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# Social networks and the study of relations: networks as method, metaphor and form

Hannah Knox, Mike Savage and Penny Harvey

## Abstract

Networks have recently become fashionable in social analysis but most of the new network approaches have paid scant attention to the long history of reflections upon the potential of networks as an analytical device in the social sciences. In this paper we chart the developments in networking thinking in two disciplinary areas – social network analysis and social anthropology – in order to highlight the enduring difficulties and problems with network thinking as well as its potential. The first half of the paper explores the uses of network approaches over the past fifty years, situating theoretical and methodological questions in their broader disciplinary contexts. The authors then show how emerging issues from both bodies of work offer the promise of new kinds of networking thinking.

**Keywords:** networks; social network analysis; social anthropology; social change; interdisciplinarity; methodology.

Today, networks proliferate to an astonishing extent. We are told that we are living in a ‘network society’ (Castells 1996, 2000). Technical networks, such as those of the Internet and other kinds of virtual communication, are said to surround us. It is claimed that businesses and organizations are organized along network lines (see the discussion in Thompson 2003). Actor-network

*Hannah Knox, Mike Savage and Penny Harvey, Centre for Research on Socio-Cultural Change (CRESC), 178 Waterloo Place, University of Manchester, Manchester M13 9PL, UK. E-mails: Hannah.Knox@manchester.ac.uk*

theory is currently the most popular means of examining the relationship between technical and social relations (Latour 1990). Fascinated by the ubiquity of 'networks' in contemporary political and economic life, networking and interactivity have been seen to dominate contemporary Western thinking, operating as both 'metaphor and model of individual and collective life' (Barry 2001: 85). Increasingly, network ideas are championed within numerous sciences and a host of popular books have emphasized the new appeal of networks in scientific endeavours (Barabási 2002; Newman *et al.* 2003).

This proliferation raises a number of deeply puzzling issues. For one thing, network ideas are remarkably poorly networked among themselves, with very little dialogue between different traditions of network thinking. In recent times this has been so marked as to lead to bitter recriminations between researchers in social network analysis (SNA), who see themselves as 'genuine' network scientists, and exponents of network ideas in the popular sciences, who have claimed that they have discovered this new 'holy grail' (Barabási 2002; Newman *et al.* 2003). For another thing, there is also very little awareness of the long history of network approaches and little sense of learning lessons about the difficulties of thinking about networks that have been raised in these older debates. Indeed, rather the reverse: network ideas appear, are then dissipated, and re-emerge again. They have never defined the core concerns of any discipline or research specialism to the extent that they form part of its canon and are seen as fundamental to its ongoing concerns.

This paper explores the problems for network thinking by learning how networks have been deployed within the two traditions where they have the longest history – first, social network analysis (SNA), as practised predominantly by (American) quantitative social scientists (especially sociologists), and, second, within social anthropology. We examine the complex shifts in sociological and anthropological approaches to networks as methodological tools, as metaphors for understanding forms of relations and as descriptors of social forms. Network analysis began as a method which straddled the two disciplines of anthropology and sociology at the point at which they were marking out for themselves distinctive intellectual territories, and the different path that network thinking has taken in the two disciplines is revealing. In social network analysis, networks have emerged as a distinct specialism, one rather detached from 'mainstream' concerns, whereas in social anthropology<sup>1</sup> early interests in networks have given way to a suspicion of network thinking. Comparing these two bodies of work allows us to develop a greater understanding of why network approaches have been so appealing yet also of their enduring problems.

To open our discussion of these questions we take up the influential arguments by the anthropologist Annelise Riles (2001), whose ethnography of the participation by Fijian women in the United Nations 4th global forum focused on 'the network' as a specific cultural form that connects contemporary social science to the practices of NGO activists around the world. Riles shows how 'the network' figures as a device which allows both social

scientists and NGO activists to discover latent structure by simultaneously disconnecting and then reconnecting parts to an imagined or abstract whole. By tacking carefully between the specifics of NGO practice and the analytical forms that she is more familiar with from her social science training, she shows how ‘analysis and phenomenon . . . have become “the same thing”’. Indeed, she argues that ‘[t]he effectiveness of the Network is generated by the Network’s self description’ which hence generates ‘an inherent recursivity’ (Riles 2001: 172). This understanding of the network as a reflexive social form poses methodological dilemmas in relation to the establishment of an analytical position from which to consider how this form achieves its contemporary cultural purchase. In this paper we take up this challenge analytically (rather than ethnographically) and examine how networks have been deployed as method, metaphor, and form within the anthropological and sociological traditions. The ultimate purpose of this exercise is to reveal some of the submerged differences and tensions within network thinking, and to draw out the creative ways of working with networks which are hinted at within Riles’ ethnography. We want to show that there is a potentially exciting turning point, associated with the cultural turn, which offers new potential to re-engage different traditions of network thinking.

We first examine the theoretical underpinnings of social network analysis (SNA), the most self-conscious of the network traditions. This has a high level of institutionalization through holding its own conferences and organizing a specific *Social Networks* journal, and it claims a long history (Freeman 2004; Scott 1991). Undoubtedly, SNA has developed a high level of formalization of network measures and has an impressive grasp of its mathematical foundations. It has also announced a distinctive origin story, in which early network ideas, found mainly within psychology and anthropology have increasingly developed into a distinctive social science niche. In exploring the history of the field, we are interested in how SNA has defined itself as a cohesive community, rather than as a more diffuse network, and we suggest that in fact the SNA tradition is actually less homogeneous and coherent than it sometimes claims to be. We are particularly interested in examining how its structuralist assumptions pose fundamental problems for its own emphasis on networks.

The second section explores the history of anthropological reflections on networks. Trends in anthropological thinking about networks are less well known than for SNA and we show here how anthropologists’ sporadic engagement with networks for the purposes of data collection or analysis might be seen not as a deviation from other theoretical positions but re-articulations of an ongoing concern with forms of social relatedness. The use of the term ‘network’ as a separate field of interest hides the fact that anthropologists have long been concerned with questions of connections between people, most clearly demonstrated by the central disciplinary tenets of kinship and exchange, and demonstrates the difficulty of abstracting the study of networks from their disciplinary contexts.

While our first two sections draw critical lessons about the difficulties of using network thinking, in our final section we highlight three areas, drawing on recent debates within SNA and social anthropology, which we think do offer prospects for new and insightful ways forward. We first examine the cultural turn within SNA, associated with the recent writing of one of the leading network writers, Harrison White (1992) and his colleagues. We then turn to consider the ways in which network thinking continues to figure in the largely ethnographic tradition of social/cultural anthropology, and the relationship of this tradition to actor-network theory as work on networks within the interdisciplinary field of science and technology studies (STS) came to be known. Finally, we examine the potential for new studies of network sociality – figured in the work of writers such as Riles (2001) and Mische (2003), where networks, understood as cultural forms, are nevertheless acknowledged as an increasingly important component of economic, social, and cultural relations with descriptive value, particularly in relation to alternative descriptive regimes which erase all reference to social connection in pursuit of quantitative abstraction.

### **The contested field of social network analysis: method**

Exponents of SNA have developed a progressive story of their field in which a series of methodological advances and institutional developments from the 1950s leads to the elaboration of a distinctive specialist framework (Freeman 2004; Scott 1991; Wellman 1988). The story here is that early progenitors of SNA, such as Jacob Moreno, Elton Mayo, and Kurt Lewin, were followed in the 1950s by writers who placed network methods on a more ‘precise’ footing (e.g. Kephart 1950). The origin stories of explicit theories of social networks in both disciplines are usually centred around the influential work of the anthropologists Elizabeth Bott (1957) and John Barnes (1954), as well as American sociologists such as Edward Laumann (e.g. Laumann 1973; Laumann and Guttman 1966), Mark Granovetter (1973), and Freeman *et al.* (1963).

This process involves an increasing specialization of SNA around a shared set of methods. As López and Scott note, ‘social network analysis is not, in itself, a specific theory or set of theories’ (2000: 61). Rather, it relies on ‘a series of mathematical concepts and technical methods’, drawing specifically on graph theory, leading to a distinct cluster of methodological expertise which connects nodes through ties, and institutionalized in specialized software packages. Thus distinctive ways of measuring the hubs of networks, cliques, and factions, blocks, and the like have all been created. This methodological expertise has made it possible for SNA writers to claim a monopoly on ‘scientific’ network thinking, by providing them with a means of going beyond ‘loose’, metaphorical approaches to networks, and providing a range of formal tools for ‘precisely’ mapping networks.

Ironically, perhaps, this rendering of SNA defines it as a more or less cohesive community, rather than a network. United in large part by its use of a common set of technical methods, writers within the SNA tradition tend to gloss potential theoretical differences around a common commitment to a shared project. Moreover, they are often keen to announce themselves as 'true keepers of the flame' and see themselves as occupying a privileged position with respect to network thinking. However, we should also recognize that internal diversity of opinion has been endemic. In line with Riles' (2001) insistence on the modernist character of network thinking, the main pitch has been to emphasize the structuralist foundations of SNA, championing its abilities to map structural relations usually opaque to lay actors, through delineating the ties between parts of social bodies (see Wellman (1988) and especially Freeman (2004) for a particularly strong statement in these terms). This is undoubtedly a valuable contrast to mainstream social science's reliance on sample surveys, which observe random individuals, making it difficult to infer structural properties from these observations. Network methods are seen as a means of mapping roles comprehensively, so allowing the 'real' qualities of social structures to be delineated. As López and Scott put it, 'the basic presumption of social network analysis is that sociograms of points and lines can be used to represent agents and their social relations. The pattern of connections among these lines in a sociogram represents the relational structure of a society or social group' (2000: 59).

The study of social mobility offers one area where this approach offers valuable insights, notably through Harrison White's (1970) idea of 'vacancy chains'. Orthodox 'status attainment' approaches to social mobility (e.g. Blau and Duncan 1967; Goldthorpe *et al.* 1980) examine the correlates of individual mobility, leading to a 'supply side' approach to social mobility where the focus rests on identifying the variables which correlate with people's mobility prospects (gender, class, qualifications, ethnicity, etc.). Structure thus becomes conflated with the operation of such categories, with the resulting impoverishment of a complex understanding of structure (for instance, through reference to the 'class structure', as in Goldthorpe *et al.* (1980)). White, by contrast, argued that social mobility is driven not by individuals, with their various attributes, but instead by 'demand' processes, notably the need of organizations to fill job vacancies vacated when their incumbents retire or move on (see generally, Levine and Spadaro 1988). The attributes which individuals moving into such positions possess are secondary compared to their propinquity to the vacant position. Therefore our understanding of mobility should focus on the processes by which vacancies come about, and how they are then filled, rather than just the characteristics or attributes of the specific individuals who move into them. Here we can see how SNA has in practice, if not in conceptual terms, shifted focus away from individual properties and qualities.

There is an affinity between SNA and a thoroughgoing structuralism, where social networks became a means of mapping social structure. SNA becomes an

attempt to emphasize the importance of social structure in a social science milieu dominated by methodologically individualistic approaches. American SNA writers, in particular, have certainly been attracted to this definition as it unites them in common purpose against the power of the individualistic assumptions that characterize mainstream quantitative research and that pervade fields such as economics, (much) sociology, and political science. In the hands of Granovetter (1973, 1985) it has emerged as probably the most powerful counter to individualistic, rational choice approaches which span the social sciences and are especially important in economics. Network approaches have thus been central to the emergence of a distinct terrain of 'economic sociology'. In his famous article on 'the strength of weak ties', Granovetter (1973) argued that people looking for jobs were better placed if they had a wide range of 'weak' contacts than a smaller number of 'strong' contacts, since this maximized the chances of getting relevant information about job vacancies. By linking arguments about the formal structure of dyadic and multiple ties, and relating them to the substantive concerns of 'mainstream' economists and sociologists about job search processes, Granovetter was responsible for popularizing network thinking to new audiences.

However, the apparently structuralist underpinning of SNA that Riles (2001) points to in her description of SNA is more complex than might at first appear. Within SNA there is a well-known distinction between analysis of 'whole networks' and 'ego-networks' (e.g. Wellman 1988). The former seek to map structural role relations, but the latter do not enumerate all the relationships between all members of a (sub-) population, but only between a given individual and his or her 'alters'. An example of the latter is Elizabeth Bott's *Family and Social Network* (1957). Bott collected data on the household relations and social ties of twenty 'ordinary' households living in London in the early 1950s. None of these households knew each other, and Bott was not in a position to explore the relationships between them. She noted that those households where there were a large number of social ties in neighbourhood and workplace were likely to have segregated gender roles, while where households had weaker social ties, the couple had few external ties, tended to be more privatized and tended to share their social lives. This kind of analysis uses networks to unpack the context in which individuals live, and is reconcilable with more individualistic perspectives within the social sciences. Indeed, Granovetter's celebrated metaphor of 'embeddedness' precisely captures this idea that networks are a means of examining individuals in their context. This approach is therefore compatible with individualistic mainstream social science perspectives, since it defines networks as attributes of individuals. Just as individuals have a class, gender, ethnicity, etc., so they can be said to have a network of ties to others. And indeed, network methods have become a key part of survey analysis in recent years, with questions asking about respondents' friendships, their social support, and the range of their social contacts. The recent popularization of the concept of social capital has done much to promote the popularity of this approach and has helped to

'mainstream' SNA concerns within quantitative social science (see, notably, Lin 2001). We should note, however, that this reconciliation of SNA with sample survey analysis has lost much of the richness evident in earlier more qualitative 'ego-centred' approaches, such as that of Bott (1957). Compared to her ethnographic depth, survey questions are much more limited about the range of questions they can ask about such ties, and are normally limited to one or two summary questions (e.g. about your 'best' friend). Although some ingenious attempts to use summary questions to explore the social range of people's networks have been devised, e.g. by Erickson (1996) and Lin (2001), who uses 'position generator' questions where respondents are asked if they know anybody from specified social groups, this still leads to an individualized conception of networks. Furthermore, in these kinds of cases, SNA can be used to explain 'outcomes' (or to put this in more positivist language, dependent variables), so that it becomes articulated to a kind of variable = centred analysis that seems inimical to the structuralist proclivities of SNA writers (for variable centred methods, see the critique in Ragin and Becker (1996)).

We can see this conversation between ego-centred and whole network approaches as part of the tension that Riles explores between the way that networks both divide and connect. This tension, which she identifies as intrinsic to network thinking, has important effects on network methods. When data on whole populations are collected, all the ties in a given population can be measured to understand the complete structure of role relationships and different modes of analysis adopted. A particularly influential approach has been that of structural equivalence, as developed by Harrison White and his associates (1976). Structural equivalence exists between individuals when they are in the same 'equivalent' relationship to third parties, even if the individuals concerned are not tied to each other. Thus, for example, independent farmers, who may not know each other, but share a common relationship to, for example, a landlord or supplier, are in structurally equivalent positions. This approach often involves breaking from a reliance on sociograms and devising formal methods for measuring the size of blocks and the relationships between parties in such blocks (called blockmodelling, by White and his associates). SNA here is not seen as a way of mapping connections, but as a means of delineating structural relationships, where it can be the absence of connection, or the existence of similar kinds of connection, that is important.

White's work can be seen as an attempt to find hidden, latent structure, using highly formal means, so as to recover a form of latent structure that is entirely opaque to observers. In this respect, it marks the apogee of the modernist project, and it also reveals how the subsequent evocation of structure becomes redundant as it is abstracted from daily practice and comprehension: to put the matter another way – what is the point of social network analysis when it is so far removed from daily practices?

This indicates a tension, within SNA, between those stressing 'contact' and 'field' (or 'proximity' and 'position' (see Ansell 1997: 362f.) or 'contagion' or 'role').



Networks work though 'contact' if they are based around the ties which link a person (or institution) to someone (or something) else. Thus, in the well-established SNA research on interlocking corporate elites, the extent to which members of the elite know each other is seen as important for establishing their cohesion and degree of 'class formation'. SNA maps connections. This however assumes that contact is necessarily significant. Bourdieu criticized network methods for assuming that power needed to circulate through personal networks of this kind, and his elaboration of the concept of cultural capital, and relative downplaying of the importance of social capital, was in part concerned to redress this. His correspondence analyses in *Distinction* (1984) are a means of showing that people who do not necessarily know each other can still have similar positions in social space if they have similar amounts of economic and cultural capital.

'Field' approaches elaborate the relationships between parties in a field, and are thus more consistent with structural perspectives, particularly the emphasis on structural equivalence developed by White. This kind of SNA does not necessarily see the existence of ties as being important: rather it is the 'holes' or 'gaps' in networks which may be of greater interest. This has had a particularly pronounced application in what Burt calls 'structural holes', areas within a whole network where there are few connections between various socially important activities. Thus Burt's (2000, 2002) study of an American bank showed that those who were most successful were not necessarily those who had the most connections. In fact, many connections may be 'redundant' in that they are to similar kinds of people who know the same kinds of things. Rather, those who were most successful were able to span groups who were otherwise little connected, since these would be able to gain access to very different groups and make 'connections'.

This distinction points to a subtly different theoretical underpinning. In many respects, the more structuralist approaches associated with 'whole network' analysis offer a robust critique of perspectives derived from mainstream economics, and valuably indicate an alternative kind of political economy. It is certainly no accident that radical political economists have been attracted to SNA, especially as a means of analysing elite power. However, two major problems of this kind of SNA need to be emphasized. First, it is pragmatically hard to collect data on entire populations. It is no accident that most celebrated studies use documentary data collating published or historical sources, which are taken to report exhaustively the members of a given group and their salient ties.<sup>2</sup> This kind of research draws on assumptions about the boundaries which constitute the whole which tend to rely on pragmatic, administrative limits.

Second, this leads to a major problem in reflexively operationalizing network presuppositions. If one is concerned to examine whole networks, and if one also recognizes that everyone is in some ways connected to everybody else, then it is not clear how coherent boundaries around any 'whole' can be meaningfully devised. To a large extent, SNA writers sidestep

this problem by using pragmatic, administratively defined boundaries. There are thus network studies of children in particular classes at school or of interlocking directors in certain companies chosen by particular criteria (such as size of firm). However, imposing this kind of boundary to define a whole population is in fact logically inconsistent with network ideas themselves. Given that networks are seen as spanning groups, then any attempt to define a bounded group (within which one can examine the whole network) will ultimately contradict the network idea itself. However understandable it may be to take the pragmatic decision to define a group as a whole population for the purposes of a study, a serious cost is still to be paid.

Ironically, because SNA writers nurture a cohesive community, rather than a network, their ideas tend not to take the kind of network form which their expertise is designed to unravel. There is little translation between their own practices and their theoretical and methodological writings, a point which will stand in comparison with the work of some social anthropologists which we will move on to discuss now. However, before leaving this discussion, we should note that there is clear evidence that some SNA writers have sought to recognize enduring problems in the structuralist foundations of SNA and have tried to develop a cultural approach to social networks in recent years. Part of the impetus here has come from particular applications of SNA within the study of social movements, by scholars such as Charles Ansell, Peter Bearman, Roger Gould, and Ann Mische. The study of social movements has raised unsettling issues because they are more fluid than many more institutionalized areas of social life, and numerous theorists have drawn attention to the way that social movement organizations arise from cultural framing processes. In the case of social movements, it is not clear that there is a pre-existing 'whole network' on which network ties are generated and which might lead to social movement organizations. Rather, the logic might work the other way around, with the definition of the relevant whole population depending on the cultural framing. This body of work offers a new and distinct way of operationalizing networks, and we return to consider its potential in the third section of this paper.

### **Anthropological network approaches**

Unlike social network analysis, social anthropologists' engagements with networks have a less well-documented history. Nonetheless, where noted, disciplinary histories of the use of networks as a theoretical or methodological tool tend, like social network analysts, to cite Bott (1957) and in particular Barnes (1954) as the originators of these approaches (Kuper 1996; Riles 2001; Yang 1994). The use of networks in anthropological accounts of social life since these early studies appeared, have been oriented to importantly different problems from those we have seen addressed by SNA. In this section we chart the ways in which social anthropologists have used networks in their writings,

by attempting to situate the use of networks within broader shifting disciplinary and inter-disciplinary currents with which they have engaged in order to illustrate some of the reasons why social anthropologists and social network analysts have diverged in their use of network approaches.

Barnes, who is often cited as one of the first anthropologists to conduct a network analysis (1954) took an ego-centred network approach to understand the formation of community and class in Norway. Barnes used the network as a concept<sup>3</sup> to reveal how 'class' inequalities emerged despite the fact that people living in a Norwegian parish emphasized social equality in their relations with one another. Barnes' contention was that, although most people considered their friends and neighbours to exist in a socially equal position to themselves, the acquaintances of these friends or neighbours might in turn be of a slightly higher or lower social ranking than themselves. Cumulatively, as people in the community imagined the chain of friends of friends they were able to perceive social differences in a way which did not compromise their experiences of direct face-to-face relations with one another as socially equal. By seeing people as situated in networks of relations, class was revealed not to be drawn along clearly demonstrable boundaries, but rather to be discernible only from a position within the network of relationships within the parish where people further out along the chains of connection could be seen to be more different from oneself.

Barnes' study was notable for the way in which he used networks to effect a departure from structural functionalism, which had been so pervasive within the British anthropological tradition up until this time. Structuralist approaches to culture had already been mobilizing the notion of the network in a way which was very similar to White's later sociological work on whole networks. This was typified in Radcliffe-Brown's famous presidential address 'On social structure', published in the *Journal of the Royal Anthropological Institute* in 1940. Making a clear distinction between the identification of an empirical social structure, as 'the set of actually existing relations, at a given moment of time, which link together certain human beings' (1940: 4), and the role of the anthropologist to reveal structural form, Radcliffe-Brown contrasted the fact that 'human beings are connected by a complex network of social relations' (1940: 2) with what he saw as the scientific role of the anthropologist to create abstractions regarding the general characteristics of these social networks, or social structure. This interest in social structure as determined by structural connections between individuals was an extension of a long-running concern within anthropology with another kind of structural explanation – kinship. Functionalist kinship studies, like structuralist SNA, had paid great attention to the ways in which roles and actions were determined within social groups by relationships that were defined according to formal rules. Classic kinship studies had many similarities to early structural network analyses, as anthropologists sought to understand the social structure of definable groups through the mapping and analysis of kin relationships.

Radcliffe-Brown's interest in networks as a way of characterizing social relations was an extension of a concern with kinship and descent as determinants of social structure in small-scale societies to questions of wider structural relations in complex and large-scale societies. The metaphor of the network enabled structural-functional anthropology to move from local kinship studies to broader questions about relatedness and interconnection at a much greater level of structural complexity and a broader scale. As Radcliffe-Brown made explicit in this address, the purpose of an analysis of social structure (or networks of social relations) was to generate greater understanding of how the structural dimensions of human sociality need to be mapped differently as a result of spatial extension.

At the present moment of history, the network of social relations spreads over the whole world, without any absolute solution of continuity anywhere. This gives rise to a difficulty which I do not think that sociologists have really faced, the difficult of defining what is meant by the term 'a society'.

(Radcliffe-Brown 1940: 4)

Whereas social network analysts continued, as we have seen, to find ways of explaining social life through structures of network relations that could be contained within bounded social groups, early network-based ethnographies were a response to a perceived need to deal with issues of 'scale' in a grounded, empirical way (Barth 1978). The invocation of large-scale categories such as 'social class' or 'society' was becoming seen as problematic because of the clear discontinuities of these models with people's explicit understandings of their life circumstances. This was not primarily an issue of the gap between abstract heuristic models and local categories (the emic/etic distinction) but rather concerned the implications of applying abstractions that were assumed to be universally valid to contexts in which they were only superficially relevant. For example there are problems involved in invoking 'class' or 'gender' to explain inequality in contexts where notions of ownership and production processes are such that a 'class' or 'gender' analysis is inappropriate to explain people's lived experience. The anthropological response to the question of how to understand society was to turn away from structural-functional approaches to social life and look to new ways of answering questions about the constitution of boundaries and communities as socially produced ways of living in the world.

The work of Barnes and Bott provided a bridge between a commitment to issues of relatedness that had informed structural anthropology in the past, and required the mapping of social networks, and a more inductive methodology, which attempted to discover how people's interrelationships with one another produced particular kinds of understandings about the world in which they lived and the people with whom they interacted. In the decades following the publication of Bott's and Barnes' work a number of well-known anthropologists spent time exploring the possibilities of technical forms of network analysis in order to answer questions of anthropological interest

(cf. Boissevain 1979). Networks provided a generic notion of connection that seemed to hold the potential for understanding social cohesion in settings of disruptive social change, without limiting the analysis to functionalist explanations based on kinship, religion, or economics. Of the anthropologists who were interested in the potential of network analysis to inform ethnographic research at this time, Mitchell (1969) was broadly concerned with how to conduct a cultural analysis of life in industrial urban settings; Barth (1978) saw networks as means of developing his interest in transaction analysis; Kapferer (1973), whose initial interest in using networks was to understand kinship in urban situations, went on to develop a wider concern with questions of power and social change; and Noble (1973) worked to extend Bott's work on social networks in the analysis of family life. All these anthropologists were exploring the possibility that network analysis held for understanding new social forms. Networks seemed to hold the potential to combine the explanatory power of 'culture' while being able to account for human agency in ways which structural-functional theories of social life were unable to do.

As Mitchell (1974) has shown, however, despite an interest in the methodological possibilities of network analysis, few of these studies actually ended up developing an explicit methodology for identifying and studying social networks. These anthropologists were more concerned with networks providing a method of analysis rather than a method of data collection. But even as an analytical tool it was questionable how far these studies could be seen to have been contributing to a distinct network theory. Rather than focusing on the kinds of questions about patterns of interaction, sampling and individualism that we have seen as concerning some of the proponents of SNA, these analysts utilized the idea of the network to extend already existing theories such as exchange theory, action theory, and role theory in the analysis of data collected during fieldwork. Unlike social network analysts, these anthropologists were not addressing the work of rational choice economists. They were conversing with other social anthropologists, and their concern was less to provide social explanations for phenomena that had been explained in universalising and individualistic terms, and rather to find some way of describing change while still maintaining a commitment to patterns of relations that were no longer describable in terms of former categories of analysis. Mitchell (1974) questions the extent to which even the most vociferous proponents of the study of social networks could be said to have developed a 'network theory' which could be utilized to test the validity of propositions about the forms or structures of social relations in the way in which network analysts in sociology were trying to do.

In a review of the network studies of the 1960s and early 1970s, Mitchell (1974) concluded that, despite claiming to be a critique of structural-functional anthropology, most network studies differed from structural analysis only in the level of abstraction at which they worked. Bax (1978) concurred with this view in his summary of the state of the field, where he suggested that, despite

claims to the contrary, network analyses ended up reproducing an untenable opposition between structure and agency, characterized by the opposing positions of what he called network structuralism (following Bott) or network activism where the focus is on the individual's social network. Network analysts sought to answer the same questions as structural-functional anthropologists regarding the normative basis of people's behaviour but did so by focusing on relationships between individuals rather than the effects of institutions, whereby the network itself came to be the structural form.

Whether for the reasons that Bax gives or not, the methodological and theoretical value of the network waned in social anthropology after the 1970s. Other ways of exploring questions of power, agency, and social action replaced the initial interest in network theories, and subsequently new questions began to be posed about how social worlds were constituted, could be described, and produced effects, that were antithetical to the rigorous scientism of formal social network analysis. As social anthropologists became more concerned with issues of representation, reflexivity, meaning, personhood, and identity, the theoretical and methodological potential of social network analysis to answer these questions diminished.

Methodologically then, the network came to pose different questions within anthropological thinking as it did in more formal SNA. It was tied to wider questions over how to account for power and agency in descriptions of social lives, and how to account for human action and meaning in socio-cultural terms when ethnographic attention moved from culturally defined groups in delimited locations, to social settings where culture and stability were less important than conflict and change. The benefits of social network analysis were explored but the effect of networks to replace one kind of structural explanation with another led ultimately to their demise as a technical tool of investigation.

At the same time as the demise of network analysis within anthropology, however, networks were proliferating in common parlance as a way of describing and characterizing contemporary ways of living. The spread of information and communication technologies (ICTs) and new reproductive technologies (NRTs), the globalization of trade, migration, travel, development, and science came to mobilize concepts of networks to describe new ways of being in, and understanding the world.<sup>4</sup> Thus the position of networks within ethnographic accounts moved from a distinct methodological tool to a metaphorical device that pointed to and described the shifting contexts of social research. As Hannerz points out, during the 1980s there was a 'recognition that ... structures of meaning and meaningful form are not uniformly shared but problematically distributed in populations and that both culture itself and the order of social relationships are significantly influenced by this distributive complexity' (1992: 36) This was leading to new ways of thinking about connection and relationality which were informed by a sense of the world being a place which was constituted through complex flows and extensive networks (Castells 2000). On the one hand, there has been an

identification of network 'effects' – new kinds of connection that have come about as a result of technological advances which have enabled greater movement of goods, people, and ideas along routes and trajectories that come to be described as networks (Castells 1996, 2000; Hannerz 1992). On the other hand, as we have been attuned to notice the appearance of spontaneously emerging network patterns (Terranova 2004), people who are engaging with the implications of this networked movement of capital, populations, and power both in terms of resistance to the local effects of these processes and the promotion of 'new' forms of capital accumulation are self-consciously organizing themselves into 'networks' of their own (Escobar 2001; Riles 2001; Wittel 2001).

This rise of the network as a mode of organizing and relating has been closely linked to developments in scientific knowledge and the invention and use of new technologies. Anthropologists have been very interested in the ways in which both information technologies and biomedical advances have shifted the terms upon which relationships are being conducted.<sup>5</sup> These new topics of anthropological attention have drawn anthropologists into conversation with other social scientists working on similar problematics in the field broadly known as science and technology studies, and in particular with the writings of actor-network theorists. For these anthropologists, the powerful critique that actor-network theorists produce about scientific claims to truth and knowledge and about the ontological status of socio-technical hybrids has provided a new and challenging analytical perspective through which to understand both these new objects of research and the methodological challenges faced in studying them.

Anthropologists of science and technology have turned to work by theorists like Bruno Latour (1997), a self-avowed enthusiast for anthropological approaches to the study of modern science. Latour's critique of the modernist foundations of science and social science draws upon anthropological studies of non-modern peoples in order to reveal the continuity and entanglement of domains of practice that modernist thinking separates out and resolutely keeps apart (Latour 1993, 1999b). For Latour, moderns assume the ontological reality of nature and society as distinct orders of being. Latour challenges these realist assumptions, claiming furthermore that modernity is an aspiration rather than a reality, but an aspiration with strong delusional capacity and institutional backing. The purification process through which the twin poles of nature and society emerge as discrete, generates many parallel and related distinctions, including the separation of domains such as science, belief, ontology, and politics. Taking as his starting point the limits of assumptions about the integrity of the Cartesian subject (the ideal scientist) who knows himself and the world through doubt and reason, Latour pushes his readers to recognize how scientific truths are in fact produced through rich collaborations of human and non-human agents in networks of relationships that inevitably inhere in the realities that any particular scientist sets out to describe and understand (Sykes 2003). It is in these networks that subject/object

distinctions are collapsed. In the modern world, such networks proliferate in direct relation to attempts by modern subjects to hold apart the twin poles of nature and society.

For anthropologists interested in the meaning and texture of social relations in practice, Latour's description of the foundational assumptions of Western science and modern forms of ordering enacted through everyday practices provides a potential resolution to the problem of the relationship between meaning, action, and context by repositioning human action as part of complex socio-technical networked arrangements. Anthropological studies of science and technology and ANT share a passionate interest in the ways in which attention to practice reveals networks of collaboration that destabilize powerful theoretical constructs (often constructs with significant social force) that rest on claims to autonomous reason. Yet the insights of actor-network theory, while influential, have not usurped a commitment within social and cultural anthropology of science and technology to the anthropological methods of participant observation, which Latour claims are unsuitable for the study of contemporary Western settings. For Latour, the ethnographic approach can be effective in small social groups where face-to-face encounters are typical of the contexts in which people know each other, and know about the world and where networked sociality is limited. For this reason it has been the study of objects as materializations of 'networks', rather than ethnography *per se*, that has characterized the field of STS.

Some would argue that such studies *are* ethnographic, but if we look at the different claims being made for following the 'network' as opposed to more usual anthropological method of participation and observation of social relations between people, we begin to reveal some of the differences between network, as opposed to ethnographic approaches. The actor-network theory that Latour's work inspired (although he subsequently disavowed much that was done in the name of ANT) is perhaps best described as an approach rather than a theory, an approach that prioritizes, as we have seen, the empirical study of the complex entanglements through which Western sciences and technologies are constituted. A central concern for much of this work has been to reveal the diversity of non-human agents in these networks, and to describe the socio-technical assemblages through which modern political life is conducted.

While studies in STS have often tended to retain a distance from the lives of the people they are focused on, in such a way that people become abstractions in the description of scientific processes (Barry 2001; Latour 1987; Law 2002) anthropological studies of science and technology have stopped short of making the ontological commitment to objects as equal actants that ANT requires, re-focusing that which has been revealed by ANT upon the problem of human relationality. For example, Strathern (1996) uses actor network theoretical approaches as a way of rethinking the problem of ownership and the way in which claims to ownership are organized differently within Euro-American and Melanesian relationships. But, while Strathern seems taken with Latour's basic interest in the ways in which the 'network' reveals the 'diverse



props . . . that sustain people's actions and in the way that the props are held in place long enough to do so' (ibid.: 523)., she also distinguishes her interest in people's awareness of network relations, from what she calls 'recombinant culturology – the endless recombining of elements in cultural commentary' (ibid.: 522). By this Strathern indicates a difference between a descriptive approach which, through its acknowledgement of and excavation of complexity and interlinkage reveals the hybridity of all forms and challenges all divisions and categories, and an analytical and perhaps more anthropological approach which is interested in the end, with the ways in which people find themselves able or unable to make claims upon one another because of, their awareness of their position within or outside either a social or socio-technical network.

The most recent development in anthropological engagements with networks has turned attention from the social implications of a person's location in complex (hybrid) networks, to the network itself as object and subject of enquiry and attention (Green 2002; Green *et al.* n.d.; Knox 2003; Riles 2001; Strathern 1996, 2005; Yang 1994). This move to incorporate the network into these analyses mobilizes it neither as a structure through which to discern patterns of relations nor as a means of characterizing increasingly fluid and mutable forms of social relations nor, even, as a critical description of proliferating forms of connection that reveals unacknowledged affinities, but rather as a cultural form in and of itself. These studies turn their attention to the art of networking, and to the aesthetics and texture of networks in their multiple guises as they appear as variously structural and performative entities.

Studies which have begun to explore this relationship between the structural and processual form of networks hold the potential, we suggest, to assist us in reflecting anew on the ways in which networks have been mobilized within the social sciences and the implications of cross-disciplinary collaborations with social network analysis. In the following section we look at Annelise Riles' work as an example of a recent anthropological analysis of the network's ability to collapse the structural and the processual, alongside examples of the cultural turn within SNA mentioned above which attempt to reconcile the two, in order to consider what future the model, metaphor, and method of the network might have in ongoing social research.

### **New network perspectives: or, our networks inside out?**

In this paper we have shown that networks were a means of developing a structuralist alternative to economics, but in anthropology they were a means of breaking from structural functionalism, addressing the inherent mobility and complexity of social systems, and, more recently, finding new ways of describing and interrogating (post)modern techno-scientific objects and relations. In both cases, it has proved difficult to sustain network approaches: within SNA methodological virtuosity has come at the price of relative inattention to theoretical underpinnings, while anthropologists have become

suspicious of the appeal to network as an absolute or philosophical category, and have been more interested in how the network is not a neutral scientific method so much as a form of activity and performance. This difference is indicative of the need to recognize the limits of any simple appeal to networks as a kind of a holy grail. However, we want to conclude our discussion by suggesting that there may be a new moment of cross-fertilization between currents in SNA and anthropology which offers potential for fuller engagement. This potential rests in the approach to 'culture' that networks have helped to articulate in both areas.

Within SNA, a new cultural sociology of networks has appeared as a means of offering a resolution to the problem of defining the boundaries of networks and hence rescuing problems with the structuralist SNA framework. This approach is exemplified in the recent writing of Harrison White, for instance in his book *Identity and Control* (1992), though its esoteric nature means that it has not had as much impact as his (sometimes co-authored) articles. A particularly important paper by Mische and White (1998) indicates the flavour of his departure from structuralism:

The network approach has so far ... centered on formal techniques to the detriment of substantive theoretical grounding. Early structuralisms in linguistics, as well as in sociology and anthropology focused on the conjecture that sets of roles fitted together to yield coherent, if not cohesive, structure. But little of such coherent structure is actually to be found in the modern civilisation that is the actual (if unacknowledged) subject and context of social science ... Instead in our civilisation there are domains and networks that coalesce over time into recognisable genres and institutional forms ... social process in this view comes from the shifting overlays of constituent sociocultural processes. (Mische and White 1998: 717)

Mische and White's arguments take the following form. Following the distinction between 'contact' and 'field' approaches to networks, they insist that networks need to be related to the domains (fields) which they organize: 'the phenomenology and theory of network ties has thus far remained ad hoc, casual, indeed largely implicit, because networks have not been understood as embedded in domains'. The boundaries for such domains can be identified only through the 'stories' which are associated with them, with discourse identifying the 'insiders' as those who belong to networks, their roles and identities, and by implication outsiders: 'normally networks and discourse are co-constitutive around stories. Modernity gives rise to multiple cross cutting networks.' We routinely switch from one network to another in our daily lives (family/work/neighbourhood/leisure, etc.), and in each of them there are different stories and discourses. Networks are hence not measures of structural roles, but are themselves cultural constructions – they do not pre-exist, or exist apart from their enactment in conversation and discursive communication processes. In certain times and places these storied networks become institutionalized, so that, rather than discourse arising from network

structures, more enduring and institutional ties can coalesce from storied networks. An example is Ansell's (1997) account of how the emergence of French socialist politics in the period between 1890 and 1914 rested on the way that certain symbols were used to generate stories around which networks form 'through the interplay between organizing symbols and social or organisational networks . . . organisational cohesion emerges' (Ansell 1997: 360). Rather than begin with a whole population defined by an organizational boundary, and using network methods to assess how this population is structured, one starts from discursive unities in the form of stories to consider how far they lead to organizational boundaries.

Mische and White here make a move akin to that unravelled by Riles in her observation that the network's description becomes its own analysis. They go on to argue that as we live in overlapping and multiple networks, we need to focus on the 'switching processes' in which we move from one network to another. These are the 'public' arenas in which multiple stories coexist and jostle alongside each other. (They draw here on Goffman's (1959) idea of the presentation of self.) Those 'situations' that arise when normal stories around which a network coheres break down, for either internal or external reasons, lead to a moment of crisis or tension and the potential for change and conflict. Understanding how routine 'occurrences' become 'situations' is crucial to their concerns, and connects with the now considerable literature in American sociology concerning the social scientific use of narrative methods (see, e.g., Abbott 2001).

This manifesto is a long way from the SNA of Granovetter, Freeman, and other 'mainstream' writers and implies very different theoretical preconceptions at work. We might see the first generation of SNA as a kind of 'enriched individualism', for instance in the work of Granovetter. Here, the concern is to criticize purely rational actor models within the social sciences by emphasizing that individuals are 'embedded' within a web of relations and ties, and that these webs of relations offer a vital context in which individual actions need to be placed. However, such networks are still essentially individual attributes. A second generation is more fully 'structuralist'. Here, the focus is on looking at how network techniques can be used to understand the role relations within a 'whole' network. Researchers here are not primarily interested in individuals at all, but in the dynamics and properties of certain kinds of network structure. Individual agency might arise because of a specific bridging position, but only as agency bestowed by one's network position. We have argued that this approach is theoretically problematic because of the difficulty of defining whole networks in anything but pragmatic or arbitrary terms. The third generation seeks a fuller cultural and discursive foundation for SNA. However, although exemplars have been published in top American sociology journals, its application and popularity remain restricted. In part this is due to its rather narrow disciplinary base within a particular kind of historical comparative sociology and the sociology of social movements: it has not attracted interest

from a broader constituency of SNA users (e.g. researchers in business schools) and currently has few if any practitioners outside North America.

This third generation pays little attention to recent debates within anthropology, even though, as we discuss shortly, there are some parallels. In this respect it is very different from the structuralist SNA theorists who often thought they were building on specifically anthropological approaches to social structure: in López and Scott's words, 'SNA has systematically developed the relational focus of the German social theorists and the British social anthropologists, seeing structures of social relations as defining a multidimensional social space within which agents can be located and their actions explained' (2000: 60). By contrast, the new cultural approach within SNA rarely makes any reference to anthropology (for instance, the only reference within Mische and White (1998) is to Victor Turner's concept of liminality, which they see as a way of exploring 'switching processes'). In fact, this is not entirely surprising when one notes that most of these cultural studies have not used ethnography, but have instead concentrated on historical case studies using documentary data.<sup>6</sup>

The parallels between this third generation of SNA writers and recent writings within anthropology like that of Annelise Riles that have taken the network as their focus of enquiry lies in the realization that the network's power and importance is tied to its mutability and shifting form. Mische and White have tackled this by combining conversation analysis with network analysis, and introducing the idea of 'switching' into their studies to account for the processual character of network participation. It is notable that both Mische and Riles take new social movements as their empirical sites. For Mische these diffuse forms of semi-institutionalized interaction pose a problem of description and explanation that a domain-sensitive network analysis offers a potential means of resolving. For Riles the problem emerges ethnographically out of spending time with people who are living these networked social movement formations: different meanings and manifestations of something called a 'network' emerge in the course of an ethnography whose realization and identification challenge the very basis of using 'network' as an explanatory, descriptive, or analytical tool at all.

Rather than looking, then, at network-like relations in dispersed communities, or 'networked' assemblages of people and things, Riles derives her interest in the network from its salience as an ethnographic category. Thus her interest is not in defining the network (however shifting or ego-centred) but rather in tracing these definitions and operationalizations of the 'network' as an ideal-type or form of relating. Riles provides very detailed ethnographic description of the ways in which people articulate their relationships with one another as network relations, and are able to envisage those relationships through the use of pictorial and diagrammatic representation of networks. Riles shows how in doing so they do not bracket these relations off as something other than the thing being represented as a network but, rather, the network and relations exist as the same thing 'seen twice'; 'for networkers in

Suva, the Network and “personal relations” are versions of one another seen twice’ (Riles 2001: 26).

Riles finds that in mobilizing the network as a basis for action and form of description, the activists that she follows make the same moves as social scientists have done to make the network work. Specifically, she points out the way in which a network for social theorists and the social actors which she is following, is *both* as a descriptor of social relations *and* a descriptor of itself. The network has an uncanny ability to stand both for itself (Wagner 1986) and for the relations that it describes.

In one sense the networks that Riles describes are metaphorical, in a way similar to that explored by Otis (2001) in her study of the importance of metaphor and analogy in the process of building knowledge. Otis asks ‘what is new about networking?’ and answers ‘everything and nothing’. Focusing on the development of telegraph technologies and drawing primarily from the work of nineteenth-century scientists, philosophers and novelists, Otis identifies the ‘network’ as the quintessential communications system, the core metaphor through which technical systems and bodily processes are imagined and made to stand for each other. The network metaphor is seen to hold together two quite different network forms, identified as ‘the web’ and ‘the network’. The notion of a web allows for a hierarchical structure with a centre and concentric spheres of influence while the network invokes a more horizontal and open-ended ‘weave’. There is a tension between the notion of networks that bind and immobilize, and those that invoke mobility and liberation. In technological terms this analogy is apt and recreates the tension at the heart of technical innovation in industrial histories.

Otis does not suggest that scientists confuse metaphors with the realities they are trying to understand; rather, her aim is to show how knowledge is mediated by metaphor, to the extent that there is no other space from which to know things – metaphors can be changed and their potential developed or curtailed but there is, in this argument, no space outside language. Mische and White likewise place considerable importance on understanding the place of discourse and narrative through which networks are produced.

Otis’ work also raises the question of how the image of the network inhabits contemporary social analysis. The network metaphor has become intrinsically engaged with discussion of self-organizing systems rather than control centres. Thus, just as ‘networks’ emerged as the universal social form when ‘communities’ became the focus of analytic attention, so ‘the network’ and ‘the relation’ are now subject to greater critical analytical scrutiny as grounding tropes with pre-theoretical assumptions that researchers have not always thought through.

While Riles’ focus is on specific networking practices, we find their moves reflected in Mische’s attempts to combine more quantitative forms of SNA with the narrative, conversational, and discursively produced dimension of networks. For Mische, as for Riles’ activists, the importance of the network is that it can be both a model and an object, that it can be turned, as Riles puts it,

inside out. The inside of the network (the social relationships of which it is composed) is at the same time the outside (the representation or visualization). It is only because the network has this ability to stand both for itself and for something beyond itself that Mische is able to propose a combinative methodology that aims to capture both dimensions of the network form. While Riles' analysis reveals this network effect, Mische attempts to make some methodological suggestions as to how these different dimensions of networks might be captured and combined. We conclude by indicating what we see as the potential of cross-disciplinary collaborations and conversations between social network analysts and social anthropologists that are revealed by this juxtaposition of these two different approaches to networks as cultural forms.

## Conclusion

Recently, there has been considerable interest in the way that Latour (1999a) has moved away from the idea of networks. His unease has come in response to people taking the metaphor of the network as a truism. Rather than being a provocation, as it was originally intended, it has come to stand as an unquestioned alternative to other ways of thinking about relatedness. ANT provided a vocabulary for talking across disciplines but found itself beholden to this vocabulary whereby certain metaphors started to become descriptors of structures rather than heuristic devices. Though many actor-network theorists have abandoned 'the network', the reasons given for this abandonment reveal sensitivity to what the notion of the network has come to imply which has proved influential in reflections on the cultural dimensions of the network form. What we have shown in this paper is that this turn away from networks has earlier progenitors and is indicative of enduring problems within network thinking itself. However, it is these problems that produce the very contexts within which possible collaborations and conversations between social network analysts and anthropologists might be situated.

To register this point, we must first recognize the ways that the idea of the network must be placed within a larger understanding of its disciplinary contexts. We have traced the very different character of network thinking through a focus on two areas: social network analysis, which emerged as a distinct social science specialism, and social anthropology. In the former, it marks a critical engagement with mainstream social science's individualistic assumptions and championed a kind of structuralism, but in the latter it marked a critical engagement with structural functionalism and signalled a recognition of fragmentation and complexity. For a few years, in the 1950s and 1960s, some writers played a role in both traditions, but this should not obscure a longer-term tension. The lesson here is to recognize that network thinking does not offer a coherent or convincing theoretical foundation for itself, and we should be cautious of attempts to suggest it offers an easy interdisciplinary resolution to deep-seated disciplinary differences.

We have explored theoretical issues with social network analysis as championed from within SNA, noting that its apparent methodological expertise is bought at a cost of oscillation between individualistic and structuralist perspectives. We have questioned the view that network methods were developed mainly within SNA while anthropology apparently 'dropped' them. In fact, if we look in more detail at what happened to networks we can see that they were not so much dropped, as not necessarily developed in these terms as a structure for analysis. The insights of the early network analysts were clearly incorporated into anthropology's on-going core concerns with the analysis of kinship and exchange, and the study of kinship and of relatedness remains the defining core of contemporary anthropology (Carsten 2000, 2004; Franklin 2003; Franklin and McKinnon 2000; Franklin *et al.* 2003; Strathern 1992). Anthropology offers a series of important lessons.

We have seen, in recent work, that the strength of the network metaphor has been to encourage us to rethink questions of relatedness, and to consider how the implications of distance(s) of different kinds might be addressed by the network. This itself leads us to different perspectives, for, as Strathern (1996), Riles (2001), and Green and Harvey (Green 2002; Green and Harvey 1999) have shown, the network is not simply an analytical tool for the analysis of social life, but an ethnographically significant form as well. Interrogating the idea of the network itself, being sensitive to what its effects are and also its limitations, reveals to us some of the assumptions that social theorists have inadvertently imposed through the mobilization of the network metaphor as an explanatory device.

The network thus seems to provide a challenge to rigidity but in use it has the effect of reintroducing new kinds of rigidities, in a different form. This may account for the sporadic re-discovery of networks in social theory. It is important therefore to recognize the limitations of networks as an explanatory tool; however, this does not mean that the concept of the network is not useful for posing interesting questions in social research. People find it useful to the extent to which it can challenge the received understanding of the spatial and relational dimensions of social life but, as soon as the network itself becomes a blueprint for spatial relations, that is, as soon as it stops challenging and starts prescribing, then the productive capacity of the network is diminished. We might see the recent work criticizing structuralism within SNA and developing more cultural approaches as testimony to this point. As we have seen, one way around this has been to find new idioms and metaphors to articulate anew the project of describing and explaining social life. Another has been to turn the network from the form of analysis to the focus of analysis and back again – to turn the network inside out in Riles' terms, in a self-reflective form of engagement. This points to a difference from the cultural SNA writers who still seek to formalize their understanding of networks through reference to mathematical techniques. Of course, it must also be remembered that the explanation of social structures in terms of networks has its own effects that a more reflexive analysis cannot achieve. For example, the development of

formal network analysis has created a means by which social scientists can converse across disciplinary boundaries, for example enabling conversations between social network analysts and economists.

The ideal of the network and the claims that are made for it are never achieved in actual social relations as the ethnographic cases have shown. Despite their claims, networks, it seems, do not connect, transfer, and emancipate in the ways that they promise to do in popular usage. Ethnographically, we have come to realize that networks are not neutral tools for describing social life, but rather entail a particular politics in their description of social life as fluid and contingent. In fact, as we have seen networks are usually anything but fluid and open, for, as soon as they purport to describe, like any description they fix. This produces a tension which continually re-appears in discussions of networks, for, as they fix things, they produce what Callon (1998) might call 'overflowing'. Now this overflowing can either be included in the network – so then networks are conceptually endless even if they are practically curtailed – or can be excluded from the network, making the network a delimited and bounded entity. The latter scenario provokes the question of upon what basis and according to what criteria the network is delimited. This question is a challenge both for the anthropologist and the social network analyst, albeit for different reasons.

At the same time, it is precisely this tension between these different approaches, indicated by Mische's suggestions for a combinatory methodology for analysing networks and Riles' account of the network 'seen twice', that makes the network useful for thinking about the project of social science and its responsibilities. Unlike other objects that find themselves more clearly demarcated as either qualitative or quantitative categories, the network produces a discursive gap, precisely through its ability to collapse both the sign and the signifier into itself. Graphs, charts, and diagrams of statistical origin make no claims for having another dimension – the world is not a graph; sociological categories like power, class, community, gender are not representable on paper in a form that mirrors so closely their manifestation in practice. But the network holds the potential to be simultaneously referent and representation in a way that is both dangerous and productive.

We have noted the recent emergence of a cultural sociology of networks within SNA which responds to various methodological problems within SNA itself and which offers a potentially stimulating and exciting way of connecting with debates in anthropology. As we have shown, networks can be seen in their usage as methodological tools, metaphors, or analytical abstractions and as descriptors of empirically identifiable social forms. Ethnographies of social networks as social forms have shown, however, that the political and powerful affects of being in or outside networks are generated through the ambiguities created by the diverse aspects of the network itself: the fact that the network points simultaneously to a structural or morphological form, recognizable through forms of inscription such as that conducted by social network analysts; the way that network is used in a metaphorical sense to evoke connectedness



and exclusion through relationships which are performed in new ways; and the network as a design for action and prescription of how to organize. All contained within the same term, these different meanings come to stand for one another in ways which produce discursive engagement among those who mobilize them as either a form of social organization or a form of analysis.

We began by noting how poorly networked social network approaches are in the social sciences. Taking on board our own observations then, we suggest that there is a potential for interdisciplinary cross-fertilizations which explore this gap that the network produces. Networking ourselves means thinking about our own interrelationships in terms of both formal collaborations and the more discursive emergences that this requires. We do not suggest that such collaborations will result in a 'better' or more complete 'picture', whereby the ethnographic can simply be added to the structural to produce a more truthful rendition of 'how things are'. Rather, we see the potential of collaboration to lie in the requirement to engage with the challenges that the network has been shown to make evident, challenges which lie at the heart of the methodological and epistemological concerns of social scientific enquiry.

## Notes

1 In this article we generally refer to the history of British social anthropology. However, we recognize that in practice contemporary British social anthropology is thoroughly entangled with US cultural anthropology, and many of the texts we draw on towards the end of the article draw on a particular branch of contemporary Euro-American anthropology interested in critical analysis of knowledge practices.

2 Examples here include Padgett and Ansell's (1993) study of the rule of the Medici in Florence, Roger Gould's study of the Paris Commune (1995), which used data from militia enlistments and prosecutions to show that militancy was based on the overlap between neighbourhood and occupational networks, and Peter Bearman's (1995) study of elite formation in seventeenth-century East Anglia, which shows that before the Civil War the gentry was becoming more interlocked through marriage alliances.

3 See Mitchell (1974) on how Barnes raised it from a metaphorical to a conceptual statement.

4 For example, see Appadurai (1986), Bestor (2001), Kopytoff (1986), Mintz (1985), Franklin (2003), Escobar (1996), Hannerz (1992), Hassan (2003), Sassen (2000), Stoller (1996), and Wittel (2001).

5 See Wilson and Peterson (2002) for a review of work by anthropologists on online communities, and Edwards (1993), Strathern (1992), Franklin (2003), and Carsten (2000) on the relationship between science, technology, and kinship.

6 The main exception here being the work of Mische (2003), which has used qualitative data (though not ethnography) on political activists

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**Hannah Knox** studied social anthropology at the University of Manchester. She completed her PhD in 2003 and spent the following year working as a research associate at Manchester Business School. She is currently a research associate at the ESRC Centre for Research on Socio-Cultural Change, working on the theme of 'Politics and Cultural Values'. Her current research is on the cultural dimensions of information and communications technologies in circumstances of social and economic change.

**Mike Savage** studied history at York and sociology at Lancaster, and has been researcher and lecturer at the universities of Lancaster, Sussex, Surrey, Keele, and North Carolina. He is currently Professor of Sociology at the University of Manchester, where he is Director of the ESRC Centre for Research on Socio-cultural Change. Recent publications include *Class Analysis and Social Transformation* (Open University Press, 2000) and *Globalisation and Belonging* (with Gaynor Bagnall and Brian Longhurst, Sage, 2005). He is currently working on a book on changing popular identities in England since 1945.

**Penny Harvey** studied Spanish at King's College London and social anthropology at the London School of Economics. She taught at the Institute for Latin American Studies at the University of Liverpool and is currently Professor of Social Anthropology at the University of Manchester, and concurrently holds a Professor II position at the University of Bergen in Norway. She is author of *Hybrids of Modernity: Anthropology, the Nation State and the Universal Exhibition* (Routledge, 1996) and has published widely in the general field of the politics of communication, working ethnographically with language, exhibitionary practice, information and communications technologies, and, most recently, roads.