# Designing the Internet for a Networked Society:

## Little Boxes, Glocalization, and Networked Individualism

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File cacm2b-all.doc (3Sept01) *Communications of the ACM, May 2002*

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**The Internet in a Networked Society**

*Little boxes made of ticky-tacky*
*Little boxes, little boxes, little boxes*
*All the same.* [Malvena Reynolds, "Little Boxes" (song) 1963]

"*Only connect"* [E.M. Forster, *Howard's End,* Chapter 22, 1910]

*"Community, like love, is where you find it."* [B. Wellman, [1], p. 130]

The developed world is in the midst of a paradigm shift in the ways in which people, organizations and institutions are connected. Our social systems – at work, in the community, at home, and elsewhere – have moved from being bound up in hierarchically arranged, relatively homogeneous, densely knit, bounded groups ("little boxes") to become social networks.

In a networked society, boundaries are more permeable, interactions are with diverse others, links switch among multiple networks, and hierarchies are flatter and more complex [2]. People in networked societies live and work in multiple sets of overlapping relationships (see Figure 1: glocalization and networked individualism). They cycle among different networks. Many of the people they deal with are physically dispersed and do not know one other (i.e., the social networks are "sparsely-knit").

> Figure 1: Three Models of Community and Work Social Networks <

The shift has many manifestations, ranging in scale from the interpersonal to the international. Employees (especially professionals, technical workers, and managers) report to multiple peers and superiors. Work relations spill over their nominal work group's boundaries, and often connect employees to outside organizations. Management by network has people reporting to shifting sets of supervisors, peers, and even nominal subordinates. Organizations form complex networks of alliance and exchange, often in transient virtual or networked organizations. Trading and political blocs have lost their monolithic character in the world system.

Computer networks and social networks resonate with each other. Because the much of the developed world had already started becoming a networked society, the Internet rapidly took root in it. In return, the Internet's flexible openness to intermittent communication with all comers encouraged the ongoing transformation of work and community into social networks.

How did the turn away from groups to social networks facilitate the proliferation of

the Internet? Think of a traditional society. People's lives are encapsulated in villages and small work groups in which all are directly connected and boundaries to the outside are tight. In such a society, almost everyone would know each other and be able to communicate easily by walking door-to-door or glancing at nearby workers. There would be little isolation, much social control, and sporadic contact with the outside world. Almost all communication and information-seeking would be face-to-face, enlivened only by occasional forays into – or from – the outside world. Social network analysts describe such a society as containing "densely-knit" and "tightly-bounded" "clusters". I call it a "little box" society after Malvena Reynolds' song. Introverted little box societies have little need for the Internet (see Figure 1).

Much groupware has tried to provide computer-mediated support for replicating this door-to-door, little box society among physically dispersed people. Modeled on villages or small work groups, such groupware assumes a small set of people who communicate frequently, routinely barge in on each other, have a broad range of relationships, share much information, and are aware each other's behavior and resources. This sort of groupware has not become widely used, with the exception of instant messaging – best suited for focused, interdependent teams in crises and *Lotus Notes* – best suited for communication within complex organizations.

Although nostalgic pastoralist dreams continue, the developed world has functioned for decades more in social networks than in little boxes. Consider the nature of community in the pre-Internet 1960s and 1970s. Only 22% of Torontonians' 17 most active ties with friends and relatives lived within a mile. People had only visited at home with 1 or 2 of their 4 active neighbors. About as many (21%) of these friends and relatives lived more than 100 miles away: physically reachable only by airplane, telephone, or long car rides. The median distance apart was 10 miles (15 km) – scarcely walking distance [1]. Similar studies throughout the developed world support these findings [3].

Developments in transportation and communication (long-distance telephone as well as the Internet) – along with social changes wrought by the Industrial Revolution and the development of nation-states – have made neighborhoods permeable containers. People live at home – and usually operate with spouses as joint household units. Local places remain important – in part because we are rooted to our wired-in computers. Nevertheless, the neighborhood is only one part of our lives. Households reach out from their domestic bases to far-flung ties with friends and relatives. Few people are immersed in a vibrant neighborhood life. Relationships are glo***C***alized – both global and local (Figure 1).

**The Internet in Everyday Life**

Robert Putnam has documented the decline of social capital in the United States since the 1960s. Fewer people get together in voluntary organizations or participate in family dinners and picnics [4]. There is uneven access to such social capital in different neighborhoods, cities, and states. The turn towards a networked society suggests that informal interaction in networks may be replacing group participation under Putnam's radar.

How does the Internet fit into this? There have been fears that by immersing people in their monitors, the Internet would weaken face-to-face community and domesticity. Yet there have also been hopes that the Internet would facilitate new forms of voluntary communities based on shared interests and would even form the relational basis for increased face-to-face contact [5]. The Internet's distance-free connectivity might enable people to transcend their area's lack of social capital.

For years, the debate was based mostly on assertion and anecdote. However, several sets of survey data have recently emerged that shows the Internet fits nicely into networked societies [6]. The characteristics of the Internet allow it to support large numbers of transitory relationships, and enable people to maneuver among multiple work and community networks. The Internet's architecture makes no assumptions that the community or neighborhood group is closed or cohesive, or that even that the world is composed of groups. Of course, these Internet characteristics have their costs. Where doors had been unlocked in traditional villages (only the village itself had been gated), contemporary urban places have locked doors and offices. Where traditional groupware can often support the visibility of all to all and the access of all to all files, Internet inhabitants have to develop elaborate routines to guard their accessibility, prioritize contact, form evanescent grouplets, and compartmentalize who has access to what.

Rather than forming a unique entity, the Internet has been incorporated into everyday life: at work and in the community. For every tie that operates only online, there are hundreds that combine email contact with face-to-face and contact. These suggest that there has been unwarranted fear that the Internet will destroy community, and also overstated hopes that the Internet would bring supportive, voluntary communities of choice to all. Moreover, the continuing (although shrinking) digital divide means that the Internet is providing less social capital to those of low socioeconomic status and racial and linguistic minorities [7]

For example, the essentially flat lines in Figure 2 for face-to-face, telephone and postal contact show that as email use rises, face-to-face, telephone and postal contact with others neither decreases nor increases [8].[1] The majority of reported contact is by

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[1]These data come from "Survey2000," obtained from 47,176 respondents on the National Geographic Society's website, *http://survey2000.nationalgeographic.com/* . These statistics should only be taken as rough indicators. 1. The data were collected in Fall 1998, at a time when fewer friends and relatives were available online. The greater number of people using the Internet in Fall 2001 – which means the greater number of friends and relatives available for contact – has undoubtedly increased the importance of the Internet for contact. 2. Contact rates were fallibly reported by survey respondents. 3. This was not a random sample but a self-selected web survey of visitors from around the world to the *National Geographic* site. 4 Only U.S. and Canadian data (N=39,211) data are reported here. 5. Although the demographics of the respondents are statistically biased towards high socioeconomic status and computer use, the respondents are less computer-involved than most ACM members. For example, less

telephone or face-to-face. Even among relatively heavy email users, those using it daily, email comprises only about half of their contacts with friends and kin. Face-to-face contact continues to be frequent with those living nearby and telephone contact with those living both nearby and far away. Indeed, the telephone remains the most frequently used mode of contact with nearby friends, albeit closely followed by email. Thus, email increases the total volume of interpersonal contact by adding its connectivity to continuing levels of face-to-face and telephone contact.

> Figure 2 about here <

**The Local Internet**

Many of us are in “place-to-place” community and work situations. This is not a place-less society, for until nomadic wireless systems develop, people will be wired into homes and offices as they connect locally and globally.

Not only are people wired into local spaces, the Internet itself facilitates local as well as global connectivity. For example, the 8 students in my graduate School of Information Management and Systems course at Berkeley (Spring 1999) tracked the origins of all email they received in 24 hours. 57% came from within Berkeley, and another 15% came from elsewhere in the San Francisco Bay area. Even the foreign email was largely “local” for most were messages to two Norwegian exchange students from friends back home in Bergen.

Survey2000 also shows the importance of local email. Nearly three-fifths (58%) of people's daily email contact with friends is to those living within 30 miles/50 km, as is more than two-fifths (42%) of their email contact with kin (Figure 2). Indeed, the volume of daily users' email contact is highest with nearby friends (118 days per year), followed by distant friends (85 days per year), distant kin (72 days per year), and the less numerous nearby kin (52 days per year). Within 30 miles, the Internet is important but trails face-to-face and telephone contact for interactions with friends and relatives. Beyond 30 miles, email joins the telephone as the principal means of keeping in contact.

Our ethnographic and survey-based Netville study of people moving into a highly wired, new Toronto suburb in the late 1990s provides suggestive information about how email can increase local community [9]. A high-speed 16 Mb ATM network connected many residents to each other and to the Internet. Although we were not able to do before/after studies of being wired, we do have a natural wired/non-wired comparison as administrative problems prevented many homes from being wired. Table 1 shows that the "wired" residents on the high-speed network are aware of more neighbors, range more widely in their neighboring, and visit more neighbors in-person. Email (including a local discussion list) is especially useful for forging the weaker ties of

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than 1% primarily use Unix. 6. The within/beyond 30 miles (50 km) distinction for distance to friends and relatives that is used here is built into the closed-ended survey. We are unable to specify distance with more granularity.

acquaintanceship that help knit a community together. Messages ranged from planning barbeques to offers for babysitting to alerts about suspicious vans cruising the streets during a spate of neighborhood burglary. Wired residents also used private and list emails to organize local political struggles against the real estate developer and the Internet service provider.

> Table 1 about here <

Nor does local involvement come at the expense of long-distance connectivity. Wired residents are better able than non-wired residents to maintain their social capital, obtaining more contact and support from friends and relatives living more than 50 km away. This is not strongly related to distance: those who are wired maintain the same level of after-move social contact with ties stretching beyond 500 km as they do with ties living between 50 and 500 km away. However, distance matters for the in-person delivery of support: more support is provided by ties living 50-500 km away than by those living more than 500 km away [10].

**The Rise of Networked Individualism?**

In sum, the acceptance of the Internet has both benefited from and facilitated the social transformation of work and community, from groups in little boxes to glocalized, ramified social networks. Rather than being an isolated technical system, the Internet has become incorporated into everyday life and is increasing North Americans' stock of social capital.

As social systems change, the Internet changes in a feedback process. The relationship is less one of hard technological determinism than of soft "social affordances" creating opportunities and constraints (to use Erin Bradner's felicitous term). As such, design for the Internet can usefully take into account important social phenomena, such as the characteristics of users (e.g., gender, skills), social relationships (strong/weak ties; specialized/broad ties), structural positions (power in organizations), social network structure (densely-knit, loosely-bounded), and social network composition (the spatial and temporal dispersion of kin, friends and coworkers in communities of shared interests). Designers can respond to how the world functions in social networks rather than try to shape interactions into misspecified group templates [11].

What next? Mitel computer scientist Thomas Gray forecasts: "In the past you adapted to the network. In the future, the network adapts to you." (Introductory remarks to the Micon conference, Ottawa, August 24 2001). Social networks as well as computer networks will become individually adaptive as the Internet experiences increased broadband use, global ubiquity, portability, 24x7 availability, and personalized services.

There will be a change of emphasis from place-to-place connectivity – based on the household and the workplace – to person-to-person connectivity – based on individuals making and remaking connections in their social and computer networks [3] (see Figure 1: networked individualism). This will evoke needs for new forms of managing personalized social networks. For example, the ContactMap manager described by Nardi and Whittaker elsewhere in this issue helps people to become aware of and

manage their complex, evanescent social networks. Another application, IKNOW, addresses a problem of network societies [12]: How do you discover and use the resources of indirect ties ("friends of friends")?

Computer scientists look forward as they design; ethnographers and survey researchers look back at what people have experienced. Simultaneously looking backward and forward, like Janus, offers integrating perspectives in which the future and the past mutually inform each other. In such ways, designing for a networked society benefits from the interplay between computer science and the social sciences.

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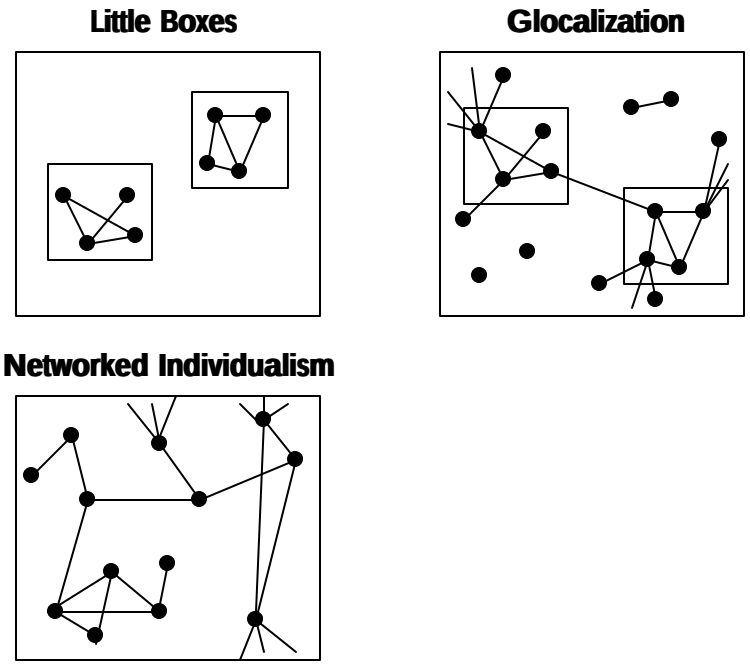
## Acknowledgments

Research underlying this article has been supported by the Bell University Laboratories, Communications and Information Technology Ontario, Mitel Networks, the Office of Learning Technologies (Human Resources and Development Canada), and the Social Science and Humanities Research Council of Canada. Discussions with colleagues have been invaluable, especially Ronald Baecker, Jeffrey Boase, Erin Bradner, William Buxton, Manuel Castells, Wenhong Chen, Danyel Fisher, Laura Garton, Thomas Gray, Keith Hampton, Caroline Haythornthwaite, Marti Hearst, Paul Hoffert, Emmanuel Koku, Marilyn Mantei Tremaine, Nancy Nazer, Anabel Quan Haase, Janet Salaff, and Beverly Wellman. Wenhong Chen, Keith Hampton and Anabel Quan Haase provided valuable collaboration.

Table 1: Wired and Non-Wired Neighboring in "Netville"

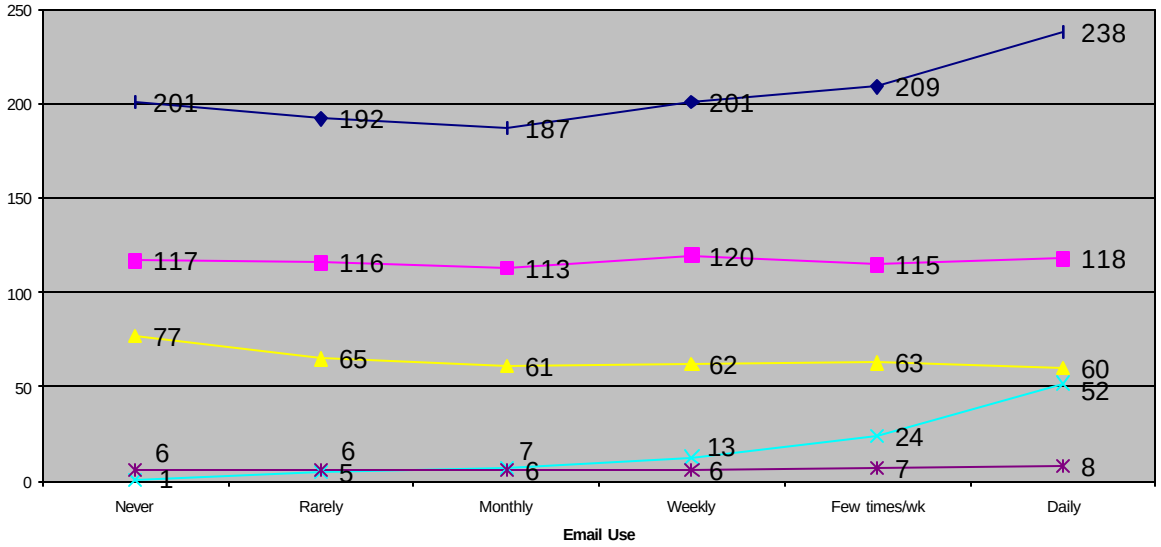
| Mean Number of Neighbors | Wired *(N=37)* | NonWired *(N=20)* | Wired / NonWired Ratio | Significance Level *(p <)* |
|---|---|---|---|---|
| **Recognized by Name** | 25.5 | 8.4 | 3.0 | .00 |
| **Talk with Regularly** | 6.3 | 3.1 | 2.0 | .06 |
| **Invited into Own Home** | 3.9 | 2.7 | 1.4 | .14 |
| **Invited into Other's Home** | 3.9 | 2.5 | 1.6 | .14 |
| **Number of Intervening Lots to Known Neighbors** | 7.5 | 5.6 | 1.3 | .08 |

**Figure 1: Three Models of Community and Work Social Networks**

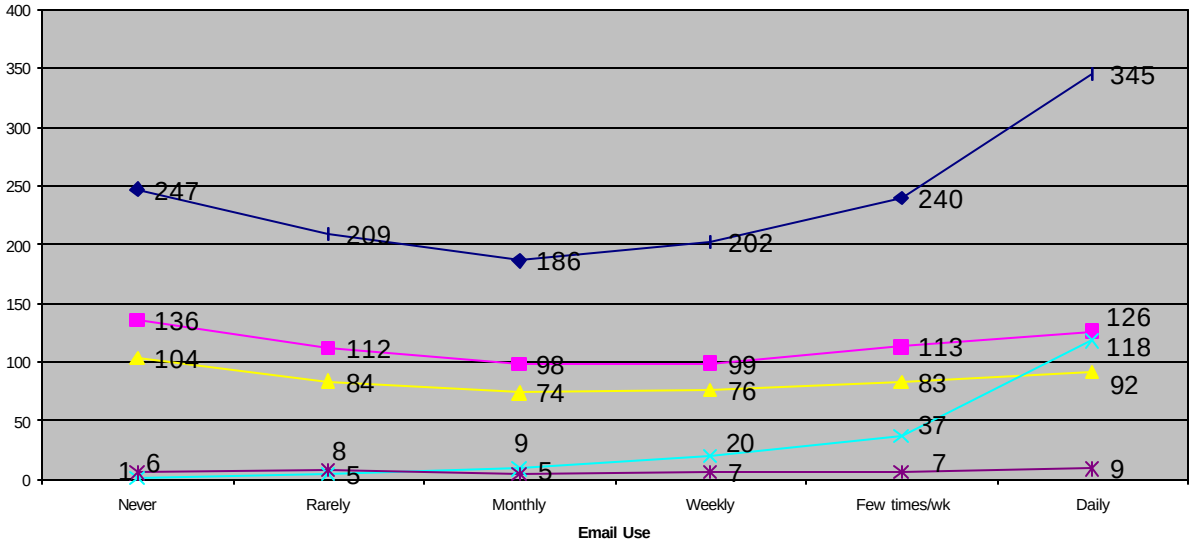


## Figure 2: Contact with Kin and Friends – Near and Far – Days per Year

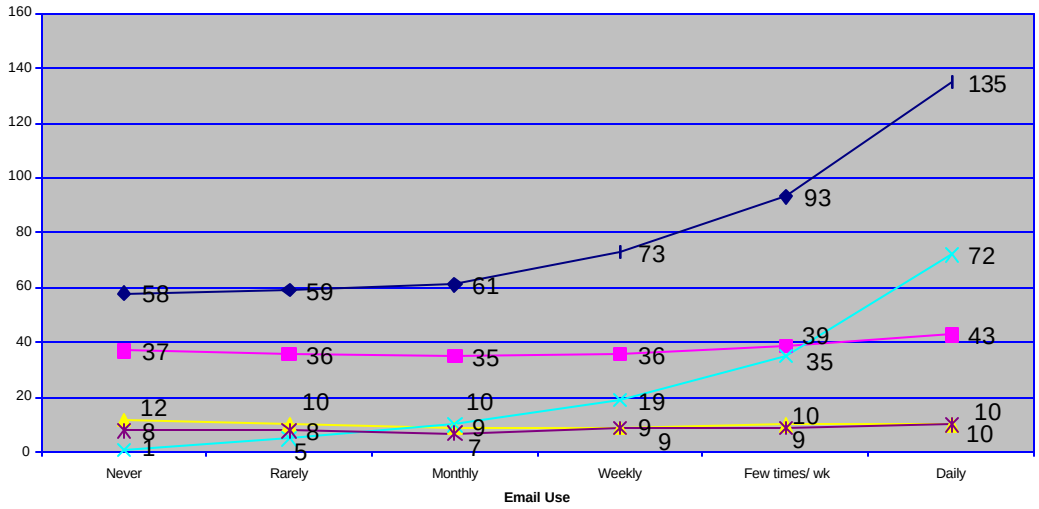
**a: Contact with Kin Within 30 miles (50 km)**




**b: Contact with Friends Within 30 miles (50 km)**



**c: Contact with Kin Beyond 30 miles (50 km)**




**d: Contact with Friends Beyond 30 miles (50 km)**