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**THE AMBIGUOUS EFFECTS OF DIGITAL TECHNOLOGY ON DEMOCRACY IN A  
GLOBALIZING WORLD**

**INTRODUCTION:**

Telecommunications technology has from the start been regarded as an engine of democracy: any innovation that enhances communications would appear to enhance politics rooted in the power of words. Recently that technology has also driven globalization, helping to make frontiers porous and to erode the parochial limits separating national economies. Yet in its support for globalization, technology may also undermine democracy - imperiling the national sovereignty that has been democracy's natural sanctuary. Most discussions about the intersection of the new telecommunications technologies and global democracy have been inconclusive if only because those who understand the technology know little about democracy, and those who understand democracy are woefully ignorant about technology. Nevertheless, there is no discussion more fateful for the future of democracy than the one that poses the question 'will the new technologies that have sustained globalization reinforce or undermine democracy?'

Terms like 'teledemocracy' and 'virtual community' come easily to us, but deciphering their meaning requires not only a grasp of the technology but a deeper understanding of ideas like community and democratic governance than is usually manifested by those enthralled with democracy's electronic frontier. We can in fact only answer the question "how does technology impact on democracy" when we understand the character and nature of democracy itself, something too often taken for granted. Before I come to the problematics of trying to define democracy, however, I want to offer several caveats concerning the more general problem of technology; for here too, we often make assumptions that are dubious.

**FOUR CAVEATS**

**UNEVEN PROGRESS:** The first caveat of which we need to be mindful is that the new technologies under review here -- IT (information technology), digital technology, computer technology, and the Net --- are by no means universal. Because in the prosperous parts of the developed world they have become widespread, it is easy to overestimate their penetration elsewhere and therefore to overestimate their impact. Most of the world is still dominated by traditional media. It is still newspapers and radio and television and government propaganda that for most people constitute the informational framework of their lives. For them, issues of democracy and tyranny, censorship and free speech, are determined more by radio, television and newspapers, than by the new media. Ironically, poverty has insulated many societies from the virtues and advances but also the vices that attend the new technologies. More than five percent of Americans still do not have phone service and only a tiny fraction of peoples living in the developing world have internet access.

**THE ACCELERATING PACE OF CHANGE ('Murphy's Law'):** Nevertheless (and this second caveat undermines the force of the first), the new technologies are not only undergoing rapid change, but respond to forces that compel geometrical rates of development. There has been more radical technological change in the last two centuries than in the previous two millennia. Miniaturization and the speed of microprocessors proceed at the same accelerating pace, bringing the weight and price of electronic products

down even as their efficiency and speed increases. Under these circumstances, any generalization we make about technology today is unlikely to survive tomorrow. Moreover, rapid change means that those who miss yesterday's enhancement may be today's beneficiaries, leapfrogging a technology with which a more "advanced" society actually feels burdened. Africa has not been hardwired, but as a consequence may enjoy a more rapid leap into the wireless cellphone age than the first all-wired societies in Europe and North America.

THE GENERATIONAL FALLACY: A third caveat concerns what I want to call the "generational fallacy", which has been at play in the history of technology from the beginning. Those who create new technologies bring to those innovative technologies all of the judgments, values and prejudices acquired in using the older technologies with which they grew up. They make assumptions about the new technology rooted in their experience of the old. The first automobiles were literally 'horseless carriages' whose design and use seemed to parody their era of equestrian transport. Nowadays, academics educated in libraries and reference rooms full of books and periodicals find in the Internet a wonderful research tool. For them, the Internet is a surrogate library, a substitute reference system. And they naturally assume that will be its primary purpose. But our children and grandchildren, socialized in the image-rich culture of television and the net, have little experience of books or libraries and will bring a different set of expectations to the new technology. They may never learn to use the Web as a reference tool because they have no reference skills, and will in any case use it for quite different purposes.

Growing up in a text based, word centered culture, we see the Internet as a place to use words and text. But our children and grandchildren who grow up in a television world of images and pictures, may see the Web as a source primarily of pictures and images, especially as broadband facilitates the flow of images. They may see in scrolling text a rather primitive use of the new technology, something resembling a souped-up turbo-telegraph. Our generation has in fact designed a technology whose consequences we can not foresee because those who use it will not have grown up in our generation's culture.

TECHNOLOGY AS MIRROR: Fourth and last, although we like to think of technology as a radical modifier - even an absolute determinant - of how society it shaped, in the first instance new technologies tends to reflect rather than alter the culture that produces them. In the long term, there may be complicated causal interactions in which an innovative technology modifies a civilization, but in the short run, technological innovations tend themselves to be conditioned by the character of civilization. The cliché has it that the technology of gunpowder helped democratize the West in the Renaissance by diminishing the importance of the aristocratic military skills on which armored horseback warfare depended and hence undermining hierarchical feudal culture. True enough. Yet in China, where gunpowder was invented, it strengthened the control of mandarins and tyrants. Similarly, while the internal combustion engine and electricity appeared to privilege the automobile in the United States, leading to private transportation and the interstate highway system as well as suburbanization and labor mobility, in Europe the same technologies were the occasion for a strong public transportation system (railways) and the strengthening of urban culture. There is no reason to think it will be different with the new technologies. If the dominant moments of modern society are democratic and civil, and if culture and education are made to trump other private goods, the new technologies are likely to be deployed on behalf of improved democracy, enhanced civic discourse, and the spread

of culture. If those moments are primarily commercial, private, material, and consumerist, however, (as seems to be the case at present) then the technologies too will become commercial, private, material and consumerist. The technology cannot save us from ourselves, it can only reflect all too candidly who we are.

Indeed, the current characteristics of the net technology that seem most vigorous reflect the stamp of the attendant culture on the technology. Yes, it has a potential for education and culture and horizontal communicative interaction, but its actuality is commercial; yes, it can encourage democracy and plural uses as well as competitive ownership, its reality today as defined by portals, software platforms and content is monopolistic. Yes, its technical character is open and accessible, but its actual use is as divisive and inegalitarian as the society around it. It cannot be other than the society that has produced it. Is it really any surprise that over 95% of the net's use is commercial (about one quarter of that devoted to pornography)? The 1996 Federal Communications Act privatized the new technologies, leaving them to the commercializing forces of the market. Its egalitarian potential is everywhere trumped by society's inequalities, a "digital divide" tracking educational and economic divisions becomes inevitable, putting many poorer Americans (and millions of people around the world) at risk. These trends may be countered and contradicted by the potential inherent in what is a leveling, horizontal, and accessible technology, but because economics trump technology, the real monopoly and inequality trump potential pluralism and openness.

#### **THE VARIETIES OF DEMOCRACY**

With these caveats on the table, I can address the relationship between democracy and technology. The crucial point is of course that there is no such thing as "democracy," pure and simple; there are only democracies -- different varieties of democracy, competing theories of direct democracy and indirect democracy, representative democracy and populist democracy, plebiscitary democracy and strong democracy. To which kind of democracy do we refer when we worry about technology's impact on it? It may be that innovations that serve one kind are nefarious to another.

In the United States, it is generally assumed that democracy is representative democracy, what I have called "thin democracy" to contrast it with participatory or 'strong democracy' - a form of government more closely associated with Switzerland's decentralized participatory system. Under representative democracy, where citizenship is limited to voting, ordinary citizens can feel privatized and marginalized. Once a year the voter is free, she votes and then goes home and watches and waits (and, this year, waits and waits and waits and waits!) The rest of the year she lives privately as a consumer or a client, letting her elected representatives do the governing. This wan and pallid version of "thin democracy" often creates passivity and cynicism. The active citizens who are engaged in their neighborhoods, towns, schools, and churches creating social capital and civic trust cannot be produced by watchman style representative government.

Plebiscitary democracy, in which party elites and powerful leaders manipulate impassioned but disengaged subjects in order to win populist approval for their hegemony mimics participatory democracy but lacks its civic legitimacy, and hence qualifies as still another form of democracy. Mussolini's fascism and Peron's populism used mass elections to cast a patina of legitimacy over party rule, casting representative government's

'rule of law' approach into doubt without actually legitimizing genuine participatory democracy.

Now the purpose of these rehearsal of elementary democratic theory is to make clear that there is no simple, one on one relationship between the new technologies and 'democracy,' since there is no simple or singular 'democracy' whose features can be charted. There is a potential relationship not between technology and democracy, but between certain specific features of technology and distinctive features of the several models of democracy we have introduced here (we might add still others). Among the new technology's most compelling features are its **speed** (the new, digitalized, computer-based technologies are fast); its **simplicity** or simple-mindedness (the new technologies can become reductive, binary); its privileging of users' **solitude** (the new technologies can isolate and atomize us); its **pictoriality** (the new technologies privilege images and sounds over text even though today they are primarily text-based); its **lateralness** (the new technologies offer a horizontal or lateral medium of communication, point to point rather than vertical); its privileging of the **informational** over wisdom (the new technology privileges raw data, information over knowledge); its immediacy (as a point to point medium it eschews editing, monitoring, teaching and oversight); and its **segmentation** (the new technologies divide audiences into segments, pieces, and groups, instead of encompassing them as a national or communal whole - as the traditional broadcast networks once did).

We could portray the complex of relationships generated by the interplay of these three forms of democracy and these seven characteristics of the new technologies on a three by eight grid. That would perhaps overwhelm rather than inform our understanding, however, although it would offer a full sense of the complexity of the interplay of factors. I will limit myself to commenting briefly on each of these eight with respect to at least one or two varieties of democracy.

#### **TECHNOLOGY'S VIRTUES - DEMOCRACY'S VICIES?**

Let me start with what is electronic technology's chief virtue - and vice - its speed. Computer communication occurs quite literally at the speed of light. When the American Revolution was being fought, it took six weeks to get 'news' back to England; the Crown's response took another six weeks to get back to America, making for a three month news cycle. America gained its independence in part because of the slowness of communications; for with rapid reporting, the British might have responded far more efficiently to the rebellion than they did, and possibly 'saved' their colony.

Today we have nearly simultaneous knowledge of current events - the news cycle is measured in minutes rather than days or weeks. Computers permit instant communication. But is speed appropriate to every human activity? To culture? To literacy? To democratic deliberation? With respect to deliberative democracy, the injunction is "slow down!" The challenge of democracy in the electronic age, is how to put speed bumps on the electronic highway (speed bumps being those humps or ridges that are put in local roads to slow traffic down). Democracy takes time, takes patience, takes consideration, takes thought, takes reconsideration. That's why parliamentary procedure often requires several readings of a legislative bill prior to passage. The aim is to require time and rethinking before precipitous action is taken. Chat rooms on the net invite instant thinking, which often means the venting of unfiltered prejudice and unthought opinions.

The challenge for technology is how to in effect obstruct the technology's appetite for speed without destroying its innovation. Deliberative software such as that offered in the new Pnyx Unchat program aims at doing exactly this - but it does so by foiling the technology's greatest virtue. What does this mean to democracy? Depends on what kind. Both representative and strong democracy are speed averse, requiring time and patience to implement civic judgment. But if instant polling or manipulated mass opinion are the aim (as in plebiscitary democracy), speed is actually an asset. In sum, the technology says "Hurry up!" while deliberative democracy says "Slow down!"

The second characteristic of digital media relevant to democracy is its inclination to reductive simplicity -- to binary dualisms that, in political terms, facilitate representative democracy with its up or down votes, its yea/nay referendums, its two-party choices. This penchant for dualism is, however, a problem for strong democracy, which demands multiple choices and the complexities multi-choice options bring. Where we seek common ground between two polar alternatives rather than a stark choice between them, consensus or at least nuance rather than a clear division, digital media may be problematic.

A third feature of the new technologies is their tendency to divide, isolate and atomize people. There is a necessary solitude in how we address cyberspace. We sit alone in front of keyboards and screens and relate to the world only virtually, our bodies in suspension, electronic pixels our only emissaries to the larger society. Many fans of the Net argue that cyberspace creates new, virtual forms of community, (an argument I will challenge shortly). But, in fact we each address cyberface on an interface that is solitary. Bowling together is always an alternative to bowling alone, but surfing alone on the net is the only option open to us. In America's universities, students increasingly are dropping out of social life and community and school activities in favor of time alone on the computer. Some roommates have taken to talking to one another over the net, as if they lived in different countries rather than across a single room.

Now in the realm of democracy, it might appear that computer voting would facilitate participation in the political process (New Mexico ran its Democratic Primary with a computer voting option in the spring of 2000 to achieve exactly such an end). In a representative democracy where secret ballots are already the norm and where the privatization of politics is already a reality, computer voting may enhance both efficiency and participation without incurring any costs. But in a participatory democracy, where COMMON deliberation is the object and the public defense of political judgments the rule, the privatization introduced by computer voting will appear as a vice. Using private, solitary space where there is no pressure to consider others or their common goods as a venue for political choosing contradicts the essence of strong democracy. John Stuart Mill and many other democrats have argued that to render decision-making responsible it must be public (Mill even opposed the secret ballot for that reason, insisting that only view that could publicly defended were worthy of being voted!) There is no more private space than cyberspace. Plebiscites intended to ratify the rule of tyrants work particularly well when citizens can be separated from one another; but deliberative democracy demands that citizens vote in public, and remain willing to defend their position in a public assembly (or at least vote in public where they can feel some sense of public scrutiny).

The impact of privacy on voting can be easily discerned in American electoral polling where race is involved. Black candidates running in predominately white districts regularly poll fifteen percent more votes than they actually received in elections. Why? Because when asked in a

poll, "Will you support this (black) candidate," most people disguise whatever prejudices they may have and reply 'yes' or 'probably' or 'maybe,' whereas in private you without the benefit of public scrutiny citizens are free to vote their private prejudices. The solitude of the virtual interface is then a bane for deliberative democracy even though it may be a boon for plebiscitary democracy. It can increase participation but can also alter the quality and thoughtfulness of the participants.

This is not to suggest that we cannot use the new technology in ways that compel people to defend and justify their positions. But only if we get away from voting as clicking a yea or nay icon on the computer screen to register an unreflective private prejudice - at one moment choosing between music tracks on an MTV web site (do you want to watch Madonna or Garth Brooks?) and at the next moment making some momentous choice about foreign policy (do you want to post U.N. observers in Serbia or bomb it back into the Stone Age?!) Using equipment intended for private entertainment to render public judgments cannot be a prudent way to pursue democratic decision-making.

Zealots of the new technology are apt to respond to charges of hyper-individualism by citing the novel possibilities of cyber-community. Communities that cut across nations and peoples can be fashioned on the net that are otherwise impossible. Aristotle proposed that a community could be no more extensive than the territory that could be traversed in a single day (so that the assembly could meet with all citizens in attendance). On the net, we can traverse the globe in seconds. And since markets have been effectively globalized while democratic communities have remained mostly parochial -- national and local - there is certainly a need for global civic communities. Indeed, transnational civic communities like CIVICUS and CIVITAS have already put the net to such purposes. Before being lost in enthusiasm, however, we need to examine very closely what a virtual community really is - whether it really is! Most of the virtual communities that have been created on the Internet are narrow communities of interest, in effect, special interest groups comprised by people who share common hobbies or similar identities or identical political views. Or they are a continuation of communities forged in real time and space. It's one thing to use the net to reinforce an extant community, quite another to create a community from pixels alone. And often, communities that use the web to spread their nets do so in the name of resistance and terror - radical fundamentalist Christians and Islamic Jihad (not to speak of the Neo-Nazi movement) have all used the internet to forge something like a transnational political community.

Ironically, almost all conference addressing the potential of the new cyber-technology meet in real time and space - their modus operandi standing as a living reproof to the cyber-communitarian theories they celebrate.

It is hard enough to determine whether cyber-community is feasible; even if we assume it is, this leaves open the question of whether democracy is likely to benefit. Representative democracy, founded on the pluralism of interests and groups and rooted in individualism and rights theory, puts little stock in communities to begin with, and its advocates are unlikely to feel benefited by whatever good deeds the new technology can perform on behalf of community. Strong democrats, on the other hand, may feel that the technology's ultimate benefit to participation will rest entirely on its capacity to contribute to the building of the kinds of community on which spirited participation and social capital depend.

There is considerable ambiguity surrounding the use of pictures and text in the new technologies. In its early incarnation, the web has been a word-based technology (scrolling text) that has actually countered the pictorial leanings of television. I have argued elsewhere that by returning us to 'the word' the web is an apt medium for politics, law, deliberation and contracts. Reason and promising are the products of the word and for all its technological progress, this remains a civilization based on the Word. The word-centered character of the technology is good for democratic politics, good for participation and good for deliberation (only plebiscitary democracy benefits from manipulated images). Yet, this focus on the word is but a matter of technological lag-time. The Net is faster and getting faster. Streaming video is the wave of the future, allowing moving pictures to displace text. Moreover, the generation being trained in computers today is a television educated, picture-inundated generation that prefers 'moving pictures.' Though candidates working under the conditions of representative democracy may believe this new technology will be better suited to the selling of offices that now defines their profession, strong democrats will accurately identify steaming video as averse to deliberation.

Artists and others may argue that that images can be more honest and less deceiving than words. Yet politics, the law and democracy start quite necessarily as a contest of words against force and feeling. In as much as democracy is the politics of reason and of promising, and reasoning and promising demand the currency of words, democracy will rely on words rather than pictures and streaming video will not be a welcome development. It may be that the transition from a civilization of the word to a civilization of moving pictures will inaugurate new political institutions rather than eroding democratic institutions. Yet such a civilization may be less able to sustain promising and the social contract, or the kinds of discourse that make democracy possible. In a global market society this can have particularly dire consequence. No one will quickly forget how American foreign policy in the Horn of Africa was powerfully influenced by a single image, the picture of a dead American soldier in Somalia, being dragged naked across the ground after his helicopter had been shot down by a local warlord. This single photograph led to America's withdrawal from military commitments in Africa and in time around the world (in 2000, George Bush, Jr. won in the Presidency in part on the basis of a promise to intervene less in world affairs than the busybody Democrats!) What Steven Spielberg may do at his "Magic" reengineering studios can increasingly be done by any modestly competent user on the Net. We know that the Net has today already become a source of rumor and gossip and misinformation: with contrived images and manipulate and morphed pictures, things are unlikely to improve.

Perhaps more salient than any other feature of the net is it's lateral character as a point to point medium that ties individual to individual without the need for mediating hierarchical structures. The world wide web resembles the telephone rather than broadcast radio and television. It permits unmediated communication freeing us both from masters and manipulators AND from educators and tutors, allowing us to reach judgments without the intervention of editors or arbitrators. For direct democrats this is a boon of the first order; for representative democrats who see in representation James Madison's "filter" of popular passions and base prejudices, it is a disaster. It enables mob rule and puts the rabble on the throne. Representatives may protest "The last thing we want is for citizens to talk to one another! Let them talk to us and WE will talk to their fellow citizens on their behalf!" If the horizontal communication capabilities of the net serve direct democracy's participatory bent, they are of less use to it penchant for popular deliberation. Immediacy is a

democratic virtue, but it is also a democratic vice, because unmediated conversation is undisciplined conversation, prejudiced conversation, private conversation, polarizing and unproductive conversation. Deliberation has traditionally required the intervention of mediators, authoritative leaders, moderators, editors or educators. Left to their own devices, conversation deteriorates into babble and an unguided talking people into a rabble.

"Talk radio" (where listeners call in and participate in live political debates led by loud-mouthed and highly opinionated political partisans) offers a warning. Calling itself "democratic," it actually encourages immoderation, divisiveness, unreflective rhetoric and foolishness. The unmoderated exchange of violent prejudices does nothing for conversation and less still for democracy. On talk radio, people are encouraged to rant (that's entertainment!) and pit prejudice against prejudice. If 'chat' is to be something other than Digital Talk Radio, it may require mediation - a challenge to the very virtue of immediacy that is the web's greatest boast.

Too many chat rooms on the Net criminalize difference rather than exploring it. They embrace a hooliganism where participants refuse to learn, refuse to listen and refuse to grow. On talk radio and on the Net what is required is not more free expression and talk but more thoughtful silence and listening. Democracy, at least in as much as it wishes to be deliberative, is in need of "Listen Radio" and "Listening Rooms" on the net. Deliberative uses of the technology are to a degree counterintuitive and require new software programs (like the "Unchat" program cited earlier). If information is to be mediated so that it can grow into knowledge, even wisdom, then the horizontal infrastructure of the technology must be challenged and one of its virtues treated as a vice.

We speak easily of IT (information technology) and boast about the 'information society' as if information as a self-evidently useful tool. What exactly is information but raw, unmediated, undigested, data -- meaningless noise. Information is what the newborn infant gets - random sounds and sights of which little sense can be made. Human civilization and human intellect have depended NOT on information but on making sense of information, on converting information into knowledge and (on rare occasions) converting knowledge into wisdom. It is only the end product wisdom that serves culture, education and democracy. Yet we have permitted ourselves to believe that the virtue lies in a flow of information and that as long as we have sufficient data we can forge an educated society and a competent democracy. The problem of modern democratic societies in the global era is not, however, too little information or too little access to information, but too much information out of which we make far too little sense. Inundated in raw information, we are informed that the new net technology can give us still more with even greater rapidity: virtue or curse?

The conventional wisdom makes it a virtue: schools in the United States are being hardwired, and hardwiring has become a criterion elsewhere for democratic development. What does giving illiterate children access to every library in the world do for them? Do we help youngsters without research skills, without literacy, without an ability to discriminate between relevance or irrelevance, when we perch them in front of computers hardwired into a universe of random information? Education is the only reliable search engine. On second look, one might benefit these children and democracy too by cutting the cables and severing the wires and requiring that they read a single book, and make sense of it. Access and quantity cannot count for more than quality, information is not tantamount to knowledge, and knowledge stops short of wisdom. The deficit in our

schools is not an information deficit but a knowledge deficit, a deficit in critical thinking. Knowledge technology would serve democracy better than information technology.

A final characteristic of the new technologies is the proclivity towards segmentation and division. Traditional broadcast technologies are displaced by narrowcast technologies that offer every constituency and every interest group its own channels of information and communication. The growing multiplicity of conduits, sites, and media channels to express and arbitrate contested special interests is aided by narrowcast (political parties and interest groups have already begun to use the web for fundraising and constituency development). But communitarian democracy and participatory institutions require exploration of common ground and are better served by a single state network or America's three national networks that everyone watched than by a thousand channels where no citizen finds common ground with another. Segmentation cannot help but undermine community, whether it in a neighborhood community, a nation or an emerging global civil society. By dividing us into groups and special interests without common ground to share, it may foreclose the globalization of our local communities.

There is something deeply solipsistic about the idea of every man with his web page. Because it can be done, we do it. A mirror makes a poor substitute for the politics of compassion and empathy. Private web pages also create a dangerous illusion of equality. My page and Disney's page equalize us! My 'portal' and Bill Gates' portal, what's the difference? The difference is of course that power lies not in the capacity to express yourself but in the ability to get others to listen. This depends in turn on resources, and in resources there is no real equality at all. Disney's power is not in its access to a homepage but in its multibillion dollar programming, marketing and merchandizing assets where it becomes a daunting monopoly force for which individuals are no match at all.

There is to be sure a contradiction within the segmenting, fractionalizing tendencies of the new technology. For while distribution is fragmented, the ownership of software is monopolistic and tends to be homogenizing as well as commercializing. There has been a palpable "mall" of cyberspace that has made 'dot com' far more important than 'dot org' or 'dot edu.' Nearly all of significant web traffic is commercial (one quarter of it going to pornography). The net's "pull" virtues are being displaced by high pressured "push" technology devoted to the hard sell. Free net access as well as free hardware (including computers) are available to those who are willing to live with endless advertising on their screens. One wonders if the Swedish Lutheran Church has considered selling advertising in their songbooks and on the shining white walls of their churches here, but they could probably could sustain growing congregations if they did. But a world where everything is for sale is not a world hospitable to democracy. How quickly the remarkable new technology has become one more element reinforcing an old, commercial, consumerist society. This only increases the pressure of money and commerce and monopoly and the forces of democracy, and increases the pressures of homogeneity and uniformity of democracy's necessary pluralism. Politics as the art of public selling may flourish, but democracy in its representative and strong forms can only expire.

#### **CONCLUSION:**

Let me sum up. Technological change is both driving globalization unambiguously and impacting democratization in deeply ambiguous ways. It

has the potential to strengthen as well as to weaken democracy in certain of its chief characteristics, though differentially for representative and strong democracy. Globalization itself (as I have argued at length in Jihad vs. McWorld) does more to impede than facilitate democracy, and technology is too often a tool of that obstruction. If it is to serve democracy, the technology will have to be effectively programmed to do so, and that program will have to be sensitive to the distinctive political theories and paradigms of democracy that inform political regimes. Market forces will not put the technology to creative and democratic uses but only to commercial uses. Deregulation in this domain has been and will be disastrous.

Certainly there are novel features of telecommunications technology that can serve a more participatory, deliberative form of strong democracy and can help redress the asymmetry of a global society in which anarchic markets are powerful and organized civic and political forces weak. Technology can be an ally of citizens as well as of banks and corporations, of global civil society as well as special interests groups. But this will happen only if it is consciously subordinated to our democratic wishes, and if we are fully sensitive to the technology's ambiguous impact on the forms of democracy.

It is certainly not the zealots of technology alone who are to blame for the fact that the democratic potentials of technology have not yet been exploited. Cyber-enthusiasts riding the electronic frontier understand technology well enough but misunderstand democracy completely; democrats tend either to ignorant enthusiasm or Luddite fearfulness. But in the end, the real challenge is political not technological, and if democracy is to benefit from technology we will have to start not with technology but with politics. Having a voice, demanding a voice and the making of science and technology policy is the first step that citizens can take in assuring a genuinely, democratic, technology. The new technology is only an instrument of communication. It cannot determine what we will say and to whom we will say it.

There is a story about the wireless pioneer Marconi (probably apocryphal, but useful nonetheless) at the moment of his greatest triumph: having set up his great experiment in the Northeast, and with a recipient in Florida, he awaited the opening of the new age of communication with a certain peculiar skepticism. For when an assistant called from the adjacent room where his wireless device was mounted "Marconi, Marconi! We can talk to Florida!" Marconi seems beset by doubt. Rather than celebrate, he asks "and do we have anything to say to Florida?" Cyber-enthusiasts around the world are excited by the fact that Stockholm can talk to Hanoi, and Hanoi to Tokyo, and Tokyo to Florida.

But while we are able talk to strangers around the world, many of our problems today arise from the fact that we no longer know how to talk to neighbors, to husbands, to wives, and to fellow citizens. Can our communicative blockages, our local incivilities and neighborhood conflicts be overcome by the miracles of long distance computer communications? Will virtual community heal the ruptures of real community? Does the Net offer a solution to Kosovo or Palestine? Why should we think we can cure on our little keyboards and pixilated screens in nanoseconds all the intractable human problems we have created with one another face to face over centuries? If in this new, remarkable, millennium we are about enter, a millennium in which these new technologies will dominate our lives as never before, we want democracy to be served, and globalization's anarchic tendencies to be checked, then the bitter-sweet fruits of science will have to be subordinated to our democratic ends and made to serve as a

facilitator, rather than a corrupter of our precious democracy. Whether this happens or not will depend not on the quality and the character of our technology, but on the quality of our political institutions and on the character of our citizens.

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### **CONVERGENCE**

We like to talk, those of us who are fond of the new technologies, about convergence. A convergent multimedia in which television screens, and computers and the Net all come together in a single fluid, interactive system. But that convergence is still very far away, and indeed we can not be sure it will come. Back in the United States when I was growing up in the 1950's, engineers theorized their own version of domestic convergence, convergence in the kitchen. The technicians in America had figured out you could engineer an oven, a toaster, a mixer, a peeler and a coffee-maker in a single tool. But it turned out that the women who worked the kitchens preferred different devices for different tasks, and convergence never came to the kitchens of the United States or other parts of the world. It is possible that we reject convergence in today's electronic world as well. We may turn out to prefer to have one screen to be entertained on, another screen to work on, and still another to talk to people on. It may not be that the engineer's dream of a single screen in which these several utilities converge will remain a figment of the engineering imagination.

MORE ON ABSENCE OF IMPACT: A recent poll conducted by the Pew Center on the Media disclosed that over 40% of Americans were now accessing the internet. However, the poll neglected to take into account the fact that at least 5% of Americans do not have a telephone and so are omitted from such polls! The 'ancient' technology of the telephone is not yet universal, let alone the new technology of the internet. We, the privileged live on the technological frontier, but many others are far from that frontier. In Scandinavia, in Finland, here in Sweden, there is more penetration by cellular telephones, and by computers than most other societies. Yet there are in Africa and Asia where there is no penetration at all - though in some of these places, people may leapfrog today's technology and embrace tomorrow's.

SPECTRUM ABUNDANCE vs. MONOPOLY: The third caveat concerns the question of so-called spectrum abundance. We tend to assume that because the new technologies open up a broad range of communication conduits the old anxiety about limited broadcast spectra are obsolete. In the United States it was the limited broadcast spectrum that justified the regulation of radio and then television earlier in the century. But spectrum abundance, both by the widening of bandwidth and also by other forms of technology (laser optic satellite), does not guarantee a pluralism of offerings and content. We may have more and more conduits to show less and less content, because ownership is narrowing and becoming more monopolistic. When I first came to Europe in the 1950's there were no more than a handful of radio and television channels in each country, but frankly I found more variety than on just two or three outlets than I do today on the 50 or 100 channels that can be found on such satellite and cable networks as Sky Television. To think that because there are more channels of communication there is more diversity of content is simply a category mistake. Who we are has been

defined for us by the globalization of markets and the privatization of all things public - clearly manifested in the 1996 Federal Communications Act.