INEQUALITY IN THE DIGITAL SOCIETY: WHY THE DIGITAL DIVIDE DESERVES ALL THE ATTENTION IT GETS

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I. AN INTENSE, SUSTAINED TRANSFORMATION OF SOCIETY, AN INTENSE SUSTAINED POLICY DEBATE

A. *Digital Society and the Digital Divide*

Driven by powerful and unique characteristics of a technological revolution in computing and communications, American society is undergoing a "digital transformation." At the core of the process is a virtuous circle that uniquely affects these industries. Improvements in computers and software can be used to produce further improvements in computers and software. Network effects mean that as more people use these products, the products become more valuable to each user, stimulating more people to join the network and use it more intensely.

The ability of all communications to be digitized—rendered as a stream of bits—and immense increases in the speed and capacity of communications networks have encouraged the convergence of voice, video and data into global, digital communications networks. The speed and power of change in these technologies has penetrated deeply into the production process of a wide range of industries and transformed the global economy.

The virtuous circle in the economy, however, may become a vicious cycle for those who do not have access to the new technologies. Deeply embedded in the new economy is a process that may divide society and create the potential for greater inequality. The new form of economic organization requires fewer, more highly skilled workers, and changes the process for moving ahead in society.

Those who have computers and Internet communications find themselves better trained, better informed, and better able to participate in democracy. Because they are active in the early stages of the transformation, their needs are met and they get to define the economic, social and political landscape. Those who do not par-

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ticipate, because they lack the skill and resources, may fall farther and farther behind, especially when the speed of change requires constant upgrading of skills and hardware. Because communications media are at the core of the transformation and are key institutions in civic and political life, the exclusion spills over from the economy into all aspects of society. The disconnected become disadvantaged and disenfranchised.

The digital transformation and concern about the digital divide have long gone hand in hand. Almost from the moment the Clinton administration established the National Information Industry Task Force,[1] the digital divide has received a deluge of attention and criticism. Census counts of who has a computer,[2] or access to the Internet, and most recently, high-speed Internet services[3] have been watched with almost as much intensity as overnight tracking polls in a close presidential election, and handled in approximately the same "good news-bad news" way. While the Clinton administration labored to take credit for the spread of technologies and the expansion of the e-economy,[4] it also continually raised concerns about the digital divide.[5]

Others have dismissed the idea that a digital divide exists, or should be a source of public policy concern.[6] The Bush adminis-

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[1] *See* INFORMATION INFRASTRUCTURE TASK FORCE, THE NATIONAL INFORMATION INFRASTRUCTURE AGENDA FOR ACTION 1 (Sept. 5, 1993) (declaring the ambitious goal of creating a seamless web of communications networks, computers, databases, and consumer electronics that will put vast amounts of information at users' fingertips). Development of the NII can help unleash an information revolution that will change forever the way people live, work, and interact with each other. *See id.*

[2] *See* U.S. DEP'T OF COMMERCE, FALLING THROUGH THE NET: TOWARD DIGITAL INCLUSION (collecting data from 1995 to present), *available at* http://www.ntia.doc.gov/ntiahome/ fttn00/falling.htm (Oct. 16, 2000) [hereinafter FALLING THROUGH THE NET].

[3] *See id.* at 23 (heralding the addition of high-speed access as "one of the bonanzas of rapid technological change").

[4] *See* ECONOMIC REPORT OF THE PRESIDENT, H.R. DOC. NO. 107-2 (Jan. 2001) (presenting extensive analysis of new economy) [hereinafter ECONOMIC REPORT].

[5] *See* John Schwartz, *U.S. Cities Race Gap in Use of Internet: Clinton Bemoans 'Digitial Divide'*, WASH. POST, July 9, 1999, at A1.

> There is a growing digital divide between those who have access to the digital economy and the Internet and those who don't, and that divide exists along the lines of education, income, region, and race . . . . If we want to unlock the potential of our workers, we have to close that gap.

Id.

[6] *See id.* (quoting David Boaz, Executive Vice President, Cato Institute, who dismissed the notion of the digital divide).

> We've got a new technology spreading more rapidly than any new technology has spread in history. And of course, it doesn't spread absolutely evenly. Richer people have always adopted new technology first – and that's not news. There's no such thing as information haves and have-nots, there are have-nows and have-laters. The families that don't have computers now are going to have them in a few years.

Id.

tration's newly appointed Chairman of the Federal Communications Commission ("FCC"), Michael Powell, has taken a completely different view of the problem. He equated the debate over the "so called digital divide" to a Mercedes Benz divide, declaring that "I don't have a Mercedes Benz and I want one, but I cannot afford it."[7] This market outcome is satisfactory to him since "[w]ealthy people always get these products first."[8]

Chairman Powell added that he is not convinced that economic concentration undermines diversity in the media industries, even though the FCC had, just a few weeks earlier, released several reports, consistent with several decades of empirical evidence that it does.[9] With respect to the political implications of communications policy, Powell relied on an appellate court ruling that overturned the FCC's horizontal limit on cable system ownership as an occasion to attack all limits on concentration of ownership across the full range of communications industries.[10] Powell made it clear that commercial access is all that the public has a right to expect in communications networks and added that the public interest standard, which distinguishes the Communications Act from the antitrust laws, is too fuzzy for his liking.[11]

B. *Purpose and Outline of the Analysis*

This paper seeks to deepen the discussion of the digital divide debate by digging beneath the surface indicators of the divide, computer ownership and Internet connectivity, and boring down into behavioral implications, such as civic participation, as well as examining the underlying causative trends of the divide.

Part II offers an analytic paradigm that provides the tools to comprehend the complex changes that are taking place in society. In Part III, the paper presents empirical discussions of the nature

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7 Stephen Labaton, *New F.C.C. Chief Would Curb Agency Reach*, N.Y. TIMES, Feb. 7, 2001, at C1.

8 *Id.*

9 *See* CHRISTINE BACHEN, ET AL., FEDERAL COMMUNICATIONS COMMISSION, DIVERSITY OF PROGRAMMING IN THE BROADCAST SPECTRUM: IS THERE A LINK BETWEEN OWNER RACE OR ETHNICITY AND NEW AND PUBLIC AFFAIRS PROGRAMMING (1999); WILLIAM D. BRADFORD, FEDERAL COMMUNICATIONS COMMISSION, DISCRIMINATION IN CAPITAL MARKETS, BROADCAST/WIRELESS SPECTRUM SERVICE PROVIDERS AND AUCTION OUTCOMES (2000); ERNST & YOUNG, FEDERAL COMMUNICATIONS COMMISSION, FCC ECONOMETRIC ANALYSIS OF POTENTIAL DISCRIMINATION UTILIZATION RATIOS FOR MINORITY- AND WOMEN-OWNED COMPANIES IN FCC WIRELESS SPECTRUM AUCTIONS (2000); WILLIAM E. KENNARD, FEDERAL COMMUNICATIONS COMMISSION, REPORT TO CONGRESS ON THE PUBLIC INTEREST OBLIGATIONS OF TELEVISION BROADCASTERS AS THEY TRANSITION TO DIGITAL TELEVISION (2001).

10 *See Testimony on Telecommunication and the Internet: Hearing Before House Energy and Commerce*, 108th Cong. 54 (2001) (statement of Michael Powell, Chairman, FCC), *available at* 2001 WL 312498 (F.D.C.H.).

11 *See id.*

of the transformation of society, the causes of the digital divide, and the technology experience of societies and households (not only ownership, but also use of and attitudes towards computers and the Internet).

The discussion in Part IV will be divided into two parts. First technology/economy are discussed, and then civic/political institutions are addressed. The citations offered seek to balance technological concepts with the normative views that have been taken about the implications of the transformation of society, and the need to address the digital divide. Part V examines the special role of the media in our digital society.

The analysis in Part VI demonstrates that possession and command of technologies (the obsession of the technology counters) are not only critical indicators of the digital divide, but they are also the primary tool of economic production, civic participation and political involvement. In this sense, it shows that the digital divide matters. Finally, it demonstrates that the digital divide is likely to persist. Because it has this pervasive impact across all aspects of society, it deserves all of the public-policy attention it has been receiving.

This analysis focuses only on domestic issues. If the perspective were expanded to consider a global digital divide, the extreme importance of the issue would be even more evident. A digital divide exists between developed and developing nations[12] and the divide within developing nations is likely to be even greater than within developed nations.[13]

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[12] *See* JEFFREY JAMES, GLOBALIZATION, INFORMATION TECHNOLOGY AND DEVELOPMENT 88-89 (Palgrave 1999).

> Generally speaking, information technology represents a continuation of these historical tendencies in the developed countries. For what many of its applications presuppose, is an advanced infrastructure, a highly skilled labour force, a high degree of automation and hence capital per head and relatively high income consumers. It is not surprising, therefore, that the developed, rather than the developing countries tend to gain most from almost all the mechanisms. . . . (The former countries, for example, enjoy higher rates of diffusion of electronic communication and industrial technologies and they also tend to dominate strategic alliances in information technologies.) Because of their closer degree of similarity to developed country conditions, it is also not surprising (on these grounds) that the most advanced of the developing countries should be able to use information technology most effectively in the pursuit of global economic integration (in some countries, one should emphasize, it is particular and often relatively small regions, rather than the economy as a whole that bear comparison with developed country conditions).

Id.

[13] *See id.* at 102-03.

> By extension of this logic to the situation within developing countries, what one would expect is for the gains from information technology to accrue mainly to economic agents that form part of the modern technological system within those countries (as distinct from the agents who belong to the traditional sys-

II. Analytic Paradigm of Digital Society

A. *Modalities of Regulations/Realms of Social Order*

The analysis starts with the analytic framework offered by Lawrence Lessig in his recent book, *Code and Other Laws of Cyberspace.*[14] This work is used as a starting point because it presents a comprehensive set of definitions, focuses on cyberspace, and is based on a clear normative premise.

Social order is created by human activity in four realms – technology, economy, civic institutions, and the polity.[15] Social order emerges because human activity is *routinized* or regulated in each of these realms. Lessig defines the contemporary "modalities of regulation"[16] in each realm – architecture,[17] the market,[18] norms[19] and

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tem which is based typically on pre-capitalist modes of production, non-wage labour and small scale labour-intensive technologies). Stated in these terms, our expectation is that information technology will generally tend to exacerbate, rather than ameliorate, the degree of technological dualism within developing countries (it will tend, that is, to widen the gap between the modern and traditional technological systems).

Id.

[14] Lawrence Lessig, Code and Other Laws of Cyberspace (Basic Books 1999) (discussing, in addition to a legal analytic point of view, a broad analytic framework from a comprehensive sociological perspective similar to that presented by Manuel Castells in his book, *The Rise of the Network Society,* and adding insights in specific realms of social order in cyber society from several sources); *see also* Richard C. Longworth, Global Squeeze (McGraw Hill & Co. 1998) (discussing economic relationships from labor perspective); Marina Whitman, New World, New Rules: The Changing Role of the American Corporation (Harvard Business School Press 1999) (discussing similar economic relationships from business perspective); Jeremy Rifkin, The Age of Access (J.P. Tarcher 2000) (discussing civic and cultural relationships); Robert McChesney, Rich Media, Poor Democracy: Communications Politics in Dubious Times (New Press 1999) (discussing media aspects); Andrew Shapiro, The Control Revolution: How the Internet is Putting Individuals in Charge and Changing the World We Know (Public Affairs 1999) (discussing political implications).

[15] *See infra* Table II-1.

[16] Lessig, *supra* note 14, at 235-37 (giving specific definitions).

[17] *See id.* at 236.

> This is the constraint of *architecture*—the way the world is, or the ways specific aspects of it are. Architects call it the *built environment*; those who don't give out names just recognize it as the world around them.
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> . . . .
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> But whether absolute or not, or whether man-made or not, we can consider these constraints as a single class—as the constraints of architecture, or real-space code. What unites this class is the agency of the constraint: no individual or group imposes the constraint, or at least not directly. Individuals are no doubt ultimately responsible for much of the constraint, but in its actual execution the constraint takes care of itself. Laws need police, prosecutors, and courts to have an effect; a lock does not. Norms require that individuals take note of nonconforming behavior and respond accordingly; gravity does not. The constraints if architecture are self-executing in a way that the constraints of law, norms and the market are not.
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> . . . .
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> From the objective perspective the difference is between constraints that demand payment up front and constraints that let you play and then pay. Architecture and the market constrain up front; law and norms let you play first. For

laws[20] – by the nature and timing of constraints and the enforcement agents. Sociologically, many other aspects of social order can be added in each realm. Central in the discussion below are the nature of relationships, identity and participation in each realm of social order, and the institutions through which activity is channeled.

B. *The Positive and Normative Purpose of Analysis*

Lessig's discussion of the modalities of regulation is not simply descriptive, but proscriptive, as is the debate over the digital divide. For Lessig, emerging patterns of activity as the Internet moves into

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example, think of the constraints blocking your access to the air-conditioned home of a neighbor who is gone for the weekend. Law constrains you—if you break in, you will be trespassing. Norms constrain you as well—it's unneighborly to break into your neighbor's house.

Id. at 236-37.

[18] *See id.*

The market constrains through price. A price signals the point at which a resource can be transferred from one person to another. If you want a Starbucks coffee, you must give the clerk two dollars. The constraint (the two dollars) is simultaneous with the benefit you want (the coffee). You may, of course, bargain to pay for the benefit later ("I'd gladly pay you Tuesday for a hamburger today"), but the obligation is incurred at the time you receive the benefit.

Id. at 236.

[19] *See id.* at 235.

Social norms constrain differently. By social norms, I mean those normative constraints imposed not through the organized or centralized actions of a state, but through the many slight and sometimes forceful sanctions that members of a community impose on each other. I am not talking about patterns of behavior: it may be that most people drive to work between 7:00 and 8:00 a.m., but this is not a norm. A norm governs socially salient behavior, deviation from which makes you socially abnormal . . . .

. . . . What makes norms different, then, is the mechanism and source of their sanction: they are imposed by a community, not a state. They are similar to law in that, at least objectively, their constraint is imposed after a violation has occurred.

Id. at 235-36.

[20] *See id.* at 235.

Law is a command backed up by the threat of a sanction. It commands you not to commit murder and threatens a sever penalty if you do so anyway. Or it commands you not to trade in cocaine and threatens barbaric punishments if you do. In both cases, the picture of law is fairly simple and straightforward: don't do this, or else.

. . . . Obviously law is much more than a set of commands and threats. Law not only commands certain behaviors but expresses the values of a community (when, for example, it sets aside a day to celebrate the birth of Martin Luther King, Jr.); constitutes or regulates structures of government (when the Constitution, for example, establishes in Article I a House of Representatives distinct from a Senate); and establishes rights that individuals can invoke against their own government (the Bill of Rights). All these are examples of law; by focusing on just one kind of law, I do not mean to diminish the significance of these other kinds. Still, this particular aspect of law provides a well-defined constraint on individuals within the jurisdiction of the law giver, or sovereign. That constraint— objectively—is the threat of punishment . . . .

Id.

a commercial phase require urgent measures to preserve its openness. The key to the positive aspect of the analysis is the observation that people have multiple roles in society that overlap, each of which is a source of action. As inhabitants of cyberspace, we are not just consumers and producers, we are participants and citizens.

TABLE II-1:
PARADIGM OF SOCIETY

Characteristics of Social Interaction	Realms of Social Order			
	Technology	Economy	Civic Institutions	Polity
Modalities of Regulation	Architecture	Market	Norm	Law
Enforcement Agent	None	Sell/Buyer	Peers	Police/Courts
Timing of Constraint	Before	During	Before/After	After
Nature of Constraint	Physical	Money	Opprobrium	Sanction
Basis of Relationships	Structure/Flow	Production	Experience	Power
Basis of Participation	Inhabitant	Producer/ Consumer	Member/ Participant	Citizen
Basis of Psychic Success	Security	Wealth/Life Quality	Character	Authority
Primary Institutions	Place/Space Internet	Enterprise/ Union	Family/Church	State/Media

> In at least some ways, then, we should relate to cyberspace as members rather than as customers. In an odd but wholly familiar sense, we need to take responsibility for what cyberspace is; we must become citizens of cyberspace just as we are simultaneously citizens of, say, the United States and Massachusetts. Being all three at once will force us to work out how these various political communities should interact.[21]

Lessig's concern in the discussion of cyberspace is that in the face of a powerful technology, there is a tendency to passively accept the technological edicts of the code writers, rather than assert control over the definitions and development of society.[22] Lessig issues a call to arms—code is no different than law, subject to direction.[23] The animus for the call is a fear that the dictates of the

21 *Id.* at 202-03.

22 *See id.* at 59.

23 *See id.*

> But isn't it clear that government should do something to make this architecture consistent with important public values? If commerce is going to define the emerging architectures of cyberspace, isn't the role of government to ensure that those public values that are not in commerce's interest are also built into the architecture?
>
> Architecture is a kind of law: it determines what people can and cannot do.

code writers, driven by commercial interests,[24] will be corrosive of fundamental values in our society—justice, equality and democracy.[25]

> We will treat code-based environmental disasters—like Y2k, like the loss of privacy, like the censorship of filters, like the disappearance of an intellectual commons—as if they were produced by gods, not by Man. We will watch as important aspects of privacy and free speech are erased by the emerging architecture of the panopticon, and we will speak, like modern Jefferson's, about nature making it so—forgetting that here, we are nature. We will in many domains of our social life come to see the Net as the product of something alien—something we cannot direct because we cannot direct anything. Something instead that we must simply accept, as it invades and transforms our lives.[26]

Lessig casts the need to act to preserve key values in cyberspace in very potent terms.

> Now we are changing that architecture. We are enabling commerce in a way we did not before; we are contemplating the regulation of encryption; we are facilitating identity and content control. We are remaking the values of the Net, and the question is: Can we commit ourselves to neutrality in this reconstruction of the architecture of the Net?
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> I do not think that we can. Or should. Or will. We can no more stand neutral on the question of whether the Net should

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> When commercial interests determine the architecture, they create a kind of privatized law. I am not against private enterprise; my strong presumption in most cases is to let the market produce. But isn't it absolutely clear that there must be limits to this presumption? That public values are not exhausted by the sum of what IBM might desire? That what is good for America Online is not necessarily good for America?
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> Ordinarily, when we describe competing collections of values, and the choices we make among them, we call these choices "political." They are choices about how the world will be ordered and about which values will be given precedence.
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> Choices among values, choices about regulation, about control, choices about the definition of spaces of freedom—all this is the stuff of politics. Code codifies values, and yet, oddly, most people speak as if code were just a question of engineering. Or as if code is best left to the market. Or best left unaddressed by government.

Id.

[24] *See id.* at 209.

> The decisions then is not about choosing between efficiency and something else, but about which values should be efficiently pursued. My claims in each of these cases is that to preserve the values we want, we must act against what cyberspace otherwise will become. The invisible hand, in other words, will produce a different world. And we should choose whether this world is one we want.

Id.

[25] *See id.* at 154, 205.

[26] *Id.* at 233.

> enable centralized control of speech than Americans could stand neutral on the question of slavery in 1861. We should understand that we are part of a worldwide political battle; that we have views about what rights should be guaranteed to all humans, regardless of their nationality; and we should be ready to press these views in this new political space opened up by the Net.[27]

These concerns involve values that are very much at the heart of the debate over the digital divide. The legal and sociological analyses suggest that there is a close nexus between technology and the economic structure, and that these spheres are driving changes through the remainder of society. At such times, it is particularly important to engage in political action to direct societal developments. As Manuel Castells argues in a vein similar to Lessig, within broad limits, that technology deployment, economic activity, social interaction and political institutions can and should be directed toward specific goals.[28]

> Yet, if society does not determine technology, it can, mainly through the state, suffocate its development. Or alternatively, again mainly by state intervention, it can embark on an accelerated process of technological modernization able to change the fate of economies, military power, and social well-being in a few years. Indeed, the ability or inability of societies to master technology, and particularly technologies that are strategically decisive in each historical period, largely shapes their destiny, to the point where we could say that while technology per se does not determine historical evolution and social change, technology (or the lack of it) embodies the capacity of societies to transform themselves, as well as the uses to which societies, always in a conflictive process, decide to put their technological potential.[29]

As noted, this normative view could not stand in sharper contrast to the policies articulated by Powell, the Bush administration's newly appointed Chairman of the FCC.[30]

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[27] *Id.* at 205.

[28] *See* MANUEL CASTELLS, THE RISE OF THE NETWORK SOCIETY 7 (Blackwell Publishers 1996).

[29] *Id.*

[30] *See supra* notes 6-11 and accompanying text.

III. The Nature of Digital Society: Technological Drivers and Economic Transformation

A. *Communication and Computer Technology*

In the broadest sense, technology creates the "architecture" of human life. In its most concrete form, it is the built environment that humans inhabit. The architecture of technology affects the structure and flow of activity.[31] Technologies that affect communications and transportation have always been especially important economic infrastructures. They are "infrastructural" in the sense that they support and affect many other forms of economic activity. They are inputs (intermediate services) to many other goods and services produced by society. The architectures of telecommunications networks are crucial in determining exactly how such services function.

While changes in communications and transportation technologies generally have a deep effect upon society, the ongoing technological revolution is different.[32] In the past several decades, these technologies have exhibited a powerful quality that goes beyond the driving force of the industrial revolution, which was based primarily on economies of scale.[33] Economies of scale, which typify the mass production industries of the industrial age, occur because

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[31] *See* Mark Stefik, The Internet Edge 11-12 (M.I.T. Press 1999).

> The Internet amplifies change. Like all earlier connection technologies, it does so by reducing the power of distance. People say that the world is shrinking. Of course, the planet hasn't changed in size, and great distances can still limit the pace of change. For the most part, it is still true that the farther apart things are the less they interact. In basic physics the law of gravity says that the gravitational attraction between two objects decreases with the square of their distance from each other. Something analogous can be said of social processes. In an office building, one of the major factors governing how often people talk to each other is how far apart their offices are. The perceived "costs" of walking to someone else's office goes up with its distance from our own. We recognize intuitively that a work group is more effective when its members' offices are close together.
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> Distance in these examples is not simply straight-line or Euclidean distance. When people have to go up or down stairs – working against gravity – to talk to each other, the actual reduction in interactions is even greater than when their offices are at more distant points on the same floor. When there are walls, locked doors, or other barriers in the way, the effort required to get together becomes part of the perceived "cost" of the interaction.

Id.

[32] *See generally* Ida Harper Simpson, *Historical Patterns of Workplace Organization: From Mechanical to Electronic Control and Beyond*, Current Sociology, Apr. 1999, at 47; Barry Bluestone et al., Growing Prosperity: The Battle for Growth with Equity in the Twenty-First Century (Univ. of California Press 2000) (seeking historical parallels to previous technological revolutions and ultimately acknowledging the uniqueness of the current transformation); George Evans, Seppo Honkapohja, & Paul Romer, *Growth Cycles*, Am. Econ. Rev., June 1998, at 495.

[33] *See* Castells, *supra* note 28, at 6.

in industries with fixed costs, as the number of units sold increases, the cost per unit falls dramatically.[34] While the computer and communications industries have high fixed and front-end costs, and exhibit economies of scale, other characteristics—virtuous circles and network effects—distinguish these industries.

Positive feedback loops, or virtuous circles, drive the uniquely rapid development in the computer industry. Advances in computing technology support more advances in computing technology. This process is observed in both the level of hardware,[35] and the organizational process.[36]

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[34] *See* Brian Arthur, *Positive Feedbacks in the Economy*, SCIENTIFIC AM., Feb. 1990, at 92-93.

> Conventional economic theory is built on the assumption of diminishing returns. Economic actions engender a negative feedback that leads to a predictable equilibrium for prices and market shares. Such feedback tends to stabilize the economy because any major changes will be offset by the very reactions they generate.
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> . . . . [T]he parts of the economy that are resource-based (agriculture, bulk goods production, mining) are still for the most part subject to diminishing returns. . . The parts of the economy that are knowledge-based, on the other hand, are largely subject to increasing returns. Products such as computers, pharmaceuticals, missiles, aircraft, automobiles, software, telecommunications or fiber optics are complicated to design and manufacture. They require large initial investments in research, development and tooling, but once sales begin, incremental production is relatively cheap.
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> Increased production brings additional benefits: producing more units means gaining more experience in the manufacturing process and achieving greater understanding of how to produce additional units even more cheaply. Moreover, experience gained with one product makes it easier to produce new products incorporating similar or related technologies.

Id.

[35] *See* Brian R. Gaines, *The Learning Curves Underlying Convergence*, TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE, Jan./Feb. 1998, at 20-21.

> This improvement depends on the capacity of silicon to support minute semiconductor logic circuits, but this capacity could not have been fully exploited over nine orders of magnitude performance improvement without the use of the computer to support the design and fabrication of such circuits. This is one example of a positive feedback loop within the evolution of computers, that he computer industry has achieved along a learning curve that is unique in its sustained exponential growth because each advance in computer technology has been able to support further advances in computer technology. Such positive feedback is known to give rise to emergent phenomena in biology whereby systems exhibit major new phenomena in their behavior. The history of computing shows the emergence of major new industries concerned with activities that depend upon, and support, the basic circuit development, but that are qualitatively different in their conceptual frameworks and applications impacts from that development: for example programming has led to a software industry, human-computer interaction has led to an interactive applications industry, document representation has led to a desktop publication industry, and so on.

Id.

[36] *See* Arthur, *supra* note 34, at 95.

> Self-reinforcing mechanisms . . . . work in international high-tech manufacturing and trade . . . . For example, in the early 1970's Japanese automobile makers began to sell significant numbers of small cars in the U.S. As Japan gained market volume without much opposition from Detroit, its engineers and production workers gained experience, its costs fell and its products improved.

Strong network effects are present in both the computer and communications industries. The central factor in understanding network externalities is the economic efficiencies inherent in achieving a large installed base of users with networked technologies (sometimes called demand side economies of scale). As the number of users grows, economic benefits are created on both the supply side and the demand side.[37] As the installed base of hardware and software deployed grows, learning and training in the dominant technology is more valuable, as it can be applied to more users and uses.[38] There may also be certain pooling benefits on the supply side.[39] As the customer and geographic base spreads,

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> These factors, together with improved sales networks, allowed Japan to increase its share of the U.S. market; as a result, workers gained still more experience, costs fell further and quality improved again. Before Detroit responded seriously, this positive-feedback loop has helped Japanese companies to make serious inroads into the U.S. market for small cars.

Id.

[37] *See* Michael L. Katz & Carl Shapiro, *Product Introduction with Network Externalities*, J. OF INDUSTRIAL Econ., Mar. 1992, at 55 (using industries at the core of the digital transformation of society as prominent examples of industries exhibiting network effects).

> On the demand side, buyers choose which product to purchase, when to buy it, and each buyer received greater benefits, the larger the total number of buyers using compatible products, i.e. the larger is the *installed* base of the selected technology. Firms' installed bases are critical objects of strategic rivalry in such industries . . . . Prominent examples include the computer industry, the broadcasting industry, many consumer electronics industries, and the telecommunications sector.
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> (a) Installed bases are important, and network externalities arise, when buyers wish to "communicate" directly with each other, such as when files are transferred from one computer to another or software is shared among users. Network externalities also arise when a large installed base allows manufacturers of complementary goods to exploit economies of scale, leading, for example, to a higher density of repair facilities for more popular automobiles or a greater variety of software to run on more popular computer hardware platforms.

Id.

[38] *See* Melissa A. Schilling, *Technological Lockout: An Integrative Model of the Economic and Strategic Factors Driving Technology Success and Failure*, 23 ACADEMY OF MGMT. REV., 267, 275 (1998).

> The size of the installed base and the availability of complementary goods will be highly correlated because the variables have powerful self-reinforcing effects. A technology's installed base will influence the choice of manufacturers of complementary goods. Assuming there are increasing costs associated with supporting multiple technologies, complementary goods providers face a technology adoption choice similar to that of consumers. Supporting a technology with many users will be more valuable to them than supporting a technology with few users and, thus (with the possible exception of a few niche providers) complementary goods providers are likely to support the technology with the largest installed base.

Id.

[39] *See* Charles B. Stabell & Oysteing D. Fjeldstad, *Configuring Value Chains for Competitive Advantage: On Chains, Shops and Networks*, 19 STRATEGIC Mgmt. J. 420, 432 (1998).

> When network externalities are present, the value of the service provided is affected by the character of the customers that join the network . . . .
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> In the value network there is reciprocal interdependence across primary activity categories due to the need for synchronization and dimensioning of simulta-

the load on the system can be balanced, achieving higher overall utilization rates. Spreading the customer base across geographic areas would allow time zone differences to balance the load as well. The expression "twenty-four seven" has its greatest impact in a globally networked economy precisely because it is rush, peak or busy hour, someplace in the world every hour of every day.[40]

On the demand side, as more consumers use a particular technology, each individual consumer can derive greater benefit from it. The classic case is the telephone network (or the Internet) in which each individual derives greater benefit by being able to contact other individuals directly.[41] This is a communication externality.[42] There may be indirect benefits in which two consumers never actually come face-to-face, or computer-to-computer. Larger numbers of users seeking specialized applications create a larger library of applications that become available to other users.[43] Markets may be created for used hardware and software.[44]

The rate and magnitude of change that underlies growth in

> neous activities. Both geographical coverage and capacity must reflect the composition of customers who are members of the network. Adjustments must be done on a continuous basis.

Id.

[40] *See* Dell Champlin & Paulette Olson, *The Impact of Globalization on U.S. Labor Markets: Redefining the Debate*, 33 J. OF ECON. ISSUES 443, 449 (1999) (stating that "[i]ndeed, two software professionals, one in Boston and one in Bangalore [India], may share the same job in the same firm. While one sleeps, the other works. As one author observes, 'In cyberspace, Boston and Bangalore are practically the same place'").

[41] *See* Jeffrey Church & Neil Gandal, *Complementary Network Externalities and Technological Adoption*, 11 INT'L J. OF INDUSTRIAL ORG. 239, 241 (1993).

> The benefits received from the consumption of a particular good often depend on the aggregate number of consumers who elect to purchase compatible goods. This positive consumption, or network, externality can be direct or indirect. If it is the former, the utility of a consumer depends directly on the total number of subscribers to the same network. For instance, the value of access to a telephone network depends on the total number of consumers with similar access.

Id. at 239.

[42] *See* Katz & Shapiro, *supra* note 37, at 55.

[43] *See* Church & Gandal, *supra* note 41, at 241; *see also* Chien-fu Chou & Oz Shy, *Network Effects Without Network Externalities*, 8 INT'L J. OF INDUSTRIAL ORG. 259, 261 (1990) (stating that "[e]xamples of goods where the network externality is indirect include many consumer durables such as televisions, videocassette recorders, compact disc players, and personal computers. To be of value these durable hardware goods require complementary software").

[44] *See* Arthur, *supra* note 34, at 93.

> Not only do the costs of producing high-technology products fall as a company makes more of them, but the benefits of using them increase. Many items such as computers or telecommunications equipment work in networks that require compatibility; when one brand gains a significant market share, people have a strong incentive to buy more of the same product so as to be able to exchange information with those using it already.

Id.

the computer industry is enormous.[45] To put this in terms that may be familiar to the average person, the powerful productivity growth in the computing and information sectors has been aptly summarized as follows: "If automobiles had developed at the same rate as computer microprocessors over the last twenty years, a typical car would cost $5 and get 250,000 miles per gallon."[46] "If automobiles and aerospace technology has exploded at the same pace as computer and information technology, a new car would cost about $2 and go 600 miles on a thimble of gas, and you could buy a Boeing 747 for the cost of a pizza."[47]

The communications revolution exhibits not only network effects, but also additional characteristics that deeply affect the transformation of the economy and society. The speed of change is much greater. Coupled with the fact that communication technology must keep pace with expanding and completely novel uses, networks are continually updated—updates which are happening more frequently with every passing week.[48] The architecture of communications technology can and will change (relative to other infrastructures, like roads and rails) in the blink of an eye.

The new communications media combine qualities that create a fundamentally new mode of communications. The reach of broadcast is combined with the interactivity of telecommunications to create a new medium, broadband Internet services, with the potential to deliver interactive television as well as applications not yet dreamed of.[49]

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[45] *See* Gaines, *supra* note 35, at 20.

> Information technology is characterized by high rates of growth in performance parameters sustained over long periods. The number of devices on a chip is growing at 60% a year and has grown by some nine orders of magnitude in 37 years. Clock speeds of computers have grown by some six orders of magnitude over the same period. The number of computers connected through the Internet is growing at 100% a year and has grown by seven orders of magnitude in 27 years. The volume of traffic on the Internet is growing at over 100% a year . . . .
>
> The number of transistors on a chip has seen a 1,000,000,000 times increase in less than 40 years, whereas other high-technology industries have typically seen less than 100 times performance increase in 100 years.

Id.

[46] Jeffrey L. Sampler, *Redefining Industry Structure for the Information Age,* 19 STRATEGIC MGMT. J. 343, 345 (1998).

[47] Stephan Moore & Julian L. Simon, *Twenty-Five Miraculous U.S. Trends of the Past Hundred Years, in* GLOBAL FORTUNE: THE STUMBLE AND RISE OF WORLD CAPITALISM 80 (Ian Vasquez ed., Cato Inst. 2000).

[48] *See, e.g.,* JAMES GLEICK, FASTER: THE ACCELERATION OF JUST ABOUT EVERYTHING (Vintage Books 1999).

[49] *See* STEFIK, *supra* note 31, at 12.

> The ability of the Internet to cause action at a distance is akin to that of other communication technologies—including smoke signals, drum talk, mail, newspapers, radio, television, and the telephone. It enormously magnifies the most

At the same time, communications exhibit a universal quality; every sound, symbol or image can now be digitized.[50] That is, they can be represented as zeros and ones in a stream of data. As the complexity of the sound or image increases, so too does the amount of data that has to be encoded and decoded to accomplish the digital representation.[51] As computing speeds, storage capacity, and transmission rates grow in size and speed, as well as decrease in price, it becomes feasible to move large quantities of voice, data, and video over vast distances. To appreciate the powerful technological and economic forces driving the creation of a digital, global

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powerful feature of technologies like radio and television: wide dissemination of information. Its enormous fan-out allows an idea or an action originated at one location to be sent instantaneously to thousands or millions of other sites. In addition, like the telephone, the Internet is interactive. Some have described Internet technology in terms of "push and pull." Imagine a playground full of kids playing tug-of-war with long ropes, pushing and pulling, yanking and shoving, creating interaction at a distance.

Id.

50 *See* BRUCE M. OWEN, THE INTERNET CHALLENGE TO TELEVISION 29 (Harvard University Press 1999).

Any message traveling from one human to another at a distance must be impressed upon a medium (such as paper, magnetic tape, or carrier wave) by encoding (such as typesetting, digitizing, or modulating) to suit the features of the medium and then decoded or transformed back into terms accessible to human senses. For a long time electronic communication used analog modulation for this purpose, because I happened to be the most cost-effective way to get the job done. In recent years the cost of digital computers or processors has fallen greatly. Such computers can be used to lower the cost of communicating any given amount of information, if the information is in digital form, by conserving relatively expensive bandwidth. At the moment, digital coding is still more expensive than analog coding, but this disadvantage is overcome by the bandwidth savings.

The form of the Internet medium, and hence the form of its content, is determined (on the supply side) by a set of tradeoffs and constraints such as the tradeoff between bandwidth and compression. All these tradeoffs are changing in ways that are difficult to predict. Thus the form of electronic communication in the next decade (and in the next century) depends largely on whether the costs of data storage fall faster than the costs of data transmission, and whether the costs of data processing fall faster than either storage or transmission.

Id.

51 *See id.* at 151.

From the point of view of digital communication technology, "information" is a bitstream" of zeros and ones, just like an old-fashioned dit/dah telegraph code. Digital technology works the same way regardless of content. Anything that can be digitized can be transmitted on a digital medium to one and all. And virtually any image can be digitized, including books, newspapers, paintings, movies, TV programs, music, personal conversations, speeches, political cartoons, brainwaves, and three-dimensional objects. Further, almost any current electronic communication medium is or can be made into a digital medium, including telephone systems, television broadcasting systems, cable television systems, and geosynchronous communication satellites. It is easy to see why convergence is a focal concept: everything seems headed in the digital direction very rapidly.

Id.

economy, adults need only reflect on personal experiences with computers.[52] Since the first desktop computers entered the home market about twenty years ago, desktop computers have undergone a remarkable transformation. Central processing units (CPUs) are about eighty-five times faster. Storage capacity (hard drive space) has increased nearly sixty fold. Communications speed (modems) with other computers is nearly 500 times faster. This remarkable increase in capacity has come with dramatic reductions in cost. For every $1.00 spent in 1980 on these functionalities, today the consumer would spend the equivalent of about $.005 for speed (megahertz), storage (megabytes), or transmission (mega bits per second).[53]

These cheap, powerful computers constitute the rapidly proliferating muscle of the digital economy.[54] Its backbone is the rapidly sprawling fiber-optic networks that allow these machines to communicate at rising speeds with falling costs.[55] A software revolution is the nervous system that enables the messages to be routed, translated and coordinated.[56] Prices for software, however, have not decreased nearly as quickly as prices for hardware.[57]

A single statistic that captures the immense impact of these changes is the number of computer hosts connected to the Internet.[58] These are computers connected to the global communications network coordinated by even more complex software code. The exponential growth is stunning, and has been sustained for the better part of the 1990s (see Exhibit III-2). This is the most visible symbol of the digital transformation of society.

B. *A New Age in the Economy*

The virtuous circles that typify the core of the technology have begun to penetrate into a broad sphere of production.[59] The abil-

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[52] *Id.* at Ch. 2.

[53] *See* Moore & Simon, *supra* note 47, at 80.

[54] *See* SARA BAASE, A GIFT OF FIRE: SOCIAL, LEGAL AND ETHICAL ISSUES IN COMPUTING (Prentice Hall 1996).

[55] *See* GEORGE F. GILDER, TELECOSM: HOW INFINITE BANDWIDTH WILL REVOLUTIONIZE OUR WORLD (Free Press 2000).

[56] *See* Gaines, *supra* note 35, at 18.

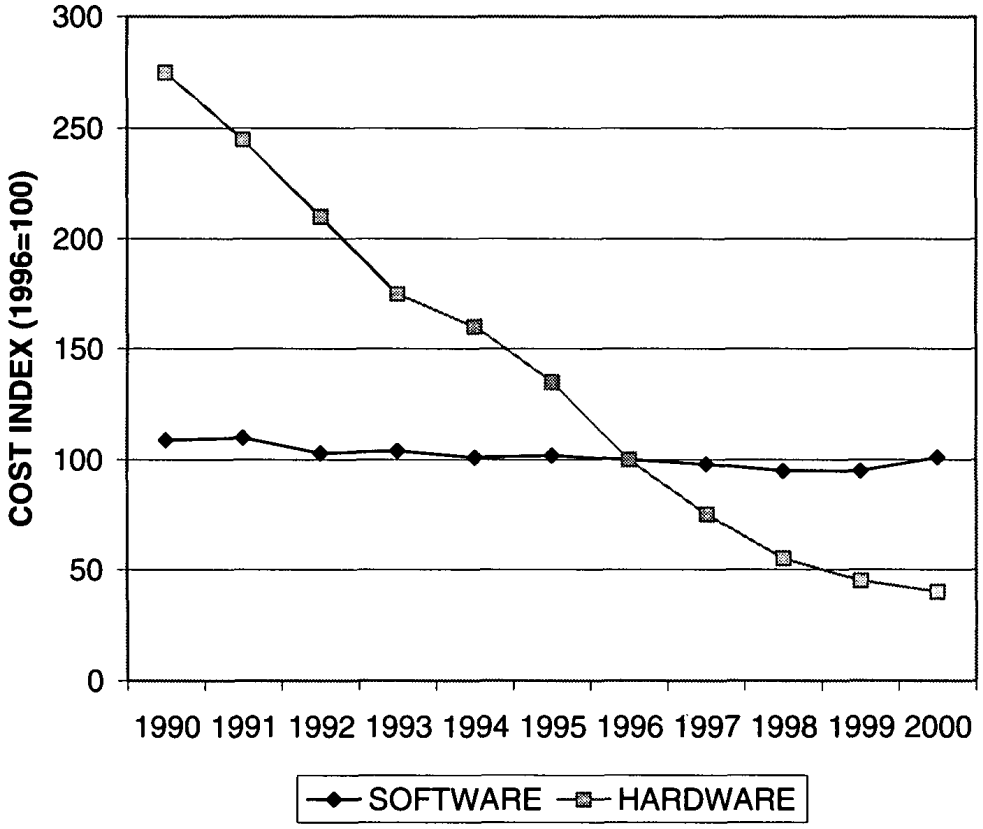
[57] *See supra* Figure III-1.

[58] *See supra* Figure III-2.

[59] *See* ROBIN MANSELL & UTA WHEN, KNOWLEDGE SOCIETIES: INFORMATION TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT 13 (Oxford University Press 1998).

> The technological convergence which is occurring throughout the ICT sector means that there are very few clear boundaries between sectors on the supply side of the industry. ICTs are being used, and often produced or modified in the case of software, in virtually every segment of the manufacturing, services, and natural resources industries. This is the main reason for their pervasive and potentially revolutionary impact. ICTs are being used as control technolo-

EXHIBIT III-1
HARDWARE AND SOFTWARE COSTS



ity to innovate is the hallmark of the new business organization.[60] The nature and scope of competition is changed with a much greater emphasis on productivity and flexibility as well as international character.[61] Success relies on the ability to respond to rapidly changing circumstances and capture large markets to spread

gies leading to innovations in products and processes in the manufacturing sectors and resource extraction industries. They are playing an increasing role in computational activities supporting scientific and technological research and in the networks of communication research and development and business activity around the world.

Id.

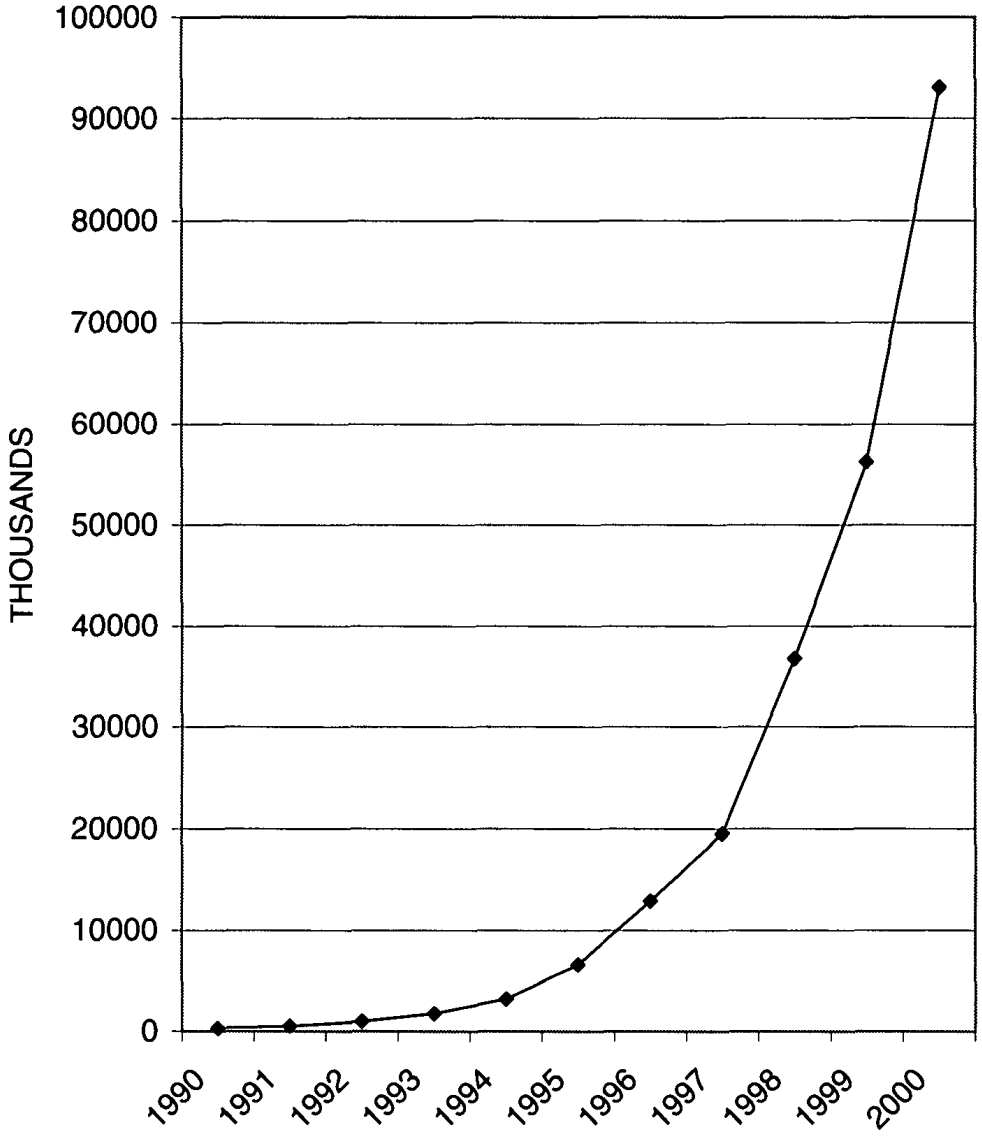
[60] *See id.* at 52.

Advanced manufacturing technologies (AMT) refer to a "bundle of technological opportunities which are opened up by the application of information technology but . . . include in this bundle the organisational 'good practices' which have emerged in parallel with IT development." Organizational learning on a continuous basis is needed to benefit from these technologies as well as investment in hardware, software, and human resource development.

Id.

[61] *See generally* Shaker A. Zahra, *The Changing Rules of Global Competitiveness in the 21st* Century, ACAD. OF MGMT. EXECUTIVE, Feb. 1, 1999.

EXHIBIT III-2
INTERNET HOSTS

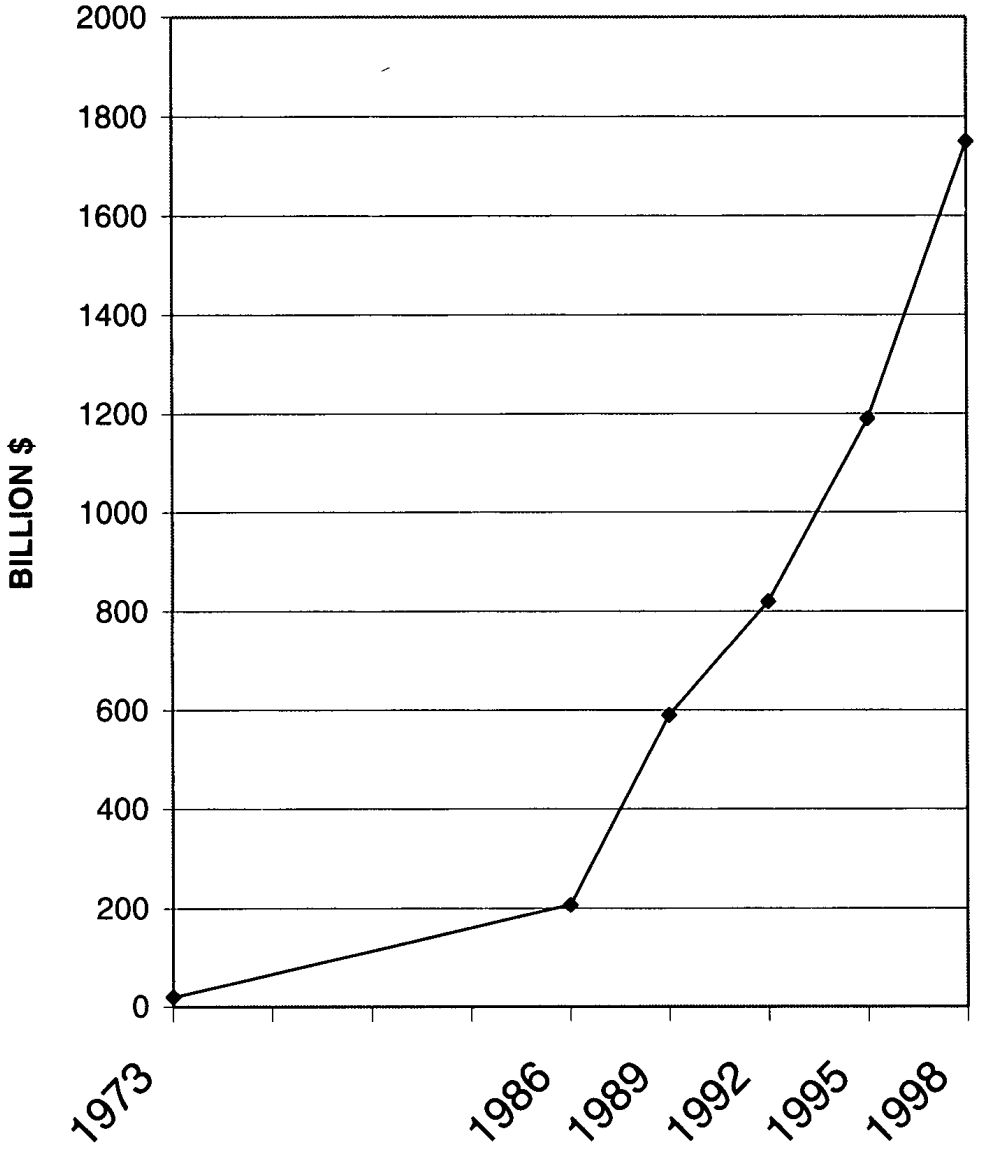


the increasingly large capital investment necessary to support the technology intensive production processes.

"New Competition" is competition based on the minimisation of product development and changeover times rather than on the basis of price. In particular, such industrial technologies as computer-aided design (CAD) and computer-aided manufacture (CAM) enable certain firms, especially those organised on the basis of "flexible" or "lean" production systems, to develop and market new products with more rapidity than was previously possible. The

truncated life cycle of products involved in the "New Competition," in turn, "puts firms under intense pressure to expand their share of markets worldwide in order to amortise fixed production costs, in a shorter period of time."[62]

FIGURE III-3
DAILY FOREIGN EXCHANGE MARKET TURNOVER



Technology has created a sharp increase in the capacity to co-ordinate activities across the globe, diminishing the importance of

[62] JAMES, *supra* note 12, at 8.

location, as well as altering the bargaining power of labor.[63] Coordinating a production process between plants in Cleveland and Kuala Lampur is not as complicated as it once was. Production activities can take place anywhere, as long as they can be integrated.[64] Location in physical space becomes less and less important as transactions and information flow in cyberspace.[65] Globalization is generally measured by three market criteria: trade, finance and technology.[66]

The growth of trade accelerated rapidly in the last two decades of the twentieth century—"World merchandise trade grew about 1.5 times as fast as world output in the period 1950-1984, and nearly three times as fast in 1984-1994."[67] Trade in non-automotive capital goods, driven by communications and information products, was among the fastest growing categories of trade, more than doubling in the 1990s.[68] Trade in these goods alone exceeded six percent of gross domestic product by the end of the twentieth century, a larger share than total trade in the late 1960s.[69]

The increase in financial transactions within the global economy is a key indicator of the transformation of the economy, paralleling the growth of hosts on the Internet.[70] This statistic reflects both the computational capacity to carry out the remarkable magnitude of transactions and increasing liquidity of capital across national borders.[71] From about $200 billion in 1986, the daily value of foreign exchange transactions increased to over $1.5 trillion in 1998.[72] More money changed hands on international currency markets in one week than the total value of goods and services pro-

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63 *See* LONGWORTH, *supra* note 14, at 44.

64 *See* RICHARD P. ADLER, JOBS, TECHNOLOGY, AND EMPLOYABILITY: REDEFINING THE SOCIAL CONTRACT 5 (1998).

65 *See* LONGWORTH, *supra* note 14, at 63.

> This process is erasing the concept of space. Over half of all transactions on the fiber-optic cable network in Manhattan involve international deals. These deals, between persons or corporations legally based in two or more countries, take place entirely within Manhattan but lie outside the jurisdiction of American courts. Legal disputes are settled by international arbitrators, also often based in New York. The global economy is thus an economic state within a state, untouchable by the government that holds theoretical sovereignty over the soil where all this happens.

Id.

66 *See generally* GUNTHER G. SCHULZE & HEINRICH W. URSPRUNG, GLOBALIZATION OF THE ECONOMY AND THE NATION STATE (1999).

67 WHITMAN, *supra* note 14, at 19.

68 *See id.*

69 *See* ECONOMIC REPORT, *supra* note 4, at 155-57 tbls. B-1, B-104.

70 *See* Figure III-3.

71 *See* LONGWORTH, *supra* note 14, at 7. *See generally* ROBERT H. FRANK & PHILIP J. COOK, THE WINNER-TAKE-ALL SOCIETY (Penguin Books 1995).

72 *See* Figure III-3.

duced by the U.S. economy in a year. In 1973, it took over two months to transact that much currency.

Another important difference that emerged in the last few decades is the corporation. It is quite different from the rigid hierarchy of the industrial age. This process of globalization demands organizational agility in the midst of changing circumstances.[73] The environment in which this new organization functions is also different in many ways.

> The corporation itself has changed its organizational model, to adapt to the conditions of unpredictability ushered in by rapid economic and technological change. *The main shift can be characterized as the shift from vertical bureaucracies to the horizontal corporation.* The horizontal corporation seems to be characterized by seven main trends: organization around process, not task; a flat hierarchy; team management; measuring performance by customer satisfaction; rewards based on team performance; maximization of contacts with suppliers and customers; information, training, and retraining of employees at all levels. This transformation of the corporate model, particularly visible in the 1990s in some leading American companies (such as ATT), follows the realization of the limits of the "lean production" model attempted in the 1980s.[74]

C. *The Potential for a New Space in Society*

The "horizontal corporation" created by technology that allows and requires it to span the globe in a flexible, decentralized mode gives rise to a "horizontal society." Social relationships are dramatically altered. Lessig's concern that "commerce is going to define the emerging architectures of cyberspace" has a direct impact on the civic sphere.[75]

> In a world of customized production, continuous innovations and upgrades, and ever narrowing product life cycles, everything becomes almost immediately outdated. To have, to hold and to accumulate in an economy in which change itself is the only constant makes less and less sense . . . .
>
> More and more cutting edge-commerce in the future will involve the marketing of a vast array of cultural experiences rather than of traditional industrial-based goods and services . . . .
>
> While the industrial era was characterized by the com-

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[73] *See* MANSELL & WHEN, *supra* note 59, at 13.
[74] CASTELLS, *supra* note 28, at 164.
[75] LESSIG, *supra* note 14, at 59.

> modification of work, the Age of Access is about, above all else, the commodification of play – namely the marketing of cultural resources including rituals, the arts, festivals, social movements, spiritual and fraternal activities, and civic engagement in the form of paid-for personal entertainment . . . .
>
> Imagine a world where virtually every activity outside the confines of family relations is a paid-for experience, a world in which traditional obligations and expectations – mediated by feelings of faith, empathy, and solidarity – are replaced by contractual relations in the form of paid memberships, subscriptions, admission charges, retainers and fees.[76]

Cyberspace has been created by the central technologies of the information age—computers and communications. These technologies have been critical to the transformation of economic enterprises, social interaction and political discourse.[77] Out in cyberspace, economic transactions take place between people in ways that never existed before.[78] It is the leading new driver of our economy and is absorbing more and more of our leisure hours.[79]

A new space for social activities has been created, facilitating interaction between individuals who previously never had access to one another. Cyberspace radically alters one of the keys to culture and political power—the ability to control speech.

> First, the Internet presents very low barriers to entry. Second, these barriers to entry are identical for both speakers and listeners. Third, as a result of these low barriers, astoundingly diverse content is available on the Internet. Fourth, the Internet provides significant access to all who wish to speak in the medium. But on the Net, manufacturers can set up their own online shops to advertise and sell their products directly to their customers. In theory, the Net could provide a new, more efficient means of distribution, potentially eliminating many of the intermediaries that have been an indispensable part of commerce to date. The Internet, according to Nathaniel Goldhaber, chief executive officer of CyberGold, is "the first medium to provide a 'virtually frictionless' distribution channel." The impact of this "disintermediation" could be very large: distribution expenses account for 50 to 80 percent of the final cost of consumer products. With $9 trillion in U.S. retail sales annually, the potential for savings is great.

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76 RIFKIN, *supra* note 14, at 7-9.

77 *See* MANSELL & WHEN, *supra* note 59, at 12.

78 *See generally* SOON-YONG CHOI ET AL., THE ECONOMICS OF ELECTRONIC COMMERCE (Macmillan Technical Publishing 1997).

79 *See id.* at 15.

> The same sort of disintermediation can affect other kinds of institutions as well: airlines can sell tickets directly to travelers without having to pay commissions to agents; insurance companies can sell directly to the public, eliminating the need for expensive agents; educators can even reach students without the need for ivy-covered campuses.[80]

Suddenly, a publishing house is no longer necessary for the world to read one's written work, and a major recording label is not required for the world to hear one's song. Cyberspace is also being used in (and changing how people get information about) politics. Most notably, it has unleashed an intense debate over the dominant institution of politics in the industrial nation-state.[81] The industrial age was closely associated with the growth of nation-states, with a particular emphasis on national boundaries. In a global economy and cyberspace, such boundaries may diminish.

Cyberspace is just as "real" as physical space in the sense that the same interactions that take place between people offline can now occur online. It ignites the imagination in part because it is a new place in society that is just beginning to take shape. Social order in Cyberspace—the rules of the game, the norms of social behavior—are just being defined. It is an important place because it will deeply affect other aspects of society. Many observers have hoped that cyberspace would play the same liberating role in America's future that the frontier played in America's past, opening avenues of social mobility and change.

> We, as a society and as individuals, can choose how we shall think and act in relation to the digital revolution. But one thing is clear: to profit from the potentials opened up by IT—whatever they may be—we must participate in it. This is especially true for the poor, who are already excluded from the economic, social, and cultural mainstream. They must be helped to participate in the digital world in a variety of ways. In the economic sphere, the poor must be included in the informational economy—as employees or as entrepreneurs. They must receive better education, for which IT offers important potential in the form of educational uses of the Net, e-mail communication between teachers and students, and electronic self-paced education. In the social sphere, too, IT offers the urban poor a

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80 RICHARD ADLER & CHARLES M. FIRESTONE, THE FUTURE OF ADVERTISING: NEW APPROACHES TO THE ATTENTION ECONOMY 23 (Aspen Inst. 1997).

81 *See generally* Philip G. Cerny, *Globalization and the Erosion of Democracy*, 36 EUR. J. OF POL. RES. 1 (1999); Eiko Ikegami, *Democracy in an Age of Cyber-Financial Globalization: Time Space and Embeddedness from an Asian Perspective*, 66 SOC. RES. 887 (1999); Robert Dahl, *The Shifting Boundaries of Democratic Governments*, 66 SOC. RES. 915 (1999).

> new set of opportunities because of two unique characteristics—namely, its interactive potential and decentralizing nature. Unlike television and radio, IT offers the opportunity for interaction between the computer and its user, creating the conditions necessary for learning, confidence building, and self-empowerment. [C]omputers, if used with empathy, can reduce the poor's sense of disempowerment and give them the confidence necessary for continued learning. Likewise, its decentralizing nature offers the poor an opportunity to be entrepreneurial. Unlike earlier waves of technological innovation, such as the industrial revolution, IT lends itself to multiple, local variations, and to the exercises of multiple forms of local control. With the World Wide Web, every user has the potential of becoming a broadcaster. Further, the new network technology opens up hitherto unrealized potentials for communication. Every individual has the potential for discovering and making connections with other individuals of like interest and mind.[82]

IV. CONCERNS ABOUT A DIGITAL DIVIDE

A. *Technology / Economy*

Where is the dark side of this digital transformation? The digital economy may establish processes that create a gap or divide that hinders mobility and fosters inequality.[83] In an industrial society, emerging from an unskilled category into a skilled category requires training.[84] Mobility from the skilled worker category into management requires education.[85] Managers become owners through the accumulation of stock, and gain control with the dilution of ownership. Digitization changes the production process and the nature of mobility, allowing for the routinization of activi-

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[82] Bish Sanyal & Donald A. Schon, *Information Technology and Urban Poverty: The Role of Public Policy, in* DONALD A. SCHON ET AL., HIGH TECHNOLOGY AND LOW-INCOME COMMUNITIES 371, 375-76 (M.I.T. Press 1999). *See generally* DANIEL J. B. MITCHELL & ARTHUR B. SHOSTAK, CYBERUNION: EMPOWERING LABOR THROUGH COMPUTER TECHNOLOGY (M.E. Sharpe 1999).

[83] *See* Figure IV-1.

[84] *See* Peter Golding, *The World Wide Wedge: Division and Contradiction in the Global Information Infrastructure*, 48 MONTHLY REV. 70, 73 (1997).

[85] *See* ADLER, *supra* note 64, at 16.

> The impact of "job displacement" does not fall equally on all workers. Those with minimal skills, or those with narrow, highly specialized skills, are more likely to have difficulties. Displaced workers living in rural areas with relatively few job opportunities are more likely to have problems finding other employment. And older workers who lose their jobs are often less able to find other employment.

Id.

ties at work.[86] It deskills labor, allowing more and more labor to be performed by machines.

> Thus, new information technology is redefining work processes, and workers, and therefore employment and occupational structure. While a substantial number of jobs are being upgraded in skills, and sometimes in wages and working conditions in the most dynamic sectors, a large number of jobs are being phased out by automation in both manufacturing and services. These are generally jobs that are not skilled enough to escape to automation but are expensive enough to be worth the investment in technology to replace them. Increasing educational qualifications, either general or specialized, required in the reskilled positions of the occupational structure further segregate the labor force on the basis of education, itself a highly segregated residential structure. Downgraded labor, particularly in the entry positions for a new generation of workers made up of women, ethnic minorities, immigrants, and youth, is concentrated in low-skill, low-paid activities, as well as in temporary work and/or miscellaneous services. The resulting bifurcation of work patterns and polarization of labor is not the necessary result of technological progress or of inexorable evolutionary trends (for example, the rise of the "postindustrial society" or of the "service economy"). It is socially determined and managerially designed in the process of the capitalist restructuring taking place at the shop-floor level, within the framework and with the help of the process of technological change at the roots of the informational paradigm. Under such conditions, work, employment, and occupations are transformed, and the very notion of work and working time may be changed forever.[87]

Tasks become routine as machines become smarter, reducing the demand for skilled labor, as well as the number of jobs.[88] The speed of change and the changing nature of competition alter the

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[86] *See* Donald R. Davis, *Technology, Unemployment, and Relative Wages in a Global Economy*, 42 EUR. ECON. REV. 1633, 1640 (1998).

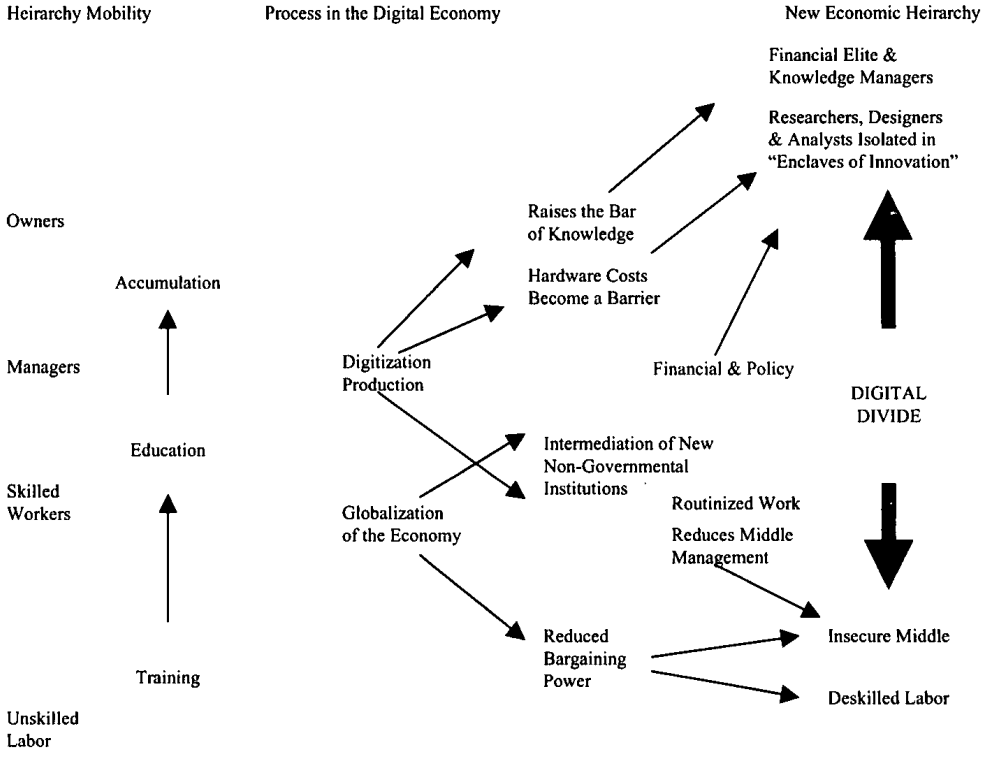
> Another factor that appears to be playing a role in the country's economic success is the long-heralded impact of information technology. American businesses have invested billions of dollars in purchasing computers and automating their processes. Nearly two-thirds of all American workers now use a computer as part of their jobs. For many years, the tangible benefits of the massive investment in technology proved elusive, but it appears that these investments are finally beginning to pay off in increased efficiency and effectiveness, particularly in service industries where increased productivity has been especially difficult to achieve. Computer applications have become more sophisticated and companies have learned how to structure themselves to take advantage of the power of their systems.

ADLER, *supra* note 64, at 7.

[87] CASTELLS, *supra* note 28, at 251.

[88] *See* LONGWORTH, supra note 14, at 67-8.

FIGURE IV-1
THE ECONOMIC UNDERPINNINGS OF THE DIGITAL DIVIDE



mobility process further. The deskilling process applies to lower levels of management as well.[89] Programmable machines can perform more and more decision-making functionality, particularly with centralized monitoring by other machines.[90] Deskilled labor

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89 *See id.* at 65-66.

> These middle managers, once company men and women to the core, have been thrown onto the casual market to live by their wits. Each brings out a laptop, which is the manager's tool kit, and announces his or her willingness to work, probably as a "temp," by the year or the month or, if necessary, by the day or even the hour. These people call themselves consultants, but they are in truth unemployed workers, with no more stability nor guarantees in life than a Mexican plumber.
>
> This is the proletarianization of the middle class, which once considered itself set for life in the cushioned cubicles of big corporations but now finds itself pitched onto the pavement, a loser in the global competition for jobs. If there is a focal point of the growing debate on the global economy, it is here, where people wok. Whether you're middle class or working class, globalization's pressure on jobs has created anxieties and questions that seldom arose in the prosperous postwar years.

Id.; *see also* SCHON, *supra* note 82, at 7 ("If anything, Wolpert sees advanced information technology as driving the working poor and layers of middle management out of the mainstream economy, depriving even more people of its benefits.").

90 *See* HENRY C. LUCAS, JR., INFORMATION TECHNOLOGY AND THE PRODUCTIVITY PARADOX 126-27 (Oxford University Press 1999).

> The T-Form organization substitutes technology for layers of management.

and middle management are rendered less valuable in the new economic order.[91] At the same time, the bar is raised with regard to mobility.[92] The education necessary to command the more complex technology that drives the economy becomes more difficult to obtain.[93] Not only is the education more demanding, but access to the resources and networks necessary to command the technology is restricted.[94] Hence the digital divide grows.[95]

First, communications technology demolishes old ideas of spans of control; a manager can stay in contact with and "'supervise'" a large number of subordinates electronically. Of course, this supervision will be more remote and will require much more trust than the close supervision made possible by sitting near one's subordinates.

Secondly, technology will be used to help the manager perform his or her tasks rather than hiring a subordinate. The kinds of support available through a personal computer workstation connected to a network makes a manager far more productive today than in the past.

Another objective for the T-Form corporation is to remain flexible. Market needs and business conditions change rapidly. The firms will have to respond quickly to these changes, a characteristic not associated with large bureaucracies. The T-Form organization uses matrix management and temporary work groups to create this flexibility. Matrix management involves multiple assignments for staff members. The information technology function used this structure for many years; systems analysts and programmers typically work on more than one project at a time. They report to a project manager for each project, and to an overall manager of systems and programming.

Id.

91 *See* ADLER, *supra* note 64, at 12.

Perhaps the most significant aspect of this trend has to do with the kinds of jobs that are being eliminated and being created. The AMA survey found that "two supervisory jobs were lost for every one created; almost three middle management jobs were cut for every one created." Middle managers were particularly hard hit: while middle managers make up just 8 percent of the total U.S. workforce, they accounted for 20 percent of all jobs eliminated in 1995-96.

Id.

92 *See* LONGWORTH, *supra* note 14, at 105.

93 *See* CASTELLS, *supra* note 28, at 278-79.

Society became divided, as it was for most of human history, between winners and losers of the endless process of individualized, unequal bargaining. But this time there were few rules about how to win and how to lose. Skills were not enough, since the process of technological change accelerated its pace, constantly superseding the definition of appropriate skills. Membership of corporations, or even countries, ceased to have its privileges, because stepped-up global competition kept redesigning the variable geometry of work and markets. Never was labor more central to the process of value-making. But never were the workers (regardless of their skills) more vulnerable to the organization, since they had become lean individuals, farmed out in a flexible network whose whereabouts were unknown to the network itself.

Thus, on the surface, societies were/are becoming dualized, with a substantial top and a substantial bottom growing at both ends of the occupational structure. so shrinking the middle, at a pace and in a proportion that depend on each country's position in the international division of labor and on its political climate. But down in the deep of the nascent social structure, a more fundamental process has been triggered by informational work: the disaggregation of labor, ushering in the network society.

Id.

94 *See* STEFIK, *supra* note 31, at 194.

The cost differential between computers at the state of the art and computers

"The split between the highly skilled and the poorly paid has acquired a hard permanence in the suburban workforce. There is not much of a middle to bridge."[96] But, as we have seen, the changed relationship between the American corporation and its various constituencies has its downside. The decline in mutual loyalty between firms and their employees has undermined the sense of personal economic security at every occupational level. It has also created a growing class of contingent workers who rarely share in the perquisites and benefits enjoyed by full-time workers in large companies. And increased pressure for immediate financial performance has introduced a myopic or short-run bias into management decision making, leading to under-investment in activities like R&D and training that are likely to generate benefits external to the firm but beneficial to society. Finally, these changes have contributed to a growing inequality in earnings and income that has strained America's social fabric.[97]

Globalization magnifies the forces creating the digital divide. Routinized, deskilled labor can be found throughout the world, and the enhanced ability to coordinate economic activity through the application of information technology allows the integration of the global economy. Globally, there is a vast pool of potential labor, diminishing the bargaining power of local labor and middle management. If management does not like a bargaining package offered by labor, they can always close up shop and move to a developing country.[98]

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that are five years old created choices that affect the accessibility of computing for most of the world, which cannot afford the latest systems. Corporations in wealthy advanced nations can afford a more rapid pace of change than those in poorer, developing countries.

What are the implications of this inequality for the Net? Will the Net become more fragmented, increasingly separating the information haves from the information have-nots? Alternatively, will concerns about backward compatibility for a growing installed base of old systems across the world create inertia that stifles innovation?

Id.

95 *See* SCHON, *supra* note 82, at 12 (discussing effective access as a multi-layered proposition, consisting of access to the "pipes," the "affordable appliance," the "user-friendly software," and the "will motivation to exploit all of the above"). "[T]he real barrier to entry is, in this case, not 'physical capital' but human capital, which depends on education, training in computer skills, and job experience; and social capital, which consists of the formation of a network of useful business contracts. These are 'just the things that poverty denies.'" *Id.*

96 Robert Suro, *Crossing the High-Tech Divide*, AM. DEMOGRAPHICS, July 1999, at 59.

97 WHITMAN, *supra* note 14, at 172.

98 *See* LONGWORTH, *supra* note 14, at 9.

In this new global economy, technology – the power of the computer chip, the reach of the global satellite – is the key. Only when technology made the global economy possible did the relentless drive for profit make it happen.

If jobs move freely, people don't. A laid-off worker in California can go to

Digitization and globalization also affect processes at the top. The power of management is reinforced by its control of the knowledge-based economy.[99] Accumulation takes on a new character. The information and computer industries have spawned a new breed of wealthy entrepreneurs who have capitalized on opportunities in the new economy. The use of stock options for senior employees—the programmers, scientists, innovators and designers—who create and develop intelligent machines—creates a broader class of owners who are isolated in enclaves of innovation, "milieus of innovation," around the world.[100]

Social analysts have identified similar groups in the upper tier of society. Those with higher income and skill are referred to as symbolic analysts. The core of the technology conversant population, about twenty percent, falls within this group.

> The labor force is polarized into a better-educated core and poorly educated periphery, the latter prone to fall into the growing ranks of the semi-employed.
>
> Information technology will serve the 20 percent or so of the workforce, Reich's symbolic analysts: their jobs require theoretical abstract intelligence, plus deep and specialized education and knowledge.
>
> He writes about the 40:30:30 society, in which only 40 percent represent the secure and well-paid symbolic analysts: the middle 30 percent consist of a casualized informational proletariat, increasingly in danger of losing its jobs to competitors in other cities and other countries; and the bottom 30 percent constitute an underclass subsisting on welfare payments and casual unskilled labor.[101]

> Texas or Michigan in search of a new job; even Germans or Japanese, less footloose than Americans, move within their own countries. But they probably can't chase their old jobs to Indonesia or Guatemala. In many countries, laws against foreign workers, outside a few privileged categories, are all but insurmountable. Few workers have the knowledge or, especially, the languages to work in another country. To these barriers, add family ties and outright fear of the unknown, and workers seldom stray far from home.

Id.

99 *See id.* at 9-10.

> There even is a globalization of ideas. At the top of the global pyramid is a village of global citizens, constantly in touch with each other by computer and satellite across oceans and continents. They are CEOs, traders, economists, corporate analysts, international lawyers, star journalists, better known to colleagues halfway around the world than they are to their nonglobal neighbors with whom they share little except a passport.

Id.

100 CASTELLS, *supra* note 28, at 30.

101 Donald A. Schon, *Introduction*, *in* SCHON, *supra* note 82, at 7; *see also* Peter Hall, *Changing Geographies: Technology and Income*, *in* SCHON, *supra* note 82, at 56-58.

The anomalous problem of the digital divide can be summarized by looking at the growth of earnings in information technology (IT) industries compared to non-IT workers in the 1992-1998 period.[102] This period exhibited the strongest growth level within the IT sector.

Annual earnings grew, in real terms, in the IT sector by more than twenty percent.[103]In the rest of the economy, real earnings increased by less than five percent.[104] Over the same period, the value added in the IT sector more than doubled, but employment in the sector increased by about one-third.[105] This pattern of income changes is observable in the broader economy.[106] The increase in income was larger for the higher quintiles of the income distribution. In fact, the situation in Silicon Valley, the heart of the transformation of the economy, was even worse.[107] Between 1993 and 2000, the top fifth of the income distribution enjoyed an increase in real income of twenty percent, while the bottom fifth suffered a decline of real income of seven percent.[108]

B. *Social and Political Implications of the Divide*

Enclaves of innovation at the heart of the economy, called campuses by the leading firms, exist both as physically separate places,[109] and as socially separate places that are connected by communications and culture.[110] This builds the commonality of view-

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102 *See infra* Figure IV-2.

103 *See id.*

104 *See id.*

105 *See id.*

106 *See infra* Figure IV-3.

107 *See* JOINT VENTURE, 2001 INDEX OF SILICON VALLEY: MEASURING PROGRESS TOWARDS THE GOALS OF SILICON VALLEY 2010 (2001) *available at* http://www.jointventure.org (last visited Nov. 1, 2001).

108 *See id.*

109 *See* Hall, *supra* note 101, at 58-59.

> These cores employ the symbolic analysts in the activities that now constitute they key urban economic drivers: finance and business services, command and control functions for international companies and agencies, creative and cultural industries, the media, the design professions, international tourism. Some of these workers live locally, in inner-city apartments; many, however, commute from distant suburbs, although significant numbers are concentrated in elite corridors or sectors leading in one or two predominant directions through prosperous inner suburbs to prosperous outer ones. Elsewhere, subways, commuter trains, and expressways hurry people past the inner suburbs at high speed, making them barely noticeable.

Id.

110 *See* MANUEL CASTELLS, *The Informational City is a Dual City: Can It be Reversed?*, *in* SCHON, *supra* note 82, at 30-31.

> The few nodal functions still located in central cities, around Central Business districts (CBDs) and high-quality urban spaces, can be bridged to their regional, national, and global hinterlands via telecommunications, fast transportation, and information systems, without needing to renovate their surrounding

point and trust that allows decision makers to decentralize key activities.[111] Those outside the enclave lack the physical and social connections to achieve mobility.[112] They are walled-off from the

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urban areas. Thus the central city's islands of prosperity and innovation can further isolate themselves from the city, while integrating into the archipelago of the space of flows and delinking themselves from their social and territorial environments. So the space of flows links up valued spaces at the same time that it separates and isolates devalued spaces in the inner city, and sometimes in the suburbs, where low-income communities, a significant proportion of ethnic minorities, rundown schools, dilapidated housing, the institutions of the urban welfare state, and the shop floors of the criminal economy remain trapped. Given that these spaces, these populations, and these institutions have a decreasing relevance for functions valuable to the central city's islands of prosperity and innovations, from the point of view of the system logic, there is a self-reinforcing process of spatial marginalization, social exclusion, and functional devaluation in these neglected places, which the information highways of the space of flows have bypassed. Under such conditions traditional patterns of urban segregation are deepened. Infor-mationalization induces dualization and reinforces it in the structure and dynamics of space.

Id.

111 *See* LUCAS, *supra* note 90, at 127.

Technology alone is not enough to produce the T-Form organization; to take advantage of IT, the culture and climate of the organization have to change. In addition to matrices and temporary task forces, management has to decentralize decision making. In order to provide flexibility, firms have found that managers closest to a problem are in the best position to solve it. Technology makes it possible to provide managers at any level in the firm with information; management has to be willing to delegate decision making to individuals who are close to a problem.

What does delegating decision making mean? You have the ability to make a decision If you can commit the organization and/or its resources without prior approval. You may have to report on your actions, but you will only rarely be overruled, and you are free to act without checking with someone else first.

Decentralized decision making implies that there is a high level of trust in the organization. Management must have faith in managers at all levels in the firm, and they must believe that the information systems in place provide the appropriate information for managers to take action. Trust, then, is an essential part of the culture in a T-Form organization.

Id.

112 *See* William J. Mitchell, *The City of Bits Hypothesis, in* SCHON, *supra* note 82, at 153.

When access to jobs and services is delivered electronically, those who have good network connections will have an advantage, whereas those with poor service or no service will be disadvantaged and marginalized. So common justice clearly demands that we should strive for equitable access—and, in particular, to ensure that members of low-income communities are not further disadvantaged by exclusion from the digital world. But this goal—although simply stated—probably cannot be achieved in any simple way. The problem turns out to be complex and multilayered, requiring a combination of measures for its solution.

Becoming connected to a new kind of utility is the most obvious problem. As with water, sewer, gas, and electric service, members of low-income communities need to get the "pipes"—in this case, pipes for digital information—connected to their homes, workplace, schools, libraries, community centers, and other potentially important delivery points. The connections must be reliable and provide enough bandwidth for effective use; a system that is overloaded, slow, and goes down all the time provides little real benefit.

Connections should also be two-way, and – I would argue—symmetrical. One-way connections, like those established by broadcast media, create a rigid

core of the digital economy and society.

> Whereas America's cities proved to be extraordinary venues for upward mobility and assimilation, it is not clear that high-tech suburbs will serve the same function. In the industrial economy, workers with strong backs but little education could aspire to middle class prosperity. But in the new information economy, lack of education can be an insuperable barrier to advancement.
>
> The construction of campus-style office parks on the highways radiating out from the nation's cities signals a fundamental demographic change just as surely as it is a sign of economic advancement.[113]

The resulting economic and social structure exhibits a much wider gap between those in command and those at the bottom. Dramatic increases in wealth are causing the gentrification of the United States. Individuals who can no longer afford their neighborhoods are forced to relocate or move to the streets. The phenomenon is now observable in demographic data.

> A new immigrant class is taking root in the suburbs of the nation's capital. Drawn by the growth of Washington's technology corridors that has characterized the '90s boom, many newcomers lack the education and language skills necessary to advance into the information age. The result is a starkly divided landscape of high-tech haves and low-wage have-nots.[114]

This widening digital divide can be seen in daily life. For example, at a global Internet conference held in Fairfax, Virginia, which now has the highest average annual household income in the U.S., and is the home of one of the most famous names in the digital global economy, America Online, Inc., the heads of corporations like AOL and Dell computer reveled in the birth of the "Internet Century." Simultaneously, a local all-news radio station reported that homelessness in Fairfax county had grown by twelve percent in the past year.[115] The cause of this growth in homelessness—twice the rate of growth of the local economy—was the re-

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> division between producers and consumers of information. Asymmetrical two-way connections, like those established by cable television systems, allow large quantities of information to flow in one direction but only allow a trickle to flow back. Two-way symmetrical connections, as in a telephone conversation, allow exchanges of information on an equal footing; this is an important dimension of equity in the digital world.

Id.

113 Suro, *supra* note 96, at 57.

114 *Id.* at 55.

115 The author heard the report on WTOP radio.

markable run-up in property values resulting from the tremendous growth in value of the high-tech corporations in Fairfax. The working poor can no longer afford housing in the county.

Anecdotes underlie systemic patterns. Housing affordability nationwide declined in the late 1990s.[116] The percentage of working families with critical housing needs increased steadily, coming close to ten percent by 1998.[117] San Jose and San Francisco, the bookends of Silicon Valley, fared the worst, both cities exceeded twenty-five percent.[118] The Silicon Valley assessment presents a somewhat different picture. It found that, nationally, housing was affordable to about sixty percent of median income families in 2000, down slightly from 1993.[119] In contrast, it was affordable to only sixteen percent of median income families in Silicon Valley, down sharply from forty percent in 1993.[120]

The transformation of economic relationships spreads to the social relationships that surrounded the economic relationships. An implicit and explicit social contract between employers and employees is undermined in the face of these changes.[121]

> Many factors were in place to make the old contract work. While the U.S. economy was expanding rapidly, the hierarchical structure of organizations allowed for such a contract. Management was not in a position to demand as much flexibility in the workplace as it can today, which allowed for more "slack" in the system. Jobs themselves did not change very rapidly. With less competition (for both markets and capital), companies could afford to provide generous benefits. There was competition for labor, however, and attracting highly qualified employees was often a matter of who offered the best package.[122]

If economy-wide flexibility is to be accompanied by enhanced personal economic security, the social-support mechanisms designed to undergird labor markets of the 1950s and 1960s must be adapted to new labor-market realities. In particular, they must be tailored more effectively to an environment in which job changes are more frequent and a larger share of involuntary unemploy-

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116 *See* Michael A. Stegman et al., *Housing America's Working Families*, NEW CENTURY HOUSING, June 2000, at 7 (reporting on critical problems facing the nation's moderate-income families), *available at* http://www.nhc.org/comm_and_pubs_publication.htm (last visited Feb. 10, 2002).

117 *See id.* at 8.

118 *See id.*

119 *See id.*

120 *See id.*

121 *See* JAMES K. GALBRAITH, CREATED UNEQUAL: THE CRISIS IN AMERICAN PAY 24 (Twentieth Century Fund Book 1998).

122 ADLER, *supra* note 64, at 17.

ment is structural rather than cyclical in character. Unemployment insurance, pension plans, health benefits, and other measures to enhance the economic security of individuals and families were substantially expanded in virtually all industrialized countries following World War II. But in the United States the thrust of these developments was different than elsewhere in one important respect: in most countries these protections were delivered primarily through government programs, but in the United States the delivery mechanisms were concentrated in the private sector. As a result, the American economy is more dependent than any other on employer-based schemes of social protection. Yet to shift successfully from the concept of personal economic security rooted in a particular job to maintenance of "employability security" in the face of job changes will require institutions and mechanisms that bridge the lines of demarcation between individual employers.[123]

Cultural factors also play a role. With a relatively homogeneous workforce, there was a sense that everyone has an equal chance to advance if they worked hard enough. Professional success typically came from dedicating years of work to one company and moving up the corporate ladder. Employment with one company was often part of an overall sense of security, and workers enjoyed the sense of well-being that came from spending an entire career with one company. Once viewed as binding our society, the middle-class ethos has weakened.[124]

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123 WHITMAN, *supra* note 14, at 172-73.

124 *See* LONGWORTH, *supra* note 14, at 103.

> The middle-class ethos embraced attitudes toward social stability, religious acceptance, family cohesion, especially politics. In a nation made up of so many other nations, other creeds, other histories, the middle class provided the goals on which these diverse fragments could agree, a focus for their common striving. This broad middle class provided the ballast of American politics, leveling the ideological swings that roiled other, more class-ridden nations.

Id.

> The creation of conglomerates through mergers and acquisitions in the 1970s, corporate restructurings in the 1980s and 19905, and foreign acquisitions of u.s. companies since the mid-1980s have all intensified a shift of ownership and decision-making power from local communities to headquarters elsewhere, often in another state or country.
>
> A virtually inevitable result is a change in the role a company and its management play in the community, as the power base of local elites shifts to the local managers of national or international corporations. Such a local manager is unlikely to have the same motivation as a resident owner-manager—or the control over resources even if motivated—to allocate corporate resources to benefit the local community. Regional or national differences in cultures, traditions, and expectations are also likely to alter and complicate the relationship between company and community Above all, the firm's capacity to reallocate operations, and therefore employment, between different locations is likely to erode commitment on both sides of the relationship and thus to increase the community's vulnerability. A comparison of personnel practices in locally

The link between the place of work and the place of residence is also severed as corporations lose the community ties and become global citizens.[125]

> The gap between the possessed and dispossessed is wide, but the gap between the connected and the disconnected is even wider. The world is fast developing into two distinct civilizations – those living inside the electronic gates of cyberspace and those living on the outside. The new global communications networks, because they are all-encompassing and comprehensive, have the effect of creating a new and totalizing social space, a second earthly sphere above the terra matter, suspended in the ether of cyberspace. The migration of human commerce and social life to the realm of cyberspace isolates one part of the human population from the rest in ways never before imaginable. The separation of humanity into two different spheres of existence – the so-called digital divide – represents a defining moment in history.[126]

The transformation of the corporation reaches to its "so-called" philanthropic activities.

> Even more noteworthy is the changed nature of such corporate giving. When large corporations began to create in-house foundations in the 1960s, following the Supreme Court's removal of the last remaining barrier to corporate philanthropy; these entities prided themselves on their independence from the sponsoring company's corporate policies and the arm's-length distance of their contributions from its lines of business.

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owned and absentee-owned firms in one Michigan city revealed, for example, that absentee owners are far quicker to shut down plants in an economic downturn, and somewhat more likely to take a strike rather than settling at the bargaining table.

Frequently, of course, a shift from local to absentee ownership spells a reduction or even total elimination of jobs at a company's original headquarters as local operations are downsized, relocated, or simply closed down. Several studies confirm that mergers between locally owned and absentee corporations significantly slow growth in local employment and payroll at the acquired firm; a shift to non-local financial, legal, and accounting services compounds the loss. Similarly, employment growth tends to be both more rapid and more stable in locally owned than in absentee- owned companies.

WHITMAN, *supra* note 14 at 110.

125 *See* ADLER, *supra* note 64, at 17.

In addition to the contract between employers and their workers, a second-level contract (also implicit) existed between companies and the communities in which they operated. It was based on the premise that the benefits of work extend to the communities in which workers lived and that all members of a community shared an interest in the success of its businesses and its workforce. Communities would often take steps to accommodate businesses, and, in return, firms would commit to stay in the community.

Id.

126 RIFKIN, *supra* note 14, at 13-14.

> Frequently, a significant part of a firm's philanthropy would be allocated to the personal pet projects of the CEO and other high-ranking executives.
>
> Not until the mid-1980s did AT&T create an entirely new kind of foundation, one whose funding initiatives would be closely tied to the parent company's business functions. Philanthropy, in other words, would aid the marketing function by promoting the prestige and name recognition of the company's products; it would aid the human-resources department by promoting causes of interest to the firm's employees and involving them in donation decisions and volunteer activities; it would aid government relations by supporting causes and organizations allied with the firm's public-policy objectives; and it would promote the R&D function by supporting universities and other nonprofits pursuing research related to the firm's interests. The adoption of such a "Janus-faced" approach, focused on serving both society and the company's business goals, restricted the freedom of company CEOs to regard corporate philanthropy as a private domain.
>
> Many of America's largest companies soon followed in AT&T's footsteps, making their philanthropic activities more focused and professionalized and moving toward a "more market-driven strategic management, bottomline approach to philanthropy, to obtain a tangible return for their contributions. In some cases, this means contributions that promote company products, such as IBM's gifts of computers to schools and Polaroid's grants to university research programs in optics technology. In 1997, when Bill Gates announced that he was donating $200 million of his own money to establish a foundation to bring computers and the Internet into America's public libraries (making him "the Andrew Carnegie of the 21st century," in the words of the director of the American Library Association), Microsoft announced that it would match Gates' gift with $200 million worth of software.[127]

V. THE SPECIAL ROLE OF THE MEDIAIN DIGITAL SOCIETY AND DEMOCRACY

A. *Mediating Social Relationships*

For good reason, a great deal of attention in social and political analysis of digital society is concentrated on the media. Communications media have created the possibility for a digital society. While the impact of digitization on the economy will be great, its

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[127] WHITMAN, *supra* note 14, at 119.

impact on civic and political institutions may be greater. As digital media expand their capacity, expediting the convergence of communications, computing and television entertainment serve as very powerful economic forces capable of creating large commercial opportunities, as well as making significant social and political changes. Television was already the primary source of news and information dissemination at the end of the industrial age.[128] Broadband services, delivered over digital TV media, hold the potential to increase the power of the TV medium by adding interactivity, and much higher visual quality to a medium that already has great communicative power. Due to interactivity, immense reach,[129] real time immediacy,[130] and visual impact,[131] broadband's role in commerce and political expression may be unprecedented in the Internet century.[132]

The new services may be expensive to deliver because of the cost of appliances,[133] production equipment necessary to produce programming that takes advantage of the new appliance,[134] and the infrastructure necessary to deliver interactive services.[135] As a result of the need to sell more subscriptions and reach a broader audience, catering to individual tastes will be one of the focal points of intense advertising campaigns.[136]

The two-way character of the network is key. Push advertising on TV is high visibility, but low impact (at least in generating sales per image). The interactive broadband network allows information to flow back upstream for both consumer targeting and "T-

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128 *See* BEN K. BAGDIKIAN, THE MEDIA MONOPOLY 182 (Beacon Press 1983) (describing economic and cultural impact of television).

129 *See id.*

130 *See* Gigi Sohn & Andrew Jay Schwartzman, *Broadcast Licensees and Localism: At Home in the Communications Revolution*, 47 FED. COMM. L.J. 383, 388 (1994), *available at* http://www.law.indiana.edu/fclj/pubs/v47no2.html.

131 *See* Kathryn Olson, *Exploiting the Tension Between the New Media's "Objective" and Adversarial Roles: The Role Imbalance Attack and Its Use of the Implied Audience*, 42 COMM. Q. 36, 40 (1994); Alan G. Stavitsky, *The Changing Conception of Localism in U.S. Public Radio*, 38 J. BROAD. & ELEC. MEDIA 19, 21 (1994).

132 *See generally* A.T. KEARNEY, DIGITAL TELEVISION IN A DIGITAL ECONOMY: OPPORTUNITIES FOR BROADCASTERS (Nat'l Ass'n of Broad. 1998) (noting that that "the advent of digital television will place broadcast stations in the midst of the digital economy") [hereinafter A.T. KEARNEY].

133 The cost of early HDTV equipment has been exorbitant with current prices in the range of $2,000-$4,000. *See Profile with Bob Wright: The Agony Before the Ecstasy of Digital TV*, DIGITAL TELEVISION, Apr. 1999, at 40; Gary H. Arlen, Making the Transition: A New Kind of Television, A White Paper 11 (April 1998) (on file with author).

134 Station conversion costs are estimated at $5 to $10 billion for broadcasters and cable TV network upgrade costs are in the tens of billions of dollars.

135 *See* KIM MAXWELL, RESIDENTIAL BROADBAND: AN INSIDER'S GUIDE TO THE BATTLE FOR THE LAST MILE 9-10 (John Wiley & Sons 1999).

136 *See* MORGAN STANLEY DEAN WITTER, DIGITAL DECADE 105 (Apr. 6, 1999) [hereinafter MORGAN STANLEY].

commerce," the immediate purchase of goods over interactive television.[137] On the interactive network, programmers and system operators can discover what people watch and buy with remarkable detail.[138] This information is extremely useful in targeting advertising and increasing sales.[139] Since there is a strong need to increase sales, it is hard to imagine that digital broadcasters will not take full advantage of this information.

The resulting T-commerce will be an electronic "direct mail on steroids," enhanced by the ability of viewers to click through digitally-inserted advertising for purchases.[140] The advertising will be targeted at demographically compatible viewers, identified by detailed information on viewing patterns and past purchases. This information will be embedded in programming, as suggested by an intuitive programming guide.

The extremely powerful commercial thrust of the media runs into media policy of the late industrial age.[141] Because policymakers recognized the uniquely important role that broadcast media—radio and later television—play in the marketplace of political ideas, and in forming cultural values, they have traditionally rejected the notion that economics alone should decide the nature, availability, and content of political and cultural programming. Instead, policy has sought to prevent concentration of economic power from controlling the flow of ideas in the broadcast media by placing limits on the ownership of media outlets and imposing obligations to expand programming beyond what is simply profitable.[142] In short, what is good enough in the economic marketplace is not necessarily good enough in the political and cultural marketplace. But the power of the commercial model is growing, increasing the tensions between the economic marketplace and the marketplace of ideas.

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137 *See* Martin Simms, *From Aiming Too High to Aiming Too Low*, INTERMEDIA, June 1999, at 5.

138 *See* MORGAN STANLEY, *supra* note 136, at 15.

139 *See* Bill Menezes, *Replay, TiVo Get Cash for Consumer Push*, MULTICHANNEL NEWS, Apr. 5, 1999, at 47-48.

140 *See* Bob Van Orden, *Top Five Interactive Digital-TV Applications*, MULTICHANNEL NEWS, June 21, 1999, at 143; A.T. KEARNEY, *supra* note 132, at 143.

141 *See* CHARLES. M. FIRESTONE & JORGE REINA SCHEMENT, TOWARD AN INFORMATION BILL OF RIGHTS & RESPONSIBILITIES 45 (Aspen Inst. 1995). *See generally* Guido H. Stempel III & Thomas Hargrove, *Mass Media Audiences in a Changing Media Environment*, 73 JOURNALISM & MASS COMM. Q. 549 (1996) (documenting the growth of mass media influence); Albert C. Gunther, *The Persuasive Press Inference: Effects of Mass Media on Perceived Public Opinion*, 25 COMM. RES. 486 (1998) (documenting the growth of mass media influence).

142 *See* W. Wat Hopkins, *The Supreme Court Defines the Marketplace of Ideas*, 73 JOURNALISM & MASS COMM. Q. 40 (1996) (explaining the various definitions used by the Supreme Court to describe the marketplace of ideas when justifying limits on free speech).

B. *The Digital Divide in the Media*

The commercial model that is driving digital media raises significant concerns about the digital divide. The expense of equipment, the cost of services, and the targeting of marketing, points to a commercial model in which high-value, high-income consumers are the ones whom marketers seek to woo. Companies introducing technologies can identify the likely "adopters" and orient their product distribution to maximize the penetration within that market segment. The competitive energies of the industry are focused on the "premier" segment, with innovative offerings and consumer-friendly pricing, while the remainder of the population is ignored or suffers price increases. Merging informational, educational and employment opportunities over the Internet with the commercial activities of interactive media raises concerns that the commercial model might further isolate those who have been disadvantaged by the digital divide.

The well-established field of diffusion research provides support for this concern. The academic literature on the adoption of innovations certainly suggests that the early adopters will be the wealthier, better-educated segments of the population. This picture of the early adopters has not changed in decades.[143] It is quite similar to the results one finds in a very long tradition of innovation adoption research.[144] There is a very strong base of support for the importance of income and education in the adoptions of high technology innovations like computers and telecommunications equipment.[145] The strong predictors of inclination to early adoption point directly to market segmentation strategies.[146] In other words, companies introducing technologies can identify the likely adopters, and orient their product distribution to maximize the penetration within that market segment.

There is nothing inherent in the digital transformation that

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[143] *See* Michel Dupagne, *Exploring the Characteristics of Potential High-Definition Television Adopters*, 12 J. MEDIA ECON. 35, 38 (1999).

[144] *See generally* Jayati Sarkar, *Technological Diffusion: Alternative Theories and Historical Evidence*, 12 J. ECON. SURVEYS 131 (1998); Eva Martinez, Yolanda Polo & Carlos Flavian, *The Acceptance and Diffusion of New Consumer Durables: Differences Between First and Last Adopters*, 15 J. CONSUMER MARKETING 323 (1998).

[145] *See* Carol B. Meeks & Anne L. Sweaney, *Consumer's Willingness to Innovate: Ownership of Microwaves, Computers and Entertainment Products*, 16 J. CONSUMER STUD. & HOME ECON. 77, 84 (1992); Scott Savage, Gary Madden & Michael Simpson, *Broadband Delivery of Educational Services: A Study of Subscription Intentions in Australian Provincial Centers*, 10 J. MEDIA ECON. 1 (1997); David J. Atkin et al., *Understanding Internet Adoption as Telecommunications Behavior*, 42 J. BROAD. & ELEC. MEDIA, 475, 484 (1998); Carolyn, A. Lin, *Exploring Personal Computer Adoption Dynamics*, 42 J. BROAD. & ELEC. MEDIA, 95, 105 (1998).

[146] *See* Fareena Sultan, *Consumer Preferences for Forthcoming Innovations: The Case of High Definition Television*, 16 J. CONSUMER MARKETING 24, 37 (1999).

will alleviate the problem of information "haves and have-nots" and much that could exacerbate it. The digital transformation does nothing to reduce the economic, personal and social barriers. As the effects of the digital transformation spread, those who do not have command of the technology become marginalized.

The new medium is a potent method of information dissemination. Economic control over mass media can result in excessive political power, with an impact on political activity and political outcomes because the economic interests of media owners influences their advertising and programming choices.[147] Private interests inevitably attempt to dictate the access to political information.[148] The shift toward greater reliance on economic forces has not resulted in greater competition, but has resulted in greater concentration in the many markets.[149] Greater concentration results in less competition.[150] There is evidence of the anticompetitive behaviors expected to be associated with reductions in competition, such as price increases and excess profits.[151]

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147 *See* David L. Bazelon, *FCC Regulation of the Telecommunications* Press, DUKE L.J. 213, 230-31 (1975).

148 *See generally* W. LANCE BENNETT, NEWS: THE POLITICS OF ILLUSION (Longman 1983); EDWARD S. HERMAN & NOAM CHOMSKY, MANUFACTURING CONSENT (Pantheon Books 1988); Jon Katz, *Collateral Damage to the Network News*, COLUM. JOURNALISM REV., Mar./Apr. 1991, at 29; John McManus, *Local TV News: Not a Pretty Picture*, COLUM. JOURNALISM REV., May/June 1990, at 42; John McManus, *How Objective is Local Television News?*, 18 MASS COMM. REV. 21 (1991); Monroe E. Price, *Public Broadcasting and the Crisis of Corporate Governance*, 17 CARDOZO ARTS & ENT. L.J. 417 (1999) (arguing that for public broadcasting to flourish, and for new technologies to provide opportunities for substantial growth in impact, it may be necessary to transform public broadcasts).

149 *See* BAGDIKIAN, *supra* note 128, at ix-x; Jay G. Blumer & C.M. Spicer, *Prospects for Creativity in the New Television Marketplace: Evidence from Program Makers*, 40 J. COMM. 78, 80 (1990). *See generally* SARA M. EVANS & HARRY C. BOYTE, FREE SPACES: THE SOURCES OF DEMOCRATIC CHANGE IN AMERICA (Harper & Row 1986); William H. Melody, *Communication Policy in the Global Information Economy: Whither the Public Interest?*, *in* PUBLIC COMMUNICATION: THE NEW IMPERATIVES (Marjorie Ferguson ed., Sage Publications 1990); ROBERT M. ENTMAN, DEMOCRACY WITHOUT CITIZENS (Oxford Univeristy Press 1989); DORIS A. GRABER, MASS MEDIA AND AMERICAN POLITICS (Congressional Quarterly 1993) (examining mass media's role in all aspects of American politics); Herbert H. Howard, *TV Station Group and Cross-Media Ownership: A 1995 Update*, 75 JOURNALISM & MASS COMM. Q. 390 (1995) (demonstrating increasing concentration); Benjamin J. Bates, *Station Trafficking in Radio: The Impact of Deregulation*, 37 J. BROAD. & ELEC. MEDIA 29 (1993).

150 *See generally* Stephen Lacy, *The Effect of Intracity Competition on Daily Newspaper Content*, 64 JOURNALISM Q. 281 (1987); Stephen Lacy et al., *Cost and Competition in the Adoption of Satellite News Gathering Technology*, 1 J. MEDIA ECON. 51 (1988); Stephen Lacy et al., *Competition and the Allocation of Resources to Local News*, 2 J. MEDIA ECON. 3 (1989); Stephen Lacy et al., *The Relationship Among Economic, Newsroom and Content Variables: A Path Analysis*, 2 J. MEDIA ECON. 51 (1989); Dominic L. Lasorsa, *Effects of Newspaper Competition on Public Opinion Diversity*, 68 JOURNALISM Q. 38 (1991); J.P. Vermeer, *Multiple Newspapers and Electoral Competition: A County-Level Analysis*, 72 JOURNALISM & MASS COMM. Q. 98 (1995).

151 *See* Michael O. Wirth & James A. Wollert, *The Effects of Market Structure on Television News Pricing*, 28 J. BROAD. 215 (1984). *See generally* Julian L. Simon et al., *The Price Effects of Monopolistic Ownership in Newspapers*, 31 ANTITRUST BULL. 113 (1986); W.B. RAY, FCC: THE UPS AND DOWNS OF RADIO-TV REGULATION (Iowa State University Press 1990); Robert Rubi-

The dictates of mass audiences create the largest market-share/lowest-common-denominator ethic that undercuts the ability to deliver politically and culturally relevant diversity.[152] Furthermore, new technologies do not alter the underlying economic relationships.[153] The mass-market audience orientation of the business takes precedence.[154] The introduction of new technologies has not dramatically enhanced diversity.

> Radio programming preferences differ sharply between black and whites between Hispanics and non-Hispanics, and (to a lesser extent) across age groups. Additional consumers bring forth additional products, but in this market the products brought forth are valuable almost exclusively to members of their own groups. This is an interesting finding, among other reasons, because it gives a non-discriminatory reason why markets will deliver fewer products — and one might infer, lower utility — to "preference minorities," small groups of individuals with atypical preferences.
>
> Is this an important effect in the economy, or a curious feature of radio markets? . . . The fundamental conditions needed to product compartmentalized preference externalities are large fixed costs and preferences that differ sharply across groups of consumers. These conditions are likely to hold, to greater or lesser extents, in a variety of media markets—newspapers, magazines, television, and movies.[155]

Other empirical evidence clearly suggests that concentration in media markets has a negative effect on diversity.[156] Greater concentration results in less diversity, while diversity of ownership

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novitz, *Market Power and Price Increases for Basic Cable Services Since Deregulation*, 24 RAND J. OF ECO. 1 (1991).

152 *See* BAGDIKIAN, *supra* note 128, at 182, 188; Peter Clarke & Eric Fredin, *Newspapers, Television, and Political Reasoning*, 42 PUB. OPINION Q. 143, 150 (1978); Karen L. Slattery et al., *The Expression of Localism: Local TV News Coverage in the New Video Marketplace*, 40 J. BROAD. & ELEC. MEDIA 403, 403 (1996) (describing the emergence of new video marketplace and questions raised regarding the commitment of local TV news organizations to the FCC localism doctrine).

153 *See* Patricia Aufderheide, *Cable Television and the Public Interest*, 42 J. COMM. 52, 55 (1992); Norman M. Sinel et al., *Current Issues in Cable Television: A Re-balancing to Protect the Consumer*, 8 CARDOZO ARTS & ENT. L.J. 387, 419 (1990); August E. Grant, *The Promise Fulfilled? An Empirical Analysis of Program Diversity on Television*, 7 J. MEDIA ECON. 51, 54 (1994) (asserting that some changes found in *St. Louis Post-Dispatch* study appear to represent trends rather than responses to competition).

154 *See* Victor E. Ferrall, Jr., *The Impact of Television Deregulation*, 39 J. COMM. 8, 26 (1992).

155 JOEL WALDFOGEL, PREFERENCE EXTERNALITIES: AN EXMPIRICAL SUDY OF WHO BENEFITS WHOM IN DIFFERENTIATED PRODUCT MARKETS 20 (Nat'l Bureau of Econ. Res. 2000).

156 *See generally* William R. Davie & Jung-Sook Lee, *Television News Technology: Do More Sources Mean Less Diversity*, 37 J. BROAD. & ELECTRONIC MEDIA 455 (1993); Stephen Lacy, *A Model of Demand for News: Impact of Competition on Newspaper Content*, 66 JOURNALISM Q. 40 (1989); Wayne Wanta & Thomas J. Johnson, *Content Changes in the St. Louis Post-Dispatch During Different Market Situations*, 7 J. MEDIA ECON. 13 (1994).

across geographic, ethnic and gender lines is associated with diversity of programming.[157] There is clear evidence that greater concentration will reduce public interest and culturally diverse programming.[158] News and public affairs programming is particularly vulnerable to these economic pressures.[159] As market forces grow, this programming is reduced.[160] The quality of the programming is also compromised.[161]

Because cyberspace is an active creation of human technologies (more so than other social spaces), it is susceptible to centralized control.[162] There is growing concern that the design of cyberspace is being dominated by a particular set of economic interests.[163] Despite the Internet's democratizing influence and potential, some actors still have a great ability to "pull the plug," or direct the flow of communications.[164] This new medium may be more prone to domination and control. There is also growing concern that certain groups are not likely to have fair access to the opportunities that cyberspace present.[165] There is also a concern that control and policymaking shifts out of the hands of "duly elected" governments.[166] Because it is new and developing rapidly, time is of the essence. Control and presence at the outset is critical. Not "being there" in substantial numbers when this new space is defined creates a significant disadvantage of representation.

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157 *See generally* Thomas A. Hart, Jr., *The Case for Minority Broadcast Ownership, in* THOMAS GIBBONS, REGULATING THE MEDIA 54 (Sweet & Maxwell 1988); Timothy G. Gauger, *The Constitutionality of the FCC's Use of Race and Sex in the Granting of Broadcast Licenses*, 83 NW. U. L. REV. 665 (1989) (recognizing the FCC's general lack of expression of minority viewpoints in mass media since the 1960s).

158 *See* Vernon A. Stone, *Deregulation Felt Mainly in Large-Market Radio and Independent TV*, COMMUNICATOR, Apr. 1987, at 12; Patricia Aufderheide, *After the Fairness doctrine: Controversial Broadcast Programming and the Public Interest*, 48 J. COMM. 47, 50-51 (1990); Karen L. Slattery & Ernest A. Hakanen, *Sensationalism Versus Public Affairs Content of Local TV News: Pennsylvania Revisited*, 38 J. BROAD. & ELEC. MEDIA 205, 207 (1994) (describing how news organizations devoted significantly more time to sensational human interest stories in 1992 than in 1976).

159 *See* J. H. McManus, *What Kind of Commodity is News?*, 19 COMM. RES. 787, 789 (1992).

160 *See* BAGDIKIAN, *supra* note 128, at 220-21; *See generally* DAVID L. PALETZ & ROBERT M. ENTMAN, MEDIA POWER POLITICS (Free Press 1982); NEIL POSTMAN, AMUSING OURSELVES TO DEATH: PUBLIC DISCOURSE IN THE AGE OF SHOWBUSINESS (Viking Press 1985).

161 *See* Barry R. Litman, *The Television Networks, Competition and Program Diversity*, 23 J. BROAD. 393, 396 (1979).

162 *See generally* SHAPIRO, *supra* note 14.

163 *See generally* Mark Cooper, *Symposium Overview: Part II: Unbundling and Open Access Policies: Open Access to the Broadband Internet: Technical and Economic Discrimination in Closed, Proprietary Networks*, 71 U. COLO. L. REV. 1011 (2000).

164 *See* Robert Dahl, *Can International Organizations be Democratic? A Skeptic's View, in* DEMOCRACY'S EDGES 19 (Ian Shapiro & Casiano Hacker-Cordon eds., Cambridge University Press 1999).

165 *See* MANSELL & WHEN, *supra* note 59, at 8.

166 *See* LONGWORTH, *supra* note 14, at 62.

> There are large areas of the world, and considerable segments of the population, switched off from the new technological system . . . . Furthermore, speed of technological diffusion is selective, both socially and functionally. Differential timing in access to the power of technology for people, countries, and regions is a critical source of inequality in our society.
>
> Furthermore, because the actual technological shape of the system is uncertain, whoever controls its first stages could decisively influence its future evolution, thus acquiring structural competitive advantage. Because of technological convergence between computers, telecommunications, and mass media in all its modalities, global/regional consortia were formed, and dissolved, on a gigantic scale. Telephone companies, cable TV operators, and TV satellite broadcasting were both competing and merging to hedge the risks of the new market. Computer companies were hurrying to provide "the box," this magic device that would embody the potential to hook up the electronic home to a new galaxy of communication, while providing people with a navigating and self-programming capability in a "user-friendly" mode, hopefully by just speaking to "it."[167]

This is a vicious cycle. If a particular cultural group is not represented early in the creation of the medium, culturally relevant applications of technology and content do not get produced for that group. Since there are not as many culturally relevant applications of the technology, members of that group tend to adopt the medium more slowly. Having the technology now versus having the technology later is the difference between being a passive consumer and being an engine and driver of the medium.[168] Being there when the architecture is defined means one's needs and de-

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167 CASTELLS, *supra* note 28, at 33.

168 *See id.* at 402.

> Not only will choice of multimedia be restrained to those with time and money to access, and to countries and regions with enough market potential, but cultural/educational differences will be decisive in using interaction to the advantage of each user. The information about what to look for and the knowledge about how to use the message will be essential to truly experience a system different from standard customized mass media. Thus, the multimedia world will be populated by two essentially distinct populations: the interacting and the interacted, meaning those who are able to select their multidirectional circuits of communication, and those who are provided with a restricted number of prepackaged choices. And who is what will be largely determined by class, race, gender, and country. The unifying cultural power of mass television (from which only a tiny cultural elite had escaped in the past) is now replaced by a socially stratified differentiation, leading to the coexistence of a customized mass media culture and an interactive electronic communication network of self-selected communes.

Id.

mands will be reflected in the face of the medium.[169]

One of the most important aspects of being there to define institutions is political participation. The challenge of cyberspace to the nation-state noted earlier can be a disenfranchising process. Decisions may move beyond the control of citizens in several ways. First, immigrants are excluded. To the extent that international mobility increases in order to follow globalization, more people live where they do not have citizen rights.[170] More decision-making moves to international organization where no one has citizen rights.[171] National governments have difficulty exercising authority over global corporations, even though they are domiciled in their territory.[172]

Thus, the concern about the impetus for commercial activity provided by the new business model for digital TV is well founded in past experience with the broadcast and news media.[173] The fragmented and impersonal nature of the medium also raises concerns that true discourse will not be supported,[174] while civic programming is crowded out.[175]

VI. Evidence of the Digital Divide

To this point, the presentation of the analytic paradigm relies on traditional, macro level data such as organizational patterns, employment statistics, traffic flows, etc., to describe the transformation of society. To fully appreciate the impact of the transformation and the digital divide on individuals, this section presents the results of a recent, extremely detailed national survey.[176]

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169 *See* SHAPIRO, *supra* note 14, at 215.

> The opportunity for truly open and effective community conversation will depend on whether our digital tools are primed, in design and use, for online escapism and total filtering, or whether we balance personalization with other values, such as broad exposure, social awareness, and community strength. If we fail to do so, the problem won't just be that we are all occupying different chat rooms or reading different news online. The insularity of cyber-experience could become the insularity of experience, period.

Id.

170 *See generally* Jost Halfman, *Citizenship, Universalism, Migration and the Risk of Exclusion*, BRIT. J. SOC., Dec. 1998.

171 *See* Dahl, *supra* note 164, at 32.

172 *See* SCHULZE & URSPRUNG, *supra* note 66, at 20.

173 *See generally* ANTHONY G. WILHELM, DEMOCRACY IN THE DIGITAL AGE (Routledge 2000).

174 *See generally* DAVID SHENK, DATA SMOG: SURVIVING THE INFORMATION GLUT (Harper 1998); SIDNEY VERBA ET AL., VOICE AND EQUALITY: CIVIC VOLUNTARISM IN AMERICAN POLITICS (Belknap Press 1995).

175 *See generally* SHAPIRO, *supra* note 14; NEIL POSTMAN, TECHNOPOLY: THE SURRENDER OF CULTURE TO TECHNOLOGY (Vintage Books 1993).

176 The survey was commissioned by the Digital Media Forum, a media policy consortium funded by the Ford Foundation. It was designed and conducted independently by Professor Dhavan Shah, Ph.D., of the School of Journalism and Mass Communication, Uni-

A. *Technology and the Economy*

Given the analytic framework, the examination of the data was driven by a technologically-based set of categories. The obvious starting point is a scale of actual and potential connection to the Internet. A four-way categorization was developed.[177]

Fully Connected - Respondents who report that they have a commercial Internet Service Provider or high-speed Internet access at home.

Partially Connected - Those who have basic Internet service or basic e-mail service at home.

Potentially Connected - Those who have no Internet service, but do own a computer at home or have a cellular phone.

Disconnected - Those who do not have any Internet service and do not have a computer or a cellular phone.

Cellular is included for two reasons. First, as the Internet moves increasingly to wireless Internet platforms, these people will have a device for connection to the Internet. Second, a cellular user's ability to pay the cost of a cell phone indicates a certain amount of discretionary income that the consumer is willing to spend on communications services. At the same time, it should be noted that cell phones are simply a new form of telephone service, one that affords mobility. As such, they have spread very rapidly in the past several years, without being Internet connectivity devices.

As described in Figure VI-1, the groups are fairly even. Just over one-quarter (twenty-six percent) of the respondents are disconnected, just over one-fifth (twenty-one percent) are potentially connected, just over one-sixth (seventeen percent) of the respondents are partially connected, and over one-third (thirty-six per-

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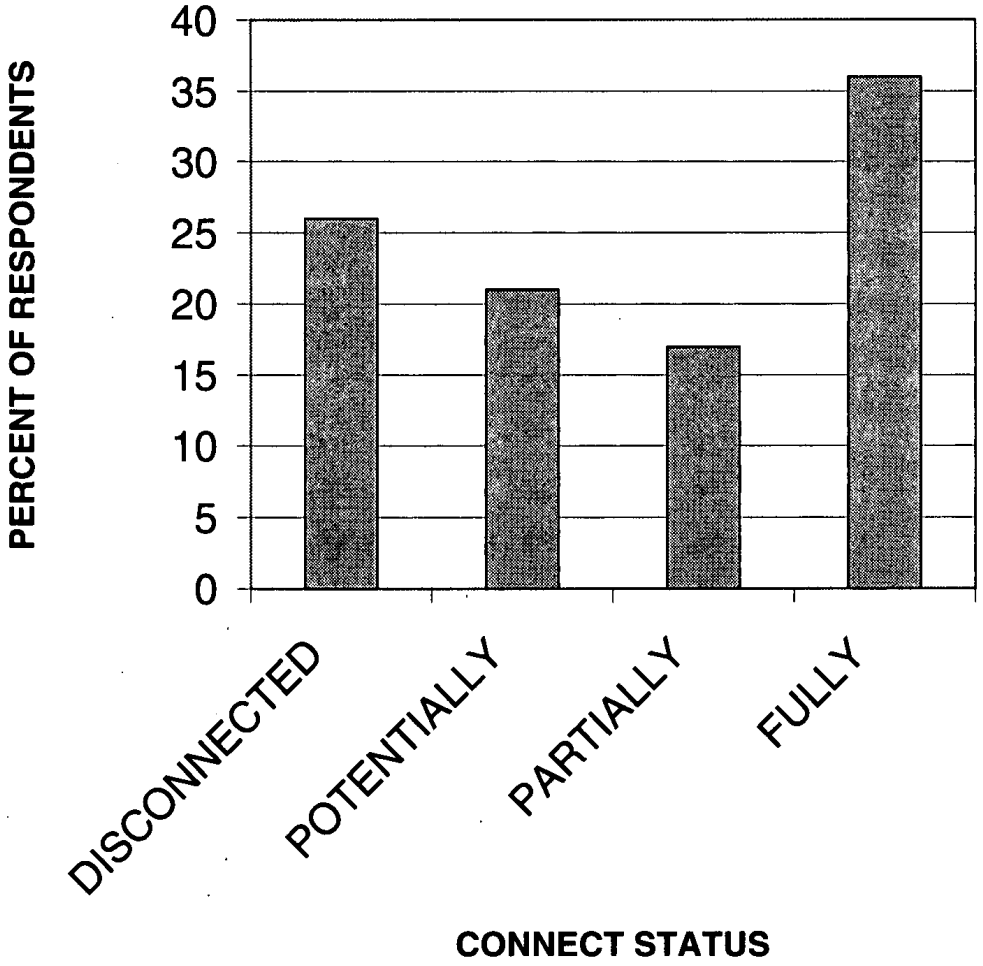
versity of Wisconsin-Madison. The resulting study relies on national survey data collected in February 1999 and June 2000 from a single panel of respondents. The February 1999 data were collected as part of an annual mail survey — the "Life Style Study" — conducted by Marketfacts on behalf of DDB-Chicago, an international marketing communications company. A balanced sample was then drawn from among the 500,000+ people agreeing to become part of the pre-recruited "mail panel." In order to ensure representativeness, the starting sample of approximately 5,000 mail panelists was adjusted within the subcategories of race, gender, and marital status to compensate for expected differences in return rates. The sample was also drawn to reflect demographic distributions within the nine Census divisions of household income, population density, panel member's age, and household size. Applying this stratified quota sampling method, of the roughly 5,000 Life Style surveys distributed to mail panelists, 3,388 usable responses were received, for a response rate of 67.8 percent. This rate of response is considerably higher than the typical national survey. For the June 2000 wave of the study, we engaged Marketfacts to recontact the individuals who completed the February 1999 survey. Due to some erosion, 2,737 questionnaires were mailed out to 1999 Life Style Study respondents. The subsequent analysis relies entirely on the June 2000 responses. *See* Mark N. Cooper, 2000 Survey, June 2000 (on file with author) [hereinafter 2000 Survey].

177 *See infra* Figure VI-1.

cent) of households are fully connected.[178]

Table VI-1 provides a description of the characteristics of these groups across cyberspace and other technologies.[179] Among the fully and partially connected, computers are ubiquitous, with ninety-six percent reporting a computer at home.[180]

FIGURE VI-1
ONLINE STATUS



Modems are also widespread in these two groups, with over three quarters possessing this communications device. Fifty-nine percent of the potentially connected have a computer, and half of these have a modem. Embedded in these numbers is the fact that eighty-one percent of those who have a computer are either fully

178 *See id.*
179 *See infra* Table VI-1.
180 *See id.*

TABLE VI-1
TECHNOLOGY TRAITS ACROSS THE DIGITAL DIVIDE

	Disconnected	Potentially Connected	Partially Connected	Fully Connected
Computer	0	59	95	96
Internet Commercial	0	0	0	100
Internet Basic	0	0	100	69
Modems	0	30	75	84
Cell Phones	0	72	58	69
Fax Machine	2	16	22	33
Cable/Satellite TV	62	73	78	87
Long Distance Service	71	85	88	89

or partially connected. In other words, once respondents have a computer, they are very likely to be connected. Figure VI-2 makes this point by showing the percentage of households currently with computers and Internet service by the date they first obtained the service.[181] Internet connectivity exploded in the second half of the 1990s.[182]

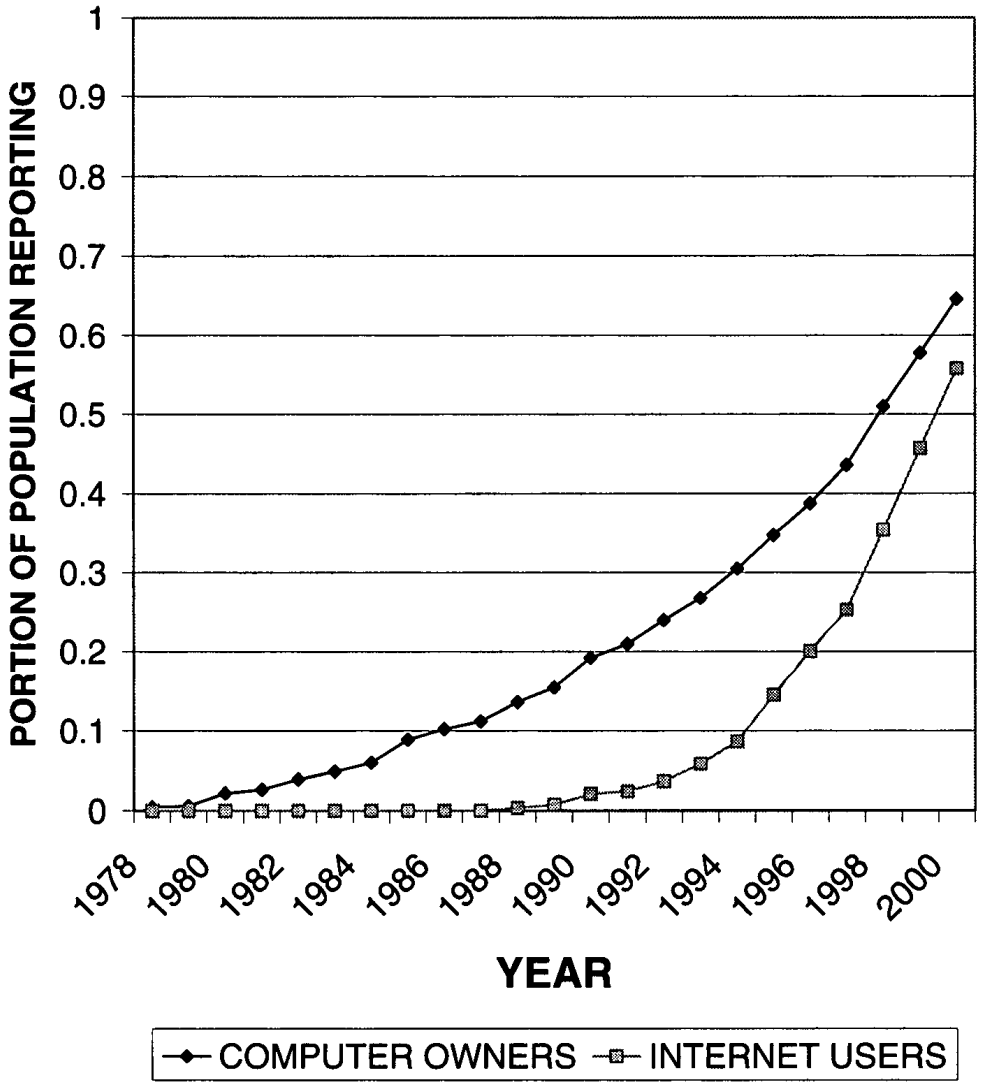
The penetration of more traditional technologies is more evenly spread across the groups than are cyberspace technologies. Seventy-one percent of the disconnected respondents report they have a long distance telephone service.[183] Sixty-two percent have a multichannel video service (cable or satellite).[184] Among the fully connected, eighty-nine percent say they have a long distance service.[185] Eighty-seven percent say they have a multichannel video service.[186] In this sense, physical space was more equal than cyberspace. This is a pattern that will be in evidence throughout the analysis.

Economic traits of the groups track the digital divide issues. Table VI-2 shows that income is lowest in the disconnected group ($25,500), and highest in the fully connected group ($45,200).[187] Those who are fully and partially connected are much more likely to have at least a college degree and be employed in managerial or professional occupations.[188] The fully and partially connected are less likely to be African-American.[189] Disconnected households are

181 *See infra* Figure VI-2.
182 *See id.*
183 *See supra* Table VI-1.
184 *See id.*
185 *See id.*
186 *See id.*
187 *See infra* Table VI-2.
188 *See id.*
189 *See id.*

older and tend to be smaller.[190]

FIGURE VI-2
DIFFUSION OF COMPUTER OWNERSHIP AND INTERNET USE (CURRENT AT HOME OWNERS)



The demographic characteristics discussed above (income, education, occupation, age and race of the household head and household size) have statistically significant effects in a multiple regression analysis. They explain about one-quarter of the variance in connectedness. Other demographics that were tested but did not have statistically significant effects, once these variables are

190 *See id.*

TABLE VI-2
ECONOMIC TRAITS ACROSS THE DIGITAL DIVIDE

	Disconnected	Potentially Connected	Partially Connected	Fully Connected
Mean Income (x1000)	$25.5	$34.3	$39.6	$45.2
At Least College Grad	13	26	44	46
African-American	12	11	4	7
Age (in Years)	53	47	45	44
Managerial/Professional	8	22	26	33

taken into account, include gender, employment status, urban/rural location, residence tenure, and Hispanic origin. Given the close link between the computer and being connected, it is not surprising to find that the variables explain about the same amount of variance in computer ownership exists.

Interestingly, two-thirds of the potentially connected, and one half of the disconnected, say they have used the Internet at some time, while virtually all of those who have Internet at home use it.[191] However, the differences in usage are quite clear. Table VI-3 presents data on cyberspace activities that fall into the general realm of economics.[192] It shows that there are very substantial differences between groups in their use of the Internet.

The fully connected use the Internet every other week at work, while the disconnected use it less than every other month.[193] Generally, the probability that the fully connected use the Internet is between five and ten times as often as the disconnected.[194] The fully connected generally use the Internet four or five times as much as the disconnected for activities such as visiting a website mentioned in an advertisement or program. The Internet has already become an important means of communications and commerce in society, and households that lack access have more difficulty conducting their daily activities. They cannot shop as effectively or conveniently, are not offered attractive pricing plans, and are therefore less effective consumers.

B. *Political Activity*

Table VI-4 presents the data on political activities in cyberspace compared to physical space.[195] We include the physical

191 *See infra* Table VI-3.
192 *See id.*
193 *See id.*
194 *See id.*
195 *See infra* Table VI-4.

TABLE VI-3
ECONOMIC ACTIVITIES IN CYBERSPACE

	Disconnected	Potentially	Partially	Fully
Prevalence of Activity (% Reporting)				
Personal Productivity				
Use Internet at work	11	27	43	47
Searched for a Job online	14	13	23	28
Searched for business info online	21	30	46	52
Obtained educational info online	26	42	72	73
Commercial Activity				
Made an online purchase	11	19	53	57
Visited website seen in an ad	14	25	64	62
Visited website seen in a program/article	17	28	65	67
Paid to access a subscriber only website	3	3	10	15
Purchased items from an online auction	2	4	15	15
Frequency of Activity (# of Times Last Year)				
Personal Productivity				
Use Internet at work	4.7	11.7	22.1	25.6
Searched for a Job online	2.4	1.6	4.3	4.9
Searched for business info online	3.9	8.4	12.4	13.6
Obtained educational information online	2.7	5.7	14.1	13.5
Commercial Activity				
Made an online purchase	0.7	2.3	7.4	8.7
Visited website seen in an Ad	2.2	5.0	11.0	13.4
Visited website seen in a program/article	2.0	2.7	7.1	7.7
Paid to access a subscriber only website	0.2	0.2	0.8	8.8
Purchased items from an online auction	0.2	0.6	2.6	2.3

space referents here since it is more important to know the baseline physical space activities in trying to draw conclusions about the impact of the digital divide on these activities. That is, most respondents undertake commercial activities in physical space—make a purchase, follow up an ad, search for information—on a routine basis.[196] The presence of online activity among certain groups speaks for itself as a new way of doing the same thing. For civic and political activity, the prevalence of activities is less routine and frequent in life in physical space.[197] To demonstrate deprivation here, we must show a difference between physical space and cyberspace.

The disconnected and potentially connected households generally participate a little less in physical space, but even less in cyberspace.[198] The data is consistent with the disadvantage/disenfranchisement argument. The problem is not that the discon-

196 *See id.*
197 *See id.*
198 *See id.*

nected do not participate in physical space, but that they do not have the opportunity to participate in cyberspace.

The evidence showing a substantial difference in the level of activity in physical space and cyberspace is clear in both the presence of activity and the extent of activity.[199] The disconnected are somewhat less likely to participate in physical space, but about three-quarters to four-fifths as likely to conduct physical space activity.[200]

Differences in the frequency of activities in physical space are similar. The disconnected engage in activities about three-quarters to four-fifths as much.[201] Consequently, those who participate do so at roughly the same level.[202] The frequency of activities also suggests that the differences are substantial. Here we caution that we cannot be certain that the quality of the activities is the same in cyberspace, but the quantitative differences are substantial. For example, the disconnected are slightly less likely to contact local government officials (31 percent to 40 percent) but much less likely to visit a government web site (13 percent to 40 percent).[203]

Activity is similar for writing a letter to the editor or discussing politics in physical space or cyberspace.[204] Attending a political rally is infrequent, less than once a year.[205] Cyberspace contact with politicians is also infrequent, but increases the total very substantially.[206]

C. *Civic Activities*

Table VI-5 analyzes civic activities using physical/cyber comparisons for information gathering, but not other activities.[207] Reading a news magazine in physical space may not be the same as visiting a news website or receiving sports information on line, but the difference in the level of activity is striking. The fully connected engage in these online news gathering activities alone, more than the disconnected do in physical space and cyberspace combined.[208] The difference in cyberspace between the disconnected and the fully connected is greater than the total of the dis-

199 *See id.*
200 *See id.*
201 *See id.*
202 *See id.*
203 *See id.*
204 *See id.*
205 *See id.*
206 *See id.*
207 *See infra* Table VI-5.
208 *See id.*

TABLE VI-4
POLITICAL CONSEQUENCES OF BEING DISCONNECTED
(CYBERSPACE IN ITALICS)

	Disconnected	Potentially	Partially	Fully
Prevalence of Activity (% of Respondents)				
Interacting with Government				
Contacted a local public official	31	35	40	40
Visited website of a gov't agency	*13*	*17*	*36*	*40*
Political Discourse				
Wrote a letter to the editor	20	18	24	27
E-mailed a Newspaper	*8*	*6*	*15*	*16*
Discussed politics with a neighbor	46	47	56	50
Discussed politics in an e-mail	*7*	*4*	*9*	*12*
Political Expression				
Circulated a petition for a politician	10	11	12	12
Signed or forwarded a petition	5	5	9	14
Attended a political rally	22	23	18	19
E-mailed a politician	*3*	*4*	*12*	*17*
Visited a politician's website	*8*	*7*	*18*	*19*
Frequency of Activity (# of Times Last Year)				
Interacting with Government				
Contacted a local public official	1.4	1.3	1.5	1.6
Visited website of a gov't agency	*1.2*	*1.8*	*4.3*	*3.5*
Political Discourse				
Wrote a letter to the editor	2.0	2.1	2.2	2.2
E-mailed a Newspaper	*0.1*	*0.3*	*0.6*	*0.8*
Discussed politics with a neighbor	2.7	3.3	3.4	3.8
Discussed politics in an e-mail	*0.3*	*0.2*	*0.5*	*0.6*
Political Expression				
Circulated a petition for a politician	0.2	0.3	0.3	0.3
Signed or forwarded a petition	*0*	*0.1*	*0.4*	*0.5*
Attended a political rally	0.6	1.2	0.8	0.8
E-mailed a politician	*0.3*	*0.3*	*0.6*	*1.2*
Visited a politician's website	*0.1*	*0.2*	*0.9*	*1.0*

connected in physical space.[209] With respect to writing to newspapers, a ten percent greater frequency in physical space for the fully connected becomes more than a forty percent greater frequency when physical and cyber activities are combined.[210] For personal communications, social interaction and recreational activities, the fully connected are much more likely to participate than the disconnected.[211] The ubiquity of e-mail among the fully and partially connected is of note. Virtually all do it, and the frequency

209 *See id.*
210 *See id.*
211 *See id.*

is high, more than once a week.[212]

D. *Attitudes Toward Technology and Participation in Cyberspace*

The existence and persistence of the gap is not for lack of appreciation among those who are disconnected.[213] Respondents have a very strong appreciation for the importance of technology in general, and computers in particular. Virtually all respondents across all categories say computer skills are vital.[214] More than four-fifths of respondents across all groups say that one needs to understand technology to be successful, and that children learn more with access to technology.[215] The disconnected and potentially connected express a somewhat less positive attitude in response to the question about whether we would be better off without computers.[216] This may reflect the fact that they have been disadvantaged by being excluded.

There is also a strong sense that technological progress can have the effect of increasing the gap between rich and poor, with almost two-thirds of respondents expressing this sentiment.[217] The disconnected and the potentially connected express the greatest concern, but a majority of all groups share this sentiment.[218] Being left behind by the "information revolution" is also a concern expressed by fifty-seven percent of respondents.[219] The pattern across the groups is similar to that for concern about the gap. While about half of those on the Internet say it is too expensive, about two-thirds of those not on the Internet feel this way.[220]

The disconnected appear quite different in their attitudes about the good that the Internet can do for them. They are much less likely to see the gain. The much larger differences across the groups in terms of knowledge and command of the technology may reflect experience. The disconnected do not have the resources and lack the skills. They fully appreciate technology and computers, but they are less likely to see the value of the Internet to them. Their limited experience may account for the latter difference. This may reflect the fact that these technologies do not

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212 *See id.*
213 *See infra* Table VI-6.
214 *See id.*
215 *See id.*
216 *See id.*
217 *See id.*
218 *See id.*
219 *See id.*
220 *See id.*

TABLE VI-5
CIVIC/SOCIAL ACTIVITIES IN CYBERSPACE

	Disconnected	Potentially	Partially	Fully
Prevalence of Activity (% Reporting)				
Personal Communications				
Sent e-mail	32	44	95	93
E-mailed friend or relative	30	44	93	90
Contributed to a web page or bulletin board	7	7	15	15
Information Gathering				
Read a newspaper	92	94	97	97
Obtained news or sport results online	25	30	60	65
Read a news magazine	62	67	72	79
Visit a news website	18	25	62	70
Social Interaction				
Used e-mail to organize social activity	8	15	27	29
Visited web site of a social group	12	18	30	38
Met with a friend made online	5	5	8	11
Recreation				
Pursued an interest or hobby	33	41	76	78
Played single-user game	20	25	43	51
Played multi-user game	10	12	14	23
Frequency of Activity (# of Times Last Year)				
Personal Communications				
Sent e-mail	12	24	60	63
E-mailed friend or relative	11	18	54	56
Contributed to a web page or bulletin board	0	1	1	2
Information Gathering				
Read a newspaper	37.5	40.2	42.0	42.7
Obtained news or sport results online	4.2	4.8	12.5	13.8
Read a news magazine	9.6	11.9	12.3	15.9
Visit a news website	4.3	4.8	12.9	14.3
Social Interaction				
Used e-mail to organize social activity	1	1	1	3
Visited web site of a social group	1	2	3	4
Met with a friend made online	1	0	0	2
Recreation				
Pursued an interest or hobby	5	7	21	20
Played single-user game	4	5	12	15
Played multi-user game	1	2	2	5

play a large or apparent role in the current occupation/situation of the disconnected.

E. *The Persistence of the Divide*

As noted in the introduction, some argue that the gap between those who are connected and those who are not is closing rapidly, and that there is no need for governmental intervention. This survey data does not support that optimism. Approximately

TABLE VI-6
ATTITUDES TOWARDS TECHNOLOGY

	Disconnected	Potentially	Partially	Fully
Technology Importance				
If you want to be successful nowadays, you need to understand technology.	83	84	91	91
Children learn more when they have access to technology.	83	86	84	88
Computer skills are vital for tomorrow.	97	95	96	91
We'd be better off without computers (disagree)	67	76	88	87
Technology and the Divide				
Technology advances increase the gap between rich and poor.	65	70	61	59
I worry that some people will be left behind by the "information revolution."	60	64	53	56
Internet/Access				
I feel the Internet can help enhance my career.	30	56	56	60
I feel the Internet can help enhance my education.	50	65	79	85
The Internet is too expensive.	63	67	51	54
Technology Skills				
I consider myself computer-savvy.	14	33	54	64
Don't have a clue what the Internet is and what it can do for me (disagree).	58	43	14	12

forty-seven percent of the respondents are not connected today.[221] Just one in eight of those respondents expects to be connected within four years.[222] In other words, forty percent of the respondents do not expect to be connected four years from now, which is considered a long time by cyberspace standards.

The potentially connected group is much more likely to say that they intend to get connected. Just under a quarter of that group intends to get connected.[223] In contrast, among the disconnected, only one in thirteen expresses this intention.[224] In the potentially connected group, there is no significant difference between those who have a computer (twenty-three percent) and those who have a cell phone (twenty-five percent) in their intention to get connected.[225]

The computer appears to play a key role in getting online. Among those who do not have a computer, respondents who say that they will get connected within the next four years, also say, overwhelmingly (eighty-six percent), that they will get a computer

221 *See supra* Figure VI-1.
222 *See* 2000 Survey, *supra*, note 176.
223 See *id.*
224 See *id.*
225 See *id.*

in that same time period.[226] Among those who do not have a computer and who say they will not get connected in the next four years, the overwhelming majority (eighty-one percent) also say they will not get a computer in that time period.[227] This is perfectly consistent with the earlier observation that eighty-one percent of those who have a computer are connected.[228]

While people's perceptions of their futures are not necessarily equivalent to their actual futures, they could get wired much more quickly than they expect. Perceptions are critical. If people do not believe that getting online is realistic for them, they are less likely to pursue these kinds of opportunities.

Listening to what people say they intend to do is one indicator of what may happen in the years ahead. Looking at what people have done in the recent past is another indicator of what may happen. Figures VI-3 and VI-4 show the diffusion curves for computers and Internet use for the total population, and for the households above and below the median of household income.[229] These are based on responses to questions that asked "when did you first get a computer" and "when did you first use the Internet." The charts reflect the date of first adoption for those who still have the technology. Income was chosen as the control variable in the analysis because it is by far the most important causal factor in technology adoption.

Figures VI-3 and VI-4 show that there is a substantial digital divide. Looking at the figures, one could argue that there is a five-year divide. That is, those with incomes below the median achieve adoption rates about five years after those with incomes above the median.[230]

If the diffusion curve for below median income households follows that of households above median, we would expect a fifty to sixty percent penetration rate in the lower income groups in four years. At that point, this group might contribute about twenty to twenty-five percent of the total population to the disconnected group. The above median households will likely not get to one hundred percent.[231] This group might contribute another five to ten percent of the total population to the disconnected group.

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226 See *id.*
227 See *id.*
228 See *id.*
229 *See infra* Figure VI-3; Figure VI-4.
230 *See infra* Figure VI-3; Figure VI-4.
231 For example, only ninety percent of the households with incomes above the median have a long distance company, while seventy-seven percent of households below- the median income do. *See generally* POSTMAN, *supra* note 175.

This suggests the disconnected would still constitute twenty-five to thirty-five percent of the population. Thus, the respondents may be a little pessimistic in what they say about their intentions to connect, but they are not too far off from the historical pattern. There will still be a substantial gap well out into the future for lower income households.

There are big questions in the analysis. When do the curves start to top out? Will the below median group sustain the same rate of diffusion as the above median income group? The answers to these questions will hinge on factors such as income growth, the cost of hardware to get connected, and the price of being connected.

Even if the bottom half of the income distribution will catch up with respect to computers and Internet access, there is another source of concern. The Internet is already moving into a new generation of high-speed services. Already one-quarter of the fully connected have high-speed access.[232] Almost forty percent of the fully connected say they expect to have high-speed access within four years.[233] Only five percent of the disconnected expect to have high-speed access in that time frame.[234] The speed of change in the Internet century may leave the disconnected permanently behind.

VII. Conclusion: A Positive Agenda for Digital Society

At the start of the twenty-first century, it is clear that technology revolutions in computers and communications are converging to transform America. They are also producing an immense amount of wealth. As with any revolution, there are negative side effects and unintended consequences. Signs of political stirrings around important public policy issues can already be seen.[235] The digital divide is significant and therefore demands attention.

As noted at the outset, the debates over the digital divide should be driven by fundamental values in American society. The divide poses a serious challenge and the response can only be normative, based on a choice and the pursuit of values. Americans should find a worsening digital divide troubling, and they should harbor a fundamental belief that people in democratic countries

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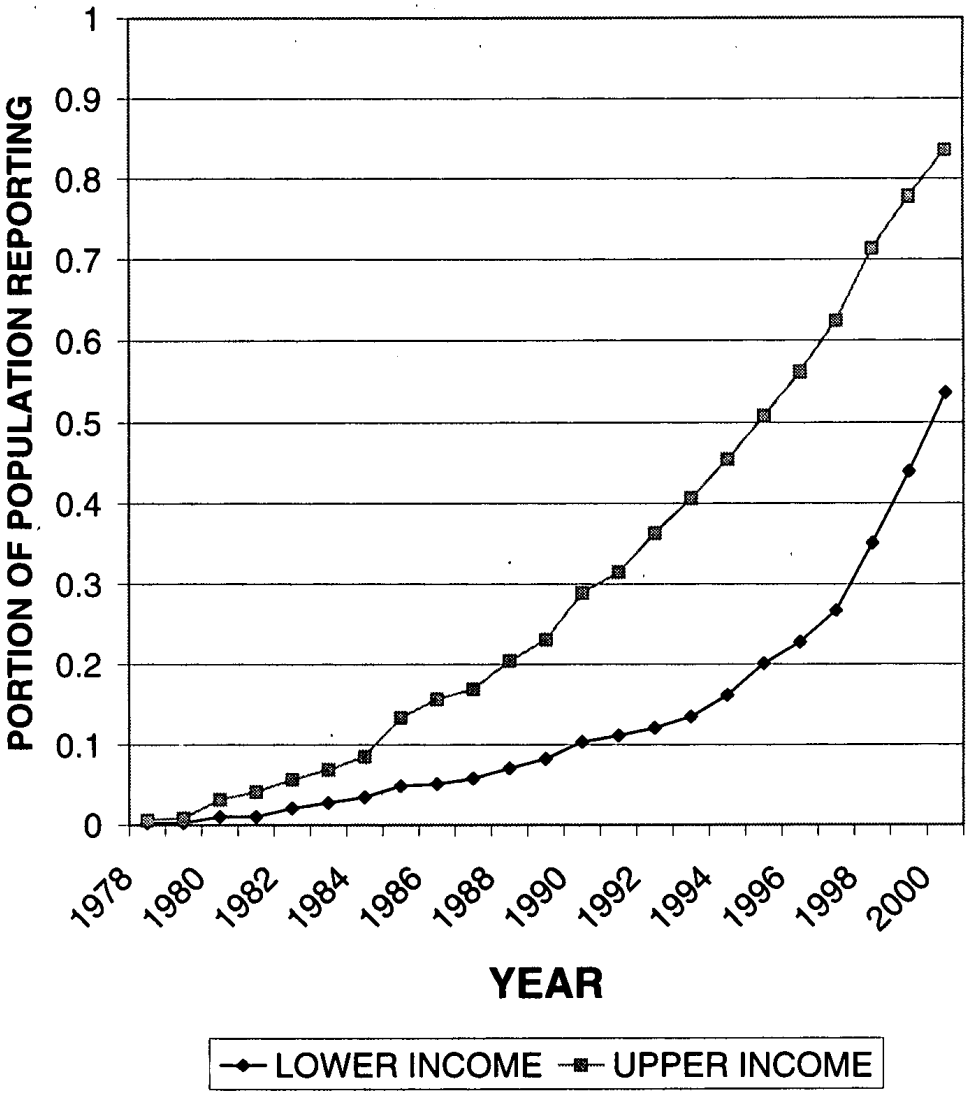
232 *See* 2000 Survey, *supra*, note 176.

233 See *id.*

234 See *id.*

235 *See infra* Table VII-1.

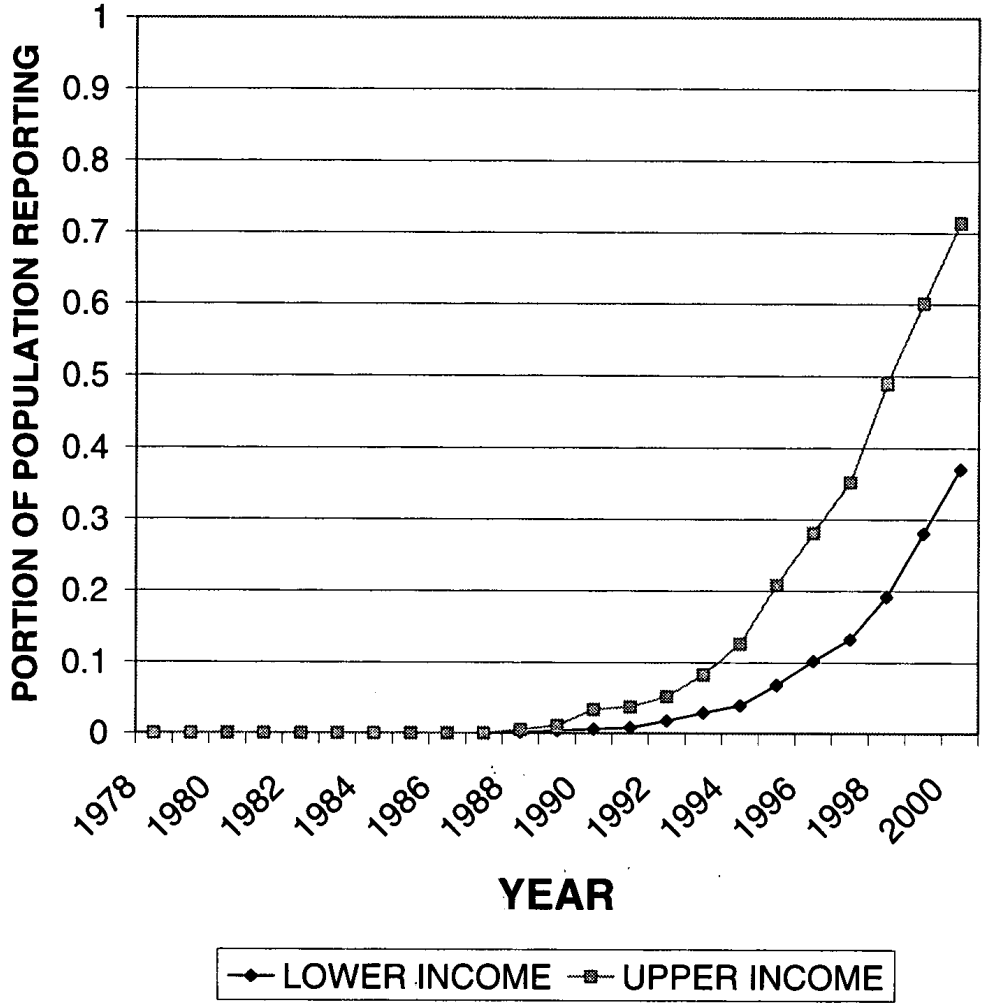
FIGURE VI-3
DIFFUSION OF COMPUTER OWNERSHIP HOUSEHOLDS ABOVE/BELOW MEDIAN INCOME



can define the type of society in which they want to live. People do not simply have to let it happen to them.

The essence of a progressive, capitalist society is that as wealth increases, so do the economic and political rights of its citizens. This is not the result of some law in nature, it is the result of political action. As the economic well-being of larger numbers of people expands, they have the resources to organize and assert themselves politically. As long as the society remains democratic, they have a good chance of succeeding. The progressive and suffrage movement early in the twentieth century, the labor move-

FIGURE VI-4
DIFFUSION OF INTERNET USE HOUSEHOLDS ABOVE/BELOW MEDIAN INCOME, (YEAR OF FIRST USE OF CURRENT, HOME USERS)



ment in the 1950s and 60s, the civil rights movement of the 60s, and the consumer movement of the 70s all occurred during or soon after times of economic expansion, when citizens demanded new rights. As the "Internet Century" begins, that challenge is mounting in street demonstrations in the U.S. and abroad.

As communications, computers and entertainment converge in the digital media economy, we frequently hear the claim by the companies that dominate these component industries that public interest obligations must be abandoned. Each of the industry segments that is converging points to a public interest obligation that it bears, which its competitors do not bear, and claims that it must be excused from that obligation. The result is a lowest common

denominator approach that obliterates all compensation for public assets and public interest obligations.

Public policy should take the opposite view. The essence of progressive capitalism is not to oppose the positive economic forces in society because of potential problems, but to implement public policies that protect the weak, and share wealth and power. In the past, progressive public policies have shaped society in a manner that is more responsive to the needs of average people. In the future it can do so again. In keeping with the theme of this paper, those policies must address both the techno-economic realms of society and build new civic-political institutions.

TABLE VII-1
LINKING TRADITIONAL PUBLIC POLICY OBLIGATIONS TO NEW PUBLIC POLICY CONCERNS

Traditional Basis for Public Interest Obligations	Area of Heightened Public Policy Concern					
	Digital Divide	Open Access	Media Control	Discourse Diversity	Abusive Marketing	Privacy
Communications						
Universal Service	X					
Non-Discrimination		X	X			
Common Carriage		X	X			
Privacy Rule						X
Cable						
Communications Service	X	X	X			
Horizontal Limits			X	X		
Right of Way		X				
Peg				X		
Privacy Rules						X
Broadcaster						
Outlet Limits			X	X		
Cross Media Limits			X	X		
Fair Speech		X	X			
Use of Public Resource				X		
Advertising Rules					X	
General Law						
Anti-trust		X	X			
Advertising Rules						X
Consumer Protection						X
Privacy Protections						X

One can see this in the media institutions on which so much attention is focused. Well grounded in twentieth century law, if not vigorously pursued late in twentieth century practice, are a host of obligations that have been imposed upon each of the discrete industries (television and telecommunications) that are converging to create the dominant institution of the twenty-first century—

the information superhighway (digital, broadband Internet). These policies can form the foundation for progressive and populist values in the media of the twenty-first century. The public interest obligations of each should be imposed on the converged medium and new ones should be crafted, commensurate with the immense economic and political power that the new medium will possess.

The immediate need is to require a part of the immense wealth and communications capacity being created by the new economy to be set aside for basic needs, human well being, and civic purposes, and to direct technological deployment to ensure an equitable distribution of economic and political opportunities. There are more resources available to replace and extend the social contract that existed between corporations, communities and employees, but new institutional mechanisms must be found to channel these resources.

The universal service obligations from the communications side provide the starting point. When the Communications Act of 1934[236] adopted this policy, approximately two-thirds of American households did not have a telephone. Institutional programs to provide skills (such as the E-rate program) must now be supplemented with programs to provide the resources for individuals to acquire the technologies at home, where they conduct their personal business.

Twentieth century policy has rejected the notion that economics alone should decide the nature, availability, and content of political and cultural programming. Limits on ownership and public interest programming obligations from the video side must be combined with obligations to provide nondiscriminatory access on the communications side.

Because the development of powerful commercial models that exploit the new capabilities of digital media are driving the need to produce and sell commercial space, educational, cultural and informational programming may be squeezed out, and low income households may be priced out of the new communications markets. Scarcity is not simply a function of the number of channels available. Rather, scarcity is defined by effective access to the public—the ability to get the information pipelines into people's homes, the ability to cultivate resources to produce meaningful content, and access to a relevant audience. To balance the powerful forces driving this new medium, new obligations should include

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[236] 47 U.S.C. § 151 (2000).

promotion of culturally diverse and educational programming, set asides of capacity, and mechanisms to ensure that the new medium is understandable, interesting and affordable for all Americans.