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Community Technology and Democratic Rationalization*

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Abstract

The objective of this paper is to explore questions of human agency and democratic process in the technical sphere through the example of "virtual community." The formation of relatively stable long term group associations - community in the broad sense of the term - is the scene on which a large share of human development occurs. As such it is a fundamental human value mobilizing diverse ideologies and sensitivities. The promise of realizing this value in a new domain naturally stirs up much excitement among optimistic observers of the Internet. At the same time, the eagerness to place hopes for community in a technical system flies in the face of an influential intellectual tradition of technology criticism. This eagerness seems even more naive in the light of the recent commercialization of so much Internet activity. Despite the widespread skepticism, we believe the growth of virtual community is significant for an inquiry into the democratization of technology. We show that conflicting answers to the central question of the present theoretical debate--Is community possible on computer networks?—generalize from particular features of systems and software prevalent at different stages in the development of computer networking. We conclude that research should focus instead on how to design computer networks to better support community activities and values.

Introduction

Unlike the broadcast media, computer networks are not merely additional "voices" heard in everyday life, but actually construct a "virtual" social world paralleling the world of face-to-face communication. Users establish all kinds of social relations in this virtual world and undergo experiences and interactions that are significant for their personal development. Two distinct models of the online world have emerged since the mid 1980s when networking first reached a moderately large user base. We will label them "the consumption model" and the "community model."

Today the consumption model is the one that we hear about most often in connection with the Internet. The germs of the consumption model can be found in the early efforts to put research centers, libraries and other information generating and storing institutions online. These virtual worlds offer a limited set of options to users who interact individually with the software for the purposes of information search and retrieval. As more and more middle-class users went online, it dawned on business that techniques for handling information could be adapted to sales. The conceptual step

from information retrieval to retrieval of goods and services was easy to make and a promising new virtual market opened up. Technical solutions ensuring higher speed and capacity of transmission, and graphical point-and-click interfaces further qualify the Internet as a global electronic mall. The population inhabiting this space consists of free, active consumers, viewing, picking, and clicking its way to goods. Users scarcely talk to each other (as in traditional brick-and-mortar commercial sites), and never see or sense each other's presence. Privacy, anonymity, reliability, speed, visual appeal are desired properties of this virtual space mobilizing armies of designers in search of competitive technical solutions.

Despite the excitement generated by these commercial applications, the older practice of human communication on computer networks may well occupy more users more of the time. In the early days of computer networking, communication was the main public application. The structure of the virtual worlds opened by the early communication applications was not given in advance. It was not ready-made for users to enter as they do a room in a building, which bears evidence of its purpose in the design of the space, the furniture, the walls and lighting. Instead, users had to work together to define the online world they inhabited by imposing a *communication model* on the emptiness of cyberspace. They might define their shared online world as a meeting, a conference, a work team, a class, an information exchange among hobbyists or medical patients, and so on. The performative establishment of such communication models in the virtual world continues today in online settings such as newsgroups and computer conferences. It is a generically new type of social act which has ethical and political implications. In this act, users creatively invent the computer as a medium, not necessarily confined to the norms and functions embodied in the technology by its designers, nor simply reproducing practices originating in their face-to-face experience (Feenberg, 1989: 266ff). Through the establishment of communication models, computer networks become an environment within which communities form and ways of life are elaborated. What is the quality of those communities and ways of life? This is the first question to which this paper is addressed.

Community is the scene on which a large share of human development occurs. And it is a fundamental human value. By online community we mean the formation of relatively stable long term online group associations. Community involves the participatory engagement in a collective practice aimed at constructing collective identities. As such, communities are inherently capable of self articulation and mobilization vis-à-vis society at large. We would like our notion to accommodate features originating in the intellectual heritage of John Dewey who saw community as connected to participation, commonness, and shared beliefs and hence as inherently democratic: "Regarded as an idea, democracy is not an alternative to other principles of associated life. It is the idea of community life itself" (Dewey, 1927). On these terms, the question of virtual community is significant for an inquiry into the democratization of technology.

In recent years we have seen increasing public debate about new issues involving technology in relation to the environment, medicine, and education, as well as the familiar problems of food purity, automation, job security, and worker health and safety. To the extent that the demands of lay actors gain influence in these domains, the scope of democratic public life expands to include technology. We call this process

"democratic rationalization" in a sense defined below. The Internet opens new struggles between contesting visions of the future in cyberspace. The objective of this paper is to explore dimensions of virtual community that relate to these broader questions of human agency and democratic process in the technical sphere. We argue here for the possibility of an outcome responsive to the need for community. Imposing the community model of the Internet is a political intervention in a society such as ours in which technology builds the scaffolding of social life.*

We will start our inquiry with a brief excursion into the theoretical debate on virtual community. We argue the participants in this debate generalize from particular features of systems and software prevalent at different stages in the development of computer networking to conclusions assumed to apply to computer mediated communication as such. The debate has not so far taken into account the results of empirical studies that show the importance of user agency in the shaping of online community. Constructivist technology studies provide a theoretical framework for generalizing from these empirical studies and open larger questions of democratic intervention into the evolution of the Internet (Feenberg, 1995: chap. 7). We argue that instead of being taken for granted as intrinsic to computer networking, existing configurations of the technology should be questioned, debated and eventually reformed to better support community activities and values. Rather than debating the possibility of online community, research should focus instead on how to design computer networks to support it. In the concluding sections of this paper, we review several important terrains of online community activity and research where the future of the Internet is being decided.

The Debate Over Virtual Community

In this section, we review the different visions of online communication of early enthusiasts, critics, and postmodern theorists. We do not hold these positions ourselves, but attempt to go beyond them to a new and more empirically based appreciation of the wide-ranging potentialities of the Internet. By contrast, all these commentators base their judgment on features of the virtual world defined largely by the prevailing groupware. Changes in software, combined with changes in the user base of computer communication, account for the radically different conclusions they reach.

The Conditions of Virtual Community

Some of the earliest writing on computer networking promised universal interconnectedness in electronically generated communities, a "network nation" (Licklider and Taylor, 1968; Hiltz and Turoff, 1978). These writers assumed implicitly that the structure of a technology determines its use and subsequent social impacts. That impact, they claimed, would be revolutionary because computer networking made it possible for the first time to mediate small group activity. The telephone mediates one-to-one interactions, and radio and television broadcasting mediates one-to-many interactions. But small group activity, many-to-many communication, had escaped electronic mediation until the development of computer

networks. Computer mediated communication was expected to have social consequences comparable in magnitude to other forms of electronic mediation.

The early enthusiasts believed that the technical possibility of mediated group interaction would enhance and improve the quality of life, revivify public discourse, and favor class, race and gender equality, and participatory forms of social organization. These ideas represented the optimism of a generation of engineers and computer enthusiasts heavily involved in creating the Internet, computer-conferencing systems, and bulletin boards. Eventually, similar notions were taken up by public discourse and, for good or ill, gave birth to a persistent metaphor: the Internet as a community technology. Because the technology was still in its earliest stages, this popular metaphor influenced design with results we see today.

The first publicly accessible virtual communities organized themselves not on the Internet but on independent computer conferencing systems such as EIES (Electronic Information Exchange System) (Hiltz and Turoff, 1978). Although conferencing software was not widely used by current standards, it had a significant impact on the image of computer communication. Early computer conferencing designers such as Murray Turoff developed software that met what we consider the four minimum technical conditions for effective online community. These conditions include the possibility of:

- 1) Bounding: forming closed online groups;
- 2) Tracking: listing how far each participant has read in community discussions;
- 3) Archiving: maintaining accessible records of community discussions;
- 4) Warranting: ensuring stable and (most of the time) genuine participant identities.

Whether other conditions of community must be met depending on the nature of the interests and tasks of specific online groups remains an important research question. We will return to the problem of the conditions of community in the concluding section of this paper.

Among the creators of the Internet, there were also community oriented visionaries. Although they had much less control over the shape of their evolving system, they too saw in it the promise of renewed community life.* But as the Internet became the dominant medium of computer communication, the early vision of online community met with problems. Internet groupware in general public use does not always support the kind of friendly, supportive interaction that early Internet users and the original computer conferencing enthusiasts experienced on their systems.

The paradigmatic group communication applications found on the Internet were and still are mailing lists and newsgroups. The design of newsgroups supports the values of free speech, universal participation, mutual aid and information sharing. However, important defining attributes of community life are missing. Because they are completely open, the acceptance of common rules, mutual respect, stable identity and authentic communication are not easily assured. Hence the notorious frequency of flaming and lack of trust experienced by participants in these fora (Sproull and Kiesler, 1991: 49ff). It is impossible to know who is reading as passive participation leaves no traces on the system. This can be discouraging for users who may feel isolated and

ignored in the midst of their community. Many Internet users are turned away by the recent assault of commercial advertising and outright hoaxes such as pyramid schemes. Netiquettes encode social practices for regulating behavior in newsgroups, but they are voluntary and have had only limited success.

Mailing lists provide for various degrees of restricted participation and performance through partly technological solutions - for example closed and moderated groups. Yet they too suffer many of the problems of the newsgroups. To the degree that mailing lists represent more strictly governed communication spaces compared to newsgroups, this has happened at the expense of vesting extraordinary power in the gate-keepers, the persons acting as list owners or moderators. Depending on the type of mailing list, these gate-keepers can allow members in or force them out of the list, as well as preview and censor contributions. It is as difficult to trace passive participation by readers, or "lurkers," on mailing lists as it is in newsgroups. Furthermore, there is little or no continuity in the exchanges since the database cannot be accessed thematically and past messages are usually not easily accessible. (It should be noted that this is changing in the latest generation of listserv programs.)

Trouble in Cyberspace

Because mailing lists and newsgroups were used at first by computer scientists and enthusiasts and drew on actually existing professional solidarities and shared values, their lack of community oriented software features did not pose a grave problem. Those cozy beginnings are a thing of the past. Dutton (1996) refers to the new state of online affairs exemplified by the difficulties in building community on Santa Monica's public electronic system: "Much is said about the strong norms within the Internet community, forgetting how homogeneous a community it serves. With the growth of commercial use, the expansion of its user base and the diminishing influence of old timers on this network, these norms are likely to be increasingly challenged" (Dutton, 1996: 285). In the face of deteriorating online morals, Dutton calls for innovative approaches to the development of rules and regulations for public electronic networks. If left normless, he contends, key participants will be chased away and the viability of these fora will be threatened.

But not everyone thinks that a solution is possible. Observing the problems of community-building on the publicly accessible Internet, a number of theorists and commentators have concluded that this nascent social space is morally "inert" and socially disruptive. This is Albert Borgmann's view of what he calls "hyperintelligent" computer networks. "More deeply considered, however, the nervous system of hyperintelligence will disconnect us one from the other. If everyone is indifferently present regardless of where one is located on the globe, no one is commandingly present" (1992: 105). Borgmann fears that we can easily make people on a computer network vanish when we need them no more. Not only is communication more superficial, the network reduces our chances of meeting people face-to-face. In this way "the immobile attachment to the web of communication works a twofold deprivation of our lives. It cuts us off from the pleasure of seeing people in the round and from the instruction of being seen and judged by them" (1992: 106).

Commitment as a *conditio sine qua non* of community is also at issue in Neil Postman's critique of the Internet (Postman, 1992). Postman argues that the very

concept of community implies being together (from the Latin root *cum*) in combination with *munis*, meaning obligation. Network communities, insists Postman, lack this essential feature of common obligation. He argues that applying the community metaphor to groups of people associating over computer networks compromises the genuine notion of community.

In an eloquent account of his experience in cyberspace, Mark Slouka (1995) complains that online we inhabit worlds "cut loose from their moorings in reality." He sees a substantial risk involved in setting up residence in these "metaphorical communities," the risk of devaluing the significance of physical reality. Turning their backs to the "real world," "cyberists" enter a "hybrid world" in which "every potential virtue became its own dark double; in which freedom became the freedom to abuse and torment; anonymity, the anonymity of the obscene phone call; and the liberation from the physical body, just an invitation to torture someone's virtual one. With the checks and balances of the real world barred at the door, all the worst in human nature quickly sets up shop" (1995: 54). These observations lead Slouka to the conclusion that morality matters only within the bounds of the physical world. He argues that there can be no morality in heaven, hell, or cyberspace.

Strangely, many of these apparently negative traits of online communication are evaluated positively by postmodern theorists who see in the Internet a paradigm of desirable social transformations (Turkle, 1995; Stone, 1995). The liberation from the body and the unlimited freedom to join and leave virtual groups that the critics fault appears to these theorists as a positive characteristic of the medium. They see a new culture emerging in the practices of multiple identity made possible by the users' disembodiment. Invisible, the user can encounter others on his or her own terms, practice virtual "cross-dressing," adopt fantasy personas, and unleash repressed dimensions of the self.

As Sherry Turkle puts it, online interaction "brings postmodernism down to earth....Multiple viewpoints call forth a new moral discourse....The culture of simulation may help us achieve a vision of a multiple but integrated identity whose flexibility, resilience, and capacity for joy comes from having access to our many selves" (1995: 268). A. R. Stone makes a similar point around the problem of online "warrantability," or accountability. Who or what is the person one encounters in an online community? The difficulty of settling this question in the old way offers opportunities for experimentation and self-transformation (Stone, 1995: 87).

Deterministic Assumptions

Although the authors discussed here follow different lines of argumentation, they all seem to share the assumption that the technical structure of computer networks will largely determine the character and the quality of the communication they make possible. Presumably, technical feasibility will transform prevailing practice, overriding the cultural ethos handed down from the past. They identify four features of online communication that seem particularly important in this context.

1. As noted above, computer communications mediates small group activity. Communities can assemble online despite the obstacles of time and space. This feature of the new systems was the basis for the optimism of the early enthusiasts. But other features appear decisive to the critics and postmodern theorists.

2. They argue that the narrow bandwidth of the online communication channel is the major difference between the “virtual” and the "real world." The social contexts within which the acting subjects are situated in cyberspace is as thin and ephemeral as the flow of electronic signals set into motion by the fingers hitting the keyboard. The critics see in this a diminishing of experience itself; the postmoderns see it as an opportunity to unleash fantasy.

3. Universal interconnectedness and the reduction of context blur human values and choices in a universal relativism. Every piece of information is equally valuable and every communication partner is equally present. The critics conclude that nothing is really valuable and no one is really present. The postmoderns seize on the liberation promised in a relativistic universe without Cartesian subjects and coordinates. Postmodern individualism can thrive in the new virtual environment where everyone is responsible for their own values and mobility between communities undermines conformist pressures.

4. Because of the anonymity of computer interaction, every act vis-à-vis other participants is equally permissible. The critics charge that under these conditions morality is impossible, while the postmoderns find in anonymity the opportunity for creating a new, more tolerant, and more self-conscious morality.

The various authors differ in the degree to which they share these deterministic premises. The critics tacitly assume that certain obvious technical features of computer networks define the social relations they mediate. The postmodern theorists appreciate the role of user practices and appropriations. However, the users who interest them are precisely the ones who appropriate the very features of the technology the critics deplore. They fail to highlight the potential variety of outcomes where users appropriate the network for different purposes. Thus in neither case is there much room left for the sort of stable, predictable environment and personal identities supporting committed exchanges we usually associate with the idea of community.

The Social Construction of Online Communities

Advocates of online community, critics of networking, and postmoderns all remain preoccupied with the benefits and dangers to community arising from the features or limitations of network technology. In contrast, sociologists and cultural analysts of cyberspace have provided empirical accounts of what actually goes on in online social groups. These researchers have concluded that the online social space is not governed by the technical characteristics of the network but is socially constructed.

Empirical studies have shown that:

1. Participants find ways to overcome the narrowness of the communication channel and, manage to create personal images of each other despite it (Walther et al., 1994; Walther and Borgoon, 1992).
2. Rather than operating in ways dictated by the structure of the network, participants actively appropriate what is available, at times using the technical features of the system and preexisting cultural resources in unexpected ways (Contractor and Seibold, 1993; Contractor and Eisenberg, 1990).

3. Participants create dynamic and rich communities by inventing new forms of expression and through interactive negotiation of meanings, norms and values (Reid, 1991, 1995, Baym, 1995; Watson, 1997).

4. Different online communities demonstrate distinctive normative orientations established and maintained through written ethical codes - "netiquettes," and through "metacommunication" (see Baym, 1995, Herring, 1993, Feenberg, 1989, Dutton, 1996).

It is interesting to contrast this sociological literature with the critical approaches outlined in the previous section. The social research does not deny the existence of problems such as those the critics identify, but it blames them on the way users appropriate the technology rather than on technical features of computer networking. For example, an online hooligan showing blatant disregard for group norms no doubt takes advantage of certain technical affordances (e.g. free and often anonymous access to the discussions of a group), but these might be blocked or altered by different configurations of software or social organization. From this non-deterministic standpoint the online environment embodies both obstacles and opportunities for community. Along with obvious features, it contains "dormant affordances" that await discovery and incorporation in new community-building practices.

From Determinism to Agency

The Politics of Technology

Early enthusiasts, critics and postmodern theorists, emphasize a few general affordances vis-à-vis an unspecified and broadly conceived user population. Empirical studies show that in practice, interacting users appropriate the technology as members of particular collectivities with particular goals in mind. In that context, they manage to discover and enact new affordances not always perceivable through abstract deduction from the obvious technical features of a system.

The different positions regarding the Internet's community-building potential correspond roughly to Langdon Winner's (1986) distinction between technologies that are "inherently political," and technologies that acquire political implications through contingent features of design. Is the very technical structure of the Internet biased against community formation, or is its impact a matter of user initiatives and design choice? We believe the latter position is correct. But that opens up important questions concerning user agency in technological development.

The Social Construction of New Communication Technologies

Social constructivists (Pinch and Bijker, Law, Latour, Hughes and others) and social historians (Marvin, Schivelbusch) have demonstrated convincingly that the design of new technological systems emerges from a process of negotiation and struggle among "relevant social groups" (Pinch and Bijker, 1987). Technologies do not start out clearly defined. All technological artifacts exhibit "interpretative flexibility," that is to say, they can be understood differently by different participants in the design process. Interpretative flexibility provides the basis for contestation among the heterogeneous actors involved in that process. The historian can study how specific sets of social

practices, relations, and organizational forms are anchored to a new technology as a dominant interpretation emerges in the course of its development.

Thus contrary to technological determinism, human agency is central to the process of technological advance (See Williams, 1974 for an insightful discussion of the case of television.) But note that this constructivist position is also different from the common sense claim that technology is "neutral" and can be used for a variety of purposes. Of course within certain limits that is true too, but the issue here is not merely how the technology is used but *what it becomes* as a result of the different possible uses that people imagine for it and design into it. Each of those possible configurations will have an impact on society, as determinists claim. In the early stages of development of a technology, it is fairly easy to uncover the role of human agents in this process. This is the case with the Internet today. Later, as a technology is stabilized, its design tends to dictate users' behavior more successfully and agency recedes into the background, at least until new demands emerge to challenge established designs. Thus not a one-sided determinism, but reciprocity best describes the human-technology relation.

Latour explains these reversals of agency in terms of the notion that moral obligations are often delegated to technical artifacts (Latour, 1992). Even though Latour's examples (the door closer, the speed bump) sound a bit too mechanistic to qualify as replacements for moral self-control, devices are fraught with intricate "programs for action" which specify what behavior is considered right and what wrong in the particular setting by a particular community. Artifacts "scaffold" human behavior in compliance with customary and ethical standards. This raises important questions for the Internet. How much and what type of "ethical guidance" do we find in the online environment created by computer networks? Is it possible to embody such guidance in the technical structure of online environments? With regard to the future of the Internet, these are questions about design solutions that could reinforce the "community model" as a democratic alternative for the development of this medium.

It is important not to underestimate the significance of the issues involved. The Internet resembles radio and television in its early stages of development. It is still unclear what it will become, but predictably, like these earlier communications technologies, it will be a major factor in the shaping of our culture once its form is settled. Just as we say of radio and television that they are entertainment media, and in the process lump together our expectations and practice of listening and viewing with certain technical characteristics, so we will someday have a widely accepted and seemingly plausible definition of computer networking. What will it be? As with radio and television, the answer to that question will depend on the emergence of standard technical affordances, practices and organizational and cultural forms associated with the technological device and determining its social meaning. That is in part a political process in both the narrowest and the broadest sense of the term.*

Democratic Rationalizations

Social constructivism directs our attention to the importance of taking into account all "relevant social groups" when analyzing the development of an artifact. However, early constructivist research remained limited predominantly to immediately visible groups of scientists, designers, engineers, administrators, and businessmen. But in the case of the computer this is an oversight in obvious need of correction. Turkle (1984),

for example, found a lot of what constructivists call interpretative flexibility in her study of diverse user communities. The openness of the machine allows for numerous readings corresponding more to the personality of the user than to the plans of computer designers or any technical characteristic of the artifact itself.

We need an account which emphasizes the inventiveness with which users engage with such products as computers. To this end, Feenberg has introduced the concept of "democratic rationalization," which refers to user interventions that challenge harmful consequences, undemocratic power structures, and barriers to communication rooted in technology (de Certeau, 1984: 30-31; Feenberg (1995, 1999). With this concept, Feenberg emphasizes the public implications and consequences of user agency for technical design.

The concept of democratic rationalization draws out the political implications of constructivism. Constructivism frees the study of technology from the dogmatic assumption that some ultimate technical criterion, such as efficiency, determines which of the various possible interpretations and configurations of an artifact must prevail. Where it used to be assumed that political "interference" in technical decisions would inevitably reduce efficiency, on the constructivist account, there ought to be many possible "rationalizations," each leading to a successful outcome. By "rationalization" in this context is meant a technically and economically coherent realization of the basic ideas associated with the technology. These alternatives are not comparable in some simple quantitative sense, as they accomplish different goals and are embedded differently in social institutions. However, they must all make sense technically to be called rationalizations. (Obviously, there may also be "irrational" alternatives, i.e. alternatives that make little or no technical sense, but that is another story, irrelevant to our considerations on the Internet.) Some rationalizations may be heavily influenced by lay actors and so could be called "democratic" in the sense that they involve citizen agency.* Environmentalism has accustomed us to recognizing such lay interventions as expressions of democratic public opinion. Feenberg proposes that we extend a similar recognition to user involvement in the "information revolution."

Feenberg identifies several types of democratic rationalization. In some cases, lay actors force design changes through initiating public controversies, leading to boycotts, regulation, or other challenges to the technical solutions preferred by experts, corporations, or government agencies. In other cases, expert and lay actors may collaborate in creating a product, as in participatory design. Feenberg calls the type of democratic rationalization most relevant to the Internet "creative appropriation," the process in which users innovate new functionalities for already existing technologies (1999: chap. 5). Creative appropriation has been a significant shaping force in the evolution of the Internet from the very beginning. It was originally designed for sharing information for the purposes of military research, but users quickly appropriated it as a medium for human communication (see Rheingold, 1993; Abbate, 1994, Feenberg, 1995: chap. 7). Subsequently, the new interpretation was incorporated into the structure of the technology through a series of design changes and now belongs to its accepted social definition.

The review of empirical studies of online community showed that the online environment is neither inherently inimical nor conducive to community. Rather, certain groups under specific circumstances manage to add a new sociotechnical "layer" to the

computer network in order to build community there. Layering in this sense involves reappropriating the network in unexpected ways, as participants innovate or actualize new or dormant affordances (Feenberg, 1999: 219). Because these participants are differently situated with respect to the technology than its designers, they are able to perceive and actualize overlooked potentialities not envisioned in the technical, economic, and political rationality already inscribed in the network. Acting on the basis of a "situated knowledge" rooted in their unique relation to the technology, participants are able to give it a new meaning. These democratic rationalizations represent an instance of the lived practice of technology.

Groupware for Community

It is reasonable to ask if democratic rationalizations stand a chance against the consumption model supported by powerful commercial interests. With these interests driving development toward more efficient forms of consumption, the creative, participatory, community-building potential of network technology faces the threat of obliteration. But the social shaping of the Internet is not yet finished. The technology and its social institution have not reached the point of stabilization. As computer networks penetrate the everyday lives of new and diverse social groups and enter into the operations of a broad range of organizations, new interpretations, meanings, problems, conflicts, struggles and design solutions proliferate. There is evidence of this in the survival and growth of quite a few early experiments in online community (Agre and Schuler, 1997). In addition, the last few years have seen the emergence of new commercial applications of computer networking that support community building. In this section we review these important terrains on which researchers and activists alike will need to focus in the next phase of the growth of online community.

Computer Supported Collaborative Work

One specialized area of computer networking - groupware, or computer supported cooperative work (CSCW) - has suggestive implications for online community. CSCW represents a prominent strand in mainstream computer network research and application. Improving group productivity, reducing so-called "process losses," overcoming time and space constraints on group collaboration, and increasing the range and speed of access to information have been among the motives driving experimentation with computer systems designed to support group collaboration (Galegher and Kraut, 1990; McGrath and Hollingshead, 1994). The work situation in multinational companies, characterized by an increasing number of long-distance collaborations, has intensified interest in CSCW and made it an area of commercial competition already by the mid 1980s (Holtham, 1994).

Designers started out by focussing on the "rationalization" of the collective work process. This they accomplished through tight, deterministic structuring of group activities. As Lea and Giordano (1997:8) note, CSCW research and development still primarily aims to support small, short-lived, interactive, task-oriented groups which would normally meet face to face. This is of course due to the fact that CSCW

applications are designed in a business context where the paradigmatic group is a work team tackling a concrete task set by the management.

But the focus of the field has gradually opened up, in many cases thanks to the contribution of social scientists, to recognize the importance of informal interactions among group members (McGrath and Hollingshead, 1994; Bowker et al., 1997). The concept of community has begun to attract interest within the CSCW field. In a recent article published in *CSCW: The Journal of Collaborative Computing*, Elizabeth Mynatt and her colleagues define "network communities" as an emergent "genre of collaboration". The authors see the architectural principles of systems such as Media Spaces and MUDs (Multi-User Domains) as providing the exemplar for developing "network communities." These are defined as computationally based environments that provide access to a persistent online world possessing technical and social affordances for nurturing community (see Mynatt et al., 1998: 123). Notable in Mynatt et al.'s analysis of how such communities work is the effort to draw on social anthropology, rather than social psychology alone, in generating guidelines for the technical support of group interaction. They argue that "Network communities emerge from the intertwining of sociality and technology. It is the appropriation, and re-appropriation, of technology to accomplish the daily workings of social life that influences the character of a network community, including its eventual failure or success. Affordances suggest and support this appropriation" (Mynatt et al., 1998:130).

The five affordances that Mynatt and her colleagues find spanning the various network community technologies include:

- 1) Persistence: durability across time of both users and particular uses;
- 2) Periodicity: rhythms and patterns through which activity is structured over time in a meaningful way;
- 3) Boundaries: spatial divisions, often metaphorical, that make possible different social groupings;
- 4) Engagement: possibility for participants to establish diverse forms and modes of communication;
- 5) Authoring: possibility for participants to change the configuration of their space.

To support community practice, Mynatt et al. start mapping out a software structure that would be conducive to community life online. They propose such things as software facilities for improving links between members' offline and online identities, providing means for members to monitor each others' background presence online, providing for redesign, so that the community can rebuild the software that structures its activities to suit its evolving needs, incorporating techniques and features for acculturating new members. These suggestions seem keyed directly to the objections of the critics of online community, who argue that identity and commitment are impossible in cyberspace. Mynatt and her collaborators have instead studied the practice of actual participants in online communities and attempted to generalize from the empirically identifiable procedures they employ to get around the very real but not insurmountable obstacles to community inherent in networking.

As in our earlier list of minimum (software) conditions for online community, the emphasis here is on enabling groups to define themselves through control of

membership and to access a collective memory (points one and three on both lists). Mynatt and her collaborators also suggest the usefulness of some sort of tracking feature (our point 2), and their call for linking online and offline identity is a way of achieving the goal of our point 4, which we call warranting. Thus the conclusions are quite similar up to this point. The additional notions of “periodicity,” “engagement,” and “authoring” could be added to a common list. Periodicity is generally achieved through moderating practices that skillfully open and close phases in online discussion, giving a sense of progress to what might easily degenerate into random and directionless monologues. Engagement in Mynatt’s sense of the term is now commonplace on Web portals, which we discuss below. Authoring concerns the ability of users to innovate features, precisely the sort of thing we refer to with the concept of democratic rationalization.

Given the influence of CSCW in the business world and the increasing commercial interest in it, this new focus on online community must be taken seriously as a possible source of significant innovation.

Web-Based Community Applications

In addition to work-oriented groupware, the relatively young Internet service industry offers another source of online community development and experimentation. Community is interpreted by this industry as a commodity which commands adequate supply efforts. Web communities have become a big business in little more than a year. Their potential audience of loyal participants has attracted portal sites. Here is a typical ad for one of them: "A virtual community is a group of people with a common interest who are connected through the Internet. People with a common interest can create their own virtual community, and it can all be done using the ICQ tools and services. The easiest way you can form a virtual community is by creating an ICQ Interest Group. The ICQ Interest Groups are located on the ICQ server" (www.icq.com/cybercommunities.html).

The simple-minded philosophy of the early Internet newsgroups can be found in this statement: all you need to create a community is common interest and a communication medium. In fact, the software tools offered by the contemporary "community services" such as ICQ, Excite, Yahoo! are fairly sophisticated and fulfill most of the conditions of community we have so far identified. They enable participants to create both listed (visible to everyone through the WWW) and unlisted "clubs", "groups", "communities"; the ones are open (to the public), the others closed (by invitation only). Not only can clearly defined and recognizable group boundaries be established, the process of boundary drawing is prompted by the software itself so even beginners can understand it. Summary information on community membership, how many pages have been viewed each day, times of posting, and other similar parameters are automatically presented by the system. Thus some form of participation tracking is available. Users are prompted to provide "profiles," e-mail addresses, and home page URLs. By these means the anchoring of online personae in real identities is possible and encouraged. Mynatt’s “engagement” is supported as well. Some of the services allow the creation of shared online "photo albums" as visual complements to the usual text-only formats. And along with asynchronous discussions via message boards and simple conferencing formats, participants can engage in a synchronous chat, or exchange e-mail by clicking a single button. The records of the asynchronous discussions are

typically available for further reference, thus constituting a form of community memory. As was the case with moderated mailing lists, the power structure of the resultant social formations is again centered on one person or gate-keeper, the so called founder or administrator who created the group/club/community. In this case, however, the software allows for different authorizations to be given to various members by the founder/administrator. For example, some members can be delegated to invite new members to the group, others can create new area folders, or prune the archives, etc. This makes it possible to innovate various structures of rights and responsibilities and to engage in a weak form of authoring.

These services must balance simplicity of use against sophistication of features. Specialists complain that a seamless combination of a web browser and a computer-conferencing client is technically tricky to achieve. Thus, some characteristics of computer conferencing (for example threading; structuring by subtopic) are missing from some systems. But the technical features that are typically in place do satisfy the minimum conditions for community building demonstrated by early conferencing systems as well as some of the recommendations of Mynatt and her collaborators. At the same time, unlike early conferencing, which was available only to a select few, these services are in principle open to everybody with Internet access and cater to a technically literate and yet non-expert user population building on the accessible point-and-click interface of the World Wide Web.

Of course, there are a number of issues related to such commercially provided groupware. Critics' fears of abusive forms of sociability and postmoderns' hopes for multiple and disengaged identities can all be verified in some of the public clubs, however, we would argue that this is more a matter of social practices chosen by participants than an essential consequence of networking. More worrisome are the problems resulting from private ownership of the hardware infrastructure of online community. The services are offered to participants at no cost for the time being but the companies reserve the right to impose fees in the future. At this stage, users are asked to pay by exposing themselves to advertising and electronic direct marketing disseminated by the company hosting the community. These commercial intrusions certainly affect the atmosphere. The service provider can at its sole discretion terminate a club/group/community and discard its content for any reason (see for example Yahoo! Clubs Terms of Service, section 13). That could have dire consequences for an established community relying on the provider.* Their collective product, the archive of their interactions, could be simply erased as a result of a change in ownership or policy. Marginal groups advocating unpopular political views or lifestyles would seem to be particularly vulnerable.

Along with that go all the privacy and intellectual property issues typical of online communication in general. Under Yahoo! Clubs terms of service (section 8), Yahoo claims ownership of all non-graphical content that participants post in publicly accessible areas of the service; they automatically grant Yahoo the "royalty-free, perpetual, irrevocable, non-exclusive and fully sublicensable right and license to use, reproduce, modify, adapt, publish, translate, create derivative works from, distribute, perform and display such Content (in whole or part) worldwide and/or to incorporate it in other works in any form, media, or technology now known or later developed." It is a little as though the YMCA claimed ownership of everything said at public meetings held

on its premises; this policy does not foster trust and free expression. Despite these problems, the rapid growth of online communities on portals offers a rich terrain for experimentation and research.

Community Networks

Community networks have been around for 20 years, far longer than CSCW and much longer than portals. They attempt to use computer networking to advance the goals and values of existing local communities. The focus has been on enhancing civic life, education, and economic development (Agre and Schuler, 1997). This involves a complex combination of political, organizational and technical innovations emerging out of the joint efforts of civic activists, computer professionals, schools, universities, local governmental agencies, libraries, and non-profit organizations (see Schuler, 1996: 25).

According to Schuler (1996: 296), the basic services that community networks provide include forums (both moderated and unmoderated), access to static information contained in files, e-mail, and file download-upload capabilities. Other services typically offered by community networks include chat, remote login, search capabilities, WWW access and database facilities. Community networks have used a whole range of technologies to deliver these services, gradually evolving from dial-up bulletin board systems to Internet tools, and more recently, to WWW-based applications. These networks have served as a testbed for a huge number of different technical solutions. As one would expect, the various conditions of community we have identified can be found fulfilled in many of these experiments, and it is here that authoring is carried on with the most freedom.

Computer professionals, academic researchers, and hobbyists associated with such projects have developed a number of software packages tailored to the needs of local community networks. FreePort written by Case Western Reserve University (CWRU) for the Cleveland Free-Net (CFN) has been the software of choice of the majority of the Free-Nets in the United States. In Halifax, Canada, the university and the local hobbyist community collaborated on an original software package. Csuite, as it was called, was initially developed for the needs of the local Chebucto Community Net, but subsequently adopted throughout the country and abroad (Gurstein, forthcoming).

This spontaneous creativity represents an important instance of democratic rationalization of computer network technology that deserves the attention of theorists and researchers. Schuler (1999) has argued that the field of Computer Supported Cooperative Work, narrowly perceived as a branch of office automation, should be expanded to include Computer Supported Community Work. Presumably, groupware systems specially tailored to support broad participation in community affairs thus would be drawn into commercial R & D. However, before that can happen, an extensive review of the widely disparate programs already in use will have to be carried out.

The Internet Alternatives

The three distinct areas of computer networking discussed in this section show that community-building groupware is proliferating on different platforms and in the context of different structures of ownership and regulation. Future developments in

these areas hold the answer to a series of crucial questions with regard to the democratization of computer network technology: Will the Internet become the ultimate entertainment and/or information medium, a seamless environment for business transactions of all kinds? Or will the Internet emerge as a community technology, enlarging human contact and debate both globally and locally in accordance with the early visions and the subsequent practice of community building? Will "network communities" be accepted as a technical response to the human need for meaningful, reliable and consequential relationships with others, and become central to the definition of this technology, or will they remain in the category of those technical possibilities that emerge for a short historical instant and fall into oblivion? Through what strategy can online communities be "liberated" from the narrow confines of the corporate rationality within which they are increasingly emerging. Can these systems, originally conceived to enhance the effectiveness of work-team performance or to generate revenue for Internet service providers, be subverted by their creators and users so as to take on a new life in the public sphere? A multitude of social contexts and actions have to be aligned for a democratic appropriation of community technology to take place.

Myth and Reality

Critics of online community are right to dampen naive enthusiasm for computer networking. They are right to deconstruct the rhetoric of the Information Highway, including its easy praise of online togetherness, and oblivion to the commercialization of the Internet. The idea of virtual community is indeed a "powerful myth" playing on people's genuine desire to control their lives and to be a part of a larger social totality that provides emotional and intellectual support (see Mosco, 1998). But in the realm of technology, myth is not always opposed to reality, but sometimes guides development toward real possibilities. Here, in our evaluation of the significance of myth, our constructivist view of technology contrasts most sharply with the determinist assumption that technology is an independent social variable. We argue for a discriminating approach to the possible realization of the myth of community in the evolving technology of computer networking.

The "consumption model" of the Internet is a plausible version of its future given the structural realities of the world in which we live. The alternative "community model" would take much more conceptual work, design efforts, and political mobilization. Yet, as we have tried to show, there are technical formats that could potentially pave the way to a more community-friendly Internet. It is the human actors involved, putting their competencies and resources to work, fighting for their values and desires, who will determine which of the emergent formats and structures prevail. From this perspective, demanding the dedication of resources to the development and proliferation of online community is not a naive or futile effort. A political process oriented toward this goal can be seen as a logical extension of the human right to free assembly. The demand for actual opportunities for free assembly in the online world is a vital moment of its democratization. The struggle for online community thus places technical democratization in the service of democracy itself.

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Yahoo!, Yahoo! Clubs Terms of Service <http://docs.yahoo.com/info/terms/>

ICQ, Creating Virtual Communities with ICQ (<http://www.icq.com/communities/cyber-communities.html>).

* Forthcoming in *The Information Society Journal*. This paper was written under National Science Foundation Award 9818724.

* For a critical discussion of the Internet and democracy, see Kurland and Egan (1996).

* For example Vincent Cerf, one of the two men who created the TCP/IP protocol wrote the following poem:

Like distant islands sundered by the sea,
we had no sense of one community.
We lived and worked apart and rarely knew
that others searched with us for knowledge, too...

But, could these new resources not be shared?
Let links be built; machines and men be paired!
Let distance be no barrier! They set
that goal: design and build the ARPANET!

("Requiem for the ARPANET", quoted in Abatte, 1995)

* For an illuminating discussion of the struggle over the early development of radio, see McChesney, 1999: chap. 5.

* Agency is of course only one of several important features of democracy, however, if its importance is overlooked, citizen action by concerned minorities may be trivialized or even treated as undemocratic. This issue is discussed at length in Feenberg (1999: chap. 6).

* Ito (1997) describes an incident that occurred with a university-hosted MUD community that fell victim to a system failure and a subsequent ban on 'mudding' imposed by the university. Ito emphasizes the importance of machine materiality that virtual communities depend on.