Equity and Access to Information Technology

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wp: 714

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There is nothing essentially wrong with power. The problem is that in America power is unequally distributed. . . .

— Martin Luther King, Jr.[1]

. . . Liberty requires opportunity to make a living—a living decent according to the standard of the times, a living which gives men not only enough to live by, but something to live for. . . . If the average citizen is guaranteed equal opportunity in the polling place, he must have equal opportunity in the marketplace. . . . Better the occasional faults of a government that lives in a spirit of charity than the consistent omissions of a government frozen in the ice of its own indifference. . . .

— Franklin D. Roosevelt[2]

INTRODUCTION

In 1982, Michael Rice, then the director of The Aspen Institute's Communications and Society Program, published "The Hopes and Fears of the Information Revolution," a paper in which he summarized a three-day communications workshop on "The Power of the Individual

in the Information Age." Rice noted that the participants in the workshop—information specialists, government officials, corporate executives, lawyers, journalists, academic scholars, and consumer advocates—identified seven worrisome possibilities in connection with the information-dependent communications era in which we find ourselves. They were that:

- The individual's opportunities for upward mobility and society's interest in preserving diverse sources of institutional power will be increasingly eroded due to the trend toward pricing information according to use—that is, to rely on market factors in order to determine what information is generated and who gets it, while other important but noncommercial needs are neglected;

- The growth information systems may exacerbate existing trends toward concentrations of power in fewer hands;

- The "democratic circuits" of society—such as political parties and associations and media coverage institutions which represent groups of people—may be increasingly replaced by technocratic circuits such as statistical controls vested in bureaucratic hands;

- The growing diversity of communications media and of private information systems may drive society toward a splintering and specialization of interests and competencies;

- If information is treated as the exclusive resource of those who control its gathering and dissemination, people who do not have access to it may be placed at an increasingly severe disadvantage;

- The information era may create increasing social stratification, structural unemployment, and other obstacles to a fair and stable society; and

- Personal rights and values may be endangered.

Many experts reflect a much more optimistic view of what they see as the inevitable upward progress which information technology and free markets operating together will produce for our society. The

purpose of this paper is to introduce a voice of caution into the optimistic discussion, and to argue that without policy attention to the issues of equity and access, the achievements of the Information Revolution will be hollow.

In titling this article, "Equity and Access to Information Technology," I alert the reader to my own view that the issue of access to information technology is essentially political in nature. It is concerned with the use and allocation of power—an inherent function of government. Further, the fair allocation of communication and information power among competing interests with competing needs must be enforced by government authority. Otherwise they are meaningless gestures.

The terms and conditions for access to information technology increasingly define one's right of access to information *per se*. While technology may well be the key driving force behind public policy and communication, technology alone cannot solve these political-social problems that affect the rights and interests of individual human beings. Rights are negotiated and determined in political forums where decision making takes place on ideological, social, and philosophical grounds that either favor or reject certain values, interests, and groups. Any political decision that effects information technology, affects information distribution, and thus, the distribution of power itself. The outcomes of such political debates, contests, and choices go to the heart of what this nation thinks is or is not the appropriate role of government in the allocation of goods and services and even in shaping the quality of life of its citizens. They also define citizen's access rights not just to information hardware or communication gadgets, but to information itself, in its various forms and formats—data, education, intelligence, knowledge, politics, or entertainment. Lastly, the outcome of the policy debate regarding these issues will profoundly effect what American society will be like in the 1990s and in the 21st century.

What a government does for the human beings at the bottom of its social order—its poor, its minorities, its children, its women, its elderly, those who are underrepresented or unrepresented, as well as people who are handicapped, those who are undereducated, and those who are generally in need but cannot help themselves—defines the degree and quality of justice that can be expected in practice. So the question arises—what kind of society do we want? The range of choices is vast. We can choose a highly technological, highly productive, efficient, and

competitive society based on democratic principles and values, a low productive, inefficient society that is divided along class, race, sex, and information access lines, or anything in between. A fair, equitable, and just society establishes a minimum quality of life for everyone; it is not one in which the few live with great wealth and the rest get by with the hope to enter the domain of the elite by winning a multimillion dollar lottery. The purpose of this essay, to restate it, is to argue that the principles of equity should guide our choices concerning information and information technology in the United States.

With the provision of universal access to appropriate information and information technology, other pressing needs and problems of American society could be greatly diminished and in some cases eventually eliminated. This does not say that appropriate information technology is a panacea to the difficulties we face as a nation, or that there is a techno-fix to America's problems. But it is to say that access to the means of effective communication and information could certainly multiply the number of options to be considered in our approach to fundamental problems.

INFORMATION AND POWER

What is information? Essentially, *information* is intelligence; a message, something told, words, meaning, knowledge[3] acquired in any manner. It is facts, data, learning, culture, language, and understood symbols. According to Harlan Cleveland, information is the sum total of all the facts and ideas that are available to be known by somebody at a given moment in time. In Daniel Bell's view, information is "data processing" in the broadest sense. While information itself is not communication, it is nonetheless crucial for communication because it is the material exchanged in the process of communication.[4] It is what Schramm called the "stuff of communication" (p. 38).

The purposes for which information is used and how information is organized also helps us to define and understand its nature. For example, information and its technology can be used either as a means of social control or used to enlighten people and to help make them free. Information is fundamentally formless and takes many shapes; it can be electrified, digitized, squeezed, compressed, modulated, amplified,

stored, manipulated, processed, traded, sold, bought, analogued, catalogued, tainted, copyrighted, lost, mishandled, privatized, trivialized, subsidized, secreted, tiered or publicized. It can take the form of propaganda, advertising, education, entertainment, news, data, speech, pictures, music, ideas, or obscenity. It has been defined as "the raw material of truth, beauty, creativity, innovation, productivity, competitiveness and freedom" (Maisonrouge, quoted in *Journal of Communication*, Information Gap issue, p. 8).

Bramen notes that although there are a number of different ways of defining information, the broadest and most significant definitions treat information as a constitutive force in society. From this perspective, which should provide the first and final analyses during the policy-making process, decisions about information policy are decisions about the way society will be structured—how socioeconomic classes will be formed and how people can act within and between them (Bramen, 1989, p. 164).

Under Bramen's definition, information can be seen as a form of power.[5] Information can be and is often used as a power to influence, to persuade, to attempt to control outcomes, to generate public opinion, to influence elections and decisions. As power, information is a basic tool or key to competing successfully. According to Les Brown, publisher of *Television Business International* (TBI), "Those who don't have it will always be at a serious disadvantage" (Brown). Branscomb says that "the ownership of information is a complex economic concept, yet a simple political one: It is the key to power" (Branscomb, 1985).

Certain information is essential and necessary, not only to maintaining a reasonable quality of life, but for life itself. Everyone needs some information some of the time for necessary and essential purposes. However, if information elites and major stakeholders alone, without government intervention, determine access rights to the infrastructure of communications based solely on profits or dictates of the market, the long-term result is likely to be an increasingly disenfranchised portion of the population whose alienation threatens political and economic stability. We should recall the messages of James Baldwin's *The Fire Next Time* and *The Kerner Commission Report*. Such outcomes would be destructive for all segments of our society.

In an information economy, one must address issues of equity of access as well as of wealth (Jonscher, 1981). The right information, and

the opportunities and ability to access it at the right time, have become the primary means of subsistence and a main source of political and economic power in all postindustrial societies, including the United States. Thus new conceptions of equity must form the keystone of information technology policy in the postindustrial society.

INFORMATION AND INFORMATION TECHNOLOGY

It is becoming more and more difficult to tell the difference between information and information technology because it is increasingly difficult to separate the means of transmission from content. For example, is a book information or is it information technology? Is a read only memory (ROM) chip information or information technology? In a copyright infringement suit a few years ago, a federal court held that Franklin Computer had violated Apple's copyright by using Apple's system operating codes without permission or license. The information in question was embedded into the computer system's ROM chip, a piece of hardware, as digital coding. Historically, tangible inventions or hardware have been classified as *technology* or an invention and thus protected under the U.S. patent laws. Now, apparently, the medium literally is the message, and, conversely, the message is the medium.

Information, particularly useful, relevant, timely information, is increasingly tied to complex electronic technology. More and more, as McLuhan had foreseen, the medium and the message are one. Without access to appropriate information technology,[6] one is increasingly denied desired or needed information. Recent trends show that greater and greater amounts of information are winding up in electronic formats—electrified, computerized, digitized, squeezed, compressed, modulated, and Dolbyed—as a consequence of the convergence of computers with telecommunications. As a result, access to a specific bit of information may require access to a specific type of information technology or set of technologies. Moreover, since specific bits of information rely on different units of information technology, higher entry costs may be involved to gain access to a broad range of information.[7]

Hamelink goes a step further than most observers and claims that *technology itself is information* and that the transfer of technology is

basically the transfer of knowledge or information. He maintains that information technology deserves the particular attention of policymakers because of the following relevant considerations (Becker, pp. 42–44):

- Differential access to information technologies determines differential access to the capacity to collect, process, and use information;
- Information technology is essentially a "convergence technology"; it represents, through the integration of data processing and telecommunication technologies, the indispensable infrastructure through which technical knowledge and information are produced, processed, and transferred, research and development can be shared, resources data can be collected and processed, and intelligence can flow;
- Information is "synergistic"; its growth leads to growth in many other industries because it creates an infrastructure around its products and services;
- Information technology is a "spearhead technology" critical for the United States as it faces an intensely competitive world economic environment; U.S. leadership in information technology could benefit American trade through the export of information goods and services, and by improving the competitive efficiency of American companies in all sectors;
- Information technology is the chief architect of the infrastructures through which values are spread globally; and
- Information technology contributes cultural synchronization and contributes strongly to the consolidation of commercial interests.

Technology is information represented by models, diagrams, plans and formulae embodied in studies, training programs and equipment, and transferred through sales and licensing of patents and via technical experts (Becker, p. 41).

EQUITY OF ACCESS TO INFORMATION TECHNOLOGY

Access[8] to information technology implies *accessibility*—rights of access to information. Accessibility is the right to collect information or seek information collected by others (Branscomb). In the case of information technology, access means that there is a reasonable way to acquire the information (Bushkin and Yurow).

Equity is an active form of the moral obligation to do the right thing.[9] Equity requires a fair or correct result or remedy. Equity looks to reason and justice, good faith and fair dealing, and acts accordingly. In the end, equity seeks a reasonable outcome. What is considered equitable has always changed with the times. Based on abstract principles of justice, equity is opposed to any intolerable rigidity and fixedness, soci-ally and economically, that prevents fairness and justice. Thus the changes inherent in information technology and its impact on power demand a fresh look at the equity produced by information technology policy.

Some analysts argue that the converging technologies—computers and telecommunications, the development of centralized management controls, the privatization of information dissemination functions—all are causing society to be increasingly dependent upon access to technology as a prerequisite or necessary condition to access information (Bass and Plocher). In addition, raw information is becoming increasingly technology dependent due to the fact that more and more information is being created, developed, stored, processed, and disseminated in electronic formats (OTA, 1989 and 1990; Pool; Schiller). Federal information is often key to democratic processes. The U.S. Congress' Office of Technology Assessment has concluded that it is possible that in the future all federal information "will exist in electronic formats as an electronic database on a computerized system." (OTA, 1989, p. 297). One's ability to gain useful and timely information will be linked to specialized, sometime complex, often expensive, information technology that has higher cost thresholds for users because of higher capital investment and higher learning curve requirements. Accordingly, Pool states that:

> The key technological change, at the root of the social changes, is that communication, other than conversation face to face, is becoming overwhelmingly electronic. Not only is electronic communication growing faster than traditional media of publishing, but also the convergence of modes of delivery is bringing the press, journals, and books into the electronic world (Pool, p. 6).

This implies that any *access policy regarding information technology is necessarily access policy regarding the information itself.* If the access barriers to information technology are too high, information flows are diverted and serve primarily those with money, higher levels of education and knowledge. Therefore, a person's right to speak or receive information effectively shrinks or expands according to wealth and the quality of one's education.

If information is primarily treated as a commodity available only to those with access to certain information technology, free speech and free press will not be free, except in face-to-face communication. Ownership or ownership-access of appropriate information technology is becoming, unfortunately, an accurate gauge of one's right to receive information or to speak effectively to an audience beyond face-to-face communication. On this point, Helga Schuchardt, president of the Board of Trustees of the German Foundation for International Development, says:

> The right to freedom of opinion and expression for everyone naturally only possesses theoretical character if the majority of men and women have no access to the media for expressing their opinion. Conversely, this proposition is only translated into reality when, if at all possible, everyone has access to the media (Becker, p. 21).

ESSENTIAL AND NECESSARY INFORMATION AND APPROPRIATE INFORMATION TECHNOLOGY

The term *essential and necessary* information technology and services refers to those technologies of information and communication and services that society has deemed to be essential and/or necessary. Justifications for so classifying a given technology may include a wide range of reasons: to maintain a minimal standard of living; to protect the

national defense; to save lives and property: to save energy; to avoid pollution; to remain competitive globally with Japan and Germany; to maintain law, order, and social stability. In other words, what is considered essential and/or necessary is determined by society. It is not limited solely to those elements required to maintain and sustain life itself—food, water, air, and sunshine. Society itself determines what is essential and necessary and the rationale changes according to a given set of circumstances.[10]

But what is *appropriate information technology?* According to Douglas, the inquiry should begin not with message sources (i.e., the technology), but rather with an inquiry into underlying problems and possible solutions in people's lives:

> Instead of looking at message sources, those who study information inequities need to discover what problems and uncertainties exist in people's lives and what motivates individuals to seek solutions.

She adds the additional insight that:

> By examining the advantages of a specific communication technology, the information needs of its potential user population, and the information-seeking styles of that population, we can determine if, in fact, that technology is appropriate or useful in reducing uncertainty in the lives of its potential users (Douglas, pp. 7–8).

In accord with this view, Hamelink explains that:

> Appropriateness is not measured in terms of the dimensions of that technology, but as a function of the relation between that technology and development. . . . In meeting specific needs under specific conditions, the combinations of the most complex with the simplest, the largest with the smallest, are possibly the most adequate (Becker, p. 49).

Appropriate information technology is therefore information technology adequate or suitable for the task of providing needed or desired useful information in a timely and efficient manner. What information,

information services and/or information technology should be readily available to each person, to each household, or to each business, regardless of ability to pay, is whatever is best suited to supplying the baseline information in a particular society at a given time.

Equitable access to essential and necessary information technology therefore means a condition where unreasonable barriers to acquire or use appropriate tools, devices, techniques, or gadgets of communication do not exist. It means that the opportunity to use information technology to obtain useful, required, or desired public or essential information is equal to all, based on individual and/or societal needs and requirements, and not based merely on an individual's ability to pay. It is necessary to economic, social, and political participation. Thus equitable access to appropriate information technology should be an essential goal of information and communication policy in a democracy.

In the United States there is no single grand national information policy (notwithstanding the fact that the dominant policy of the past decade has been one of deregulation driven by the privatization of public resources coupled with the commodification of information) but rather a patchwork. That patchwork however has two major drivers: 1) the legal foundations of information dissemination and access; and 2) the economics and management of information (Bushkin and Yurow).

Limited legal, equitable access rights to information technology now exist. However, access is generally restricted to an individual's ability to pay for the information product or service. Or, it requires that the person own an information business since the right of ownership generally includes the right to exclude, or rather, the right to exclusive enjoyment. Thus while the first driver (legal) gives rights, the second (economic) can negate them.

On the one hand, there is a presumption that public information, that is, information generated by the government, should be generally available. On the other hand, U.S. policy generally presumes that information generated or held in the private sector need not be available or accessible, except on terms set by the person or organization possessing it. Information thus can be reduced to a commodity sold in a commercial market as mere entertainment rather than to serve a greater public good as political discourse or analysis underlying the basis of a marketplace of ideas. (See Collins and Skover, "The First Amendment in an Age of Paratroopers."[11])

There is an inherent conflict in information generated for the purpose of maximizing profits and information generated to inform, enlighten, educate, teach, or otherwise empower. The marketing of information wedded to expensive, complex information technology acts as a further wedge dividing society between information haves and information have-nots.[12] On this point, the National Telecommunications and Information Administration concurs:

> Pricing information goods and services to obtain a profit may make them too expensive for many categories of consumers. A competitive market structure, while it generally holds the prices of goods down, may not provide a mechanism for subsidies to those who need certain information services and cannot afford to pay the going rate to get them.

Of course the original development of information is relatively expensive. And the marginal cost of producing information products is quite low. This is simply because copies are a lot cheaper to make than the original. Nonetheless while most information is, like the copy, derivative, pricing often remains arbitrarily high.

INFORMATION HAVES AND HAVE-NOTS: IS THERE A PROBLEM AND DOES IT MATTER?

Throughout the history of the U.S., the introduction of a new good or service into the marketplace has resulted in the nonuniform distribution of that commodity among consumers, with a corresponding nonuniform opportunity and ability on the part of those excluded from the distribution chain to partake of and enjoy that particular good or service. Examples that come to mind are automobiles, telephones, black and white TVs, computers, and VCRs. This nonuniform distribution results from the working of a capitalist economy, in which the individual with the disposable income to purchase the available good or service has a greater ability to participate in whatever system the good is part of than does the individual lacking sufficient disposable income. This form of distribution achieves an efficient allocation. However, it does not produce equity. Great gaps exist in income distribution in the United States, resulting in a culture where few of the citizens are extremely wealthy, most are in the middle, and far too many are impoverished.

It is this author's assessment that as we enter into the still-struggling-to-emerge "information society," large segments of our population constitute a particular kind of impoverishment characterized by deficiencies in information and information technology.

Benjamin Compaine and others argue that there is no information-underclass nor do any significant gaps in access to information technology or information exist. They argue that the "underclass" issue is really one of perception or of definition. Certainly our experience with universal telephone service (POTS) is instructive on this matter: Approximately 93.4 percent of U.S. households have basic telephone service. This is one of the world's highest telephone penetration rates. But as one consumer group cautions:

> It would be a mistake to simply recite [this statistic] with pride, and feel assured that there is no problem. Unfortunately, some regulators and telephone industry representatives believe the 93% penetration is a "success." They view the remaining 7% as consisting of people who just "don't want phones" or who are otherwise just a smattering of people without phones from throughout the United States . . . (Telecommunications Consumer Coalition, 1987).

Only very recently has the FCC acknowledged that the more than five million households without telephones are without service simply because of an inability to pay (Tolchin, 1987). Because most people are likely to reduce their spending for medical care and food before they will take a cut in telephone service (Telecommunications Consumer Coalition, 1987), even a telephone penetration rate as high as 93 percent is an ominous indicator for a society based on information.

In addition, focusing on a single statistic as an index of universal service obscures significant regional, class, and racial inequities in telephone service. Just 81 percent of African Americans and Hispanic households have telephone service. Phone penetration in rural and inner city areas is relatively low. Entire states may fall well below the national average. Fewer than 81 percent of Mississippi households have telephones. Just 71 percent of rural black households in Louisiana have

telephones. AT&T admits that there may be relatively large, contiguous "pockets of deprivation" in poor rural areas within which only 20 to 30 percent of households have telephone service (all data from Hadwiger and Cochran, 1984; Telecommunications Consumer Coalition, 1987). Clearly, universal service is not an accomplished fact. These service disparities indicate that information equity is a problem even in the relatively simple "plain old telephone service" world. I believe the advent of an information age can be expected to aggravate the social impact of these disparities.

Even if one accepts the notion that information access gaps exist, Compaine argues that such gaps would probably be moderate and/or short term until the necessary information technology simply trickles down to those on the bottom who happen to be poor. The experience with the telephone argues to the contrary. Acknowledging, however, that certain gaps do exist between poor people and those he calls "the better off," Compaine states:

> There are indeed all sorts of "gaps" in and among societies. Many are related to the state of an economy. Poorer people and societies have fewer and older automobiles than the better off. The poor eat fewer steaks, rely more heavily on public education, are less able to afford designer jeans. They are less able to subscribe to magazines or purchase books (Compaine, 1990, p. 189).

Compaine ignores the fact that information technologies and designer jeans are not equally important in our society. While information technology is key to economic political participation, designer jeans are not. Information technology is not simply another consumer good.

Compaine's denial of the existence of a gap is based on three arguments: 1) that there is no empirical data or rigorous analysis; 2) that information technology today is smaller, faster, better and cheaper[13] than anytime previously;[14] and, 3) "Up to this point in history, *all evidence indicates* that technologies have been crucial factors in the spread of both access to information and the skills to use information" (Id., 1988, p. 183, *emphasis supplied*):

> Arguments that we are on the threshold of some divide separating information haves from have-nots do not stand up under modest scrutiny. Getting access to content is easier, faster and cheaper than at any time in man's history. The skills needed to be well informed and well entertained are lower than they have ever been (1986, pp. 12–13).

But arguments for the gap note: 1) Data on less than 100% participation in the telephone system have long existed and remain quite steady; 2) while technology grows cheaper, the cost of the set of technologies and services necessary to participation in the information age will, barring a universal network, remain prohibitive to the poor; and 3) in regard to Compaine's claim that *all evidence* indicates that technologies have been crucial factors in the spread of both access to information and the skills to use information, it should be noted that in the summer of 1989, a 232-page special edition of the highly respected *Journal of Communication* (JOC) was published under the title, *The Information Gap: How Computers and Other New Communication Technologies Affect the Social Distribution of Power.*[15] The articles appearing in this issue of the JOC show that the ubiquity of certain information technologies in the current age seems to represent an equality of access to information, but that access appears to be fragmented and privatized. Various obstacles to information equity that exist for particular groups—in training, experience, orientation, and cultural expectation—as well as institutional barriers in law, information systems, cultural values, and research protocols that may contribute to the persistence of the information gap are identified. However, recognizing the need for additional reliable data on the issue, one of the major goals of the editors of this special issue of JOC was to stimulate readers to identify and pursue the "information gaps" that might exist as part of an ongoing assessment of the effects of communication technologies. The editors also recognized the political-ideological nature of the information technology access debate and how the moral—almost religious—fervor of the discussion might slant one's view of history or of the issues themselves:

> Often for institutional or ideological reasons, various types of research appear in very different publications. The polarization of the new technologies debate[16] into optimism and pessimism may result from this segregation on views, the selectivity of the

evidence, and the stereotyping of the opposition. The moral fervor of the discourse about technology as promise or threat may obscure not only the historicity and complexity of the debate but also the specificity of the dangers and remedies (JOC, p. 7).

The JOC joins a chorus of credible voices speaking out for the existence of information gaps and their significance to our society.

> OTA found that changes in the U.S. communication infrastructure are likely to broaden the gap between those who can access communication services and use information strategically and those who cannot. Moreover, the people most likely to be adversely affected will be those for whom the new communication technologies are help out as a means to improve their circumstances—the poor, the educationally disadvantaged, the geographically and technologically isolated, and the struggling small business.
>
> One barrier to access that may be much greater in the future is cost, given shifting subsidies due to deregulation and changes in the financing and operation of communication services. Another barrier is the discretionary power of media owners to determine what information will be disseminated. OTA found, for example, that the first amendment is being used more and more as a device to protect the economic interest of media owners. In a number of instances, this can actually compromise the goal of freedom of expression (OTA, 1990, p. 243).

> The gap between the information rich and the information poor is a gap between the privileged and the powerless. Information is power. Information represents privilege. Early users of a new technology are typically the more affluent citizens. If the affluent maintain a curb on the use of a new technology and treat it as a luxury, then it will remain a commodity for their privileged use. If, however, use of the new technology is allowed to diffuse throughout the society, then adaptations to the needs of poor people (or even poor countries) will be forthcoming.

> Inequitable distribution of information through these new systems could create worse social problems than it solves. Beneficial effects will accrue only to those who have access to the system. We cannot now assume that all members of U.S. society have financial resources, the skill, the interest and motivation to use an electronic information service (Demac, Engsberg and Stier, pp. 14–15).

> Advanced communications networks are being developed and introduced within an existing economic and social context that displays stark geographical inequalities between, for example, rich and poor nations, central and peripheral regions, cities and rural areas . . . the "distance-shrinking" characteristics of the new communications technologies, far from overcoming and rendering insignificant the geographical expressions of centralized economic and political power, in fact constitute new and enhanced forms of inequality and uneven development (Gillespie and Robins, p. 7).[17]

> The information-poor may use the VCR to substitute entertainment for more serious content; the information-rich may use it as an additional means of obtaining more information.
>
> Information inequities are most often created, reinforced, or enhanced when those who are already information-advantaged adopt technology *and* use it to further their advantage . . . (Scherer, p. 94).[18]

> . . . those who are already heavy print users, those whose information gathering is purposive and focused, are the ones most likely to use VCRs to gain control over the television/video environment. Thus, the VCR appears to be strengthening the control that the active and generally information-rich already have over their information environment while it may be weakening the position of the information-poor (Scherer, pp. 100–101).

> Clearly, the Court understands that access to funds greatly facilitates the exercise of First Amendment rights, including the right to petition the government and the right to association, as

well as speech and press rights. In *USPS v. Greenburgh Association*, as well as in other cases, the Court begins to restrict information goods and services to those who can pay, raising a cost barrier to access.

Media available to those at the bottom of the socioeconomic scale are the least protected. Thus, the cycle of the mutually reinforcing link between socioeconomic and informational class is completed: socioeconomic deprivation directly translates into an informational handicap that has, in turn, a potential socioeconomic consequence (Bramen, p.177).[19]

In general, the Court does support socioeconomic class divisions through its information policy decisions by providing relatively few protections for media available to those at the bottom of the socioeconomic scale, directly limiting spending in some cases, deferring to labor law, and defining informational rights and responsibilities by profession . . . (Bramen, p. 178).

Unlike traditional broadcasting, most of the new media involve subscriber fees. People pay very directly for cable TV services, video cassettes, videotext information, and many other services offered. These services are available only to those who pay, as opposed to broadcast services that are available to anyone with a TV or radio set. Under the broadcasting system the rich and poor had access to the same information and entertainment material. But when fees are involved, the rich will be able to subscribe to much more than the poor. Because many of the services in existence and proposed involve the providing of information, the rich will be wealthier in information than the poor. This could further the gap between the rich and poor in terms of knowledge, education, and social mobility (Gross, pp. 12–13).

The poor, who cannot afford a home video center or the services provided to it, may find themselves buried deeper in their ghettos physically, intellectually, and culturally. Possibility exists that, in some of the technologies such as cable and SMATV, apartment dwellers may have different media choices

than home owners. Minorities may find that their needs are either not met, or are met in such a narrow manner through specialized programming services that the rest of society remains unaware of those needs (Gross, p. 172).

Access to multi-service communications systems will be a new measure of the American standard of living. In all of this, the specter of a wider gulf between the haves and have-nots clearly looms . . . (Granets, p. 33).

Storage in computers requires an organizational effort, based on both technical constraints and financial imperatives. Discrimination will be based on the storage of knowledge rather than on the ability to research and use it . . . (Nora and Minc).

The development and installation of an electronic information system requires advanced planning and may require sizable capital expenditures. . . . An electronic data system needs computer and communications hardware and supporting software. Public users of electronic information systems need to have access to computer and communications hardware and supporting software in order to have access to the data (CGO, 28th Report, 1986, p. 10).

The problem with price barriers to relevant and needed information is . . . "If you can't pay, you won't get the service, and if you don't get the service, the information will be harder to come by . . . thus, those who can't foot the bill will come to make up . . . the information underclass (Bowie, p. 6).

Shifting the direct burden of transaction costs[20] to the communication-user has significant consequences for equity. In fact, it may further increase the gap between those who can access and use information strategically and those who cannot, since not every person or every business will be equally able to assume these costs. . . . Many Americans do not have the technical skills required to take advantage of the opportunities afforded by new technologies. Moreover . . . many businesses do not operate on

a scale that permits them to become communication experts in their own rights. In the past, these transaction costs were essentially the same for everyone; increasingly, they are the basis for gaining competitive and strategic advantage (OTA, 1990, p. 247).

Information is indispensable to the responsible exercise of citizenship and to the development of political judgment. Without more than the expression and aggregation of private prejudices. In an electronically facilitated "information society," it is both easier and harder to provide wide access to pertinent economic and political information. It is harder because the quality and specificity of data have grown to a point where the data are nearly impossible to disseminate. The specialized character of many of the policy decisions facing citizens today seem to place them beyond the compass of mere political judgment. Yet, the task is also easier because the new technologies of electronic and computer print and video systems allow almost anyone living anywhere to have access to and retrieve information (Barber, p. 278).

It is entirely possible, without public intervention, that proliferating "electronic marketplaces" and "electronic communities" will not be freely accessible to individuals and enterprises (Jacobson, Levy and Smith, p. 8).

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Many argue, and it is common wisdom, that since at least the 1980s, the U.S. has been experiencing an information-based economy in which more than half the workforce is engaged in information work and in which information increasingly represents wealth and power. We seem generally agreed that the United States is in an "information age," in which information has a greater importance than previously. Increasingly, information is being substituted for materials or energy resources and increasingly, information is viewed as a strategic resource. As always, information bestows comparative advantages to those who have access to it over those who do not.

Already there exists an information gap between the information rich—those persons or institutions which can pay up front for relevant information and technology—and the underclass—the group which includes not only the poor, but also many disabled persons, single heads of households, most racial minorities, many of the elderly, all illiterate and semiliterate persons, people with limited English speaking proficiency, citizens residing in remote rural or high risk areas of most urban communities, and all those who cannot afford relevant information or access to it or its technologies.

Although we can expect major social changes as a result of new information technologies, these changes are part of an evolutionary process, rather than a revolution. The new information technologies may be affecting the processes of production and consumption in a variety of ways, but their total impact has not yet amounted to any structural changes in the capitalist mode of production or empowerment that work in the direction of eliminating existing inequities. The economic, political, and cultural institutions of capitalism have remained virtually intact (Tehranian, 1986a, p. 7).

Given this "continuity scenario," as Tehranian has termed it, labels like "information rich" and "information poor" may be somewhat misleading, especially if one believes they denote an entirely new social arrangement. I believe it is more realistic to note that "the rich tend also to be rich with information and the poor tend to be information poor. Determining how "information gaps" differ qualitatively from economic gaps is not enough. The new information technologies are already aggravating and increasing the information gap. Although the level of income and information availability per capita may increase, the relative gaps in income and information may also increase (Donohue, Olien and Tichenor, 1987; Nelson, 1983).

The potential benefits of information technologies are as unlimited as our imaginations *and* our pocketbooks. The public's investment in broadcasting for instance—the purchase of receiving sets—is more than 90 percent of the total capital investment in broadcasting (Head and Sterling, 1982, p. 342), with the "software"—the programs—supplied at no additional direct cost. This is not the case with consumer applications of the new information technologies. VCRs require the purchase or rental of tapes. Personal computers not only cost substantially more than typewriters or radio or television receivers, they also require the

purchase of software and peripherals. If one adds a modem, a color monitor, storage devices, a fax machine, and a printer to a personal computer system and desires to access outside databases, the entry and maintenance fees are costly even with costs coming down. The package is well more than the cost of "POTS" and will remain so.

Ettema (1984) has conducted one of the few empirical assessments of the process by which a new information technology increases information inequalities. Examining the introduction and adoption of a commercial videotext system developed for farmers, Ettema noted that in the first phase the system was designed for and marketed to "carefully defined and economically attractive user groups" (p. 394), that is, richer farmers who tended to already have an advantage in information resources. Even later, there remained disproportionate benefits for this group. The few largest farms derived the most benefits thereby increasing their information superiority over the smaller farms through the introduction of information technology.

Research efforts such as Ettema's deserve to be pursued in assessing the social and economic impacts of new communications systems and privatized information resources. The most important question still is, how far can the gap between the cultural elite, the information rich, and the illiterate or semiliterate class of information poor be expanded without irreversible negative social consequences occurring?[21] The lessons of the Kerner Commission Report concerning the role that information technology, information, and information service (in that case the mass media) play in civil disorders by either including poor minorities or excluding them from the mainstream should be remembered. Have-nots ultimately attempt to overturn the status quo since they have little to nothing invested in it.

ACCESS AND QUALITY OF LIFE

Information needs must be factored into assessments of the quality of life. Traditional quality of life indicators overlook the centrality of information in our lives (Marien, 1984). How will quality of life be measured in the information age? (Hudson, 1984) suggests that an "index of access" to information should be developed by those who monitor the quality of life. Currently, however, only minimal access is

considered by federal and state legislators and regulators. Much is made of the two states (California and New York) that offer "lifeline" telephone services to individuals who could not otherwise afford necessary telephones. While lifeline provisions are surely better than no provisions, such arrangements usually provide only severely limited local service. Indeed, the very term "lifeline" implies that the poorest citizens should expect no more than the minimal service required to sustain life in times of medical crises. Here is what the FCC once said:

> Access to telephone service had become crucial to full participation in our society and economy which are increasingly dependent upon the rapid exchange of information. In many cases, particularly for the elderly, poor, and disabled, the telephone is truly a lifeline to the outside world (Amendment of part 67 of the Commission's rules and establishment of a Joint Board; CC Docket No. 80-286, December 18, 1984).

Surely, the social importance of the telephone, its use for social inclusion and contact with family and friends should also be considered by policymakers who are charged with setting minimal quality of life standards. Telephone access should not continue to be a luxury in an information society and similarly access to an adequate information technology should not be seen as a luxury.

SOME POLICY ISSUES

Many in the telecommunications industry equate "basic service" with "plain old (local) telephone service" (POTS). However, the border between basic and enhanced services has never been fixed. Enhanced services often evolve into basic services. Fifty years ago, a one-party telephone line was a type of "enhanced" service; today it is considered basic. Even today, approximately 15 percent of farms with telephones must rely on party line service (Hadwiger & Cochran, 1984), and the quality of rural telephone service in general can be expected to deteriorate. Thus, rural residents may find it difficult or impossible to use the telephone network for computer applications (Hudson, 1985b). What will policy makers be willing or able to do for rural residents when

access to remote information sources becomes a "basic" need, that is, a necessity or required resource?

We can expect telephone companies to offer "video dial tone" services like television via optical fiber while cable operators add voice telephony and data capabilities. Indeed, telephone-cable joint ventures or mergers may become commonplace (see NTIA, 1989; Baer, 1985; Lloyd, 1985). Will the resulting services be treated as essential services, that is, "basic" and expected to be universally available? Or will be they be like pay-cable services, that is, "enhanced" and expected to be offered only in certain areas, and made available only to those who can afford them? At what point do videotext or home banking become necessary or essential and thus part of basic service? In an era of "smart" homes and buildings, at what point, if ever, will electronic security and fire-alarm services become basic? Will privacy safeguards be part of a basic package, or will they be available only as enhanced services? These issues must be addressed in a policy framework and readdressed over time as conditions change.

Achieving equitable basic service may be further complicated given that the term "subsidy" is increasingly a dirty word in regulatory circles. Increasingly, the regulatory apparatus is expected only to: 1) discover "hidden subsidies"; and 2) pursue whatever deregulatory measures are required to allow the marketplace to "correct" for these subsidies. This deregulatory zeal is combined with technologically driven factors. As Nuestadt, *et al.*, explain: "New information systems tend to eliminate built-in subsidies. They tend to 'un-bundle' information into discrete offerings, yielding a greater number of specialized services while undermining the broader ones" (in Rice, 1981, p. 3).

The stated rationale for the information technology industry's aversion to subsidies is that subsidies are usually uneconomical. However, as Dordick (1986) notes, "It is not at all clear that social equity must necessarily lead to economic inefficiency" (p. 303). Hudson (1985a), for example, has shown how using measures of need rather than demand as guides for telecommunication development often yields unexpectedly high returns on investment and provides indirect economic benefits to the society at large.

Certain information services and technology are now considered necessary and essential, yet "POTS" and television diffusion are based not on need but on ability to pay. One's access to literacy education and

an adequate level of service may depend on where one happens to live —surburban or inner city, rural or metropolitan area. Of the 7 percent of the U.S. households that do not have access to a telephone, most are poor and/or rural and/or minority and/or inner city. Although telephone service is generally considered to be essential for emergency two-way voice communications, only two states, New York and California, require telephone companies to provide such service. Since the goal of universal telephone service is still just a goal, why should citizen-consumers expect higher levels of "universal service" penetration with newer state-of-the-art broadband fiber networks of the future? Public education is a type of information service that public policy deems essential and necessary for good and productive citizenship. But universal information technology to public education is nonexistent. Separate and unequal access to quality education and its associated information technologies (i.e., textbooks, computers, audio/video equipment, library facilities, etc.) based on race and income has been a leading cause of not only an education or information gap, but also an income gap and an opportunity gap. For students from low-income and poor households, the playing fields have never been level. Yet, a decent education for all is considered to be essential and necessary for the nation. Universal access to certain information services and hardware and software thus viewed can be seen for what it is—a national security issue.[22]

Today, due to new information technology, especially communications satellite networks and systems (and new transportation technology) the world is smaller and more competitive, but more interdependent. Because global competition for world markets including those for information products and services pits the Japanese and the still-emerging European Economic Community (EEC) against the United States, domestic public policy regarding information, communication, education, industrial training, telecommunications infrastructure, computers, artificial intelligence and even broadcast policy have international implications.

The U.S. for the first time in the 20th century has become a debtor nation, the largest in the world. It is faced with a multi-billion-dollar federal deficit, a savings and loan scandal bail-out that will cost citizens more than $500 billion over the next 30 years, a declining quality of life characterized by pollution, inflation, racism, sexism, decaying

infrastructures, drugs, AIDS, crime, alienation, and expanding poverty. But we are also presented with a new opportunity to redefine ourselves to better coexist on a relatively small planet with limited resources. Information, in the final analysis, is cheap and nonexhaustible. Yet for many individuals information technology may or may not be cheap or even affordable. Information is essential and necessary. Information technology may or may not be essential or necessary. In any event, there appear to be no constitutional guarantees to either. Unfortunately, the First Amendment does not provide the means to buy information (Wyde).

THE FIRST AMENDMENT AND EQUITY AND ACCESS TO INFORMATION TECHNOLOGY

Convergence of computers, telephones, and telecommunications has created an inseparable wedding where medium and message merge. In the marketplace of ideas, the flow of information has become increasingly dependent upon the means of its dissemination and reception, which in turn has become increasingly dependent upon information technology. Thus, to the extent that a disseminator or recipient of information is deprived of access to appropriate technology via which it is exchanged, that disseminator or recipient may be deprived of that information altogether and of the ability to have effective voice in this society.

Deprived of the means of participation, the individual will be unable to participate in the marketplace of ideas in any effective manner. This deprivation, however, unlike that associated with the marketplace of goods and services, carries constitutional implications.

Private restraints on First Amendment freedoms are just as inimical to the philosophy and purpose of the amendment as are governmental restraints, and a right of access to the means of communication should be implied from the guarantees of the first amendment or, alternatively, the means of communication should be regulated to provide for such a right.[23] This is not to say however that there are such rights, just that there should be. The noted constitutional authority, Thomas I. Emerson, has said that First Amendment freedoms include the right to communicate[24] through any medium:

> [The] set of rights, which makes up our present-day concept of free expression, includes the right to form and hold beliefs and opinions on any subject and to communicate ideas, opinions, and information through any medium—in speech, writing, music, or in any other way (Emerson, p. 3).

Communications consultant Richard Wyde contends that our Bill of Rights[25] guarantees what will emerge by the year 2000 as a "Right to Understand."[26] According to Wyde, this emerging right would be broader and stronger than the right to know because it would require that citizens not only be able to obtain information, but also be able to assimilate and utilize the information for decision making in connection with the political and economic issues. Moreover, it would protect each individual's reasonable expectation to understand the workings of our government and society, and "allow each citizen to participate intelligently in the decision-making processes affecting every aspect of his or her political, social and economic environment" (Wyde).

In *Wollman v. City of Palm Springs*,[27] a 1963 case before the California Supreme Court, a right to communicate effectively was recognized, the court said:

> The right of free speech necessarily embodies the means used for its dissemination because the right is worthless in the absence of a meaningful method of its expression. To take the position that the right of free speech consists merely of the right to be free from censorship of the content rather than any protection of the means used, would, if carried to its logical conclusion, eliminate the right entirely. The right to speak freely must encompass inherently the right to communicate. . . . Freedom of speech entails communication; it contemplates effective communication.

The U.S. Supreme Court has not yet supported the conclusion in *Wollman* regarding access rights to information technology. The First Amendment, so far, does not guarantee anyone access rights to the means of effective communication or information technology.

In *Red Lion Broadcasting Co. v. FCC*,[28] the U.S. Supreme Court noting that only a fraction of those with resources could communicate

intelligibly by radio at the same time because of the scarcity of radio frequencies, reasoned that where there were substantially more people who wished to broadcast than there were licenses to give out it was "idle to posit an unabridgeable First Amendment right to broadcast comparable to the right of every individual to speak, write or publish." At the same time the Court noted that:

> . . . as far as the First Amendment is concerned those who are licensed stand no better than those to whom licenses are refused. A license permits broadcasting, but the licensee has no constitutional right to be the one who holds the license or to monopolize a radio frequency to the exclusion of his fellow citizens. There is nothing in the First Amendment which prevents the Government from requiring a licensee to share his frequency with others and to conduct himself as a proxy or fiduciary with obligations to present those views and voices which are representative of his community and which would otherwise, by necessity, be barred from the airwaves.

Presently, there is no "fairness doctrine" obligation requiring issue access to any mass media. There is a limited right of access to broadcasting if one is personally attacked during the broadcast of a controversial issue of public importance. There is no such right of reply if personally attacked in newsprint.

In *Miami Herald Publishing Company v. Tornillo*,[29] the landmark 1974 case involving a "right of reply" statute, the U.S. Supreme Court held that the responsibility of newspapers to present opposite points of view is not mandated by the Constitution and like many other virtues it cannot be legislated. The Court said that compelling an editor to publish an article he finds objectionable for any reason is comparable to compelling him to refrain from publishing that which he wishes to print, and is equally unconstitutional. With regard to this point, the Court said, "It has yet to be demonstrated how governmental regulation of this crucial process can be exercised consistent with First Amendment guarantees of a free press as they have evolved to this time."[30]

In sum, the impact of the Court's apparent inconsistent decisions in *Red Lion* and *Tornillo* is that today the government may apply greater regulation to the broadcasting media than to print media on the grounds

of scarcity and what is required by the public interest, convenience, and necessity. In the case of print media, government must maintain a *laissez-faire* policy. But in the case of broadcasting, government may be pro-active in the areas of structure and to some limited degree, content.

But a *laissez-faire* policy regarding the most effective means of disseminating and receiving information will ultimately operate to the disadvantage of all but the wealthy information consumer and the information cartels, creating a caste system divided along informational lines and carrying constitutional implications.[31]

Ideally, the First Amendment in an Information Age would: 1) promote the public's right to receive information from as many divergent and antagonistic sources as possible; 2) promote the dissemination of information from speakers and publishers to as wide and diverse an audience as possible so as to exercise the widest journalistic freedom consistent with reasonable time, place, and manner; and 3) promote free, or at least, affordable, expression for all citizens,and, where this is impossible, the right of the viewers/listeners/consumers/citizens/individuals should be paramount over the right of corporations, government or other institutions.

RECOMMENDATIONS FOR INFORMATION POLICIES THAT WOULD PROMOTE EQUITABLE ACCESS TO APPROPRIATE AND NECESSARY INFORMATION TECHNOLOGY IN A DEMOCRATIC SOCIETY

Information technology and telecommunications policy planning is social engineering. It attempts to modify human behavior and control outcomes at a very fundamental level. Moreover, since a nation's communications infrastructure is its nervous system, any substantial change in that system necessarily affects the body/nation as a whole. Therefore, in planning for the future through information policy initiatives, the bottom line consideration should be that no American be without information technology necessary not only to survival, but also to participating fully in the political, social, and economic life of the country. The policy must be prepared to serve people with a complex mixture of backgrounds, incomes, and learning skills using whatever levers of law, regulation, subsidies and market incentives will achieve the goals.

Certain global competitors to the United States such as Japan, Germany, France, and the U.K., view telecommunications as a strategic industry, meaning that it is: 1) important to national security or has military consequences; 2) that the industry is research-intensive and therefore an important source of new technology; and 3) that telecommunications has a multiplier effect of increasing efficiency in not only the telecommunications system, but also all of the industries which depend on it (Harris, pp. 1–3). Additional spillover benefits cause many nations to view telecommunications as a strategic industry: 1) an increased knowledge base; 2) potential gains in education and research and development; 3) increased demand for other new technology; 4) new markets; 5) possibilities for improving the quality of life in both urban and rural areas; and 6) savings in energy consumption.

The chief competitor to the United States for world markets in information technology and services is Japan. Thus Japan's information technology policy is of special interest to us. Not surprisingly, Japan has already chosen to provide equitable access to a high level of information for all of its citizens and businesses. In the mid-1980s, Japan made a national commitment to develop its next generation telecommunications infrastructure (at a cost of some $150 billion) and to provide each Japanese home and each business in Japan with access to a fully digital, fully broadband, fully optical telecommunications network (Harris, pp. 8–9).[32] Moreover, according to a report in *The Japan Times*, Nippon Telegraph and Telephone (NTT) has proposed a concept to be implemented throughout Japan in 15 years called "Visual, Intelligent and Personal Communication Services" (VI&P). It is a package of readily available information services based on Integrated Services Digital Network (ISDN) that supports signal transmission over various communication media and will offer voice, data, facsimile, music, graphics, and video services. By employing the ISDN standard, all of these services would be fully integrated and sent over common interfaces (Dambrot, p. 6). The NTT statement reported upon says that NTT's mission "is to provide—in the same manner as currently available communications services—the three basic services of telephone, visual telephone and text mail, all on a nationwide basis, as well as to introduce more advanced VI&P telecommunications services."[33] NTT further envisions that its VI&P choice of flexible services will be largely image-based, and that ISDN will allow full-color, full-motion videophone to become more prevalent, and that electronic communications will go beyond text to include on-line facsimile, computer-generated graphics, and other images data—all sent and received simultaneously, "greatly augmenting the utility provided by telecommunications services." Moreover, NTT envisions a variety of advanced visual services that "will employ sophisticated image-processing technology to provide high-definition image communications with natural, life-size images; high-resolution text and drawings; multi-screen displays for personal teleconferencing; and eventually, large-screen three-dimensional color image communications" (Dambrot). So we note that one of our competitor countries has made a policy decision in light of the new realities of the information age.

The United States, by contrast, has a policy of relying on free markets to shape its information technology policy. Such an approach has serious national consequences:

> The prevalence of *laissez-faire* attitudes in the corporate sector has had one unintended result as far as telecommunications is concerned. By concentrating on short term profits rather than long-term market development, telecommunications R&D efforts have languished in this country. The end result is a telecommunications trade deficit of more than $2.5 billion per year, and growing. The U.S. is rapidly losing its leadership in this field, as in so many others. Balancing short-term marketplace competition with long-term industrial competitiveness is a problem that needs to be addressed not just by the courts and regulatory bodies but by the administration and Congress (Committee on Government Operations; 28th Report; 1986).

Harris recommends that the U.S. government fundamentally re-evaluate its public policies regarding information and information technology by first recognizing that the issues inherently concern comparative advantages. Next, he says that we should recognize that the government has a tremendous opportunity as a user of telecommunications, and as such, it should set an example by demonstrating improved quality of services and lower costs by adopting standards and bearing some of the initial learning costs of the new telecommunications. Harris advises that we should be very careful to distinguish between promoting

competition and protecting competitors from competition and that we should recognize producer interest as well as consumer interest. He also adds that we should develop policies to reduce the costs and burdens of regulation by using economic incentives rather than administrative controls by removing disincentives to invest in the public switch network and to remove the incentives for large users to leave the network. And, lastly, that we should remove restrictions on specific service offerings in virtually all cases allowing market competition where information technologies would compete among themselves (Harris, p. 10).

Harris' recommendations provide key ideas for a more effective national policy for the United States and point to the reality that this domestic issue has clear international implications.

Given those recommendations and the discussion throughout this paper, I argue that the key assumptions of a U.S. information technology policy that ensures equity and access are:

- Government has an affirmative role in assuring equity and access to information technology, and therefore to the information which it conveys.
- Regulation has a role in that policy, despite the fact that regulation currently is out of favor.
- Subsidy should be considered as part of the policy mix.
- Government is responsible for establishing a national information technology infrastructure.
- Government must ensure sufficient infrastructure to provide an adequate base of service to all its people.
- Government ownership or control of portions of the infrastructure (as in the case of the postal system, public libraries, and public schools) may be appropriate and necessary in order to deliver the full benefits of the information age (see NTIA Report, *TELECOM 2000*, October 1988, p.9).
- The concept of a common carrier (which assumes openness to all users, first-come-first-served service, no censorship) should apply to information technology policy.

- Ensuring wide access to the information technology is crucial. Also crucial is broad participation in the generation of the information and its attendant technologies. "Set-asides" and affirmative action may be necessary to ensure that broad participation and participation is essential to the political and economic future of the country.
- None of these elements needs eliminate free markets from operating in areas where there is adequate competition among information service providers, and where there are no overriding policy concerns that would necessitate government intervention. (Such intervention would be necessary if a medium begins to assume the characteristics of a public forum, thus requiring that government recognize and enforce dissolution of barriers to access.)
- There may be a need for a basic reconceptualization of the First Amendment in light of new and emerging information technologies.

CONCLUSION

Economic justice in the form of equitable access to appropriate, necessary, or essential information technology or information *per se*, is a political issue, albeit, a political issue that is related to the development of technology. But this is not a technology issue. Technology alone—no matter what its capability—cannot decide these fundamentally political issues which ultimately rest on political and philosophical questions involving basic societal values. Can we afford the kind of society that we ultimately desire? Are our expectations realistic in light of existing facts and conditions? And, most important, do we have the political will to make the necessary changes to reach a defined future?[34]

Whether poor people receive sufficient welfare assistance, whether children receive the type of quality education necessary to prepare them for the world they will inherit, and whether minorities (among which, in the years ahead will be counted our Caucasian population) have an equal opportunity to participate in all aspects of society including information technology and the sharing of political power, will be

reflections of our nation's core values. Those reflections must be considered in America's planning processes, including the political process which will shape our information technology in the future.

An equitable information policy must allow for the fact that many previously "enhanced" technologies and services may become indispensable in an information society. Moreover, regulators must have the flexibility to adopt measures to make these services, so far as possible, available to all. The most pressing policy concern should be a re-evaluation of the desirability and, indeed, rationality of allowing market forces to be the *de facto* selector of public policy. The wisdom of the late Ithiel de Sola Pool is appropriate for the times:

> The slogan "Leave it to the market" has become a cliche of those who have a naive belief that one thereby avoids the need for political decisions. On the contrary, a market is not something that happens by itself. It is something crafted by laws; without them it cannot exist (Pool, 1983, p. 143).

While people who are information poor will always have a personal obligation to make the best use of available technology, they cannot begin to do so unless their society shapes policies which allow them access to that technology in the first place.

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1. Quote from his last book, *Where Do We Go From Here: Chaos Or Community?*, pp. 37–38, King.
2. Speech of Acceptance, June 27, 1936, quoting from Warfel, H.R., et al., *The American Mind*, New York, American Book, 1937, pp. 1251–1253, Smythe, 1985.
3. *Knowledge*, essentially is highly organized, readily available, useful information. It inclu les learning, skill, erudition, awareness, or understanding. It is everything within the range of one's information. Samuel Johnson identified knowledge of two kinds: "We know a subject ourselves, or we know where we can find information about it" (Makower & Green). According to the ancient Greeks and more recently, Francis Bacon: "knowledge is power." If knowledge is power, then information is also power; it can lead to knowledge, thus, it is empowering. Knowledge of, and access to information are vested political, cultural, and economic interests (Innis,1951, p. 90).
4. *Communication* is the interactive process of information sharing or the exchanging of ideas, knowledge, and experience.
5. *Power* has to do with the ability to do and the capacity to act. It also includes the ability to control one's self and others. A person or thing that has great influence, force, or authority has power.
6. *Communications and information technologies* include any device, tool, product, technique, mechanization, invention, applied science or contrivance for the purpose of transmitting information or communication. Under this broad definition, the following are examples of information technology: formal languages, written alphabets, mathematics and numbers systems, paper, a pencil, a pen, a quill, a brush, paint, ink, printing presses, artists' canvas, books, computers, radio and television receivers and stations, cable television system, integrated services digital network (ISDN), optical fiber, multi-channel multi-point distribution service (MMDS), satellite master antennae television (SMATV), high-definition television (HDTV), communication satellites, fax, transponders, up-links and down-links, cellular telephones, typewriters, Nintendos, flashing lights, flags, camcorders, cameras, VCRs, audio cassettes, film, clay, marble, digital cellular radio, etc. (see, generally, *International Encyclopedia of Communications*).
7. For example, in order for your children to benefit from the viewing of quality children's programs on the Disney Channel, you must first have a television set—preferable a large color TV receiver. Just about all U.S. households meet this requirement. Next, your community must be wired for cable and you must subscribe to not only basic cable service, but also to a premium program service, that is, if your cable operator carries the Disney Channel among its program options. Currently, 17 percent of U.S. homes are not passed by cable. Moreover, of the 83 percent of homes that could subscribe to cable television, only about 53 percent of television households actually subscribe to basic cable service. A substantial proportion of the population either chooses not to subscribe, or, perhaps, cannot afford to subscribe to basic cable television service. The percentage of households that do not subscribe to any premium service, such as the Disney Channel, or HBO, or the like, is even higher, as one would expect. Yet, cable television, with its potential to become a necessary information technology that would revolutionize American television by providing an abundance of diversity of information, offers programming that is more or less more of the same—that is, at a cost to consumers who can afford it, far higher than traditional "free" (advertiser-supported) broadcast television. Moreover, it was the mere potential of cable television, more so than any other factor, that was used to justify the deregulation of commercial broadcast television in significant areas concerning access to crucial information—i.e., controversial issues of public importance, diversity of views concerning such issues, the requirement to present news and informational programming, the requirement to present programs to pre-school age children as well as older children.
8. *Access* means admittance or admission; liberty to use; accessible. In the computer field, for example, access is to approach, instruct, communicate with, store data in, retrieve data from, intercept from, or otherwise make use of any resources of a computer, computer system, or computer network (Compaine, 1988, p. 262).
9. Historically, equity, which has been called "righteous" law, finds its origins in ancient Rome where the word *acquitas*, from which we derive "equity," had the meaning "reasonableness." When justice was required to "do equity," in cases where the law itself was too harsh or was inadequate, general principles of tradition and custom from the then known world was applied in the search to find a fair result. The magistrate or *preaetor*, not being bound by any single code of law, was free to be reasonable in doing equity (Zane, p. 257).

   The meaning of equity in the context of information technology and services requires some understanding of justice. *Justice* is a social virtue or a form of morality that has been variously defined as meaning, rightful, just, fair, impartial, reasonable. The use of authority and power to uphold what is right, just, proper, correct, or lawful is what government attempts in applying justice. *To do justice* is to treat all people fitly or fairly. To have done justice is to have done what was right and proper. According to Rawls, the basic principles of justice were chosen by free and rational individuals who were willing to cooperate because of concern for their own interests. The first principle rests on the requirement of equality in apportioning basic rights and duties. The second principle holds that inequality is justified only if it produces benefits for the whole society, in particular for those least favorably placed. To this latter principle, Rawls adds provisions concerning equality of opportunity to enjoy whatever privileges do prove necessary (Weisband, pp. 210–211). Justice therefore can be said to include economic or distributive balancing as well as fairness in the legal and political criteria. According to Arthur and

Shaw, justice is, in a sense, because it is a characteristic of our relations with others that operates as a set of "claims" that:

> ...consist of assertions made by certain individuals or groups toward others, or that others regard as beholden upon them for reasons of moral right or beneficial good. Claims thus impose obligations of action, sometimes even sacrifice, on behalf of parties deemed to be unduly harmed or unfairly deprived (Weisband, p. 23).

10. In the United States, essential and necessary information technologies and information services have included the provision of government subsidies or favorable legislation that has served as incentives to prime the pump toward greater access as well as other defined policy goals. Examples include the following:

- Radio, considered early on to be a point-to-point information technology particularly useful to the U.S. Navy, was deemed necessary and essential, following the *Titanic* disaster, to save lives and property at sea. Thus, based on national security reasons and the fact that radio technology aided rescue assistance, Congress enacted the Wireless Ship Act in 1910. Ships that carried more than 50 passengers were required to have a working radio and a full-time radio operator on board and functioning while at sea. This affirmative access legislation served as both a spur to establish the infant broadcast industry and promote radio technology for military and commercial purposes;

- The rationalization demanded by the Navy Department exemplified in the Patent Pool Agreements laid the basis for sharing the new markets between AT&T, GE (and its offspring, RCA), Westinghouse, and the United Fruit Company and made this new cartel immune to anti-trust action (Smythe, 1985). The basis of such agreements was to assure national security and defense by maintaining control over a strategic technology and industry. Similar rationale is currently offered to justify government subsidy or favorable legislation for the development of HDTV, super computers, artificial intelligence, "Star Wars" (Strategic Defense Initiative), etc.;

- The Radio Acts of 1912 and 1927, as well as the Federal Communications Act of 1934, regard radio technology as necessary and essential to the public interest and the Federal government therefore gives away free and exclusive licenses to operate radio and television stations; this is indeed a huge subsidy to promote the technology of broadcasting and a public information service. More specifically, Title I, Section 1, of the Communications Act of 1934, as amended, provides that the purpose of regulating commerce in communication by wire and radio is:

> ... to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges, for the purpose of the national defense, for the purpose of promoting safety of life and property through the use of wire and radio communication. ...

This section is often cited as justifying universal service to telephones and telephone service, as well as promoting new uses of radio technology;

- Michael Rubin notes that the Federal government has a strong history of participation in information services through public education, postal service, public libraries, and the funding of research and development (Rubin). The central basis for the government's involvement in information service seems to be that citizens are entitled to free or not-for-profit information. Citizens simply must have knowledge required to pass judgment on their government. Our system of public education, with compulsory requirement to attend a public or private school evolved as a response to needs of the industrial revolution. Manufacturing industries needed a more highly literate and skilled workforce than did the previous agricultural society. The government thus provided subsidies for public schools, it hired teachers and administrators, it developed curricula (affirmative content-based information), and it bought text books and other information technologies (blackboards, chalk, movie projectors, VCRs, desktop computers, etc.) deemed to be appropriate for a particular school or district or system. On occasion, government provides tuition and research grants, scholarships and fellowships. For example, immediately following the Soviet Union's launching of the first man-made satellite, *Sputnik*, on the ground of national security, the National Defense Education Act was passed to enable more Americans access to education and learning opportunities.

- Lavey notes that telephone service as it exists in the United States developed largely as a result of purposeful regulation by the Federal Communication Commission (FCC) and state public utilities commission (PUCs), as well as Federal government loan programs. The combination of cost support funds, averaged rates, and areawide service obligations have been largely responsible for the widely available, reasonably priced, high quality telephone service (Lavey, pp.152–153). The Congressional Budget Office notes that by supporting the work of the first producers of integrated circuits, the federal government helped find solutions for all subsequent producers of integrated circuits.

- In 1984, the Congress passed the National Cooperative Research Act (NCRA), which made it easier for private firms to engage in collaborative

research and development (R&D). In 1987, the federal government, together with industry, began funding SEMATECH, a large-scale R&D consortium focusing on semiconductor manufacturing technology. According to a recent study of the U.S. Congressional Budget Office (CBO Study, July 1990) concerning the benefits and limitations of using federally supported R&D consortia to encourage commercial innovation of certain information technology—semiconductors, X-ray lithography, high-resolution and advanced imaging systems—the study found that federal support for R&D consortia can be a useful, if limited, tool to support commercial innovation. The CBO study identified various public purposes for funding R&D consortia. The most common reason is that the collaborative effort produces a product or technology, which some federal agency intends to purchase, or involves an area of the public interest. Other reasons that justify federal funding for R&D in general are that private markets tend to fund less R&D than is best for the national interest; and, that in high-technology industries, a national security aspect in R&D is often involved. Another reason is that R&D can also build up the science and technology infrastructure by producing knowledgeable people. By supporting R&D consortia, the federal government may achieve many of the same results that private firms do in joint ventures, and, in some cases, it may also establish an industry standard that results in a larger potential market. This standards-setting process thus produces public benefits even when it is not being purchased directly by a government agency. But the chief justification for R&D consortiums is the threat to American high technology industries from global competition. Accordingly, the CBO study states:

> Concerns about the declining international competitiveness of U.S. industry have prompted proposals for additional federal support for research to help U.S.-owned firms bring new products to market. Proponents argue that because federal agencies do not now provide much support for commercial innovation, certain U.S. industries are at a disadvantage compared with similar industries in countries that provide support. Erosion of the U.S. share of the international market in several high-technology industries is often seen as evidence of this problem (CBO study, p.1).

The appropriate place for federal support of R&D, according to CBO, is "near the beginning, where the fruits of the investment are to accrue mainly to the public and where the comparative advantage of any individual or firm is most limited" (CBO study, p. 6). An important *caveat* identified by CBO in regard to government supported R&D consortia is that they may not be the perfect way to achieve the intended policy:

> Simply stated, actions that make U.S.-owned firms competitive may not make the United States competitive. For instance, many U.S.-owned firms are moving R&D out of the United States. As noted above, R&D increases the abilities of those engaged in it. By moving the R&D overseas, these U.S.-owned firms may have reduced the future potential income of U.S. workers who would have become more skilled by performing the R&D. While the U.S.-owned firms may become more competitive through this action, the U.S. workers may become less so.

11. Texas Law Review, Vol. 68:1155, 1990.
12. These terms are also sometimes referred to as the "information-rich" and the "information poor," *infra.*
13. "The watchwords for information technology today are smaller, faster, cheaper and better. At the same time, we are witnessing the blurring of the boundaries among heretofore distinct media forms" (Compaine, 1986, p. 2).
14. Notable exceptions to the trend toward cheaper and smaller information technology are television and radio stations which now cost more than at any time in history although there are more of them than at any time before. The selling prices of cable systems, local newspaper businesses, and mass media businesses generally, are higher than at any previous time. Postage stamps certainly cost more now, with the expectation that prices will continue to go up rather than down. The cost of access to cable television services has risen steadily since enactment of the 1984 Cable Television Act.
15. Summer 1989/Vol. 39 No. 3/ISSN 0021-9916, Oxford University Press, NY.
16. To call this a debate is very generous. Essentially there is no debate, at least one of which the public is aware. One side of the "debate" controls access to the mass media which has no obligation to present any particular issue, no matter how much the issue may be a controversial issue of public importance. The mass media tends not to cover certain issues, such as media issues that might call for reform of the media itself (what Bagdikian calls "media taboos"). That same side of the "debate" has the lion's share of empirical data and facts obtained through marketing surveys and R&D. And, only one side of the "debate" can make the debate a truly public event. In other words, the rules of the debate favor the already powerful speakers.
17. Gillespie, Andrew and Kevin Robins, "Geographical Inequalities: The Spatial Bias of the New Communications Technologies," in *The Information Gap, Id.*
18. Scherer, Clifford W., "The Videocassette Recorder and Information Inequity," in *The Information Gap, Id.*
19. Bramen, Sandra, "Information and Socioeconomic Class in U.S. Constitutional Law," in *The Information Gap, Id.*
20. "To be effective communicators, people need to know how to use the technology through which their messages are mediated. Moreover, to find information relevant to their particular needs, they must be able to locate the appropriate source. To use this information strategically—whether in politics, business, or other realms—they must be able to find it in a timely fashion.

Finally, to communicate effectively with others, individuals not only need to identify their audiences and the most cost-effective means of exchange, but they must also be able to package their messages in the most appropriate technological format. These prerequisites represent the transaction costs of effective communication—costs that are often overlooked" (OTA, 1990, p. 245).

21. *Literacy in the information age.*

The U.S. literacy level has been estimated to be as high as 95 percent of population to as low as 70 percent and all in between. No one knows for sure because of disagreement as to what skills are being measured and because there is no accurate way to determine various degrees of functional literacy or illiteracy. In any event, the coming of the information age raises new literacy-related threats to social equity and equality. The problem of technological literacy or what Compaine calls the "new literacy" will need to be addressed.

We may be entering an era in which "the aims of education must embrace *multiple* literacies" (Rice, 1985, p. 9). ISDN will offer a variety of service options. Calling procedures could require input well beyond the standard seven digits (Stiff, 1985, p. 181).

A common feature of writing about the information age is the idea that learning must become a lifelong process (e.g., Martin, 1981) One critic wonders: "Are we reversing the logic of education, such that the older you get, the more incapable you will be?" (quoted in Rice, 1985, p. 11). Because entirely state-sponsored education ends with high school, lifelong education may be available only to those who can pay for it. Given that older adults and the elderly are becoming one of the largest segments of the U.S. population, these issues must be addressed by policymakers.

22. The question of how national security is defined is a political one without objective standards. Immediately after the Soviet Union successfully launched the world's first satellite, additional subsidy toward education was justified under a national security/national defense rationale. For example, any substantial brain drain from the U.S. to some other more prosperous nation that paid higher salaries to information workers could be considered a national security matter.

23. History shows that freedom of expression through speech and press in the United States is surrounded in myth; that it is, at best, a rebuttable presumption; that it tends to protect status quo values and interests; and, that the right to speak or publish effectively is generally limited to or controlled by property owners—that is, owners of the presses, both print and electronic.

From the beginning of the nation, tolerance for divergent views was indeed limited. Cohen notes that less than a decade after the Bill of Rights was ratified, Congress passed the Alien Act, declaring seditious expression a crime against government. And, on July 14, 1798, the Sedition Act became law, making it a criminal offense against the United States to utter or publish false,

scandalous, and malicious writings against the federal government with the intent of bringing government into contempt or disrepute, or to stir up sedition against the government. Because the constitutionally of the Alien and Sedition laws was never actually challenged, the U.S. Supreme Court never had the opportunity to rule on a sedition case nor to consider its First Amendment implications (Cohen).

Surprisingly, the U.S. Supreme Court had nothing to say about the First Amendment during the first 130 years of the republic. First Amendment cases were unknown in the Supreme Court prior to the 20th century. Although the Bill of Rights was written in 1787 and ratified December 15, 1791, it was not until 1919 that the Supreme Court ruled on its first case, *Schenck v. United States*, 249 U.S. 47, involving speech or press freedoms.

24. See also *Amalgamated Food Employees Union v. Logan Valley*, 391 U.S. 308 (1968), in which the Supreme Court noted that "the goal of free expression *and communication* . . . is the heart of the First Amendment" (emphasis added).
25. Wyde claims that the right to understand is implicit in several areas of constitutional law, but strongest in the context of criminal proceedings and the First Amendment. For example: The Sixth Amendment seeks to ensure that those accused of a crime understand the risks involved and to be fully informed of the nature and cause of the accusation; be confronted by witnesses; and, have the assistance of competent counsel. The Fifth Amendment requires the provision of due process including a right of fair notice and the right to participate in a hearing. And the fact that the First Amendment has been interpreted to support the individual's right to know and to freedom of speech.
26. This right to understand would require that each person would have a "reasonable expectation" of understanding consistent with the individual's aptitude and capabilities. At minimum, it would include basic skills of reading and writing, thinking and arithmetic problem solving, but also practical "electronic information-oriented" skills such as information theory, data base management, software design, and basic computer technology.
27. 59 Cal. 2d 276, 379 P.2d 481, 29 Cal. Reptr. 1 (1963).
28. 395 U.S. 367 (1969).
29. 418 U.S. 241 (1974). A number of previous Federal cases had expressed a general reluctance to mandate enforced access to the print press. For example, in *Associates and Aldrich Co. v. Times Mirror Co.*, the Ninth Circuit held that there was no requirement that newspapers accept movie ads that did not conform to their standards; in *Chicago Joint Board, Amalgamated Clothing Workers v. Chicago Tribune Co.*, the *Tribune*, engaged in a labor dispute, was upheld in its refusal to print the union's ads. And in *Avins v. Rutgers State University of New Jersey*, the Third Circuit ruled that a State-supported law review was not required to accept every article presented for publication.
30. *Id.*, p. 258.

31. The fact that privatization of data bases has been pursued by the government (see Schiller, 1981, pp. 47–78) does not obviate the need to address the rationale for, and alternatives to, such a policy.

    Deregulation is not de-politicization (Tunstall, 1985). By both default and design, U.S. information policy is now largely determined by the marketplace (Tunstall, Jeremy, 1985). Deregulation is politicization (Telecommunications Policy, 9, pp. 203–214).

32. According to Harris:

> . . . the Japanese also make certain that not just the large intensive users of telecommunications have those services, but that everyone in the Japanese society will have them. They are determined not to have an information-rich, information-poor society, which I fear we will have if we don't change our direction.
>
> Now when people in this country ask, "why don't we have optical fiber to the home?" The response is, "there aren't enough services to justify it." The Japanese have it right. They put in the capacity and expected the services to quickly follow and the demand for those services to quickly pay off the investment.

33. The VI&P is expected to be "intelligent," that is, capable of performing automatic translation, electronic secretarial, security and other custom-tailored functions made possible by the addition of microprocessors into the network itself. This intelligent network will also allow "personalized" services such as automatic classification and sorting of information according to use (business, social, home, etc.), "auto-person calling," where an individual can be reached by using his or her name alone; selective reception (call identification), and individualized billing receipts (Dambrot).

34. The case for distributive justice and equity is aptly summed up by Richard R. Fagen, who says:

> Whatever other virtues neoclassical analysis assigns to the market, a tendency toward democratic distribution is not one of them. As persuasively argued by even the most liberal neoclassicists, the function of the market is efficiency in the allocation of resources (and rewards), not distributive justice. In fact, it is quite vigorously argued at certain points in neoclassical theory that increments of new income *should* accrue disproportionately to certain sectors of the population (entrepreneurs and/or big consumers) so that savings, investment, demand, and ultimately growth will be maximized. At best, market mechanisms will not shift income shares in a democratic direction except as the structure of production itself changes. Within the existing structure, individuals can of course improve their incomes by moving to a higher niche. But this individual mobility, however widespread, does not contain within itself a dynamic seriously challenging the proportional shares going to various sectors of the society. . . .
>
> . . . The root of the solution—however that solution is conceptualized—must be sought in a revamped political/administrative process that in some fashion empowers those groups that the existing distribution of wealth and the operation of the market currently leave disadvantaged (in Weisband, 1979, "Equity for Whom?").