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TECHNOLOGY, NETWORKS AND COMMUNITIES

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Michele Willson

TECHNOLOGY, NETWORKS AND COMMUNITIES

An exploration of network and community theory and technosocial forms

Technologies such as the internet offer tremendous and potentially transformative possibilities for imagining and living with others. The possibility for new ways of being together raises the question of appropriate concepts, languages and theories to describe, analyse and engage with these social forms and practices. Network and community concepts and rhetoric are most commonly employed for this purpose, yet the differences between them and the rationale for their specific uses are unclear. In order to gain a more nuanced and informed picture, this paper attempts a very broad overview of the fields of network and community theory particularly in relation to technologically mediated social practices. The intent is to begin mapping the uses, limitations and strengths of community and network theory. In the process, the paper will bring to light some of the tensions, issues and concerns surrounding the analysis of technosociality.

Keywords virtual community; social networks; community theory; network theory; internet

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Technologies such as the internet offer tremendous and potentially transformative possibilities for imagining and living with others. Internet connectivity and internet practices are increasingly central to everyday life. The growing reliance upon the internet and mobile phones for daily activities, for example, illustrates the importance of being *connected* (understood in multiple ways). The manner, form and possibilities of connection, however, are not straightforward or uncontested.

The potentialities of technological connectivity and the possibility for new ways of being together raise the question of appropriate concepts, languages and theories that can be used to describe, analyse and engage with these social forms and practices. Network and community, as Postill (2008, p. 414) points out, are notions that enjoy an 'unrivalled paradigmatic status' in this endeavour. Yet, they are notions around which there is much confusion and debate.

Much of the early literature that looked at the internet and social connectivity was focused on online communities. In particular, the literature emphasized the liberating possibilities of virtual community and the potential for new experiences of sociality. These claims are very familiar: the freeing up of temporal and spatial restrictions enabling membership in multiple communities of interest; the democratizing potentials of interactive technologies and liberation from embodied constraints. Online communities were presented as new social forms enabling more equitable and accessible social practices. Indeed, early literature resounded with optimistic visions of inclusive, egalitarian ways of being together that had transformative potential for social life (e.g. Rheingold 1993; Poster 1995; Turkle 1995).

As time has passed, this literature has become more tempered, recognizing the many possibilities and limitations of online communities as well as the ways in which they have been integrated with everyday (off line) social practices (DiMaggio *et al.* 2001; Haythornthwaite & Wellman 2002; Hampton 2004).¹ However, the literature has also expanded to consider the wider potentials of networks themselves. Indeed, in some arenas, focus on networks has served to obscure or replace community discussions entirely.

This paper attempts a very broad overview of the theories of network and community particularly in relation to technologically mediated social practices. It considers a range of topics, including the rhetoric and imagery surrounding the notions of community and network; their positioning of nodes/actors; and the particular foci, applications to and understandings of contemporary social forms. The usual disclaimers must be made (though I think here they have particular saliency). The breadth of writings on both networks and communities are so diverse and divergent that it is only possible at this stage to make some very broad generalizations. The aim is not to negate or conflate either or both categories: we live in a complex social world with various levels and forms of engagement with others and a range of categories and approaches are needed to encompass these. Rather this paper explores the concepts, theories and rhetoric of network and community in order to gain some idea as to their appropriateness as heuristic tools in analysing contemporary social forms.

Network and community theory: a brief overview

When attempting to discuss theoretical understandings of network and community simultaneously, a number of problems become immediately apparent. The

first problem is the diverse understanding of these concepts and the theoretical approaches through which they are employed. As evident from the numerous articles, books and discussion postings on the topic, there is considerable dissension surrounding the meaning and usefulness of these terms.² For our purposes here, there are some general qualities that can be identified. This generalizing is inevitable in some ways due to the scale and diversity of the material under discussion. But it is also useful for identifying commonalities, contradictions and issues of concern. The 'macro' is thus asserted for the advantage of perspective and for understanding broad theoretical and methodological tendencies.

Networks and communities have a similar conceptual status inasmuch both have been decried as being so diverse in their understandings and applications as to be almost useless (Amit 2002; Cavanagh 2007; Postill 2008). Both network and community are associated with theories, methods and objects of study. This creates considerable difficulty – in fact, makes it almost an impossibility – in discussing them since there is often considerable slippage between the theory, method and object focus (and despite its best intentions, this paper may fall into a similar trap at times since the demarcation between usages is so fluid).

However, in whatever ways they are conceptualized, when they are applied to social forms, both network and community name ways of being together and describe forms of connectivity or relations between people. Both either implicitly or explicitly detail protocols or rules and conventions necessary for their operation, for inclusion and by default, exclusion, of participants. The differences therefore rest largely on the form or types of relations posited, the type of theoretical approaches employed and the disciplinary background from which these investigations arise.

Interest in networks has gained impetus from a number of sources, including Castells' (2000, 2001) thesis of the network society, Deleuze and Guattari's work on rhizomes, Wellman's (2002) 'networked individual', social network analysis (SNA) from predominantly sociology researchers and work in applied mathematics on small world, random and complex networks (Barabási 2002). Organizational behaviour and management studies also feature here. Drawn from across disciplines and approaches (graph theory and nonlinear physics through to SNA and sociology), network analyses attempt to map, and thereby, to understand the behaviour, predictability and potential of networks,³ and of the nodes or actors within. For some writers such as Barabási (2002), networks are ubiquitous and evident in all levels and areas of life. In these instances, network is seen as describing a relational-organizational form (see also Van Dijk 1999, p. 24).

The term network is used to describe a process or an activity (*to network*) and an object of study (*a network*). It also used to refer to specific techniques or methods of analysis.⁴ The use of the term within internet and new/digital media studies is thus often confused, and at times constrained, by the intertwining of

these differing uses. For example, the internet is frequently described as a network of networks. The types of technologies encapsulated by the term internet reflect a network structure on a number of levels. There is more than sufficient literature that describes these multiple levels (this relates to hardware, software and 'wetware' and the interconnections across and between these forms). However, in this example, network refers to both the infrastructure and the activities that take place through this infrastructure: It is used to describe the *form* or means of connection, as well as the *type* of relation (e.g. networked community, social network, etc).

In addition to the above, there is also a frequent conflation with the commonplace usage of the phrase 'to network' applied to people who are trying to build profitable professional or personal contacts: the dominant idea being to build a relation or connection that is valuable to participants. Social network sites such as MySpace and Facebook, to take two popular online examples, explicitly foster these types of instrumental or ego-centric relations. As the Facebook homepage states, 'Facebook helps you connect and share with the people in your life'. In other words, it provides a tool or the means by which *you* can initiate, manage and connect with other people. Twitter takes the ego-centric emphasis even further through the continual but short broadcasting of activity, or 'what you are doing?'

Community discussions also have a long tradition in time and across disciplines (e.g. sociology, anthropology, politics, philosophy and psychology: the list is extensive). Political communities, social communities, regional and urban communities, professional communities, to name just a few 'types' of community, have all been described, analysed and debated. As noted often by commentators, George A. Hillery Jr analysed 94 different definitions of community, noting few commonalities between them (Bell & Newby 1979).

Studies of online communities, likewise, have been extensive, facilitated in no small part by the capacities of the technologies to record interactions. A number of virtual community writings have employed Anderson's (1991) evocative notion of imagined communities (Wittel 2001, p. 62). In particular, they note a sense of connection or fraternity existing among members and of this sense of connection being constitutive of that particular social form (Watson 1997; Feenberg & Bakardjieva 2004). Other writers focus internally on the day-to-day constitutive practices of particular communities (Rheingold 1993; Watson 1997). In the latter, they address membership, identity formation, internal governance and maintenance, and conflict resolution. Like the broader community discussion noted above, virtual or online community writings have been involved in a long-standing debate as to whether communities exist, and what they look like (Bakardjieva 2003, p. 293; Fernback 2007). Within internet studies literature, this debate has been extended in turn to include questions about whether virtual communities are real communities (Watson 1997; Wellman & Gulia 1999; Feenberg & Bakardjieva 2004; Fernback 2007).

Network and community are not completely discrete concepts, theories or objects of analysis: some writers conflate networks and communities together (i.e. communities are a network or part thereof); others presents networks as a replacement for traditional community forms; while others either ignore the issue of community or of networks entirely. In applied mathematics, for example, communities are seen as an identifiable phenomena manifested through more intense clustering within networks and detectable through the use of specific algorithms (Radicchi *et al.* 2004). However, in sociology, Wellman's (2001, 2002) work notes a change in communal form from 'solidary' groups⁵ to personal network configurations, thus flagging an historical shift from the dominance of community forms to that of individual social networks encouraged by the growth in personal mobile technologies. For others, the discussions do not overlap but run in parallel – seemingly either unaware or uninterested in the different discussions taking place.

Table 1 reveals some of the common associations made with theories of community and of networks, though these are by no means definitive or uncontested.

What this brief snapshot reveals is that both network and community, as concepts and approaches, can and do operate in their own right according to quite divergent disciplinary understandings. However, to make a very crude characterization of the more commonplace uses, as noted in the table above, community *could* be positioned as a modern category while networks *could* be positioned as showing more affinities with postmodern understandings. Communities have been described as homogeneous, closed and dense social forms with embedded individuals (Wittel 2001), whereas networks have been

TABLE 1 Various ways in which the concepts of community and network are often characterized.

<i>ways of being together</i>	<i>network</i>	<i>community</i>
Temporal and spatial form	Fluid, dynamic, seeking equilibrium	Inherent stability, coherence
Time	Ephemeral, internal, flows	Longevity
Relation	Dispersed	Dense
Rules	Protocols, code	Norms, culture
Membership	Complimentary, degree of heterogeneity assumed.	Homogeneous, common identity, needs and culture
Focus	Outward	Inward
Theoretical positioning/ affiliations	Postmodern	Modern
Overall	More than nodal aggregate	More than individual aggregate

characterized as heterogeneous, open and loose associations made up of autonomous individuals (Powell 1990; Wittel 2001). With these types of characterization, communities and networks could be positioned at either end of a continuum of social forms, or loosely grouped within the traditional *gemeinschaft/gesellschaft* distinction. Yet such a characterization fails to take into account more contemporary work on community that acknowledges its fluidity and multiplicity (Wilson & Peterson 2002, p. 449). It also overstates network and community differences.

Rather than wholeheartedly embracing an age of networks or evincing attachment to a nostalgic preference for community, a more nuanced and comparative analysis is called for. Between the two concepts and approaches, there are overlaps, similarities and differences that invite further discussion.

Language and imagery

One way to start an analysis of network and community theories is to look at the language and imagery evoked with these various terms and all of the baggage that accompanies them. This language and the ways in which the concepts are portrayed in internet and digital media studies are quite interesting. Both network and community are terms associated with descriptive and prescriptive rhetoric.

For example, work on networks (particularly from the hard sciences, but also in some degree from the social sciences) often employs descriptive, scientific, seemingly objective language. Networks are thus represented as objective, identifiable, unambiguous and non-emotive. In some literatures, all networks are classified together in a way that attributes innate natural laws to their function determinable through the use of algorithms (Barabási 2002). Yet, while networks, when contrasted with a more normative conception of community, tend to be treated as identifiable phenomena and thus stripped of normative qualities, closer readings reveal that this is often not the case. Many works, for example, sociological works such as those by Wellman and Castells, employ prescriptive and evaluative criteria that present network forms of relations as having inherently desirable qualities. As Barney (2004) notes in his book, *The Network Society*:

vocabularies such as that provided by the network society thesis do not only describe what is, they also establish expectations for what might, or should, be ... Intellectuals, including Castells himself, have begun to refer to networks not simply as a sociological reality that we should recognize, but also as a 'superior organizational form' upon which an entire social order can, and probably should, be built.

(pp. 178–179)

The flip side of this valorization of the properties of networks is obviously more negative: fears associated with the uncontainability of networks and their virulent potential (for integral or integrated systems, including social systems). Some of this fear is illustrated in the early discussions about the internet and fear of malintent on the part of individuals and organizations (criminals, paedophiles, etc), terrorist structures such as Al Qaeda and concern over the possibilities for viral contagion (e.g. fears of global computer viruses). This more 'fearful' rhetoric and imagery, however, also contain some sense that these are observable and eventually understandable phenomena that follow certain rules and can be protected against. When applied to human social networks, the language of edges, nodes, flows and functions strips away many of the emotive and value-laden connotations associated with community writings.

There is a considerable literature that addresses community as an identifiable, empirically discernable and measurable phenomenon. This literature defines community according to quantifiable factors such as physical location, membership processes, size and so forth. However, there is also no doubt that there is a strong normative element to many community writings: in terms of whether the definition chosen accurately encapsulates community (e.g. is a virtual community really a community?); in terms of the perceived benefits and costs to a particular community and to the various societies in which they may exist; or simply in understanding community as desirable or undesirable in and of itself. As Bell and Newby (1979, p. 21) note when discussing the history of community definitions in sociology, 'The subjective feelings that the term community conjures up thus frequently lead to a confusion between what it *is* (empirical description) and what the sociologist feels it *should be* (normative prescription)' (emphasis in original).

As Bauman's (2001) book title, *Community: Seeking Safety in an Insecure World*, succinctly encapsulates, community is seen as a source of individual and collective security and well-being, and as a location for social resources. Fears are expressed about the demise of community (Putnam 2000). Community is (and communities are) presented as a cohesive, grounding force that provides a basis from which the individual can navigate through life (Taylor 1991, 1995, 2004) and which also provides a counter to forces of alienation or anomie (Rheingold 1993; Putnam 2000; Bauman 2001).

However, many approaches to community have been critiqued in the past for their totalizing tendencies. The danger of adopting an approach that negates particularity and imposes a general homogeneity upon any grouping is well noted (Young 1990). Indeed, some of the contemporary work on community by writers such as Agamben (1993) and Nancy (1991) is expressly intended to counter these tendencies. These totalizing and homogenizing fears, apart from broader concerns about digital divides, do not appear to be replicated within online community debates. Indeed, the possibilities offered by virtual, multiple, communities are

presented by some writers as innately countering these tendencies; as offering potentially more desirable community forms (e.g. Poster 1995).

Network and community lexicons are thus inextricably intertwined with particular notions of the social, of social practices and the relation between the grouping (network or community or amalgam of both) and its constituent parts. At one level, the use of various terms and approaches – whether network or community or an incorporation of both – requires the researcher to critically consider embedded values associated with the terms, and the implicit hierarchy of value systems that are employed. For example, in their evaluation of the notion of community, Amit and Rapport (2002, p. 25) note that,

in treating the construction of transnational communities as an inevitable element of contemporary forms of movement, we can also end up inadvertently supporting a neo-liberal tendency to treat human beings as if they can and should be infinitely portable, unencumbered economic agents.

As the above quotation about transnational communities points out, there are political and social implications for the ways in which social relations are conceptualized, framed and enacted. In general usage, this choice may well be governed by political considerations: politicians, activists and academics alike make deliberate decisions about their adoption of these particular terms and their use of them. In making such choices, attitudes about sociality, individual and collective relationships and broader philosophical positions can also be inferred.

Another way to gauge some understanding of potential synergies and differences between the use of network or community to investigate social forms is to examine the positioning of the individuals/nodes/actors – the constituent parts of the broader network or community – and the ways in which they are understood in the various literatures.

Positioning agency/nodes/individuals: networks

Networks consist of nodes and edges, or nodes, links and mesh (Barabási 2002; Van Loon 2006). Nodes are defined according to their relation to the network: they can be understood as individuals, singular entities or points of contact, yet situated within the broader relational configuration of network ties, and contextualized by this relationship.

Therefore, nodes are often positioned and identified entirely in terms of the network (either for analytical reasons or through procedural investigations) (Garton *et al.* 1997) and are thus acknowledged almost entirely on the basis of what they contribute to the network and how they impact on its flows. In some ways, nodes are therefore seen as interchangeable – picked up and dropped according to their conforming to network protocols or dependent on

the role within and needs of the network. In writing about the network society – where networks are seen increasingly as the dominant social-organizational form – Castells (2000, p. 16) describes network social forms ‘as value-free or neutral. They can equally kiss or kill: nothing personal’.

In this way, nodes are emptied of content or flattened. Individual difference between nodes becomes purely relational – in terms of a node’s relation to the network within which it is situated. As such, there is talk of the ‘fitness’ of nodes (Barabási 2002), whereby fitness describes the ability to profit or dominate within a particular network (‘winner takes all’ or ‘first in does best’). This is to understand nodes as possessing a form of agency but an agency that is constrained by both the structure (the network: for example, whether random, small world or complex) and the properties or laws that operate dependent upon the type of network within which they are situated. An example: whether a node (an individual in a social networking site) is identified as a hub, or star which is then examined in terms of qualities (in relation to the network and other nodes’ contributions, or in this instance, perhaps how many friends she/he has) addresses issues of power but purely in terms of the process and internal function and structure of the network (e.g. how well they use the network friend function, manage their profile, facilitate interaction, etc.). When contrasted with more contemporary community literature that seeks to address community while retaining regard to individual particularity, these seemingly uncritical tendencies in network theory (particularly when applied to social forms and practices) are startling and politically problematic.

However, some of the more sociological analyses, particularly works by Castells and Wellman, do consider the more particularized instances of the ‘networked individual’ and the privatization of sociability. In this literature, the networked individual (a node) participates in numerous and overlapping networks of sociality (these may or may not be contained within an online environment). These more ephemeral personal networks are posited as an increasingly dominant mode of sociality (Wittel 2001). Technologies such as the internet thus are seen as enhancing possibilities for multiple social connections since network connectivity minimizes some temporal and spatial constraints. Thus, the individual is not constrained to operating within one network but has connections that span across numerous networks.

These depictions of the networked individual (with multiple personal social networks) fit neatly with work on new social movements, affinity groups and issue-based politics where allegiances and participation are aligned around temporally prominent issues rather than broader ideology or loyalties to collective associations. Individuals are represented as free-floating and seemingly autonomous agents, able to form or connect to numerous networks at will as long as they fit network rules, protocols and functions. If they do not fit the network, they are dropped. Likewise, if the network does not meet an individual’s needs, the individual drops it.

Yet, the relationship would appear to be more complex than this picture suggests. It is arguable that at least at one level, the relations described within networks are seen as both individually advantageous but also interdependent and thus mutually or network beneficial. In relation to social networking sites, this works at two levels: at the more macro-level, the more people that participate in the social networking site, the better it is for the overall viability and attractiveness of the network site; and at a more micro-level, the more connected the individual is (i.e. the more 'friends' she/he has, the more kudos and individual advantage that can be accrued).⁶

Part of the appeal of the network-node understanding, it could be suggested, is its ability to accommodate the rhetoric and ideals of liberal individualism and the postmodern preference for multiplicity through the proclaimed possibilities for relatively unencumbered or unconstrained individual action and individual multiplicity. In terms of the internet and other mobile technologies, the network (infrastructure) enables people to belong to as many networks (form) or communities as they desire and to self-present as they desire. Writings on individual or personal networks particularly appear to embrace these notions. Some commentators also assert that networks possess a non-hierarchical structure and thus present the idea that these forms are somehow more democratic (or at the very least present different political tendencies) because of this fact (Powell 1990; Sterpka 2007).

Network understandings both flatten interactions – the complexity, depth and broader context of engagements are constrained or unrecognizable within the majority of analyses – and constrain through their focus on structure. While network approaches offer ways of understanding functions (e.g. how information circulates), or ways of achieving certain outcomes; in the main, these are quite strategic/instrumental purposes and outcomes. Theorizing about networks produces conceptualizations that range from static 'pictures' (unitary, integrative understandings of networks) to dynamic flows of association/laws (attachments or relations). When taken to extreme, network analogies and models evince totalizing, determinist and structuralist dimensions that replicate claims made about modernity's grand narratives and also about community and its practises of conformity and repression. These claims include a completely bounded and self-referential logic that fails to consider broader influences from outside of the network, the inability to recognize and accommodate diversity except where it accords with the needs or protocols of the network (Castells (2000, p. 16) for an argument about the inability to change networks from within and the need to form counter networks), to privilege instrumental actions and to diminish the possibilities for consideration of ethical relations.

Paradoxically, the networked individual approach privileges diversity to such an extent that, on at least one level, it annihilates it: the networked individual's difference is presumed but irrelevant since they can connect with others who are the same, or who meet that individual's needs or desires. Therefore, difference is

either rendered as a desirable object to be engaged with, or negated. The discussion does not need to, and indeed for Castells on some levels cannot, engage with difference except in the sense of an instrumental resource.

These claims have been contested and are certainly worth further critical investigation (for an illustration of some of these contesting claims and positions, see the nettime discussion on networks in their archives), if we are to gain a more comprehensive picture of the processes and possibilities of networks in relation to contemporary social forms. Recent work is grappling with interesting understandings of temporality and spatiality as a result of a renewed interest in dynamic processes (e.g. see some of the work by Nigel Thrift or Adrian MacKenzie⁷). Dialogue about the possibilities for new network theories is also taking place.⁸

Positioning agency, relations and individuals: community

When we turn to the discussion of community, we see many of the same emphases that are evident in network analyses in relation to investigating the internal dynamics between members, and of broader understandings of the community. Many virtual community writings focus on individuals in terms of what the community value-adds for them, though the discussions are often couched in relation to issues of identity, relationship formation, conflict resolution and inclusivity. Delanty (2003, p. 4) notes, 'If anything unites these very diverse conceptions of community it is the idea that community concerns belonging'. As noted earlier, Anderson's imagined communities notion is often put forward to explain the ways that the internal structures of the community, the infrastructure of the technology and technical and normative protocols provide the structural and cultural means for imagining connection and membership through technology. However, again dependent on the method used, there does seem to be a 'thicker' sense of members in community literature than is evident in many network discussions. In part this is attributable to the different types of research questions that are investigated: for example, questions of individual identity and subjectivity are raised, questions of communal norms and regulation posed and investigations into creation, maintenance and the demise of communities are conducted. In part it is due to the adoption of often different methodologies and techniques that allow the elaboration and exploration of broader, qualitative rather than quantitative questions (e.g. ethnography, cultural studies).

While much virtual community writing was criticized for its boundedness within the cyber realm (Wittel 2001; Bakardjieva 2003; Willson 2006), the recent literature is placing an increased emphasis on the everyday. However, the everyday for these writers still often refers to the life of distinct individuals where the broader context of contemporary technosociety is not engaged. While

the diverse uses made of the internet and the diverse experiences and particularities of users need to be acknowledged, such a focus on the individual and the particular can also be limiting, in ways not dissimilar to some of the claims made above about network writings.

The value of more broadly philosophical writings on community is that they consider the interplay between community and its constituents and the ways in which these work together to accommodate differences and to navigate ways of developing and managing various conflicts and coherences. In this literature, there is often a strong intersubjective emphasis; whereby consideration of notions of common good, and understandings of shared horizons, and issues of longevity and temporality are debated (Anderson 1991; Taylor 1991, 1995, 2004; Delanty 2003). Both integrative and interactive mechanisms are considered: a broader focus than that undertaken in many virtual community analyses where the focus is on communication or connectivity as constitutive. Philosophical literature also includes more scope for consideration of the particularities of individuals within an acknowledgement of their interconnection: individuals are seen as more than simply relational aggregates that form a community (Nancy 1991; Agamben 1993).

A brief comment on SNA and ANT: relational associations

A discussion about network and community could not be undertaken without some discussion of both SNA and actor network theory (ANT). Both ANT and SNA, with their emphasis on the relational, are gaining in popularity, though for largely different reasons: SNA in part because of its ability to visually map relational practices and to quantify connectivity and flows; ANT for its engagement with the materiality of technological processes and outcomes.

SNA is more directly about the method of study than the understanding or conceptualization of nodes or networks, though these are obviously implicit in their method. As the literature on SNA notes, the main rationale for SNA is an attempt to move the analysis of social forms from a focus on the individual or group as an entity to consider the patterns of *relations between* actors, including recognition of the interdependent nature of network participants (Wasserman & Faust 1994, p. 4).

ANT is loosely characterized as concerned with the relational association of actors (or actants) whereby actors are not constrained to those of the human, but also potentially include technologies and processes.⁹ ANT could be crudely characterized as interested predominantly in the exercise and outcome of power – what makes things happen and how (Van Loon 2007). One of the reasons why it is becoming popular with social technology analysts is that it enables technological systems and practices to be taken into account (Latour 2007 [2005]). However, rather than focus on network structure, ANT

is more concerned with examining networking: the processes by which a (temporary) stabilization of particular relations takes place (Van Loon 2006, p. 310). This approach therefore poses some difficulties in comparison with other discussion about networks in this paper since ANT is concerned with each stabilization: in effect, of singular, non-generalizable case studies. It provides procedures for investigating particular situations and effects (Cavanagh 2007, p. 33).

SNA and ANT could be seen as bridging network and community analyses; or alternately a way of or method for applying network/relational understandings to investigations of communities. In SNA, the ways in which the method is commonly adopted is as either a group-centric or ego (individual/node)-centred approach (Garton *et al.* 1997). This determination is made in part by research objectives but also substantially by the scale of the unit to be examined and the possibilities of the technologies employed in constructing and analysing the data (i.e. how large the data set is to be examined). In this sense, the interpretation and results are one dimensional and limited, through either privileging the individual and personal networks, or conflating individual differences into understandings of a singular network form. In addition, interpretations are limited by the focus and types of research questions investigated; for example, they might be good for highlighting communication flows and the centrality of particular nodes or hubs, but not appropriate for investigating the impact of these flows upon understandings of membership or identity construction, or for understanding the social importance of these flows (Howard 2002).

Monge and Contractor (2003, p. 45) suggest that,

Representing networks as matrices or graphs and measuring properties of the network serve useful descriptive purposes. However, *explaining* the emergence of networks requires an analytical framework that enables inferences to be made on the basis of theories and statistical tests.

(emphasis in original)

Monge and Contractor suggest the need for a more multi-levelled, multi-analytical and multi-theoretical approach to network analysis; a suggestion which the above discussion would indicate may prove to be a fruitful area to concentrate upon. It also flags the need for further discussion of and delineation between the concept of network and the techniques and methods used to analyse networks, taking into account broader cultural and social issues and concerns.

SNA and ANT are both important inasmuch as they emphasize the relational and interconnected nature of social life but without further development or use within a more multi-modal theoretical approach, their usefulness is limited. They may be appropriate as a tool for the analysis of some aspects of ways of being together that may illuminate further areas for research; however, their use must be limited by the recognition of their flaws.

Conclusion: understanding being together

Early discussions of internet-mediated social forms concentrated upon communities (virtual, online or otherwise). However, increasingly the literature overlaps with discussions of social networks. Network is commonly used to describe structural or organizational modes of sociality, whereas community is often used to denote content inasmuch as it refers to a particular type of sociality. One positioning of the two concepts therefore might be to consider community as content (not in an essentialist sense but as a way of naming ways of being together) and network as a form in which community can manifest but which thereby displays many of the characteristics of that form. This is a slightly different emphasis than one made by Castells (2001, p. 127) – extending on Wellman's work – who argues there has been a substitution or displacement of community by networks. He differentiates communities from networks arguing,

Communities, at least in the tradition of sociological research, were based on the sharing of values and social organization. Networks are built by the choices and strategies of social actors, be it individuals, families, or social groups [note the different tenses used to describe these terms – communities 'were', networks 'are']. Thus, the major transformation of sociability in complex societies took place with the substitution of networks for spatial communities as major forms of sociability.

(Castells 2001, p. 127)

While there is some slippage here in terminology and association (e.g. from communities of shared values to spatial communities), the central point of changing organizational forms does not preclude a form and content suggestion made above. For example, the possibility for network theory to describe or evoke multidimensional, nonlinear complex relational forms (Van Loon 2006) offers a potentially useful trope or metaphor for beginning to rethink contemporary social forms, and one that may be useful to unsettle more fixed notions of community. However, further work needs to be done: as noted above, while network theories provide some useful descriptive and structural frameworks from which to analyse certain social forms, and to predict others, considerable work is still needed to enable more nuanced and less theoretically problematic explorations of mediated sociality and social forms and practices to take place.

Not all social forms evince the same types of interpersonal relations or offer the same outcomes. A more variegated, but coherent, conceptual framework to interrogate these forms could be worth exploring (Postill 2008). Such a framework must necessarily engage with questions of community and network, even if only to dismiss them. In many ways, though, the most important contribution that might arise from any comparative analysis of network and community

theories is the *way* in which these various theories have focused their attention on social groupings and practices: the *methods* they have used and the *issues* with which they are concerned. Difference in disciplinary understandings and applications create both confusion but also space for contestation and dialogue. By highlighting some of the overlaps and, perhaps more importantly, some of the differences between network and community theory, we can identify areas that are not currently receiving attention, or areas that are contested and ask questions about why. Do these suggest the need for reworking, modification or addition? Do we need to generate some new ideas and concepts to address new phenomenon? As Amit and Rapport (2002, p. 162) note,

Concepts such as culture, community and society [and, I would like to add, network] are not problematic if they are simply treated as useful heuristic tools to think with, not so much answers as repositories of questions we should be considering.

Notes

- 1 Though some of the discussions around web 2.0 appear to be replaying some of the same hopes and fears.
- 2 See, for example, a nettime thread on understanding networks started in response to a post by Ned Rossiter (<http://www.nettime.org/Lists-Archives/nettime-l-0604/msg00015.html>); or the AoIR thread by John Postill (<http://listserv.aoir.org/pipermail/air-l-aoir.org/2006-July/010274.html>) (28 February 2007). These examples are offered as illustrations only: the debates about community and about network are extensive historically and within and across disciplines.
- 3 Networks are broadly, though not exclusively, understood in these types of analyses as a mesh or interlinking set of nodal connections.
- 4 For example, online analyses of networks, predominantly though not exclusively using SNA methods (more on this later), examine patterns of connectivity: who is connected to whom; the density of connections; and determining bridging and bonding associations.
- 5 Solidary groups is Wellman's term.
- 6 This fits nicely with the rhetoric underpinning web 2.0 that users add value. However, it is arguable that each site has a critical mass limit. Some of the debates positing a decline in MySpace popularity suggest that this may be due in part to its 'oversubscription'.
- 7 My thanks to Ted Mitew for drawing my attention to these authors.
- 8 For example, *The New Network Theory* conference, Amsterdam, 28–30 June 2007.

- 9 An ANT understanding of network is not to be confused with the more commonplace understanding of networks discussed above: instead it is more concerned with relational associations and the result or outcome of such associations (Latour 2007).

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