Is the Global Information Infrastructure a Democratic Technology?

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The global information infrastructure (hereafter the GII) is often claimed to be a democratic technology. It is said to create electronic democracy, to facilitate or enhance democratic processes. The aim of this paper is to explore what these claims might mean and to suggest approaches to the GII that will be fruitful for evaluating such claims. The undertaking will shed light on the social, and particularly value, implications of the GII. The task necessarily involves three fundamental questions: What is the GII? What is democracy? What does it mean to say that a technology carries a value?

To say that the GII is democratic is to say that this technology has a value embedded in it, that it contains or favors or facilitates democracy. Democracy is a value in the sense that when individuals make claims about the Internet or the GII being democratic, they are claiming that there is a strong link between the technology and patterns of behavior associated with democracy and considered desirable. Hence, to understand whether the GII is democratic, we must first understand what it could mean to say that values are embedded in a technology. This is the task I undertake in the first sections of this paper. Later I turn to democracy and the GII.

I have paid little attention to defining or even describing the GII. A characterization of this technology is difficult in part because it is continuously evolving. Broadly, I understand the GII to be the coming together of computer/information technology with telecommunications. It originated with the Internet, but that name now seems inappropriate since the technology has evolved (e.g., it now includes the World Wide Web) and because uses, ownership, and maintenance conditions have radically changed from those of the Internet. The system is now used for such a wide variety of activities they are too numerous to delineate.

The infrastructures in which many aspects of our lives used to take place — work, shopping, banking, and entertainment — are being re-created, and transformed, in the GII. The new medium has characteristics different from the physical, geographic world in which our bodies live; and these special characteristics affect social values. For example, property, privacy, and responsibility are being re-thought because of the extent to which anonymity and reproducibility are possible in the new medium. Hence, the question of this paper — is the global information infrastructure a democratic technology? — sheds light on the quite different, but related, question whether democracy, as it has traditionally been understood, can be realized in a world that does not depend on physical, geographic space.

Technology and values

Up until twenty years ago or less, the literature on science and technology was filled with claims about their value-neutrality. Many scholars believed that technologies did not embody values, and emphasized that values come into play, if at all, only when technologies are used. Perhaps the best or most familiar example of this is the claim about guns, i.e., guns don't kill, people do," as if a gun were a neutral tool. Computers, as well, were thought to be neutral tools that acquire values only when used for particular purposes.

The claim that technology is value-neutral rested in part on the alliance between science and technology, with several ideas about science shaping ideas about technology. The presumption about science was that it is objective and that it progresses in a natural sequence or evolution. The unfolding of our knowledge was thought to be dictated by nature, not by society. New discoveries were thought to proceed and progress in a natural order. The same would be said about technology. It was understood to have a natural order of development which was thought to be somewhat independent (though perhaps less so than science) of social forces.

These presumptions have now been rejected (or at least substantially modified and qualified) by most scholars in the field of science and technologies studies (STS). It is now well-accepted among STS scholars that technology (as well as science) is value-laden; that is, that the directions and content of science are socially influenced; that technologies are developed in a social context that pushes and pulls and shapes its development. Even those who resist these claims insofar as they apply to scientific method, recognize that when it comes to topic choice and funding, science is shaped by social forces.

Two tenets now form the foundation of science and technology studies: that technology shapes social patterns, and that technology is shaped by its social context. Bijker (1995) aptly and concisely describes the unfolding of these two trends in STS studies. He characterizes the scholarship of the last 50 years as moving like a pendulum from one of these tenets to the other with smaller and smaller swings over time until the two work closely together.

"Before the 1940s the social sciences did not pay much attention to the study of the detailed development of technical artifacts and society. ... The pendulum started to swing, and especially historians, some economists, and, later, philosophers and sociologists discovered technology. The swing went too far, however, and technology was viewed as an autonomous factor to which society had to bow. Technology was all important. With the rise of social shaping models, the pendulum swung back from this technological determinist conception. But again the swing went a little too far. The impact theme almost disappeared from view and technology seemed merely a social construct that could not appear in an obdurate, transformations-resisting, and society shaping form. Recently the pendulum started to swing back again to redress this imbalance. Technology recaptured some of its obduracy without completely losing its socially shaped character. The swings are smaller now. Perhaps we should say that the pendulum is not moving anymore in a flat plane but moves in Foucaultian circles." (p. 254) For the purposes of this paper, it is important to note that the social encompasses values (though the two are neither synonymous, nor identical). Values are one aspect of the social. Hence, Bijker's articulation of the two tenets of STS includes the claims that: (1) values shape technologies and (2) technologies shape values.

By implication, then, we should expect the GII to carry values with it, i.e., to shape, enhance or diminish, afford or constrain values, and we should expect that the GII has been shaped by social values. Still, these claims are too abstract to point us to where or how to look at the GII. We need to understand more concretely what it could mean to say that a technology is value-laden or that values are embedded in technologies.

In this paper, I focus primarily on one of the two tenets, that technologies shape values. Thus, I ask what values are embedded in the GII. I touch only briefly on values that shaped the development of the GII.

Values embedded in technologies

What, then, does it mean to say that values are embedded in technology? Winner (1986) addressed this matter head on in his famous article, "Do Artifacts Have Politics?" He distinguishes two views. The first is the view that values are inherent to technology. Winner writes,

"According to this view, the adoption of a given technical system unavoidably brings with it conditions for human relationships that have a distinctive political cast — for example, centralized or decentralized, egalitarian or inegalitarian, repressive or liberating. ... [C]ertain kinds of technology do not allow such flexibility, ... to choose them is to choose unalterably a particular form of political life." (p. 29) In contrast, Winner identifies a second view according to which "a given kind of technology is strongly compatible with, but does not strictly require,

social and political relationships of a particular stripe." (p. 32). Winner goes on to mention solar energy as an example of a technology that has been said to be more compatible with a democratic, egalitarian society than, say, petroleum-based energy systems or nuclear power, but nothing about solar energy requires democracy.

Winner sets us on the right path, though we need to be clear on the distinctions he is making. The first distinction is that between intractable properties and flexible properties. These are properties of the technology. The second distinction has to do with the relationship between the properties of the technology and the social relationships necessitated by the properties. Some technologies require patterns or types of social relationships and social organization; others are compatible with alternative types of social relationships and social organization. Winner is particularly concerned with patterns of power and authority in these social relationships.

To summarize his view, then, he claims that: (1) technologies embody values insofar as they have properties that are linked to social relationships, in particular relationships involving power and authority; and, (2) technologies may do this in one of two ways, either (a) by having intractable properties that require particular types of social relationships and authority, or (b) by having flexible properties compatible with diverse patterns of social organization and authority. In the latter case, the pattern of social relationships surrounding a technology is determined, presumably, by something other than the technology (e.g., prevailing social patterns at the time of the technology's introduction).

In terms of democracy, then, a technology may have: (a) intractable properties that require democratic patterns of authority; (b) intractable properties that require non-democratic (or anti-democratic) patterns of authority; or (c) flexible properties that are compatible with either pattern of authority. If we use these distinctions to ask questions about the GII, they point, in particular, to patterns of social relationships surrounding the GII. Many who claim that the GII is democratic seem to have in mind that it facilitates "unmediated" communication connections between individuals. Even if we accept, for the moment, the claim that such communication is "unmediated, " we still have to ask whether this property — unmediated communication — is intractable or flexible. Is communication in the GII inherently unmediated? or is the GII compatible with both mediated or unmediated communication? It might be argued that the GII is "intractably" democratic because telecommunications lines (which are a hard, not a flexible property of the GII) connect every individual to every other individual in the world. Of course, every individual in the world is not yet connected to every other individual in the world because millions of individuals do not have access to telecommunications lines, let alone computers. Still, the argument could be made that the technology makes such connections possible in principle, and, therefore, that

the technology embodies a pattern of social relationships connecting all individuals to all others. This account makes some sense of the claim that the GII is democratic. However, the conclusion is much too quickly drawn, for several reasons. For one, it is significant that telecommunications lines do not yet go to every individual. The fact that not some individuals are not connected suggests that the GII can be undemocratic in its hard (physical) structure; that is, the technology is compatible with inclusion or exclusion. It appears to be compatible both with every individual being connected to every other individual and with use by a subgroup (an elite) that is facilitated in promoting its interests and capable of excluding others from access or use. Limiting access to a subgroup can be achieved either via hardware (wires) or software. That is, even if physical wires were to connect every individual to every other individual, the technology allows information to be routed in selective and exclusionary ways (as payment for service or for information is making clear).

The characterization of the technology as facilitating "unmediated" communication is misleading. Communications scholars have referred to exchanges via this technology as "computer-mediated" communication (CMC), explicitly recognizing that communication is mediated in the new medium. The issue then becomes understanding how "computer mediation" may affect communication. Our concern is whether computer mediation promotes or diminishes democracy. The literature on electronic democracy suggests that the mere fact that the technology provides forums for individuals to discuss political issues makes the technology democratic. Once again, however, this conclusion is drawn too quickly. In order to conclude that discussions on the GII are democratic or that they enhance democratic processes depends much more on who is talking to who, what they are talking about, and what procedural rules are in place.

In any case, the idea that the GII is democratic because it connects every individual to every other individual and allows individuals to engage in political discussion puts the emphasis on the users of the technology. It focuses attention on what the technology facilitates. Winner's analysis points, however, not so much to the users of technology as to the social relationships required to produce and maintain a technology. Winner's analysis suggests that we ask about the types of social relationships required to manage and maintain the system. These relationships are, of course, complex and evolving especially as the technology expands on a global scale. As well, ownership and management has been changing in the U.S. from a publicly funded, decentralized, cooperative system to a private, more centralized, commercial system. While all complex systems, especially those of a global scale, require cooperation, it would be naive to suppose that the management and maintenance of such a system does not require hierarchical relationships and centralized control, i.e., undemocratic relationships.

Winner's account is useful in bringing to the fore both the distinction between intractable and flexible properties and the focus on social relationships necessary for maintenance and management of a technology. Nevertheless, there are other possible meanings to the claim that technologies are value-laden, and it is important to distinguish several more of these before continuing. Discussions of the value-ladeness of technology are often muddled and suggestive and I have tried below to sort out some of the possible meanings of the claim that technology is value-laden.

The moral/metaphysical meaning of embedded values

On this type of account, values pervade the invention and production of a technology, and these values are put into technology in such a way that they cannot be separated from it. The invention and production of the technology may, therefore, be tainted because of the practices, institutions, and people involved in its creation, even though these no longer exist. For example, a structure built by slaves, knowledge created by Nazi scientists, projects done by the military, are all tainted by the character of the activities by which they were created.

On this account, there is an inseparability, an inalterable link, between a technology and the institutions, practices, and actors that produced it. The inalterable link here is metaphysical in the sense that the carry over is in the very existence (being) of the thing, even though it may not be in any physical feature of it. The link is moral in the sense that what carries over from the history of the technology's development is a moral quality. The history of a technology's production involved moral values and those values persist in the technology's being. Most importantly, since the technology's history contains moral values that carry over in its being, those who use the technology become implicated in that history.

The Support Meaning of Embedded Values

This account is similar to the preceding in the sense that it also affirms an inseparability between the technology and its invention and/or production, but on this account, the institutions, actors, and practices are current (ongoing) and the inseparability has to do with support. Those who use or purchase the technology, in effect, support or endorse or promote the values that create it. The technology is value-laden in the sense that using it supports the values that produced it. For example, when one uses plastic water bottles, one supports petroleum-dependence and, therefore, imperialistic governments. Values are embedded in the technology in the sense that the act of purchasing and/or using the technology implicitly involves support for institutions, actors, and practices that themselves embody values.

The Material Meaning of Embedded Values

On a third type of account, the values embedded in a technology no longer reside in the institutions and practices that produced it; the technology is, in some sense, separable from its origins. On this type of account, the material object carries values in its design (Gorenstein, 1996). Its design may be the result of activities that put values into it, but we need not know about or think about those activities to confront the values in the technology. Values are in the physical or material being of the thing. They inhere in it and can be read from it. There seem to be at least two different versions of this account.

a. On one version, material objects embody values in the sense that they convey values(ideas) in their design, and we can read (see, experience, be influenced by) these values by viewing or interacting with the object. For example, a plastic water bottle may be designed in a way that makes it comfortable to hold with one hand. It may be small enough to put in a jacket pocket or it may have a small piece that allows it to be hooked onto a belt. Just by looking at the bottle, a person can tell that it is meant to be held, put in a pocket, or used in moving about — walking or running. Similarly, a pitcher with a handle and spout carries the idea of fluid being contained, lifted with the hand, and poured. A gun carries the idea of being held in a hand, aimed, and sending projectiles at high speeds. Perhaps it doesn't contain killing per se, but it contains the idea of a hard, fast-moving projectile directed at an object or in a specific direction. On this version of the material account, the design of a technology conveys ideas about the technology's relationship to the human body or to a task and in this sense it contains values. The values are activities, tasks, functions facilitated by the thing.

b. Winner's account seems to be a somewhat different version of a material account. His idea seems to be that the design requires or is compatible with certain types of social relationships, especially relationships of power and authority. The use of the technology requires (or when put together with other social conditions leads to) certain patterns of social life and social behavior. Here it is not just that there is an idea in the design, not just that certain tasks or activities are facilitated, but rather that the technology(in the case of intractable properties) can only be used by adopting particular social patterns. Those social patterns come with (are carried by) the technology, and they embody values.

These two versions of material accounts cannot be distinguished too sharply; one seems to meld into the other. Winner's account is material in the sense that the connection of the technology to social relationships is in the technology's material being or design. In his description of the Long Island bridges built so that public buses could not go under (thus insuring that the poor, lower classes couldn't go to beaches where the wealthy went to swim), class difference - a value - is in the height of the bridge. So, the physical design of a technology contains values in the sense that it facilitates tasks, activities, purposes (version a), and some of these activities lead to particular social relationships, relationships of power and authority (version b).

The Expressive Meaning of Embedded Values

On a fourth type of account, technologies have social meaning, and, therefore, values. The values in the technology can only be understood by understanding the social context of the technology. This social context may refer to the use of the technology but it may also have little to do with explicit purpose or use. Sclove's idea that technologies have polypotency is helpful here (Sclove, 1995). "In other words, technologies exhibit superfluous efficacy or "polypotency" in their functions, effects, and meanings. ... For example, when a man uses an ordinary hammer to pound nails, he also learns about the texture and structural properties of materials, he exercises and develops his muscles, he improves his hand-eye coordination, and he generates noise, all while stressing and wearing the hammer itself. As his competence at hammering grows, he feels his self-respect affirmed and approved. At another level, his activity resonates with half-conscious memories of primeval myths about Vulcan and Thor. He is also reminded of the blacksmith and the mythology of the American frontier. He thinks of a judge's gavel, the hammer as a symbol of justice, and a song popularized by the folksinging trio Peter, Paul, and Mary. ... So, is the nail entering the board necessarily the most important feature of the activity called "hammering"? Hammers, like all technologies, are polypotent in their social functions, effects, and meanings." (pp.20-21) On this account of the value-ladeness of technology, we may buy and use things because of their symbolic meaning in our culture, not only because of their focal function. We don't buy cars capable of going 120 miles per hour because of this function for we rarely, if ever, have the opportunity, let alone need, to drive at such a speed. Rather we buy them because of their meaning in our culture — macho, sexy, successful. Statistics and computer-generated data add authority and the appearance of being up-to-date to a presentation(even if they don't convey any other significant information).

This type of account of values embedded in a technology is similar to the material account in that on both types of account, values are thought to be amenable to being read off the technology. On the expressive meaning account, however, values are dependent on social context so that one cannot understand the values expressed in a technology unless one understands its social context.

Now, these four types of accounts are not mutually exclusive. They can apply simultaneously to the same technology. They should be kept distinct primarily because they point to very different ways in which values may be embedded in technologies and, therefore, they recommend quite different directions of analysis of technology.

Values embedded in the global information infrastructure

How do these accounts help to understand values embedded in the GII? Do any of them point to the GII being democratic?

The Moral/Metaphysical Meaning of Embedded Values

Moral/metaphysical accounts generally come into play when something noteworthy has occurred in the development of a technology. It may be something good as in the case of Tang's origins in NASA's project to send humans to the moon, or it may be something horrible as in the case of the Volkswagon bug being conceived in Nazi Germany. In either case, the technology is thought to carry the values of its noteworthy history. When it comes to the GII, then, we have to examine its origins, that is, the institutions, practices, and people involved in its development, to see what moral values it carries.

While a full examination will not be undertaken here, it is interesting to note conflicting values in the historical roots of the GII. The GII is an evolution of the Internet, and the Internet had its origins in the U.S. military. It would seem, then, that those who think military endeavors are immoral might find the GII tainted by its origins. This association, however, is rarely expressed in social commentary on the GII, and certainly not in the context of the technology's democratic qualities.

On the other hand, the GII's more recent roots are generally understood to be in academe and the culture of hackers. In the early history of computers, hackers were not criminals, but computer enthusiasts. The culture of hackers is described as a culture of sharing and openness, an environment in which individuals would spend long hours helping each other figure out how to do things with computers, improving on each others programs with no interest in who owns what or what credit would be assigned to who. An examination of this period in the GII's history might reveal values associated with democracy such as sharing, openness, bonds between individuals, decentralized activity (Levy, 1984).

A linking of the GII with the culture of hackers may be at work in the thinking of those who claim the GII is democratic; however, it is difficult to imagine the link being affirmed as moral or metaphysical. That is, there may be an association, but not one that would lead to a strong case for the GII being democratic.

The Support Meaning of Embedded Values

On the support account, we should look not to the history of the GII, but to the institutions, practices, and people who currently produce and maintain it. We should ask what values are found there and whether these values are worthy of our support and endorsement. Since we are interested in democracy, such an analysis must focus on whether these institutions and practices are democratic. This is a complex undertaking given that the GII is now a global system. The institutions, practices, and people who produce and maintain it are in many different countries working in diverse conditions. Moreover, the system is still evolving. The U.S., for example, is in the midst of radical change as its portion of the system evolves from being publicly funded and available to a limited range of users, to a commercial system, privately owned and marketed broadly.

On this account of values embedded in a technology, the important point is to know what values one is supporting when one buys or uses a technology. The idea that users might be supporting democratic or undemocratic institutions when they use the GII is an idea that has not been addressed in discussions of the GII or its social impact. Indeed, a focus on the institutions, practices, and people who produce and maintain the system is likely to reveal quite undemocratic features of the technology, as will become clear later on.

The Material Meaning of Embedded Values

The material meaning of embedded values points in the direction of values embedded in the material design of the GII. This type of analysis was sketched out earlier when the web of hard wires connecting every individual to every other individual and the decentralized way in which information is routed were suggested to be hard features of the technology that embodied democracy. Both of these features do seem to be at the heart of claims about the democratic character of the technology. [In stark contrast would be a centralized system in which every bit of information moving through the system would have to pass through a central site from which it would be routed to its destination.] However, the earlier discussion revealed these ideas to be premature. The GII is compatible with hard wires connecting everyone and with decentralized routing, but it is also compatible with limited access and centralized routing. Even if we move the argument to focus on individual autonomy and the idea that the GII allows individuals to control who they are connected to and what information they access, it is important to remember that this is a flexible property of the technology, not an intractably feature. The technology is also compatible with invisible shaping of an individual's apparently autonomous control; it is compatible with centralized control, surveillance, and censorship. As an example of individual autonomous control being invisibly controlled, imagine search engines that display information in an order that is based on (gives priority to) how much has been paid to the developers of the search engine.

The Expressive Meaning of Embedded Values

Finally, the fourth account of embedded values points in the direction of an analysis of the cultural meaning of the GII. The social context in which the GII has been developed is complex and changing. Using Sclove's notion of polypotency would al-

low us to see a diverse set of values in the cultural meaning of the GII. Perhaps its most potent meaning is that it is "the future." The GII symbolizes the direction in which the world is headed. It symbolizes a future in which individuals are working, doing business, and being entertained on a global scale. The message of the technology (or at least the advertising and reporting about it) is that it is a high-speed train into the future and those who do not get on board now will be left behind forever.

The GII also expresses other social meanings and the topic of this paper is itself evidence of the fact that its cultural meaning has been linked to democracy.

Democracy as the starting place: power and insularity

The preceding analysis suggests a number of fruitful directions for further research into the values embedded in the GII, research that would further our understanding of its democratic and undemocratic tendencies. The preceding, preliminary analysis points in the direction of the technology having both democratic and undemocratic tendencies.

Yet another approach to this issue would be to deconstruct the notion of democracy, teasing out its elements and meanings, and then use these as the basis for an analysis. 'Democracy' is used in a variety of different ways, to refer to a variety of features of democratic societies. Anthony Arblaster (1987) recognizes this diversity and seeks to ferret out the kernel of meaning in definitions of democracy. He writes, "At the root of all definitions of democracy, however, refined and complex, lies the idea of popular power, of a situation in which power, and perhaps authority too, rests with the people. That power or authority is usually thought of as being political, and it often therefore takes the form of an idea of popular sovereignty — the people as the ultimate political authority." [p. 8] Popular sovereignty is the overarching idea at the root of many ideas associated with democracy, including the following: elections and representative government; participation (in government and other institutions); power in the hands of many rather than a few; joint deliberation; cultivation of active habits; equality; individual freedom; and individual rights. Several of these elements came into play in the preceding discussion of the GII's democratic character. However, an approach that starts from the meaning of democracy would lead to additional, fruitful analysis. In particular, two elements point in the direction of anti-democratic tendencies of the GII: the idea of democracy as power in the hands of the many and the idea of democracy as involving joint deliberation.

Power to the Many

Tightly connected to Arblaster's idea of popular sovereignty is the idea of a government or society in which individual citizens have significant power. In other words, in a democracy(as op-posed to a dictatorship or aristocracy or oligarchy) individuals have a say in the rules, laws, and policies (or representatives) by which they must live. This idea seems to be at work in the thinking of those who claim the GII is democratic. The reasoning would seem to go as follows: democracy means power in the hands of the many; information is power; the GII puts information in the hands of the many; therefore, the GII is democratic.

The generally unexamined kingpin in this set of claims is the claim that 'information is power.' This phrase has been used over and over in public discussion and advertising of the GII. But, what does it mean to say that information is power? There are two radically different meanings. On the first interpretation 'information is power' means that information goes to individuals and these individuals (the receivers of information) are, thereby, empowered. For example, I find out that my senator accepted a bribe; I am empowered to vote more intelligently. Or, I find useful information on the World Wide Web about a rare disease that I have; I am empowered in understanding and personally treating my illness.

The second meaning of 'information is power' is that information is sent by some individual(s), and this individual (the sender of information) is, thereby, empowered. For example, those who write for the New York Times or those who advertise have power. They have the power to influence, shape, mold, and, in some sense, control those who receive information.

Those who think of the GII as democratic seem to have in mind the first meaning of 'information is power.' Putting information in the hands of individuals is perceived to be democratic because it empowers individuals. And, there are many examples of this type of empowerment taking place as a result of the GII. The GII creates enormous opportunities for access to information. Nevertheless, the second meaning of 'information is power' is also at work in the GII and this is much less recognized. The assumption is made(based on the first meaning of 'information is power') that more information is better, and the more the information, the better. What falls by the wayside is that individuals (as well as businesses and government) do not simply need information, they need accurate, reliable, and relevant information. The GII has created the availability of quantities of information well beyond the capabilities of most individuals to comprehend. This situation necessitates filtering and credentialing of information; yet little attention has been given to how this should or will happen in the GII. Authentication of information is being addressed by encryption technologies, but this by no means addresses the integrity of content. Those who send information and those who filter information will have enormous power (just as television stations do now). They will have the power to influence, shape, and ultimately control — on a global scale.

To make this point is not to deny that the GII can and will empower individuals — some individuals; rather it is to point to

a countervailing tendency. The systems by which information is filtered on the GII are still evolving, and so it is unclear which tendency will dominate, which will be favored and how. It is important, however, to be aware of the potential downside. Those who filter information for us will have enormous power over us. Admittedly, the information we receive now is filtered, so that the threat is not of a new kind; nevertheless, the GII creates the capacity for this power to be more highly concentrated. Those who filter and package information for us in the GII will hold enormous power over us.

Joint Deliberation

An important feature of democracy tightly linked to popular sovereignty is the idea of joint deliberation. The idea of democracy is not merely the idea of individuals casting votes and thereby expressing their desires (as one does in the marketplace). Popular sovereignty has meant the populous getting together as a group or in subgroups for debate and discussion of issues they face jointly. In joint deliberation, individuals put their ideas on the table and listen to the responses of others. Ideas are submitted to critique. The process insures a degree of reflection. Better ideas emerge out of the combat of ideas. Ideas are formed in the process of discussion; individuals grow and learn; their active capacities are stimulated. And, bonds are developed between people as they jointed confront difficult issues.

While those who claim the GII is democratic have had in mind that the GII facilitates this joint deliberation by providing on-line forums for discussion, with the convenience of staying at home, there is, again, a counter trend that is not often recognized. The counter trend is a tendency towards, for lack of a better term, insularity. Individuals choose which forums they will participate in, what news they will read, who they will send and receive messages from, and so on. There is the possibility (if not likelihood) that individuals will choose like-minded people to chat with and news slanted in the direction of their already-formed biases; they will seek information on interests they already have. This is freedom and I can hardly argue against it. Nevertheless, there is the possibility that individuals will become even more isolated from diverse perspectives and people than they are now. Why deal with those with whom you have disagreements? Why deal with your difficult and 'different' neighbors, when you can simply avoid them? Why expose yourself to news perspectives that suggest something wrong with the views you presently hold? In the past, shared geographic space has necessitated contact and joint deliberation. It has compelled diverse people to figure out how to live together. That necessity because weaker and weaker when the infrastructure of so many activities is global.

The GII has one fairly obvious bias; it is a global system. While it does not compel anyone to interact globally; it facilitates global interaction (communication). The more time individuals spend communicating with people on-line, the less time they spend communicating off-line, or more to the point, the more individuals interact with others who are geographically distant, the less time they spend with those who are geographically close. This is typically seen as a good thing because it exposes individuals to diversity — individuals from other countries. The degree of diversity is, in fact, quite limited —to those who can afford to own computers, to those who know English, etc. However, it also means that individuals do not have to deal with others who occupy the homes and offices next door, i.e., those who are geographically close.

The tendency towards insularity is facilitated further by marketing strategies based on analysis of transactional data. One's personal tastes, hobbies, habits, needs and desires can be inferred from one's activities in the GII. These are already being studied in efforts to provide consumers with what they want even before they want it. Individuals are facilitated in becoming more and more what they already are.

The GII raises a new version of an old and interesting issue having to do with the role of geographic space in democracy. In the new version, we ask whether democracy can be based on something other than shared space. Indeed, the global reach of the GII together with its powerful as an information system lead one to wonder if national boundaries and national identities can endure. National boundaries are weakened when citizens are using a global communication system because information shapes attitudes, beliefs, and allegiances. It would seem that national boundaries will become weaker and weaker as individuals spend more time interacting with others who are geographically distant. Indeed, individuals may come to identify more with their information providers than their nation-states.

While democratic theorists have dealt with the varying geographic scale of nation-states, we now have the possibility of strong alliances among people based on something other than geographic location. Can democracy prevail in such an environment? The common space that people occupy has, historically, been the commonality that has drawn them into political communities. If we are less dependent on physical, geographic space, then what will bind us together? ◆

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