Using Network Analysis for Understanding How Decisions are Made

Frédéric Adam
University College Cork, Ireland

INTRODUCTION

Network analysis, a body of research that concentrates on the social networks that connect actors in society, has been found to have many applications in areas where researchers struggle to understand the complex workings of organisations (Nohria, 1992). Social network analysis (SNA) acknowledges that individuals are characterised just as much by their relationships with one another (which is often neglected in traditional research) as by their specific attributes (Knoke & Kuklinski, 1982) and that, beyond individuals, society itself is made of networks (Kilduff & Tsai, 2003). It is the study of the relationships between actors and between clusters of actors in organisations and in society that has been labeled network analysis.

These high level observations about network analysis indicate that this orientation has great potential for the study of how managers, groups of managers, and organisations make decisions, following processes that unfold over long periods of time and that are sometimes very hard to fully comprehend without reference to a network approach. This article proposes to investigate the potential application of network analysis to the study of individual and organizational decision making and to leverage its strengths for the design and development of better decision aids.

BACKGROUND

SNA has been used consistently in sociology (Berry et al., 2003) for over 50 years and Roethlisberger and Dickson (1939) used an early form of network analysis in the 1930s in their famous studies of the Western Electrics Hawthorne plant to emphasise the importance of the webs of informal relations in organisations. Subsequently, network researchers have focused on the development of essentially quantitative methods and the use of standard statistical analysis to investigate the design and structure of networks and many areas covering a broad spectrum have benefited from the application of social network analysis (Watts, 2004). Wasserman and Faust (1994) have regretted that the overly quantitative approach of many research endeavours related to SNA has limited research perspectives and they have called for the development of new concepts and tools to broaden the scope of network analysis. Tichy (1992) stressed that there was a need for studies that would consider as many types of transactions as possible. Thus, researchers would be able to get a global picture of organisational life. In Tichy's words:

A complex organisation is made up of a multiplicity of networks arising out of many types of relationships, and each of these networks has its own structure and functional logic. (Tichy, 1992, p. 227)

The key strength of network analysis is to allow for a close examination of the structure and patterns of relationships that establish amongst organisational actors (Nohria, 1992). It also enables researchers to collect large amounts of data regarding managers, their linkages to each other, the usage of the information exchanged, and the managerial activities served by these exchanges. Thus, network analysis supports the development of comprehensive models of organisations that capture the essence of their networks and analyse some of their quantitative and qualitative characteristics. Network analysis is particularly suited to the study of managerial decision making because it recognises the dynamic nature of networks and provides tools and techniques for measuring and evaluating this change.

Thus, network analysis enables researchers to transcend the problems identified by previous research, namely that some managerial processes sometimes appear to be without order (Cohen, March, & Olsen, 1986) and that the preferences of managers are often vague and contradictory, even when there is agreement on the objectives of the firm (March, 1987). Also, as

highlighted by Knoke and Kuklinski (1982), the International Network for social network analysis was founded in 1978 in an attempt to broaden the range of application of network analysis to other areas. This serves to highlight the potential of the network approach and the numerous directions of research it has fostered.

PRINCIPLES OF THE NETWORK PERSPECTIVE

The network approach to organisations has been formally described by Nohria (1992). He suggested that five basic principles underlie this perspective on organisations:

- All organisations are, in important respects, social networks and need to be addressed and analysed as such.
- An organisation's environment is properly seen as a network of other organisations.
- The actions (attitudes and behaviours) of actors in organisations can be best explained in terms of their position in networks of relationships.
- Networks constrain actions and in turn are shaped by them.
- The comparative analysis of organisations must take into account their network characteristics.

These principles highlight that the network approach is more than just a philosophical orientation and constitutes an alternative conceptual framework for the study of organisations. Traditionally, management-oriented studies have been undertaken mostly in an atomistic (or individualistic) perspective whereby individual actors make choices and act based mostly on their own motivations and expectations. By contrast, network analysis views actors as essentially participants in complex social systems involving many other actors whose behaviour and actions may affect each other's behaviour (Knoke and Kuklinski, 1982). In addition, network analysis focuses on identifying the different levels of structure that exist in organisations in order to analyse the properties of networks in which actors are embedded and detect the effects on individual and group behaviour. Thus, networks, made up of actors, or nodes, and their relationships can be used to represent organisations and theorise about them. It enables the observation of actions or qualities that only exist when two or more entities are considered together instead of focusing on the attributes of individuals or groups. It also supports more rigorous comparisons to be made within subnetworks in organisations and across different organisations. Organisational networks can then be compared for speed of transfer of information (Leavitt, 1951; Shaw, 1978), for speed of decision making (Adam, 1996), or for analysis of power relations (Knoke, 1994).

Nohria (1992) also suggested a dynamic approach to the analysis of organisations whereby actors (or managers) "are not seen as atoms locked in a crystalline grid, their every action determined by their structural location, (...)[but as] active, purposeful agents" (p. 7).

White (1992) indicated that individual ties are continuously added to and subtracted from formal networks. He described management as a continuing process that involves throwing up fresh networks and changing existing networks (White, 1992, p. 94).

Thus, network analysis examines the structure and patterning of relationships that become established amongst individuals in organisations, and attempts to draw conclusions for research in organisational and individual behaviour. Emergent characteristics of organisational structures can be identified and used to explain the performance and behaviour of the systems observed (Knoke & Kuklinski, 1982). As noted by Blau:

When people are thrown together, and before common goals or role expectations have crystallised amongst them, the advantages to be gained from entering into exchanges relations furnish incentives for social interaction, thus fostering the development of a network of social relations and a rudimentary group structure. (Blau, 1989, p. 92)

The network perspective is born out of a careful observation of the life of actual organisations. Balbridge (1970) has observed that New York University makes decisions through "a network that allows a cumulative build-up of expertise and advice" (p. 190), while Kadushin (1987) observed that "a core of 47 people ... runs Detroit" (p. 19A).

The work accomplished so far means that the methods and concepts available under the label of network analysis enable the capture of all significant organisational processes at different levels of analysis