digital test of Gabriel Tarde's monads. *The British Journal of Sociology*, 63(4), 590-615.
- Law, J. & Hassard, J. (Ed.). (1999). *Actor Network Theory and After*. Malden, MA: Blackwell Publishers/The Sociological Review.
- Lee, N., & Brown, S. (1994). Otherness and the actor-network: the undiscovered continent. *American Behavioral Scientist*, 37(6), 772-790.
- Leigh-Star, S. (1991). Power, technologies and the phenomenology of conventions: on being allergic to onions. In J. Law (Ed.), *A sociology of monsters? Essays on power, technology, and domination*. London: Routledge.
- Luke, D. A. (2005). Getting the Big Picture in Community Science: Methods That Capture Context. *American Journal of Community Psychology*, 35(3/4), 185-200.
- Marston, S., Jones, J. P., & Woodward, K. (2005). Human geography without scale. *Transactions of the Institute of British Geography*, 30(416-432).
- McCormack, D. (2012). Geography and abstraction: Towards an affirmative critique. *Progress in Human Geography*, 36, 715-734.
- McCormack, D. (2005). Diagramming practice and performance. *Environment and Planning D: Society and Space*, 23, 119-147.
- Mische, A., & White, H. (1998). Between Conversation and Situation: Public Switching Dynamics Across Network-Domains. *Social Research*, 65, 295-324.
- Mitchell, J. C. (1986). Ethnography and Networks. *Connections*, 9(1), 17-23.
- Mohr, J. W., & Duquenne, V. (1997). The duality of culture and practice: Poverty relief in New York City, 1888-1917. *Theory and Society*, 26(2), 305-356.
- Mol, A., & Law, J. (1994). Regions, Networks and Fluids: Anaemia and Social Topology. *Social Studies of Science*, 24, 641-671.
- Mould, O., & Joel, S. (2010). Knowledge networks of 'buzz' in London's advertising industry: a social network analysis approach. *Area*, 42(3), 281-292.
- O'Hagan, S. B., & Green, M. B. (2004). Corporate knowledge transfer via interlocking directorates: a network analysis approach. *Geoforum*, 35(1), 127-139.



- Pachucki, M. A., & Breiger, R. L. (2010). Cultural Holes: Beyond Relationality in Social Networks and Culture. *Annual Review of Sociology*, 36, 205-224.
- Radcliffe-Brown, A. R. (1940). On Social Structure. *The Journal of the Royal Anthropological Institute of Great Britain and Ireland*, 70(1), 1-12.
- Radil, S. M., Flint, C., & Tita, G. E. (2010). Spatializing Social Networks: Using Social Network Analysis to Investigate Geographies of Gang Rivalry, Territoriality, and Violence in Los Angeles. *Annals of the Association of American Geographers*, 100(2), 307-326.
- Riles, A. (2001). *The Network Inside Out*. Ann Arbor, MI: University of Michigan Press.
- Roberts, S., Jones, J. P., & Fröhling, O. (2005). NGOs and the Globalization of Managerialism: A Research Framework. *World Development*, 33(11), 1845-1864.
- Rose, G. (2007). *Visual Methodologies: An Introduction to the Interpretation of Visual Materials*. London: Sage Publications.
- Rose, G. (2013). On the relation between 'visual research methods' and contemporary visual culture. *The Sociological Review*, Vol. 62, 24-46.
- Routledge, P. (2008). Acting in the network: ANT and the politics of generating associations. *Environment and Planning D: Society and Space*, 26, 199-217.
- Routledge, P., & Cumbers, A. (2009). *Global Justice Networks: geographies of transnational solidarity*. Manchester: Manchester University Press.
- Ruhnau, B. (2000). Eigenvector-centrality - a node-centrality? *Social Networks*, 22(4), 357-365.
- Sheppard, E. (2002). The Spaces and Times of Globalization: Place, Scale, Networks, and Posituality. *Economic Geography*, 78, 307-330.
- Singer, M. (1984). A neglected source of structuralism: Radcliffe-Brown, Russell, and Whitehead Semiotica, 48(1-2), 11-96.
- Socio, M. D. (2010). Geographers Mobilize: A Network Diffusion Analysis of the Campaign to Free Ghazi-Walid Falah. *Antipode*, 42(2), 310-335.
- Ter Wal, A. L. J., & Boschma, R. A. (2009). Applying Social Network Analysis in Economic Geography: Framing Some Key Analytic Issues. *Annals of Regional Science*, 43(3), 739-756.
- Thörn, H. (2011). Aid(s) Politics and Power: A Critique of Global Governance. *Politikon: South African Journal of Political Studies*, 38(3), 433-451.
- Thrift, N. (2003). Performance and... *Environment and Planning A*, 35, 2019-2024.
- Thrift, N. (2008). *Non-Representational Theory: Space, Politics, Affect*. New York: Routledge.
- Weick, K. (1995). *Sensemaking and Organization*. London: Sage.
- White, D. & Johansen U. (2004). *Network Analysis and Ethnographic Problems: Process Models of a Turkish Nomad Clan*. Oxford: Lexington Books.
- White, D. (2004). Network Analysis and Social Dynamics. *Cybernetics and Systems*, 1(1), 53-64.

- White, H. C. (1992). *Identity and Control: A Structural Theory of Social Action*. Princeton, NJ: Princeton University Press.
- Whittle, A., & Spicer, A. (2008). Is Actor Network Theory Critique? *Organization Studies*, 29(4), 611-629.
- Wolfe, A. (1978). The rise of network thinking in anthropology *Social Networks*, 1(1), 53-64.
- Yeung, H. W.C. (1994). Critical reviews of geographical perspectives on business organizations and the organization of production: towards a network approach. *Progress in Human Geography*, 18, 460-490.

**Figure 1:** This diagram illustrates funding relationships between donors and recipients. Colour and size of the node indicates out-degree, or the number of organizations that a particular donor provides funding to. Note that out-degree is not a measure of amount of funding, but the number of recipients an organization has. The larger, lighter-coloured nodes are larger donors. Grey nodes are medium-sized donors, whereas the black nodes are recipient organizations.

**Figure 2:** This diagram illustrates both funding and partnership relations. Colour here indicates type of organization, whereas size is an indication of Betweenness centrality. Larger nodes may have more influence in a network because they serve as a bridge between numerous other actors.