Living Networked in a Wired World

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[includes concluding point 3, not in published paper]

The world is composed of networks – not groups – both computer networks and social networks. When computer networks connect people and organizations, they are the infrastructure of social networks. Just as a computer network is a set of machines connected by a set of cables (or airwaves), a social network is a set of people (or organizations or other social entities) connected by a set of socially meaningful relationships. Although this may be obvious to many computer scientists, the implications of living in a networked world are non-obvious.

Computer scientists have been centrally involved in a paradigm shift, not only in the way we think about things but in the way that society is organized. I call it the shift from living in "little boxes" (Reynolds, 1963) to living in networked societies. I am going to describe its implications for how we work, commune, and keep house, using a neologism called glocalization. Members of little-box societies only deal with fellow members of each of the few groups to which they belong: usually be they our homes, our neighborhoods, our workgroups, or our organizations. We are moving away from such a group-based society to a society in which boundaries are more permeable, interactions are with diverse others, linkages switch between multiple networks, and hierarchies (when they exist) are flatter and sometimes recursive.

The little boxes metaphor is that people are socially and cognitively encapsulated by all-confining, socially-conforming groups. Most people think of the world in terms of groups, boundaries and hierarchies (Freeman, 1992). They see themselves as belonging to a single work group in a single organization; they live in a household in a neighborhood; they belong to a kinship group (one each for themselves and their spouse[s]) and to voluntary organizations such as churches, bowling leagues and the Computer Society. All of these social structures appear to be bodies with precise boundaries for inclusion (and therefore exclusion). Each has an internal organization that is often hierarchically structured: supervisors and employees, parents and children, pastors and churchgoers, the Computer Society executive and its members. In such a little-box society, we only deal with the people in each of our bounded groups when we are participating as members of that group.

We have moved from hierarchically arranged, densely knit, bounded groups to less bounded and more sparsely knit social networks. (Actually, a group is a type of social network, one that is tightly bounded and densely knit, but it is cognitively easier to compare groups with more loosely bounded and sparsely knit networks.) Simple empirical observation has shown this shift in many milieus. Instead of hierarchical trees, management by network has people reporting to shifting sets of supervisors, peers, and even nominal subordinates. Unless people are tethered to assembly lines, their work relations often spill over their work group's boundaries, and may connect them to outside organizations (Wellman, et al., 1996). Organizations sometimes distrust sales people and purchasing agents because their jobs entail more contact outside the

organization than within it: they are what sociologists call marginal people who are not totally committed to one group.

Rather than belonging to a single family, people often have complex household relations, with stepchildren, ex-marital partners (and their progeny), and multiple sets of in-laws. People in the western world usually have more friends outside their neighborhood than within it: indeed, many people have more ties outside their metropolitan areas than within it (Wellman, 1999). People might attend several churches, and they may have to decide between going bowling or attending a Computer Society meeting. In short, while people think they are members of social groups, they more often function as operators of their social networks. (See the sidebar for pointers to more information about social network analysis.)

Although I have constructed my argument as a then/now contrast, people have always functioned in social networks to some extent. Consider the comings-and-goings in Jane Austen's preindustrial England. Whatever their "sense and sensibility," her novel's characters are forever galloping past their neighbors to visit their far-flung friends and relatives (Austen, 1811). Kenneth Scherzer has shown that guests traveled considerable distances to attend New York City weddings in the mid-19th century: they provided us with empirical proof by signing the wedding registers as witnesses (Scherzer, 1992). The telegraph enabled alert businesspeople by the middle of the 19th century to manage their affairs at a distance (Pred, 1973), intensifying a tradition of spatially dispersed business empires that traders had heretofore held together through kinship loyalties and written correspondence (Ferguson, 1998). Even before the coming of computer-mediated communication, cars, planes and phones maintained far-flung relations. For example, in the 1960s and 1970s, North Americans' important ties of sociability and support rarely were confined to their neighborhoods. Many were on the other side of the metropolitan area; some were across the continent or the ocean (Fischer, 1982; Wellman, 1999).

Characteristics of Computer Networks as Social Networks

CMC — such as the Internet, newsgroups and videoconferencing — makes it easier to be socially networked (Garton & Wellman, 1995):

CMC is usually asynchronous, allowing people in different time zones or on different schedules to communicate. For example, although the computer scientists our group has studied work in the same office, their different work schedules leads them to use e-mail (Haythornthwaite & Wellman, 1998).

CMC is rapid, fostering a high velocity of exchanges, sometimes ill-considered (Walther, Anderson & Park, 1994).

CMC supports emotional, nuanced, and complex interactions, belying early fears that it would be useful only for simple, instrumental exchanges.

CMC has taken on its own norms, procedures and ethos, with CMC participants showing greater creativity and emotional swings than those talking face to face (Sproull & Kiesler, 1991).

The absence of direct feedback in most CMC encourages more extreme forms of communication. People input messages to screens that they would never say to another person palpably present in person or on the telephone.

The ability of communications to be forwarded supports transitivity, as when messages get forwarded to friends of friends. The inclusion of headers in forwarded messages allows indirect ties to become direct relationships. This aids the exchange of information that cuts across group boundaries. Such crosscutting ties link and integrate social groups, instead of such groups being isolated in tightly bounded little boxes.

E-mail, the only widely available form of CMC, supports easy accessibility. This has led to a leveling of perceived hierarchies, with all feeling they have access to all. Email is not unique in this. Telephone networks also support easy accessibility, so much so that busy and reclusive people have constructed social (secretaries) and technical (voicemail) barriers to access. CMC will probably engender the same reaction, once techno-euphoria fades, with agents both providing background detail about callers and keeping unwanted callers at a distance.

The ease of sending messages to large numbers of recipients allows participants to remain in contact with multiple social milieus.

E-mail is especially useful for maintaining contact with "weak ties" -- persons and groups with whom one does not strong relationships of work, kinship, sociability, support, or information exchange. Because weak ties are more socially heterogeneous than strong ties, they connect people to diverse social milieus and provide a wider range of information (Granovetter, 1982).

CMC's accessibility, velocity and multiple-message characteristics indirectly connect the entire world in five steps or less (White, 1970). Yet, unlike computer networks in which all nodes are ultimately connected, there is significant decoupling in social networks. Hence, information diffuses rapidly through computer-supported social networks, but neither universally nor uniformly (Valente, 1995; Wellman & Berkowitz, 1997).

Although most experimental studies of CMC look only at screen-to-screen relationships, people who relate to each other online often relate to each other offline: face-to-face, by phone, or even on paper (Walther, Anderson & Park, 1994). Many studies have focused on CMC without realizing that such interactions are only part of the life that extends beyond screens. We can only comprehend the role of CMC if the total tie is taken into account, and not just the on-screen relationship. For example, our group's study of a wired suburb has found that extremely fast and accessible Internet access spurs neighborly interaction as well as far-flung ties. Neighbors use the Internet to arrange get-togethers and to organize in opposition to real estate developers. This neighborly interaction is not surprising: Until wireless CMC becomes prevalent, people are largely tied down to their computers at their office or home desktops. This is the phenomenon we call glocalization: the situation of being intensely global as a Net surfer while

being firmly rooted to the area around the computer screen and keyboard (Hampton & Wellman, 1998; Wellman & Gulia, 1999).

Computer-mediated interactions are socially situated as well as spatially situated. Thinking of computer networks as social networks can move the study of human computer interactions beyond looking only at the standard HCI concerns of person-screen or person-screen-screen-person interactions. Even when only two persons communicate, they are not dancing duets in isolation. Their interactions are conditioned by the availability of others to supply resources, cause problems, or enforce norms.

Moreover, unlike laboratory experiments of CMC, in real life CMC is often between people who have different social characteristics — such as gender and lifestyle — and different social positions — such as supervisors and subordinates and core and periphery. For example, our group's study of desktop videoconferencing saw supervisors initiating more contact than subordinates. Some coworkers in a separate office 100 kilometers away maintained autonomy when their videoconferencing equipment frequently "broke down".

Even when there is unfettered computer connectivity, not all persons or organizations are directly connected. A computer network is not in itself a social network: it is the technological infrastructure that enhances the ability of people and organizations to communicate for better or worse.

How does living in networks differ from living in groups?

1. It enhances the ability to connect with a large number of social milieus, while decreasing involvement in any one milieu.

2. It decreases the control that any one social milieu can have over us, while decreasing the commitment of any one milieu to a person's well being.

3. It requires people to actively maintain their sparsely-knit ties and fragmented networks. By contrast, in groups it is easier for people to sit back and let group dynamics and densely-knit stucture do it for you. That is why friendship networks are less apt than kinship networks to persist in times of overload.

4. It shifts interactions from those based on characteristics people are born with — such as age, gender, race and ethnicity — to characteristics that they have adopted throughout the life course — such as lifestyles, shared norms and voluntary interests.

5. It fosters "cross-cutting" ties that link and integrate social groups, instead of such groups being isolated in tightly-bounded little boxes.

6. It has increased choices while reducing the palpable group memberships that provide a sense of belonging.

7. In short, it has reduced the identity and pressures of belonging to groups while increasing opportunity, contingency, globalization, and uncertainty through participation in social networks.

*To learn more about social network analysis, see the following sources: Scott, 1991; Wasserman & Faust, 1993; Wellman, 1997; Wellman & Berkowitz, 1997. The International Network for Social Network Analysis (INSNA) has a website: http://www.heinz.cmu.edu/project/INSNA/.

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