# New Personal Media— Outpacing Society?

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Harvard University

Center for Information
Policy Research

Cambridge, Massachusetts

An incidental paper of the Program on Information Resources Policy.

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November 1994, I-94-6

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  Federal Communications Commission
  National Security Agency
  U.S. General Accounting Office
U.S. Media Group
Viacom Broadcasting
VideoSoft Solutions, Inc.
VISA International

## Acknowledgements

The author gratefully acknowledges the cooperation and support of the following people who agreed to be interviewed or provided material used for this paper:

Barry Blackburn
Tom M. Boot
John Seely Brown
Dru Calandrella
Bill Darling
Taylor Finlay
Robert Frankenberg

Gerry Hanneman
Ted Kahn
Bill Mitchell
Tim O'Reilly
Bob Sears
Chris Spelius
Maurice Weitman

These people and the Program's affiliates, however, are not responsible for or necessarily in agreement with the views expressed here, nor should they be blamed for any errors of fact or interpretation.

## Executive Summary

Although individuals and society have benefited greatly from electronic personal media of all types—telephones, personal computers, facsimile machines, video cassette recorders, copying machines, cellular radios, among others—many issues and questions associated with these new media remain unresolved. This paper is a 1993 snapshot of important political, legal, business, economic, and social implications of the design, manufacture, and use of these media, as well as major issues and questions stemming from these implications. A major finding of the research was that in many areas technology advances have outpaced the study of and debate on both these implications and issues.

The following implications and issues are discussed here:

• New personal media have the potential to help transform the political process in the United States, but just because this is technically possible does not make it politically feasible. The political process needs in-depth review in light of the potential of these media.

• The way these new media are being used is having a tremendous effect on government decision-making in times of crisis. How our leaders should respond to crisis information disseminated with the help of the new media needs further research.

• With increasing frequency the new media are cited as evidence in courts of law. Study and debate are needed on their weight as evidence and on the problem of pretrial publicity regarding such material.

• These media have the potential to help transform communities, reshape population patterns, and revitalize education. They also contribute to a growing gap between information "haves" and "have-nots."

• The use of electronic personal media is having a significant effect on how and where work gets done in government and private industry.

• The new media are contributing to a major problem—the preservation of information recorded by means of them. Except for occasional mention in mass media, this problem has not yet received the attention that it deserves.

# Contents

# Chapter One

## Introduction

Electronic personal media are as common, functional, and as easy to use as the telephone. Electronic personal media are also as new, powerful, and complex as the personal computer. A wide range of electronic personal media are available to individuals and small groups for purposes of communication, work and leisure. Individuals and society as a whole have benefited tremendously from these media. Headlines are being made by new breakthroughs in media technology and well they should because of the tremendous improvements in communications these advances allow. At the same time however, technology advances have outpaced the research into and study of important issues and questions associated with the manufacture, sale, and use of these media. These issues and questions have important political, legal, economic, and social implications that need further consideration and debate. A couple of examples will illustrate the point:

Example 1. On March 3, 1991, a Los Angeles resident used a video cassette recorder to record the police striking blows on Rodney King. The tape was broadcast over mass media television the next day. On April 29, 1992, a jury acquitted the police officers on all charges but one and riots broke out in Los Angeles that lasted three days.[1]

This example of the use of a video recorder not only led to widespread riots, but also has important legal implications related to the admission of electronic personal media as evidence in a court of law. The visual images on the tape are powerful statements. But are these images given the proper weight in our judicial system? This question will be addressed later in more detail in **Chapter Three**.

Example 2. A 1992 study of how advancements in personal computer and communications technology have assisted blind people in their accessing information stated that

> more than any other technology, telecommunications has torn down the
> "communications wall" that separates print and non-print readers. It is
> the great equalizer. With the right setup, a blind person can access,
> research, transmit, and receive information on a parity with others,
> regardless of the medium.[2]

This example shows how electronic media can be developed to help the otherwise disadvantaged and has important economic and social implications given the potential of the media to do even more with adequate public support and investment. **Chapter Five** will show cases of where these media are helping the disadvantaged. On the other hand, this study has shown how these media can help raise economic and social barriers for the disadvantaged.

The fact that the technology has out-paced our research, study, and debate of its implications does not mean we should rein in the technology advances—the communications they allow is too important. But not to accelerate the research and dialogue regarding the implications runs great risk. As this report will show, we risk having our foreign policy thwarted by videos of hostages, videos of crime scenes can lead to riots, we may be creating a class of information "have-nots" that will be economically disadvantaged, and some of the historical records of the information age may be lost forever, to cite but a few potential consequences. While most readers will be familiar with some of the implications and issues involving the manufacture, sale, and use of these media, the aim of this report is to have a more comprehensive understanding. Where there is on-going research, study, and debate of these issues and implications it will be noted. Areas where further research, study, and debate are needed will be identified.

Before proceeding into a more in-depth discussion in the chapters that follow, it would be useful to: define what is meant by electronic personal media, describe what kind of issues and questions are associated with them, and provide some historical context for studying the new media.

## 1.1 Electronic Personal Media Defined

This research was in part prompted by and is meant to be a follow-up to Gladys D. Ganley's *The Exploding Political Power of Personal Media*, in which electronic personal media are defined as

> media to which individuals and small groups have meaningful access
> and which they can use to acquire, create, store, and/or disseminate
> information. To function as a personal medium, the technology must be
> one over which an individual can exert control, although the extent of
> that control will vary considerably.[3]

Examples of electronic personal media are telephones, personal computers, two-way radios, beepers, facsimile machines, audio and video cassette recorders, electronic copying machines, satellite dishes, electronic telephone answering machines, and cellular radios. When the telephone, cable TV, and other communications infrastructure are combined with personal computers, modems, and powerful switching computers, electronic personal media take the form of complex and powerful telecommunications networks of worldwide proportion. An example is the Internet.

### 1.2 Issues and Questions to Be Addressed

Below are a few of the issues and questions associated with the manufacture, sale and usage of electronic personal media. The issues and questions are grouped into chapters by political, legal, economic, and social implications. The issues and questions as well as the implications listed here are only examples of what is to follow in order to convey the scope and general content of the study. In fact, with a topic as broad as this, it is not possible in a study like this to be exhaustive of all the issues, questions and implications associated with these media. Instead, this paper is based on a 1993 snapshot of a representative sample of the issues and implications.

In **Chapter Two**, Political Implications, the central issue is *How has use of new personal media affected the exercise of political power? For example, what is the effect on U.S. policy making from foreign leaders' use of personal media to convey their messages?* On October 4, 1993, Warrant Officer Durant, a Blackhawk helicopter pilot, was taken prisoner by the Somalia National Alliance.[4] That same day CNN broadcast a videotape, which had been prepared by his captors, showing an interview of Durant who was alive but injured. Millions of Americans saw the videotape. Soon thereafter Durant was released and the U.S. renounced its decision to pursue the leader of Durant's captors. The Pentagon would not comment on the effect the video had on its policy, which did little to stop the speculation on linkage between the video and the decision to stop pursuing the faction leader.

Another important issue in that chapter is *Should the Library of Congress be available to the public via the new personal media?* These days the impact of new electronic personal media is evident at the community library. You can rent a movie on videotape, listen to a audio cassette tape, and search the catalog by means of a personal computer. Now with the

large number of personal computers in homes and businesses in the United States, the largest of the Libraries, the Library of Congress, is seeking authorization to exploit the new media to the fullest and make its collection available on-line to these homes and businesses for a fee. But private providers of electronic information to homes and businesses have been lobbying against this. The Information Industry Association sees this as serious competition and thinks the Library is going beyond its charter to propose such a service.[5] Without the success of the electronic personal media revolution, this issue would not be before the Congress.

In **Chapter Three**, on Legal Implications, a key issue is *Whether the legal system in the United States is keeping pace with intellectual property rights infringements involving the new electronic personal media?* Computer software piracy has been going on since long before the introduction of personal computers. The widespread use of personal computers has increased the market for pirated software. The use of diskettes in personal computers has provided a handy media for packaging pirated software. Carl Malamud in his recent travels around the world cites just how easy and inexpensive it is to obtain pirated software in Hong Kong.

> Software here was priced by the disk. Low-density disks were HK $15 (U.S. $2) each, high-density disks are HK $25 (U.S. $3). To see how much your favorite software would cost, simply count how many disks it is distributed on. Each list had several hundred software titles, each title with the number of disks written next to it. In the U.S., I had just purchased Microsoft Word for Windows under an extra-special rebate program for U.S. $129. The Golden Shopping Center was having a special sale for U.S. $12.50.[6]

No wonder software manufacturers have been seeking stronger means to protect their products. It has been estimated by the Washington, D.C.-based International Intellectual Property Alliance that intellectual-property pirates and legitimate-goods smugglers grossed $10 billion in 1992.[7] What is ironic is that the very success of the electronic personal media industry, especially personal computers and diskettes manufacturing, has made this pirating so much more lucrative and easier to accomplish as compared to the days when there were only much larger main frame computers and software was exchanged by means of punched cards and large reels of magnetic tape.

In **Chapter Four**, Business and Economic Implications, a major issue is *Will the electronic personal media competitors be able to advance the technology and compete globally without a significantly greater role by the government?* The Internet is the largest network of

computers in the world. The U.S. government was responsible for developing the original backbone of the Internet, ARPAnet (of the Advanced Research Projects Agency of the Department of Defense), in 1969. Over fifteen million people in more than sixty countries are connected directly or indirectly to the Internet in its present form by means of many private and public networks. While one could argue whether the Internet would have progressed to where it is today without government subsidy, that debate will not change the history of the Internet. But, the Internet will change to some degree depending on the outcome of the current debate over a provision in current legislation dealing with the network. In 1991, then Senator Al Gore sponsored legislation to transform the Internet into a more powerful network, the National Research and Education Network (NREN). Congressman Rich Boucher recently introduced legislation to encourage the NREN computers to use private networks instead of the publicly subsidized ones. What some users of the Internet fear is that moves toward privatizing the NREN will lead to higher costs for access and use of the network.[8] The questions for the future are whether some form of government subsidies are necessary for continued affordable Internet use by the general public, whether competition in the marketplace would hold costs down, whether the Internet needs to be regulated like a public utility to contain costs, or some combination of these and other options would be necessary.

The question arises, *How have the new personal media affected the management of corporate information services?* Prior to the introduction of personal computers, modems and telecommunications networks, data processing services were usually rather centralized in an organization with a single staff element responsible for operating the main frame computer or computers, writing the necessary computer programs and entering data into the computers. When personal computers first became increasingly available around the mid to late 1970s, and corporate accountants, engineers, lawyers, and other professionals began to request that their companies buy these computers to help them do their personal work more efficiently, this was often resisted by corporate data processing management. After all, it was argued, how could these non-data processing professionals do data processing more efficiently? We only have to walk around the corporation of today and see a personal computer on almost every professionals desk to know who won that argument. But the introduction of these new media has resulted in some new problems that are causing some companies to rethink how best to manage information services:

> Imagine the challenges for a company like Great Western Bank of Chatsworth, California, which has several thousand computers, each connected to a network and each loaded with an assortment of programs.
>
> Great Western now has three thousand personal computers (PCs) and is adding 750 to one thousand a year as it makes the transition from a central mainframe-based system to one based on networks of smaller, connected PCs.
>
> ... High on the list of complaints was the impact of cost-cutting, which often means fewer support people for more computers. That also means fewer people with the time to evaluate and test new software.[9]

**Chapter Five**, Social and Other Implications, raises the question, *What role will the personal media play in learning and increasing literacy?* Many of us have seen or heard of a handicapped person doing remarkable things with the assistance of a personal computer, a telephone or some other electronic personal media. The fact that these media have also been used to improve literacy is also fairly well known. But apparently we have only started to scratch the surface of what is possible when several of these media are combined into a system geared to help students learn regardless of their backgrounds.

> "MacMagic" is an experimental venture shaped by LucasArts Learning, the Marin Community Foundation, the San Rafael, Calif., School District and Apple Computers to explore ways to teach language and history skills to ethnically and academically diverse students, using their personal experiences and backgrounds.
>
> The students, some of them recent arrivals from Mexico and elsewhere, employ, at their own pace, computers, laser disk players, video cameras, scanners and tape recorders.[10]

A key issue in this chapter is *How has the preservation of information and historical records been affected by the new personal media?* Think of all the new electronic media and all of the different ways that personal communications can now be stored and it boggles the mind: audio cassette, video tape, telephone answering machine, facsimile, laser disk, computer memory, etc. A historian who wants to write about something or someone these days can expect to find raw material for his or her work recorded on these and other media. This is a far cry from the day when an archivist merely had to worry about the right temperature and humidity to preserve manuscripts for the historians and gives some insight into the extent that the new electronic media have permeated our society and culture. In fact, the impact goes even further. Today the archivist must be concerned about not only the effects

of temperature and humidity on the new electronic personal media, he or she must also preserve the equipment necessary to make these media function. In addition, in the case of some of the equipment, it will be necessary to preserve various forms of computer software to make it function.

> "I'm rather gloomy about it," admits Edmund Morris, a political scholar and biographer of Theodore Roosevelt. One can only imagine what would have become of the nearly 150,000 letters Roosevelt composed during his lifetime had they been sent through E-mail. Or, for that matter, our notion of the Civil War had Robert Gould Shaw phoned home instead. When asked how one might go about reconstructing contemporary history, Mr. Morris, who is now at work on a biography of Ronald Reagan, replied sotto voice: "The truth is, you don't—the vacuums are everywhere."[11]

### 1.3 Some Lessons from History

There is no reason to rue this advancement in technology just because there are issues and controversy associated with its introduction. It is cause to research and study the implications of the technology a little more closely and take the necessary actions. History has shown that it is not unusual to see negative implications with the introduction of a new media. Consider the concern of a certain Greek by the name of Socrates over two thousand years ago when he warned a young disciple of the evils of the written word, namely, that one would lose the ability to remember:

> If men learn this it will implant forgetfulness in their souls. ... What you have discovered is a recipe not for memory, but for reminder. And it is no true wisdom that you offer your disciples, but only its semblance.[12]

Although Socrates had a valid point, he exaggerated the potential outcome and the written word has allowed enormous compensating benefit. Socrates warnings seem akin to the warnings we hear today that we will all become couch potatoes when we get 500 channels of TV into our homes. Despite these warnings, benefit can be seen in the new media. Today an individual can send news around the world almost instantaneously via electronic media using the telephone, ham radio, the Internet or a combination of the many services available. Contrast this capability with the effort of individuals in 1848 to tell the rest of the United States about the discovery of gold in California:

> At that time, there was no organized mail service of any kind between the Atlantic and the Pacific coasts, since California had been a part of the United States for about a year and was not even a state, and so the gold discovery, made in January, 1848, was not immediately known in the East. The first hint of it in the East, a rather casual reference in a booster edition of the *California Star*, was supposedly taken across the Rocky Mountains and the endless prairies of the Great Plains by pack mule, and reached the East probably in July or August but was treated with skepticism.[13]

When one thinks of the power and capabilities of the new electronic personal media such as the personal computer, satellite dishes, and copying machines, it is easy to overestimate the effect these media are having on society. But these effects can be more gradual than one might perceive, and major consequences can go unnoticed at first. Another historical data point, the introduction of the printing press, illustrates this point. Elizabeth L. Eisenstein, in a comprehensive study of the printing revolution in early modern Europe entitled *The Printing Revolution In Early Modern Europe*, while noting the major importance of the printing press, took issue with the notion that the development of printing had a cataclysmic effect on society:

> Insofar as flesh-and blood historians who turn out articles and books actually bear witness to what happened in the past, the effect on society of the development of printing, far from appearing cataclysmic, is remarkably inconspicuous. Many studies of developments during the last five centuries say nothing about it at all.[14]

Eisenstein goes on to show how printing did not suddenly put all the scribes out of work. The printing and scribal cultures existed simultaneously for a while.

> Not only did early printers such as [Peter] Schoeffer [who worked with Gutenberg] try to copy a given manuscript as faithfully as possible, but fifteenth-century scribes returned the compliment. ... [A] large number of the manuscripts made during the late fifteenth century were copied from early printed books. Thus handwork and presswork continued to appear almost indistinguishable, even after the printer had begun to depart from scribal conventions and to exploit some of the new features inherent in his art.[15]

After dispelling this common notion about the impact of the introduction of printing, Eisenstein does provide insight into one of the implications of printing that is easily overlooked.

Of all the new features introduced by the duplicative powers of print, preservation is possibly the most important. To appreciate its importance, we need to recall the conditions that prevailed before texts could be set in type. No manuscript, however useful as a reference guide, could be preserved for long without undergoing corruption by copyists, and even this sort of "preservation" rested precariously on the shifting demands of local elites and a fluctuating incidence of trained scribal labor. Insofar as records were seen and used, they were vulnerable to wear and tear. Stored documents were vulnerable to moisture and vermin, theft and fire. However they might be collected or guarded within some great message center, their ultimate dispersal and loss were inevitable. To be transmitted by writing from one generation to the next, information had to be conveyed by drifting texts and vanishing manuscripts. ... After the advent of printing, however, the durability of writing material became less significant; preservation could be achieved by using abundant supplies of paper rather than scarce and costly skin. Quantity counted for more than quality.[16]

With Eisenstein's study in mind, one of the purposes of this study of the new media has been to look for significant implications of the new media that might go relatively unnoticed. The difficulty in retrieving information and records that have been archived in the new media may qualify as a candidate. This issue is presented in more detail in **Chapter Five**.

The telephone is one of the oldest of the electronic personal media and at the same time a major component in systems involving the newest of personal media. The history of the telephone may give us some insight as to what to expect of the other newer media as they evolve to meet current needs:

Well into its second century, the telephone has begun a transformation more profound than any in its history—dragging with it much of our other technological baggage, including the computer, the fax machine, the pager, the clock, the compass, the stock ticker and the television. In the past year [1992], it became possible to rent cellular phones with your skis and poles at Vail, Colo., and from vending machines in California. The last three area codes available to North America were used up—assigned for the "relief," as the phone companies say, of over-numbered regions of Philadelphia, Michigan and North Carolina. More transatlantic circuits have been added in the past three years than in all previous history. In Portland and Seattle you may arrange to receive phone messages, along with stock prices and basketball scores, on a wristwatch. You need no longer visit the Wailing Wall in Jerusalem to stuff your note into a crack; the Wailing Wall now accepts messages by fax.[17]

## 1.4 Summary

Research into, the study of, and the debate on issues and questions associated with the manufacture, sale, and use of electronic personal media lag behind advances in the technology. The issues and questions of concern have important political, legal, economic, and social implications. History has shown that it is common for controversy to surround the introduction of new media. It also shows that the impact of new media can be gradual and that major implications and significant features of new media can go unnoticed without careful observation and study. This report will suggest areas where further research, study, and debate is needed. By not accelerating this research, study, and debate, we run the risk of unintended consequences.

# Notes

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5. Karen De Witt, "The Nation's Library, for a Fee and a Modem," *The New York Times*, Feb. 28, 1993, 4-16.

6. Carl Malamud, *Exploring the Internet: A Technical Travelogue* (Englewood Cliffs N.J.: PTR Prentice Hall, 1992), 56.

7. Elliot Blair Smith, "Mutiny on the PCs," *San Francisco Examiner*, April 25, 1993, E-16.

8. Kevin Cooke and Dan Lehrer, "The Internet: The Whole World Is Talking," *The Nation*, July 12, 1993, 62.

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12. Ibid., 27.

13. Moel M. Loomis, *Wells Fargo* (New York: C.N. Potter, 1968), 10.

14. Elizabeth L. Eisenstein, *The Printing Revolution In Early Modern Europe* (Cambridge, England: Cambridge University Press, 1983), 3.

15. Ibid., 20.

16. Ibid., 78.

17. James Gleick, "The Telephone Transformed—Into Almost Everything," *The New York Times Magazine*, May 16, 1993, 27.

## Chapter Two

## Political Implications

The development, sale, and use of electronic personal media raise issues and questions with political implications that need our attention. For example, should we use electronic personal media such as interactive TV or PCs to cast election ballots from our homes? What about having electronic town meetings? Should the Library of Congress be accessible from our homes via the new media? Should companies in the U.S. be allowed to sell advanced personal media technology to China? How should the government respond to videos of American hostages in foreign countries? This chapter briefly explores issues and questions such as these and others with political implications linked to the new media. Where these issues and implications are being researched and reviewed it will be noted. Where we are running the risk of letting the technology get too far ahead of research into and resolution of issues and questions such as these, this will also be pointed out.

### 2.1  Effect on the Political Process in the U.S.

Some politicians have embraced the information age wholeheartedly. For example, the Clinton White House has an E-mail address. Everyone in the U.S. with a PC, a modem, and a telephone can send electronic mail to the White House using the Internet or some communications service provider. In most cases, the mail will be available for someone in the White House to read in a matter of minutes. But even prior to the Clinton Administration gearing up for the information age, electronic personal media have been used by politicians for years. Gladys Ganley described the use of these media in the presidential election campaign of 1988, including:

> the extensive use of satellite transmitted TV ... and flooding of the mass media news with electronically delivered news releases and candidate interviews.[1]

Today politicians at all levels are using the new media. For example, David Pandori, a city councilman in San Jose, California, is taking advantage of a service initiated by the local newspaper. The *San Jose Mercury News* has established *Mercury Center* for placing its daily edition on-line with America Online, a communications service provider. Among the services

available to *Mercury Center* subscribers like David Pandori, is an electronic bulletin board like service for people to communicate using their PC, modem and a telephone. Pandori "invites feedback and questions about his district, which is central San Jose, including downtown. 'The key here for us is making connections ... and getting responses back to people,' says Pandori."[2]

Congress may soon try bringing some of its deliberations into the home interactively via the Internet. While this paper was being drafted, plans were being made for an on-line Congressional hearing to be held over the Internet. The hearings were being organized by Carl Malamud, the Internet Multicasting Service, and sponsored by a cross section of groups from industry and government. The purpose of the hearings "is to demonstrate how the Internet works and how the Internet can be made to work in the congressional process," according to Malamud.[3]

Although it is possible to use the new electronic media to communicate with our elected representatives, and may soon be possible to participate in a Congressional hearing on-line, some people might ask, why not use the media to elect our representatives? There appears to be the necessary technical means for people to vote electronically from their homes. But questions have been raised about the practicality of voting using the new media. Concerns related to such voting include: how to ensure the integrity of the computer systems, networks and communications lines involved, and how to maintain the secrecy of the ballot, in light of the demonstrated ability of computer hackers and others to penetrate such systems (see section **3.4**); and how to identify the voter positively.

### 2.1.1 An Electronic Town Hall?

It is quite possible that some technical solution such as encryption (see section **3.5**) or procedural changes, or both, will help alleviate concerns about possible election fraud and allow balloting from homes via the new media. If we assume that is the case and that electronic balloting is possible, the next question might be, why not go a step further and let people sit at home and decide on the issues before the political bodies? Let voters decide whether to send troops to Somalia or any other country, whether to consent to the appointment of the next Supreme Court Justice, and whether to fund the space station or use the money instead to reduce the federal deficit. If this proposal were carried out, would we

even need representatives in Washington, D.C., in state capitals, or county boards of supervisors? Could we have a government by means of electronic town meetings? Would we only need administrators in Washington and other places of government to carry out the will of the people as expressed electronically? Theoretically, this is all possible using PCs, interactive TV, telephones, and computer networks. The rub comes when one considers the political and social implications of this possible course of action for it would mean going from our representative form of democracy to a direct democracy form of government. Direct democracy may have worked in New England town halls where most of the issues were known to and debated by the populace. But today we send our representatives to Washington to learn about, understand, and debate many complex issues and then represent our interests in their voting. Who amongst us has the time or inclination to learn about and debate the myriad complex issues at the local, state, federal, and international levels and vote intelligently on them? Until a better form of government comes along we may be satisfied with our representatives doing the learning, debating and biding for us. We also may wish there was a way for them to better represent our interests.

It so happens that this issue of how technology might affect our political processes was the subject of a recent conference. *Before describing some of what took place at the conference it should be emphasized that this conference was an example of just the type of debate over the issues that is needed in order to keep pace with developments in personal media technology.*

In August 1993, the Aspen Institute conducted a round table on information technology focussed on the topic of "New Paradigms for a New Democracy." One of the papers submitted by John Seely Brown et al. for discussion included a variety of scenarios on democracy and technology.[4] One of these was similar to an electronic town hall meeting, including providing voters information by interactive TV, but, according to Brown, without the essential information and understanding needed to cast votes wisely.

> The town hall scenario unsettles us because, beyond the "yes" or "no"
> vote, it overlooks participation almost completely. The motions
> politicians vote on are the refined distillations of large and complex
> issues and debates, interests and compromises. To understand a motion,
> you have to have participated in some way in the refining process.
> Often, even those deeply involved in that process know only some of
> the competing arguments out of which a motion was distilled or

understand only a little of the implications that may result from its passage. Nonetheless, their participation guarantees at least some depth of understanding of the original issues.[5]

The paper included other scenarios, some of which might help rectify the weakness of the town meeting scenario. One, the "Community & Communication" scenario, was based on experience at the Xerox Corporation.[6] Xerox representatives working with customers distributed over a wide geographic area were given two-way radios to keep in touch with one another. After maintaining contact and sharing information by means of their radios for some time, the representatives developed into a robust community with a base of common information and experience useful for working together effectively. In a recent interview, Brown commented on the way the Community & Communication scenario might be applied to a representative democracy.

> [This] scenario is suggesting that you may be able to build affinity groups which represent your interest independent of the geography you come from. Right now we are accidents of 300 years of technology that says you can only gather votes if you are geographically honest and keep track of who is voting and who has not voted. With the new [information] age you ought to be able to form your own affinity groups. And now your affinity group is your representative. This is going back to a representative democracy but you engage in informed participation during the creation and working within that affinity group. You don't have to spend all your time with that group either. You choose a representative for your group. That enhances the informed process in choosing a representative and gives that representative a clearer sense of what he or she is representing.[7]

In other words, we have the technology today, in the form of PCs, computer networks and interactive TV, for people to form affinity groups by sharing information and experiences. We could have affinity groups centered around areas of interest such as business, education, art, human rights, the environment, etc. These groups could choose representatives to do our bidding in Washington or at the state or local level. The question is, would these representatives reflect our interests in the political process better than our current representatives who are selected based on geography and very little communication? Also, many of us are already members of one or more affinity groups and use telephones, fax and other forms of the new media to keep in contact. Many affinity groups use the new media when they actively lobby Congress and other government bodies. Why would we be better

served by a government of elected lobbyist (or affinity group representatives) than a government of elected politicians? On the other hand, some have suggested that our politicians are nothing more than slaves to the private interest groups anyway. Regardless of our specific form of democracy, it should be enhanced by greater and more effective communications between the electorate and our elected officials, and the new media have already contributed to and have much more to offer in this regard. The more important point is will those developing the technology be in the driver seat or will our study and debate of the political implications of changes in the political process lay the foundation for applying the technology to that process.

## 2.2 Effect on Government and Its Services?

While the debate about how the technology might affect our political processes continues, the government is moving to take advantage of these new media to work more efficiently and effectively in carrying out its functions and providing services. A current example is the effort to enable tax payers to file their taxes electronically. The 1992 Instructions for Form 1040 included the following information regarding electronic filing of tax returns:

> Last year, over 10 million people filed their tax returns electronically by computer. Electronic filing is a fast and accurate way to file your return with the IRS. If you are expecting a refund, it will be issued within 3 weeks from the time the IRS accepts your return. If you have your refund directly deposited into your savings or checking account, you could receive your money even faster. Even if you are not expecting a refund, electronic filing is still a fast and accurate way to file your return.[8]

The figure of ten million people is probably a little misleading, because it represents the total number of electronic filings which would include filings on a person's behalf by a third party. Also, what the IRS calls electronic filing may be misleading. Consider a recent report on the matter:

> Most computer-assisted filing ... is still rather primitive. Form 1040PC and most of the software packages of which it is a part take only limited advantage of the ability of computers. They are used mostly to generate paper reports which the I.R.S. then re-types into its own computers. The I.R.S. will not accept electronic filing by taxpayers—that is, by sending in a floppy disk or by transmitting the data over a telephone

line—and does not expect to do so soon, because it fears being
flooded.[9]

In spite of what some might consider false advertising by the IRS, it is interesting to note that
according to this article, the electronic media needed for filing are so pervasive and the idea is
so well accepted that the IRS fears being inundated if it were to allow direct filing from our
computers at home.

### 2.2.1 Make the Library of Congress Available On-Line?

While taxpayers wait for the IRS to take full advantage of the widespread use of the new
media and allow direct electronic filing, there is pressure on another part of government to
allow direct electronic access to a vast storehouse of information—the Library of Congress. In
1993, the Library of Congress made its hundred million item catalog available on-line via the
Internet.[10] But the proposal to make the Library's collection accessible on-line and charge a
user fee has stirred up considerable controversy. And it isn't the Library of Congress that is
the one resisting this access. In February, 1993, the Librarian of Congress, James Billington,
testified before a Senate appropriations subcommittee in support of legislation that would
authorize such access:

> This is to allow more use by more Americans. ... Not to make a profit.
> Not, not, not. This is an expansion of services. We have an incredible
> national asset that is being underused. The new emerging networking
> [probably referring to the administration's plan for a national
> information super-highway] of the future is going to be a vast
> cooperative undertaking in which the Library of Congress has to play a
> leadership role. And in order to play a leadership role, to help the
> nation's economy, the nation's education system, it has to generate new
> sources of revenue. Otherwise, it's going to become a passive
> warehouse.[11]

The proposed legislation was introduced by Senator Claiborne Pell, with several
cosponsors. It would sanction some of the fees the Library is already charging and authorize a
fee for a new service, electronic access to its holdings. This new service is the center of
controversy. Some publishers fear infringement of copyright protection (for more on
copyright protection, see section **3.3**). Nicholas Veliotes, president of the Association of
American Publishers, testified:

> We're not troglodytes; we're not opposed to the library. But this is an
> open-ended, unstructured initiative. It's so fuzzy. We require some
> minimal protections in the law with respect to copyright and
> competition with existing goods and services.[12]

Private providers of database information fear the Library would be a competitor. For example, "Steve Metalitz, vice president and general counsel of the Information Industry Association, said he feared that a user fee would give the Library of Congress 'incentives to put more and more of their resources into things that make money.'"[13] His association represents five hundred database companies, including Mead Data Central, providers of Nexis and Lexis, and Dow Jones.[14]

The proposal to put the Library on-line raises questions beyond copyright protection and competition among information providers. It raises questions about the role of any library in the information age and about the extent of the public's right to information. (For more on the role of the library in the age of the new media, see section 5.3.1.) As to the public's right to information, should a student be able to sit in front of an interactive TV and browse through the Library of Congress's books on great artists and then request a facsimile of several pages in order to complete a term paper? Should a new entrepreneur be able to use a PC to search the Library's holdings for books on how to get started in his or her line of business? What about the low income farmer or city dweller who doesn't have these media? Do they also have a right to this information?

The issue is bigger than just the right to electronically access the holdings of the Library of Congress, it encompasses the right to electronically access information held by all government agencies and even the right to access the world of information available from the Internet. As for accessing information held by government agencies, consider the Securities and Exchange Commission (SEC), which has a $100 million project underway to computerize information that companies are required to file monthly with the Commission. The resultant database will include the "records of 15,000 businesses—including data on profits, sales, debt and other financial matters".[15] A recent article in *The New York Times* points out that while this information may help the SEC do its work more efficiently, the public has a need too:

> S.E.C. officials will have direct on-line access to the system. And, for a
> price, wealthy companies and individuals will be able to buy easy
> access from a handful of commercial data vendors. ... A much better

idea is on-line public access to the system. With such access, which is easily realized with available networking technology, citizens would be able to order any report through a personal computer at any hour. ... In contrast, a person unable to use the S.E.C.'s limited-access plan would have no choice but to patronize a private data vendor. If he or she could afford it, that is. A typical vendor now charges $16 to $50 or more for on-line access to a single corporate report filed with the S.E.C.

Full access to the new S.E.C. system offers great benefits for many people at minor expense. This by itself justifies such access, but there are compelling equities too. For one, taxpayers are paying for the system; it should be available to as many of them as possible. For another, these millions of pages are public business records. The public has a right to get them—easily and inexpensively.[16]

### 2.2.2 Right to an Information Tone?

To say that the public has a right to this kind of information is making it a civil liberties issue. And that is exactly what the Electronic Frontier Foundation (EFF) is intent on doing. In commenting on the Clinton Administration's proposal of an electronic superhighway, Jerry Berman, EFF's executive director, said access to such information infrastructure is "the fundamental civil liberties issue of the 21st century."[17] EFF's position on access to the electronic superhighway is that Universal Service is one of the policy goals that must be kept at the forefront of its efforts in order to preserve a democratic society.[18] EFF bases its position on an extension of the Communications Act of 1934:

> The universal service guaranty in the Communications Act of 1934 has, until now, been interpreted to mean access to "plain old telephone service" (POTS). In the information age, we must extend this guaranty to include "plain old digital service." Extending this guaranty means ensuring that new basic digital services are affordable and ubiquitously available. Equity and the democratic imperative also demand that these services meet the needs of people with disabilities, the elderly, and other groups with special needs. Failure to do so is sure to create a society of information "haves" and "have-nots."[19]

John Seely Brown, who pointed out to the author that this subject was also discussed at the Aspen Institute conference (section **2.1.1**), phrases the issue in the following way:

> Should there be an extension of that law that gives an information tone to every home in America? France basically has an information tone. The [French] Minitel system has currently 23,000 information services on it. Last year at this time there were 17,000. Minitel is the Internet infrastructure for France.[20]

The Aspen Institute conference included the kind of discussion of issues with political implications that is needed. But only a relatively small number of people attended that conference, and there are many more issues exist than were addressed there. We need more research, more study, more conferences, and more people involved in the debate.

Finally, on the subject of the Internet and the public's need to access information, there are those that think privatizing parts of the Internet in the U.S will lead to a net that is not affordable for some of the public. This controversy arose when the National Science Foundation requested bids from private telecommunications companies to privatize the NSFnet, the backbone of the Internet.

> Federal officials say the changes will make the Internet more accessible as the new providers improve services and cut costs. ... Critics of the plan, however, say that without federal oversight, there is no guarantee that Internet services will remain affordable. And some network providers, which make money by offering affordable access to a small group of customers, worry they could be squeezed out by larger carriers.[21]

## 2.3 Effect on Government Policy

Use of electronic personal media also has had an effect on government's ability to develop and carry out policy. One of the best places to see this effect is where the policy involves these media themselves, a good example of which is export control policy. Export controls are best considered within the context of the overall technology transfer issue. While much of the past debate over export controls has focused on national security interests, this author previously reported in 1986 on the technology transfer issue citing how various political, economic, social, and scientific interests were also affected.[22] Much has changed in the world since that report was written—a time when the Berlin Wall and the Soviet Union still existed. But the controversy over technology transfer and export controls has not subsided—if anything, it has become more complex. Our economic competitors like Japan, Western Europe, and the Four Tigers—South Korea, Taiwan, Singapore, and Hong Kong—are still around, and there are new competitors on the block. Although our national security focus is no longer preoccupied by the Soviet threat, we are still concerned with the proliferation of weapons of mass destruction, international terrorism, national and regional conflict, and dictators throughout the world.

Given that multitude of national security interests, we continue to have concerns that our technology will fall into the hands of the wrong party. We also want to compete in the international marketplace and conduct international trade without the burden of unnecessary controls on technology embedded in the products we have to offer. And as if that were not enough, the evolution of technology is making it even more difficult for the government to administer export controls. A case in point is the technology associated with computers. A few years ago the U.S. and Japan reached an agreement on export controls for super-computers. At the time it was agreed that a supercomputer was any computer that was capable of performing more than 195 million theoretical operations a second, called M-Tops. Since that agreement, technology has advanced considerably and computer manufacturers in the U.S. are concerned about the impact of export controls on their ability to continue to compete. For example:

> Luke Alexander, export control officer at Sun Microsystems in Mountain View [California], said his company will soon ship the Sparc Station 10 Model 54, a $55,000 desktop machine that will deliver 206 M-Tops.[23]

The concern with supercomputers is that they are so powerful that they could help China, India, Pakistan, Iraq, Iran, Libya, or some other country develop weapons of mass destruction. Nevertheless, many in private industry think the time has come to ease export controls. As a Hewlett Packard corporate officer recently told the author:

> I don't think the government is anywhere close to understanding the idiocy of some of the export controls we have. I can't export a 586 personal computer to China, although my Japanese competitors can. A device that is used in networking, a router, can't be exported to China without an export license because it uses a 9600 baud modem—you can go to [a local electronics store] and buy a 9600 modem and take it to China, but we can't have one in one of these boxes. It's insane. It's arcane, cold war based. That hobbles U.S. companies from doing business. This is not a small thing. The order we are working on is about a ten million dollar order to enable China to set up stock exchanges. You would think that would be in the interest of our government to see capitalism flourish in China. We have been hampered competitively for a decade.[24]

It is clearly time to update the debate on the technology transfer issue to reflect the post-cold war era as well as the advances being made in technology. The Clinton

Administration says it is aware of the concerns of U.S. manufacturers and has wrestled with this dilemma of protecting national security interests and enabling U.S. industry to compete internationally. As this paper was being drafted it was reported that:

> The Commerce Department is scheduled to release a study that could relax long-standing export controls on general purpose computers, including advanced workstations. Manufacturers hope the reforms will make it easier for them to sell their machines abroad and fend off competition from Pacific Rim rivals.
> But industry advocates fear the reforms may not go far enough, trapping their newest and most-promising products in a regulatory swamp of government paperwork and review.[25]

There are healthy signs the update of the debate is underway. But even if the government reforms the export controls to deal with the current state of the art in workstations, PCs and modems, the handwriting is on the wall, these media are becoming so powerful and inexpensive that before long the PCs that we can use at home will have the power of today's workstations or what was once considered a supercomputer. The point is we should expect and encourage government and industry to be continually debating these issues.

### 2.3.1 The Hostage Videotape Issue

The time the president and high level officials spend on export policy is probably small in comparison to the time they spend dealing with international crisis events. And, more and more the world is learning about these events by means of a combination of electronic personal media and mass media. One of the most infamous examples was the 444 day Iran hostage crisis of 1979–81. Ganley notes how electronic personal media in the form of videotape recordings played a key role in that crisis:

> The first hostage videotapes were prepared and released by the government-sponsored Iranian terrorists who held hostages in Teheran's American Embassy during 1979-1981, in the form of pitiful holiday specials.[26]

It is widely known that the hostages in Iran were a major problem for President Carter. We all recall the ill-fated rescue mission sent to free the hostages which ended in flames in the desert. We remember that President Reagan announced that the hostages had been released the day he succeeded Carter as president. The reason that we recall this crisis so well and that

it was so difficult for President Carter to deal with it may have been one and the same, the effect of media on foreign policy. James Larson described its effect on the hostage crisis:

> The Iran hostage crisis was quintessentially visual in nature. It evokes visual memories of angry crowds outside the U.S. embassy in Teheran, armed "students" who overran the embassy and seized hostages, the bearded Ayatollah Khomeini surrounded by followers, clergy visits to the hostages at Easter and Christmas, and charred bodies of U.S. servicemen left in the desert after an abortive rescue mission. ... The Iran experience stretched and challenged past conceptions about the news media and foreign policy, stimulating a public debate over acceptable norms for both television and government in a novel situation. Out of the controversy grew a consensus among scholars, government officials, and journalists that the Iran hostage crisis was a watershed event deserving special scrutiny.[27]

President Reagan probably fared no better than President Carter in finding ways to deal with the hostage situation in the Middle East. As Ganley notes, electronic personal media in the form of videotapes were once again integral to the flow of information to the American public:

> For more than half a decade, videotapes of American hostages in Lebanon [were] regularly passed by their terrorist captors to the mass media. Just as regularly, they ... appeared on prime time U.S. TV and on the front pages of American magazines and newspapers.[28]

It soon became clear that technology was having a dramatic effect on more than just the way news information relating to terrorist events was gathered and reported—its use was having an indirect effect on U.S. foreign policy. Terrorists in Teheran, Lebanon, and elsewhere in the Middle East knew they could use inexpensive video cameras to film hostages. They could provide the tapes to the mass media and quickly get attention for their causes in ways impossible before TV and the new media were available. The effect the media, particularly TV, were having on U.S. policy began to get considerable scrutiny.

Larson focused his attention on the hostage situation in Iran. Although he refrained from stating that his observations were exhaustive or conclusive concerning the effect of TV on foreign policy, he did say what he considered the importance of the problem:

> Television news can participate in foreign policy as well as simply observe it. In the case of dramatic events, television can actually serve

as a catalyst to foreign policy initiatives. These roles of television news
have implications for, first, the manner in which scholars conceptualize
the relationship of news media to foreign policy; second, policies and
practices of television news organizations; and third, the conduct of
foreign policy and international diplomacy.[29]

Robert Picard, writing on this subject, recounted several instances of criticism of the media for the manner in which terrorism was reported. For example, shortly after one of the networks broadcast an interview of the head of the Palestinian organization that hijacked the cruise ship *Achille Lauro*, the spokesman for the State Department criticized the network for airing the interview. "Terrorism thrives on this kind of publicity ... [it] encourages the terrorist activities we're all seeking to deter."[30]

Picard noted a similar reaction to BBC plans to interview a spokesman for the Irish Republican Army. Picard set out to determine whether there was indeed evidence the media are an important factor in inducing and defusing terrorist acts. After reviewing the literature of the 1970s and 1980s he concluded there was no credible evidence, but:

> [I]t would appear to be inappropriate for journalists to interview
> members of groups taking part in terrorist acts while such acts are
> underway. This type of interview has occurred during the course of
> hijackings, building sieges, kidnappings, and other prolonged acts of
> terrorism.
> Interviews under such conditions are a direct reward for the
> specific act of terrorism underway and can interfere with efforts to
> resolve the crisis. There is also some evidence that such coverage can
> prolong crisis. In addition, such interviews all too often increase the
> spectacle of the event, spread fear, and provide a coerced platform for
> the views of the groups involved.[31]

Picard's prescription for the media focuses on the interviewing of terrorists. He apparently pays little, if any, attention to some of the most sensational footage used in media coverage of terrorist events—videotapes of the hostages the terrorists took. If the media are not to serve as platforms for terrorist groups, should his recommendation be extended to the media not accepting and showing videotapes of hostages? Even if that were the recommendation, would the media follow it? Who would decide whether such a videotape should be aired? If a tape supplied by a terrorist organization were not accepted, should a tape from an insurgent group or another country showing prisoners they held or outlining demands

they were seeking be accepted? Who would decide whether an event was a terrorist act, an insurgency, or war? Clearly, the issue of the terrorists' videotape and questions such as these need further study and debate. Study is also needed on how our leaders should respond to such events. How does a president, for example, deliberate and take measured action in the wake of such sensational news coverage? Events in Somalia in 1993 suggest this issue may not go away any time soon.

On October 4, 1993, Warrant Officer Durant, a Blackhawk helicopter pilot, was taken prisoner by the Somalia National Alliance.[32] That same day, CNN broadcast a videotape, which had been prepared by his captors, showing an interview of Durant who was alive but injured. The next day, *The Washington Post* reported the reaction to this video and other news coverage on Somalia from several military communities in the U.S., that included these comments:

> "While I personally believe that it's time to pull back, many of my fellow soldiers were so angered by what they saw that they long to return to Africa; to avenge the casualties," said a 20-year-old infantryman who refused to give his name.
> ... "They went over there on a humanitarian mission to feed them," [a clerk on one of the bases] said. "We've done our part. We've fed them. It's time to come home."[33]

The next day a Pentagon spokesperson, Kathleen Delaski, was asked about the effect on U.S. policy of Durant's capture:

> Q: Kathleen, what's the status of Warrant Officer Durant? Is he considered a POW? And does his capture in any way complicate the withdrawal efforts that the administration says—
>
> DELASKI: We do not consider him a POW. We consider him a detainee. And as far as what we might be doing to talk to people about his release, we don't want to talk about that in public.
>
> Q: In terms of the policy, is this complicating the policy in terms of extracting the U.S. involvement in Somalia?
>
> DELASKI: I don't think it would be wise to discuss that from the podium.[34]

The Pentagon may not have commented on the effect news of Durant had on its policy, but Durant was soon released by the Somalies, the Clinton Administration renounced its

policy of trying to capture the head of the Somali clan that had held Durant, and withdrew the crack Army Ranger unit sent to Somalia to capture the head of the clan. The media once again played a role in an American foreign policy issue. It is important for the purpose of this paper to note that, increasingly, the media involve relatively inexpensive videotape recordings provided to mass media for dissemination. Also, the need to think through and debate the hostage videotape issue is even greater than before.

## 2.4  Effect on Politics in Other Countries and Attempts to Control Information

Those who possess electronic personal media overseas target audiences other than the U.S. Long before Ayatollah Khomeini's supporters videotaped hostages in the U.S. embassy, Khomeini used electronic media to gain power in Iran. Starting in 1962, Khomeini conducted what was to become a seventeen-year campaign to overthrow the Shah. Not only was the Ayatollah handicapped by having to wage his campaign from exile, but he also had to communicate with a population less than 50 percent of whom were literate. His first move was to use electronic personal media in the form of audiotapes to communicate with the people in Iran. Ganley gives him credit as the one "who beat the original path to political exploitation of personal electronic media."[35] One reason he was successful in overthrowing the Shah is that the Shah's government did not take steps to stop the flow of information from Khomeini until it was probably too late.

China provides an example of a standing government that has repeatedly taken steps to prevent the flow of information into the country. Obviously, the Chinese do not want information coming in that might start uprisings similar to the one at Tiananmen Square in 1989. Nevertheless, the Chinese have reportedly not been completely successful. Early in 1993, according to a *New York Times* reporter, electronic personal media were an important factor in circumventing Chinese controls on the flow of information:

> Telephones, photocopiers, fax machines, computer modems and printing presses are proliferating, and more Chinese are traveling abroad. While the government can crack down on protests, it seems virtually powerless to stop the flow of information and ideas.[36]

A few months later the same reporter described the Chinese government's continued failure to control the flow of information, noting that although the government leaders had

decided to crack down on it, competing interests in China were making this difficult. With China's economy continuing to grow, is it surprising that competing interests appear to be economically motivated?

> The Army General Staff Department and the Ministry of Radio, Film and Television, for example, both turn a good profit by selling satellite equipment to the public. The Ministry of Electronics operates a factory that says it plans to build 60,000 to 70,000 satellite dishes this year....
> China passed a law in 1990 banning the use of satellite dishes to receive foreign television signals, except with permission from the police. But the law does not ban the sale of the dishes, nor even their installation, so long as they are used to receive China's own programming.[37]

Will China be able to achieve its economic goals and at the same time control the free flow of information? In terms of just the above report, someone, presumably the police, would have to visit everyone's home to ensure that they are not tuning in satellite signals from other countries. Further, we are told we are entering the era of information based economies. The countries that have the strongest economies, such as the U.S., Japan, the four Asian Tigers, and the Western European countries, have strong information based industries. There are a host of newly industrialized countries that are also eying information industries as their ticket to economic growth. China may have to loosen its controls on the flow of information in order to compete in the information age.

China would not be the first communist country to succumb to economic pressure. *Glasnost* was Gorbachev's attempt to stimulate enough political freedom and information flow to keep the former Soviet Union afloat. With 20-20 hindsight, we can see that, given a little taste of freedom, the Soviet Union's tight control over information continued to weaken until Yeltsin and others demanded complete reform, political and economic. In 1987, before the Berlin wall came down and before the disintegration of the former Soviet Union, Paul Kennedy, in his book *The Rise and Fall of the Great Powers*, commented on the connection between the (former) Soviet Union's economic fate and its control of information:

> Merely to keep up with these advanced technologies requires ever-larger allocations of scientific and engineering resources to Russia's defense-related sector.
> In the civilian field, the problem is even greater ... computers, word processors, telecommunications, being knowledge-intensive industries, can best be exploited by a society which possesses a

technology-trained population that is encouraged to experiment freely
and to exchange new ideas and hypotheses in the widest possible way.
This works well in California and Japan, but threatens to loosen the
Russian state's monopoly of information. If ... senior scientists and
scholars in the Soviet Union are forbidden to use copying machines
personally (the copying departments are staffed by the KGB), then it is
hard to see how the country could move toward the widespread use of
word processors, interactive computers, electronic mail, etc. without a
substantial loosening of police controls and censorship.[38]

As indicated by the above examples, those governments that would attempt to control
the flow of information are now having to contend with a multitude of media such as satellite
dishes, copying machines, and PCs. Think of the difficulty they must be having contending
with worldwide computer networks like the Internet, as the following example illustrates:

Halfway around the world, Wam Kat files daily reports on life in
Zagreb Croatia. "I just stood about half an hour in the supermarket
downstairs watching a firmly built man. ... He was shouting at
everybody in the shop," he wrote on May 24. "From what I could
understand, he said that when Croatia was under the Serbs (in former
Yugoslavia), the price of bread was at least half of what it is now. Just
a few days ago I heard somebody say that under the communists we had
our problems, but now under the capitalists we have our problems too.
What is the difference if you work for the communist or capitalist
elite?" ...

Kat's bulletins, which he calls "Zagreb Diary," don't appear in
Yugoslav papers or on television. They exist in cyberspace. Kat types
them on his own computer in Zagreb and sends them by modem to an
electronic bulletin board in Germany. From there, his stories are
relayed to computers around the world via the global mega-information
stream called the Internet.

"Electronic mail is the only link between me and the outside
world," says Kat, writing by e-mail. The Croatian government owns all
the major media in the country and is prosecuting a group of journalists
for treason.[39]

China, the Soviet Union, and Croatia are not the only countries that have been having
difficulty controlling the flow of information. In 1992, pro-democracy elements in Thailand
successfully exploited satellite TV to inform the public about government actions.

Although the Government censored local television broadcasts of the
violence, in which scores of unarmed civilians were gunned down,
satellite-dish owners videotaped the scenes of violence shown on BBC

and CNN. The tapes were distributed within hours across Thailand,
fueling the public's anger and hastening the Government's downfall.[40]

The political implications of these new media go further than the relationship between
the free flow of information and a country's type of government. Some governments are
concerned that the very culture of their country might be adversely affected by the flow of
information from abroad. Satellite dishes are often seen as the threat. For example, "The
Malaysian Government bars satellite receivers, saying it fears a 'cultural invasion' by the
West."[41] But do governments such as that in Malaysia have any real hope of stemming
information via satellite? Peter Drucker, in *Post-Capitalist Society*, comments on the futility
of attempts by governments to control satellite broadcasts in the future:

> In a few years, with receiving dishes so small that no secret police
> could prevent their use inside the home, and with satellites overhead
> beaming programs to any point of the globe, information, for better or
> worse, will have become truly transnational and truly beyond the
> control of any one country. Countries concerned about the integrity of
> their own national culture (Japan, say, or France) will attempt to protect
> sovereign control of popular information. But such attempts are futile, it
> is abundantly clear.[42]

The technology Drucker is writing about appears to be evolving on schedule if not ahead
of time. Further, the flow of information will not be just one-way. Just as people within a
country will be able to learn about the culture and events in other countries, individuals
interested in informing outsiders of conditions within their own country or bent on securing
outside support will find the technology is available.

> For a mere $25,000 NEC can supply you with one of their new M
> Link-5000s. This briefcase-sized satellite terminal will turn just about
> any spot in the world into a phone booth immune to the forces of
> nature, civil unrest or bureaucratic bloody-mindedness.
> It squeezes the latest digital technology into a manageable package
> of 13kg [29 pounds]; and it can talk to any of the four Inmarsat
> satellites that hover 36,000km [22,500 miles) above the earth. All you
> need to do is unfold the lid (which doubles as a phased-array antenna),
> aim it toward the nearest convenient satellite and dial the call. The unit
> can receive calls, transmit faxes or be used by personal computers to
> tap into remote data banks—all for $5.50 a minute.[43]

Further, it will not be only the very wealthy who have access to and can send information by satellite. Carl Malamud reported seeing in Tokyo home satellite dishes that could be used in conjunction with PCs for only $100.[44]

## 2.5 Summary

Electronic personal media are having an impact on politics in the U.S., and these media have the potential to help transform the political process with on-line Congressional hearings and the electronic ballot. At the same time, it may be wise to rethink the form of democracy we want before such a transformation occurs. More debate and more studies like that by the Aspen Institute are essential. It is easy to see that the use of these media is also having an effect on the way government works and the services it provides. Universal access to information is a major issue. If we are not careful, we will disenfranchise part of our population and create a class of information "have-nots." This is another issue for which much more research and debate are needed, because the right to access information is far from resolution. The new media continue to be a subject of government policy, as in their effect on export control policy, and it is time to update the debate on technology transfer. The manufacture and use of the new media also have a significant effect on the execution of policy, especially when they are the source of information provided to mass media for reporting international crises. Further study is needed on how our leaders should respond to such news events and formulate courses of action. Finally, it is becoming more and more difficult for authoritarian regimes to stem the free flow of information when the new media are so ubiquitous and increasingly less expensive.

**Notes**

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# Chapter Three

## Legal Implications

Increased use of electronic personal media is affecting many aspects of our legal processes. Our legal and law enforcement systems have benefited greatly from these technologies. It is difficult to imagine how our legal system could function effectively and efficiently now without electronic personal media. Consider the PC a lawyer uses to search databases interactively for legal precedents and the hand-held radios that help an officer on the beat communicate with headquarters. In spite of the advantages of the new media, the legal implications associated with them raise questions about the information age. For example, how can we be guaranteed a fair trial with so many new forms of pre-trial publicity? Can we ever escape from the eyes and ears of the new media? Will measures to protect our information lead to drying up the well of information? What is the effect of technology outpacing our laws? This chapter addresses these and other questions with implications for law and law enforcement.

### 3.1 Electronic Personal Media as Evidence

One recent notorious example of the effect of the use of electronic personal media on legal and law enforcement systems was the 1991 videotape recording of the beating of motorist Rodney King in Los Angeles, California. The tape was shown over mass media television the day after the beating, and then President Bush felt compelled to comment on it. Like many Americans, he was probably moved by the power of the visual images. But the President was not the only one affected by those images. When in 1992 the police officers charged by the state with the crime of using excessive force on King were acquitted on all but one count, riots broke out in Los Angeles that lasted for three days. In 1993 two of the officers were convicted at a second trial of the federal crime of violating King's civil rights. The purpose of this paper is solely to note the tremendous power and the legal and social implications of personal media such as videotape recorders, especially when material on sensational events is quickly made available to mass media as in this instance. Increasingly crime-related, crises, and other sensational information is becoming readily available to the mass media from personal media sources and often compels our political leaders to speak out on such matters far more quickly and far more often than in the days when information

flowed more slowly, fewer people disseminated it, fewer people received it, and the leaders had the luxury of time in which to deliberate a course of action. We must ask, is our legal system set up to deal with instant widespread dissemination of information and still ensure justice? In many ways instant coverage of sensational crimes is analogous to the media's coverage of famine, terrorism, and war in far-off places, and the way that has affected political actions by our government (see section **2.3.1**).

### 3.1.1  Weight of Evidence and Pre-Trial Publicity

As to the substance of the Rodney King tape, it is not as simple as just playing the tape and seeing for yourself whether the officers were guilty or not. Expert testimony on both sides of the issue was presented at the trial. It goes deeper than thinking it may all be in the eyes of the beholder whether one sees Rodney King continuing to resist arrest or sees the officers intentionally trying to do him harm rather than quickly subduing him. This videotape raises the question of how such material should be treated as evidence in court. Joseph Faluda commented on the evidentiary quality of such taped evidence:

> The principal difficulty with the use of tapes as evidence is that tapes provide a static picture in a limited frame, whereas witness-provided testimony is subject to that awesome tool of the law, cross-examination. Cross-examination forces the witness, willy-nilly, to go beyond whatever frame direct examination has artfully constructed. Thus, with witness-provided testimony, cross-examination can translate context-free sentences into in-context statements, can resolve ambiguous sentences into truth-functional statements, and can bring out and put before the court and the jury background details and perspective-related matters hidden from direct view.[1]

With Faluda's point in mind, consider the legal implications when tapes such as the King tape are recorded by electronic personal media and made available to mass media outside the judicial process. The tapes by themselves could cause the audience to form an opinion different from what they might otherwise have formed if the material were presented along with physical evidence and cross-examinations of witnesses and defendants. Often the testimony of the witness or defendant gives clues to possible motive or intent and conveys credibility. When tapes such as that one are shown on the six o'clock news it is only natural for the audience to form opinions based on only what is seen in the tape. In years to come, as electronic personal media become more pervasive and such tapes are made available to mass media more often, will it become increasingly difficult to find a jury that has not been biased

by what they have already seen in mass media? Will our legal system need somehow to be adjusted to deal with this new phenomenon of evidence from electronic personal media sources that has been disseminated via mass media? What is the responsibility of the mass media in presenting such material? Does it have a responsibility for warning the audience about the source of such information or presenting it in context with all other relevant facts and evidence? Even as this paper is being written, another case is being tried in which videotaped evidence plays a major role, namely, that of the beating of truck driver Reginald Denny in Los Angeles in the aftermath of the 1992 acquittal of the officers charged by the state with beating Rodney King. How such potential evidence is treated by the mass media, our political leaders, and the judicial process needs further study, review, and debate. Consider what is already happening with the so-called Devonshire Division program in Los Angeles:

> Three police cars swoop in, and officers arrest both men, confiscating several cocaine rocks. The binocular woman high-fives the radio man. "Gotcha!" they shout.
> Such scenes are being played out—and recorded—with increasing regularity in the San Fernando Valley section of Los Angeles, where police have trained civilian volunteers to covertly videotape drug dealers and other criminals in the act. In just one year, the Volunteer Surveillance Team has evolved into what police call an effective crime-fighting tool and is being studied by authorities throughout the nation. But unlike other surveillance programs, which police have used in varying forms for years, the aim is not just deterrence but catching crooks.
> "This is the most pure form of community-based policing," said Lieutenant Kyle Jackson, who oversees the Devonshire Division program. "We have a volunteer force that is providing services to the city that is basically costing us nothing. ... This is the crime-fighting technique of the future." And, oddly enough, it's a technique that developed indirectly out of the videotaped beating of Rodney G. King. The department launched its community-policing effort after the department's reputation plummeted because of the beating, and that effort produced the Devonshire program.[2]

Let the mind jump a little beyond the Devonshire program and imagine all police helmets of the future with built-in miniature videotape cameras. The resultant videotapes of police law enforcement activity would be routine evidence in court similar to films routinely made now by fighter aircraft to verify shooting down enemy planes.

### 3.1.2 Widespread Use, but Difficulty Accessing

Although videotaped evidence may currently be in the spotlight, not too long ago audiotape evidence was on the front page. In the course of the investigation into the 1972 Watergate break-in, quite by accident the investigators learned, in July 1973, about the audiotape recordings routinely made of President Nixon's conversations in the Oval Office of the White House. These recordings, in the original audiotape form or in transcriptions in newspaper accounts, were heard or read by millions of Americans and played a significant role in bringing about President Nixon's resignation. The Watergate special prosecutor requested access to the tapes as soon as he learned of their existence, but President Nixon refused it, claiming executive privilege. Other presidents had previously claimed executive privilege, but the special prosecutor challenged it, and for the first time in U.S. history the issue was dealt with in court. In August 1973, Judge John Sirica signed an opinion that required the President to turn over the tapes for the judge's inspection. In 1979, Judge Sirica explained his rationale:

> I felt that the president was entitled to some protection of his privacy and the nation was entitled to some protection from unnecessary publication of national secrets. But I also felt very strongly that no privilege existed for matters of a criminal nature, whether they came from the Oval Office or from anywhere else.
> "The Court is willing here to recognize and give effect to an evidentiary privilege based on the need to protect Presidential privacy," I wrote. "The Court, however, cannot agree with Respondent [the president] that it is the Executive that finally determines whether its privilege is properly invoked. The availability of evidence including the validity and scope of privileges is a judicial decision."[3]

Today, electronic personal media in the form of audio tape recorders, PCs, videotape recorders, telephone answering machines, etc. are in such wide use in government, industry, and the home that whether future investigations of possible illegal activity in private homes, government, or industry would ever overlook their possible existence as evidence is doubtful. But the mere existence of the media is no guarantee of easy access to them or of easy retrieval of information from them. For example, these media played a role in a potential investigation of White House activity surrounding President Bush's alleged involvement in the Iran-contra affair. When he was about to leave office, questions led to a court ruling on his archives which included considerable electronically recorded information.

> For weeks before Mr. Bush left office on January 20th, there was legal
> sparring in the federal courts about the large amount of electronic
> material under presidential control which, suspicious people said, might
> contain information about high-level wrongdoing in the Iran-contra
> business and other matters. In mid-January a federal district judge told
> the Bush White House not to destroy any such material. But on
> inauguration day itself, as one of his last official acts, Mr. Bush signed
> an agreement with the chief executive of the National Archives, Don
> Wilson, in effect giving Mr. Bush control of the disputed material,
> including thousands of tapes, to be stored by the National Archives
> pending transfer to their permanent home in Texas.[4]

*The New York Times* reported that the federal district judge who dealt with this matter, Judge
Charles R. Richey, cited Wilson for violating "the law governing record keeping by failing to
establish guidelines for preservation of electronic messages."[5] If the Iran-contra investigation
had continued with a thorough examination of the activities of President Bush and his
advisers, it might have involved scrutiny of electronic White House recordings.

In addition to the legal implications, it is important to note here another concern related
to the archiving of presidential material. Historians are concerned that technology is outpacing
the government's archiving capability, especially regarding electronically-generated data. The
head of the National Security Archives organization, Tom Blanton, commented on attempts by
the Bush Administration to destroy records in the form of electronic media:

> In this new electronic age, we can't allow presidents to control the
> writing of history by controlling the document. Electronics make it far
> more valuable than in paper form, easier to search, easier to retrieve,
> easier to archive, but also easier to destroy.[6]

Blanton notes the historical importance of the electronic media and the ease by which
they might be destroyed, but he may have overstated the ease of using this material, which
would certainly have an impact on both the historian and on future investigators of possible
White House wrongdoing. To search these electronic media easily requires the right
equipment and often the right computer software, and these are not always easily obtained
unless provision has been made in advance to preserve them. For example, if the electronic
messages of the Bush Administration had been stored on a brand A PC and were written
using software developed by brand B, chances are that other brands of computers or software
will not read them, let alone easily search, retrieve, or archive them. What this all implies for
historians and law enforcement officials alike is that simply having media such as floppy disks

with electronic messages on them is not sufficient. To use the media in writing history or as evidence in a court of law requires the equipment to make them work and, if the media involves computers, usually also some sort of software (for more on this point, see section **5.4.3**). Obtaining the equipment and software is not an easy task, because the technology is advancing rapidly and what is bought today will soon be obsolete and will have been replaced by new and often incompatible equipment and software, a problem that in this electronic information age is growing rather than declining. Consider the Clinton Administration's pride in its implementation of this type of technology throughout the White House, where there are now PCs everywhere and everyone has an E-mail address as well as fax and telephone numbers. It is not too soon to consider the equipment and software necessary to archive or retrieve records from such a modern electronic White House. Although this section has focussed on the White House, the legal implications for retrieval of evidence from electronically stored data are equally applicable to the headquarters of a Fortune 500 company, a trade union, or a private home. Law enforcement officials will need to give considerable attention to this matter or risk losing a valuable source of potential evidence.

## 3.2 Electronic Personal Media and Privacy

The White House may now have an E-mail address, but E-mail-like messages have been increasingly in use in businesses and private homes since computers started communicating with one another in the late 1960s. Many large businesses and government agencies have their own computer networks, and their employees routinely exchange E-mail within the businesses and agencies. Interbusiness E-mail is increasingly handled on the Internet. It has been estimated that "6,500 U.S. companies, including more than half the Fortune 1000, subscribe to telecommunications services that give them an Internet mail drop."[7] Some of this E-mail has required our legal system to review the privacy implications of electronic messages.

### 3.2.1 E-mail: Company Records or Employee Records?

A recent example of legal implications of E-mail is the case of the State of California vs. Eugene Wang and Gordon Eubanks. This case involves trade secrets a former Borland International, Inc., employee allegedly leaked to rival Symantec Corporation. "After ... Symantec hired away Wang, Borland's general manager and computer-language guru, Borland peeked into the electronic-mail records of its former employee and discovered he had sent 11 electronic messages to Symantec CEO Eubanks in the five days before Wang left the

company."[8] Had this employee been suspected of sending trade secrets through the U.S. Postal Service, it would have been illegal for Borland to open his mail. Borland claimed it had the right to examine its employee's mail since the company paid for the MCI account the employee used to send the mail. It remains to be seen how this case will be decided but Jeffrey Kingston, an attorney who specializes in privacy issues cites it as an example of where the "technology moves faster than the law."[9] Kingston thinks a 1987 Supreme Court ruling that searching a worker's desk violates an employee's privacy should be extended to cover "a worker's computer, and to computerized information where a password gives a worker the impression of privacy."[10]

### 3.2.2 Advanced Phone Technology

Kingston is not alone in noting the law lags significantly behind technology. Furthermore, this lag involves personal electronic media other than just PCs. Timothy Rabel, of the John Marshall Law School, cited the example of privacy and cordless phones in an article that appeared in 1992 in *IEEE Software*. Rabel notes that "while interceptors of cellular-phone communications are subject to a fine of up to $500 under federal law, interceptors of cordless-phone communications cannot be prosecuted under federal law or—in many states—state law."[11] Rabel chronicled the evolution of the privacy law that relates to portable phones:

> In the seminal case of Katz v. United States (1967), the Supreme Court determined that eavesdropping on a telephone conversation could violate the Fourth Amendment of the US Constitution even though the line was not tapped. The FBI had electronically recorded the end of a call Charles Katz had made from a public phone booth. Katz had entered the booth and closed the door behind him, unaware that the FBI microphone was affixed outside.
>
> The court found that the Fourth Amendment "protects people, not places," and developed a two-prong test to determine when an individual's privacy is invaded. First, the individual must have a subjective expectation of privacy. Second, the expectation must be reasonable. The court concluded that the FBI's warrantless eavesdropping on the individual's phone call was unconstitutional.[12]
>
> In 1986, Congress provided protection for cellular communications with the Electronic Communications Privacy Act of 1986, an amendment to Title III. In it, the definition of wire communications was broadened to include the radio portion of a cellular-phone communication.[13]
>
> But the Act specifically excludes the radio portion of a cordless phone from that definition.[14]

A few states, including California, expressly prohibit the interception of cellular-and cordless-phone communications.[15]

It may come as no surprise that the law lags the advancement of technology. Until there is a need for a law, why would one want it on the books? The problem arises when it takes so long for the legal process to respond and the problem becomes all the more important to us when it involves something as sensitive as the privacy of our personal communications. Perhaps a word of caution from Rabel is in order:

> The law tries valiantly to keep pace with technology, but it is usually more in a catch-up mode. Technologies like personal-communications networks that use microwave frequencies and satellites and video phones that can transfer visual images over phone wires are probably covered by Title III, but technologies farther into the future may not be.[16]

### 3.2.3  Electronic Junk Mail Invades Our Homes

It would not be appropriate to have a section on electronic media and privacy and not mention junk mail and soliciting via telephone, something some people consider another form of privacy invasion. In a movie about the life of Alexander Graham Bell one scene offers an experience similar to one we have all had. Bell has invented the telephone and moved to Nova Scotia and is busily engaged with another invention when the telephone rings. He answers it and after listening briefly grows irritated and screams into the mouthpiece that he already has a Sears Roebuck catalog. Then he slams the phone down, yanks its cord out of the wall, and throws the phone out the window.[17]

As humorous as the scene from the movie may be, with the advancements in electronic personal media, its many forms and its increasingly wide use, we are now receiving, with increasing frequency, junk calls, junk facsimile, and junk E-mail. Numerous federal and state proposals have been made to protect us from these intrusions into our privacy. For many of us, these protections are slow in coming. Ganley summarized the problem of junk fax:

> Because fax machines are kept on all the time to receive desired communications, they also attract the unwanted—junk fax. Ads that used to be mailed at the sender's expense now arrive by phone/fax, using the recipient's expensive fax paper and tying up the sending and receiving lines. By 1989, several states had moved to restrict junk fax, and others and the U.S. Congress were making noises about doing so.[18]

Just how vulnerable are we to these invasions of privacy? Thanks in large part to the advances being make in electronic personal media, quite vulnerable. The telephone and fax intrusions noted above are familiar to all of us. But now there are newer forms of intrusion. For example, we might use a modem, sign on to an on-line computer network, and get junk E-mail from someone who obtained our network address. If signing on meant a long distance phone call to do so, seeing the junk E-mail is not the only pain we encounter. When we pay the phone bill for the unwanted mail we get another jab of pain. We might think twice about listing our electronic address in the future.

Some people foresee greater potential for intrusions in the near future. Take for example, this excerpt from an article in a recent issue of *The Economist*:

> Someone is always watching. Your wake-up call, overnight messages
> and personalized news summary come from the database of your local
> telephone exchange. The brand of the coffee you gulp for breakfast,
> like all your purchases, was recorded when you paid with your charge
> card. Your televiewing habits are monitored by the same cable-TV firm
> that offers you 500 channels. Your drive to work is recorded by the
> traffic-monitoring system common in most cities. The swipe of a
> security card lets you into your office, where your movements and
> telephone conversations are recorded via the tiny phone-computer on
> your wrist. The date is August 7th 2003.
>     This is no sci-fi fantasy. Such a world is not only possible but
> plausible. Most of the technology needed to bring it about already
> exists.[19]

### 3.2.4 Monitoring in the Work Place

Monitoring our activities in our homes is not the only concern in this new age of abundant electronic personal media. Monitoring takes place in our work places with increased frequency and has stirred considerable controversy on the issue. Under what circumstances should an employer be permitted to monitor employees' performance? What protection should employees have from monitoring that might invade their privacy? On June 30, 1993, Congressman Pat Williams, Chairman of the House Subcommittee on Labor-Management Relations opened hearings on H.R. 1900, The Privacy For Consumers And Workers Act. He summarized the problem in the work place in his opening statement:

> *Macworld* reported in the July 1993 issue that: "More than 20% of
> U.S. employers have engaged in searches of employee computer files,
> voice mail, electronic mail, or other network communications. In
> companies with 1000 or more employees, the figure rises to 30% . ...

– 44 –

> Although some 20 million Americans may be subject to electronic
> on-the-job monitoring ... only 18% of respondents' companies had a
> written policy on electronic privacy for employees. And only 31% of
> companies that monitor or search employee computers ... give
> employees advance warning.
>     We should remember that under current law, the Federal Bureau
> of Investigation, pursuant to the fourth amendment's prohibition of
> search and seizure, is required to obtain a court order to wiretap a
> telephone.[20]

During the hearings on H.R. 1900 testimony was given on both sides of the issue. For
example, an instance of an employer invading the privacy of workers was cited by a
representative from the American Nurses Association:

> In recent years we have seen troubling examples of electronic
> monitoring which unnecessarily invades the privacy of nurses. This
> Committee is aware of the case of nurses at a hospital in Maryland who
> discovered a hidden video camera in their dressing room—broadcasting
> their activities to an in-house cable channel.[21]

Although many who testified and members of the subcommittee saw this possibly accidental
incident as an unwarranted invasion of privacy, the issue is more complex when an employer
has a seemingly legitimate reason to monitor employees. Consider the testimony of the
representative from MCI Communications Corporation:

> In virtually banning unannounced monitoring for all but new employees,
> (H.R. 1900) has lost sight of two very fundamental facts about
> telephone monitoring. ... MCI and others who responsibly use telephone
> monitoring for training and evaluation in the context of customer
> service and consumer protection interests fully recognize that employees
> should have access to unmonitored phones for the purpose of making or
> receiving personal calls. H.R. 1900 fails to address the issue that there
> are no personal privacy interests of the employee at stake in the
> monitoring of business calls.
>     ... it must be understood that, to a large extent, the benefits of
> telephone monitoring for the purposes described earlier will only be
> obtained if the monitoring is unannounced; that is, performed without
> letting the employee know when it will occur. The monitoring must be
> unannounced because this is the only way to ensure that the employer
> obtains a representative sampling of the employee's typical telephone
> performance, rather than one that has been affected by knowledge of the
> monitoring.[22]

Winding up this section on privacy and the new media, it should be emphasized that the
concern for privacy is not new—it is at least as old as the Fourth Amendment to the

Constitution. What is new is the electronic media that makes it possible for us to: get vast amounts of information by connecting our home computers and worldwide computer networks, send E-mail to business associates, make phone calls from and to a multitude of places with or without a wire connection, send and receive informative pictures via facsimile, and, monitor employee safety in hazardous work areas by means of closed circuit television. If misused, this same technology will inundate us with junk mail, allow an illegal wiretap of our private conversations, and potentially make it so there would be nowhere to hide from prying ears and eyes. Sorting all this out to protect our privacy continues to be the work of our legislators, our courts, and our law enforcement system. In the interim, the issues and questions seem to be getting much more complex and solutions seem to be taking longer to come by. And, there is no light at the end of the tunnel either. Think about the opportunities to invade our privacy when we all have an interactive TV-computer in our home, we all walk the streets with a wireless personal communicator, and electronic cameras routinely record our activities to and from work, at work, and while shopping. That appears to be where we are headed without any new breakthroughs in the technology while our legislators and legal system tries to keep pace.

### 3.3 Unsung Hero of Intellectual Property Rights?

**Chapter One** (section **1.2**) pointed out that intellectual property piracy was estimated as a $10 billion business in 1992 and this criminal activity often involved electronic personal media. For example, illegal copies of computer software are frequently and easily exchanged on a floppy diskette. Certainly there is a need to prevent the kind of piracy that allows shops in Hong Kong to sell copies of Microsoft Word for $12.50. But in spite of this piracy, Microsoft is still frequently cited as the most successful software company in the world today. How can this be in light of such extensive piracy? Much has been written and will not be repeated here about the threat to intellectual property rights and the steps being taken to protect those rights: in our trade negotiations with foreign countries, by means of legislation and court decisions, by our law enforcement agencies, and by the protective measures taken by entrepreneurs and businesses that make the goods involving intellectual property.[23] What will be reported here is a partial answer to the question of how a company might continue to prosper in spite of the theft of intellectual property. While steps should be taken to protect intellectual property, it is easy to overstate the case or overlook implications of the technology that might allow businesses to prosper in spite of the illegal activity that goes on. Take for

example all of the concern raised about copyright protection when Xerox and other photocopying machines came into widespread usage. Tim O'Reilly, of O'Reilly & Associates, a publisher specializing in books about on-line media, commented on this issue:

> Yes, there have been infringements, and there have been changes particularly in scholarly publishing, but people have responded to those things. There is not a fundamental breakdown in the system. It is an honor system no matter how you go by it. People tend to accept the fact that copyright is a good thing and that somebody who has created something has some rights in it. ... There are a variety of things you can do and they are not so much in the area of protection as they are in the area of added value. One of the things that goes against people going out and copying books is not that they can't get a copy shop to copy it for them, it's the fact that it is more convenient to buy the book. We have sold books that people could have (accessed through an on-line network and) printed on their own laser printer, but people still buy the book because it is nicely bound and easy to use.[24]

Think about this notion of added value. The publisher mentioned above is suggesting that in general people are not inclined to want a copy of a book because it subtracts from the value of the original. Therefore, the copying machine is not used to the extent once feared in infringing upon a publisher's copyright. In fact, isn't added value one means businesses use to protect themselves from the theft of intellectual property involving any technology? As long as a business is able to advance the technology and make a product with added value who would want the older less useful, less capable product, let alone steal the patent or infringe upon the copyright? Is there really a market anymore for rotary telephones or the version of the disk operating system that came out with IBM's original PC? If one were to list the most significant features of the new electronic personal media, its ability to significantly add value beyond that of the media they are gradually replacing stands out. For example, certain kinds of books in digital form can be much more useful for the researcher than a printed book. Not only do these media often facilitate added value, they do so at a phenomenal rate. No sooner does one buy a devise based on this technology and it becomes obsolete it seems. So it may be the added value often associated with this technology together with the rate of evolution of the technology is an unsung hero of intellectual property rights protection.

### 3.4 Illegal Penetration of Computer Systems

Sherry Turkle conducted a major study of the relationship between computers and people and documented how intellectual curiosity and the natural inclination to learn led to some people even at an early age becoming quite comfortable with computers—some becoming "stuck on the machine" as she described their attachment to the computer.[25] Unfortunately, intellectual curiosity and the natural inclination to learn has occasionally gone awry and a person who might otherwise have become a productive member of society and an expert in computers turns out to be a "computer hacker" in the negative sense, i.e., someone who is intent on gaining unauthorized access to someone else's computer. Once in a while, a hacker is so successful the integrity of an important computer system is in jeopardy. There have been several examples of such hacking. Probably one of the most notorious examples is the Hanover Hacker. Ganley summarized this hacker's 1986 illegal intrusions as follows:

> From his home, [Markus] Hess could gain entry to computers at the University of Bremen, Germany, and both via them and directly, he was able to enter the West German Datex-P Network. From this network, Hess was able to connect to a satellite telephone link or a transatlantic cable line, which let him enter the U.S. via the Tymnet International gateway. Via Tymnet, he was then able to gain access to a computer at one of Mitre Corporation's defense contractor operations located in McLean, Virginia. Using Mitre's accounts with Tymnet, the intruder could then traverse the U.S. to a computer system at Lawrence Berkeley Laboratory in Berkeley, California. The Berkeley system put him directly into Internet's civilian research network, the Arpanet, and gave easy access to its military research network, the Milnet.[26]

Hess's intrusions were eventually uncovered by Clifford Stoll, somewhat of a self-taught computer expert at the Lawrence Lab, but not before Hess had sold information he had illegally gathered to the Soviets.

There have been a lot of other hackers who didn't sell information to the Soviets. Some of these seemed to enjoy just the challenge of breaking into someone else's computer system and leaving their calling card. While one might be tempted to admire their ability to do so, Stoll has warned of the danger in this type of activity:

> I saw the hacker not as a chess master, teaching us all valuable lessons by exploiting the weak points in our defenses, but as a vandal, sowing distrust and paranoia.
>     In a small town, where people never locked their doors, would we praise the first burglar for showing the townspeople how foolish it was

to leave their houses open? After it happened, the town couldn't ever go back to open doors.

Hacking may mean that computer networks will have to have elaborate locks and checkpoints. Legitimate users will find it harder to communicate freely, sharing less information with each other. To use the network, we all might have to identify ourselves and state our purpose—no more logging on casually just to gossip, doodle around, see who else is on the net.

There's plenty of room for truly "creative anarchy' on the networks as they are—nobody is in charge of them, nobody makes the rules—they exist purely out of cooperative effort and they evolve freely at the whim of their users. A hacker's abuse of this openness might mean the end of the casual, communal way the networks are run.[27]

Just as there have been many cases of illegal penetration by hackers, there have been many instances of computer viruses, or the planting of computer software designed to in some way at least leave a calling card on the penetrated system; in some cases, completely destroy the system. A common way for these viruses to be spread is by means of exchanging computer diskettes for the purpose of sharing information. Unbeknownst to the one receiving the diskette, it may have been "infected" with the virus, which becomes activated when inserted into the recipient's computer. There are ways to protect one's computer from some viruses. You can buy software to run on your computer to constantly or periodically check for the presence of a virus. Unfortunately, these virus check programs work best against known viruses and there seems always to be a new virus out there that requires new software to find it. In addition to the cost of the virus checking software, and the fact it doesn't always find the newest virus, there is an even more significant reason to abhor viruses. As Stoll puts it:

The obvious way to prevent viruses is to avoid exchanging programs. Don't take candy from strangers—don't accept untrusted programs. By keeping your computer isolated from others, no virus program can infect it.

This canonical wisdom overlooks our daily needs. Unless we exchange programs and data, our computers won't be much use to us. There's a wealth of public-domain software—much of it ideal for solving our problems.

Viruses and logic bombs poison this communal well. People stop trusting public software, and eventually the sources of public software dry up.[28]

Until a better solution to the threat is developed, individuals and businesses are taking steps to protect computer systems from viruses and hackers' intrusions. "For example, Apple

Computer has only one computer directly hooked to the Internet, and keeps it effectively separated from other computers in its corporate network. About six thousand people a day log on to Apple Computer's Internet address, but no hackers are known to have penetrated from the Internet to the internal network."[29]

### 3.5 Encryption Issue

While users of electronic personal media such as computer networks and cellular phones wait for legal protection from hackers' intrusions and illegal taps on their phones, technology of another kind may help solve the problem. Secret codes have been used to protect communications for centuries and today encryption technology has evolved to the point that it is being strongly advocated by some as the best means to protect communications. If one's computer files are encrypted and if one's computer to computer communications or phone calls are encrypted, then if someone gains access to these files or communications it will be of no use to them unless they are able to break the code used to encrypt the information. There have been reports that what some people consider "unbreakable" code may have already been developed.[30] Whether it is possible to develop code that cannot be broken is not important for this discussion. Suffice it to say that code that is extremely difficult and costly to break may be adequate protection for general public use. The rub comes, however, when one considers the possible consequences of a political adversary getting hold of such code. It could pose a threat to U.S. national security if a potential adversary had a means to communicate that was secure from U.S. decryption capabilities or took a long time and considerable cost to penetrate. Nevertheless, some would agree with Robert Frankenberg, a vice president at Hewlett Packard, "the technology for encryption has been around a long time and by treating it as a national defense issue instead as an important part of preserving privacy, the government has done a great disservice."[31]

But there is more than just a national defense issue associated with the encryption solution. What if criminal elements were able to get their hands on such code? (For examples of criminal use of the media, see section **3.6**.) It is well known that criminals have fallen in love with electronic personal media just like everyone else and certainly they don't want law enforcement agencies to read their communications.

In 1993, in light of these national security, law enforcement, commercial, and private concerns, the U.S. government took a stand on the encryption issue. John D. Podesta, Assistant to President Clinton, explained the government's position as follows:

> The development of ... encryption technology was born out of a recognition on the part of the U.S. government of the public's growing desire for high quality encryption capability for commercial and private use. At the same time, the Government was concerned that the widespread use of their technology could make lawfully authorized electronic surveillance much more difficult. Historically, law enforcement encountered very little encryption, owning largely to the expense and difficulty in using such technology. With growing availability of lower cost commercial encryption technology for use by U.S. industry and private citizens, it became clear that a strategy was needed that could accommodate the needs of the private sector for top notch communications security; of U.S. industry to remain competitive in the world's secure communications market; and of U.S. law enforcement to conduct lawfully-authorized electronic surveillance.[32]

Research, study, and debate relating to encryption protection measures is likely to continue for the foreseeable future. If anything, it will get more attention as more people get connected electronically and illegal uses of the new media mount.

## 3.6 Criminal Use of the Media

The government has good reason to be concerned about criminal elements use of electronic personal media. Its increased usage and usefulness is by no means restricted to law abiding citizens. It seems that the words "white collar crime" are almost synonymous with some sort of crime involving computers, such as embezzlement by tampering with a computerized payroll or banking system. But criminal use of the media goes far beyond computers, it includes telephones both conventional and cellular, beepers, INMARSAT terminals, facsimile, copying machines, etc. And it is probably of no surprise to anyone the illegal drug trade is at the forefront in use of this media.

The following news report indicates the pervasiveness of the technology in the drug trade and the impact on the daily lives of people in a community:

> In New Jersey's biggest cities, some pay phones have become open-air offices for drug dealers—in some cases guarded by pit bulls to keep the public away.
> Officials and residents in a half-dozen cities have complained to New Jersey Bell in increasing numbers in recent months, saying in

many cases that they would rather do without pay phones than endure the crime and violence they attract. ... So far municipal officials and New Jersey Bell have settled on a program that converts telephones in areas of high drug activity to handle outgoing calls only. ... [T]he move would not stop drug-ring members with beepers since they can be paged and then call a confederate.[33]

Criminal use of these new media is so commonplace that more and more we hear of instances where the use of the media has led to an indictment and/or conviction. For example, use of a cellular car phone led to the arrest and indictment of two men charged with the recent killing of basketball star Michael Jordan's father. It was reported "the suspects ... made repeated calls on their victim's cellular phone, turning his phone bill into a trail that led straight to them."[34]

The rapid changes being made in technology are a benefit to criminal elements as they find the newest electronic media products more efficient and more effective. These changes make it harder to apprehend them. The Justice Department's obscenity unit which targets the pornography industry is finding computer networks troublesome. The unit's acting chief recently said, "the greatest challenge this agency now faces is dealing effectively with technology changes in child porn and dealing with an increased number of child sex-abuse cases."[35] One reason it is difficult to stop traffic in pornography is most pornography dealers operate within the law for the most part. But transmission of pornographic material to a minor is an offense punishable by law and there have been increasing instances of new electronic media being used illegally in this manner. The following example was recently reported:

> Steven's mother described her 12-year-old son as a "computer nerd,"
> and she believed he spent all his time engaged in good, clean digital
> fun. She said Steven often was poised at the keyboard playing computer
> adventure games such as "The Next Mutation," "Labyrinth of Worlds,"
> and "Pathway to Power."
> What she didn't know was that her son also was using his
> computer to watch hard-core pornography delivered to his northwest
> suburban home by modem from a computer bulletin board service.[36]

## 3.7 The Sanctity of Free Speech and the Free Flow of Information

One of the cornerstones of American democracy is the Bill of Rights, especially the First Amendment Freedom of Speech. That Amendment is taking on a new meaning when viewed in the context of free speech over electronic personal media, in particular,

telecommunications networks such as the Internet. While many of the users of these media are looking to the government to take some form of action to prevent what they see as abuses of the network such as junk mail, violation of intellectual property rights by electronic piracy, invasion of privacy, illegal intrusions, the spread of viruses, and the spread of child pornography, many are vocal in their opposition to anything the government might do to limit freedom of speech. The American Library Association has a stake in seeing the government achieve its goal of an information superhighway for it would mean eventually more than 1,500 colleges, universities, and research organizations—and their respective libraries—would link to that portion of the network which has been called the National Research and Education Network (NREN). But, the biggest issues to the association regarding the network are not technical.

> The overriding consideration ... is protection of First Amendment rights to freedom of speech and the press (including, one would hope, the electronic press). Publishing and distribution of digital information on the NREN must not be restricted, nor should it be screened. The NREN must be solely a pipeline through which information may freely flow.[37]

Another organization that has a stake in the freedom of speech is the Electronic Frontier Foundation (EFF). EFF was founded in 1990 by Mitch Kapor, who developed *Lotus 1-2-3*, a popular electronic spreadsheet program, and John Barlow, largely because of their concern the government was taking actions respective to the new media contrary to the Bill of Rights. A recent issue of the *EFFector*, EFF's on-line publication, stated that among the key public interest communications policy goals that must be kept at the forefront is free speech.[38]

## 3.8 Summary

Some of the legal implications of the new media are getting the kind of close scrutiny that is needed. Privacy and free speech are so fundamental to the American way of life it is not surprising issues such as electronic monitoring in the work place and free speech on the Internet are being actively debated in Congress and over the Internet. All this is as it should be in order to try to keep abreast of advances in the technology, but other legal implications of the new media need much more study and debate, such as: how to treat the new media when it is potential evidence in a court of law; how to ensure that potential evidence in the form of these media is accessible and retrievable as the technology evolves; whether junk E-mail is an invasion of privacy and if so what to do about it; the extent to which encryption

can be used to protect information; and what to do about the increased use of these media by criminal elements. Finally, the added value these media allow and the implications of mitigating intellectual property rights infringements should be considered.

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# Chapter Four

## Business and Economic Implications

Electronic personal media have had a significant impact on businesses and the economy throughout the world. They impact jobs, the way businesses function, and have led to many new products and services. When these media are considered together with the various means of connecting them electronically, the result is a vast information infrastructure. The technology associated with these media allow many new business opportunities. On the other hand there is increased need to address anti-trust, privacy, information security, freedom of speech and other issues associated with the new media.

### 4.1 Effect on Jobs

Use of electronic media has had a dramatic effect on the way work is performed. Probably the first evidence of this effect was the introduction of telephones into offices in cities. But the value of the new media was not always immediately apparent:

> When it was invented in 1876, Alexander Graham Bell's "speaking telephone" was not universally welcomed. Some dismissed it as a scientific toy of little value—messenger boys were, after all, cheap, plentiful and much more civilized.[1]

Now, of course, due to both advances in business practices and technology, when we send a message from one office to another or to a customer, we use the telephone, facsimile, and E-mail routinely. In addition to delivering information, messengers have been used for the delivery of packages. The technology for sending a package electronically from one place to another does not exist. Nevertheless, use of the new media has had an effect on the way delivery services perform this function:

> Take delivery of a package from ... United Parcel Service, and the chances are that you will not sign for it on a pad of paper. Instead, UPS drivers carry handheld wireless terminals that accept signatures written with an electronic pen. Once a parcel has been signed for, the terminals use the cellular-telephone networks of GTE and three other carriers to notify UPS's package-tracking center in New Jersey. Introduced [in 1992] at a cost of around $150m, UPS expects the new system to pay for itself in lower administrative costs and improved efficiency.[2]

Use of electronic personal media has had a wide effect on jobs in cities, suburbia, and even today's farms. For example:

> On many modernized dairies and poultry ranches throughout the Northern San Joaquin Valley [California], many day-to-day decisions and tasks are now triggered automatically through the use of computers. ... Using the Data Transmission Network in conjunction with a financial program and spreadsheet, [a typical rancher] measures decisions both short term and long. Whether to sell calves at weaning, feed them at a California feedlot or ship them to a Colorado feedlot may be the questions of the moment.[3]

These examples illustrate two possible effects that use of electronic personal media has had on jobs, improved efficiency, and reduction in personnel due to automation. More will be said about automation below, but as for improved efficiency, a corporate officer at Hewlett Packard gave this author another example of efficiency due to these new media. He pointed out that prior to using personal workstations and computer aided design tools, engineers in his organization spent only about 5 percent of their time doing actual design work. The rest of their time was taken up with documenting their work. Now with these new tools, they spend 25 to 30 percent of their time on design.[4]

There are many examples like UPS and Hewlett Packard where these media have helped make new efficiencies possible. But we have often been warned that these new media are by no means a panacea.

> Some managers specifically attribute their increased productivity to the increased utilization of microcomputers (PCs). Other managers are not so optimistic and indicate the serious organizational problems that they have experienced. Additionally, findings from many studies reveal mixed results. Like the organization itself, the impact of microcomputers is unique to each organization and may vary between departments. In the midst of this confusion, articles in popular computer magazines continue to lure the efficiency-driven managers with the guarantee that productivity will be increased by both installing a powerful PC ... and sending inefficient workers to intensive and costly training sessions.[5]

On the other hand, if properly managed, studies have shown personal computers can assist a company in achieving a return on investment as high as 6:1 depending upon the level of implementation in the organization.[6]

### 4.1.1 Telecommuting

The new media have not only had an effect on how well people work, but on where they work. One of the new words that has been born of these new media and will probably be added to dictionaries before long is "telecommuter." A telecommuter is one who works for a company but stays at home to do so. Instead of commuting to the office to work, telecommuters use personal computers, facsimile machines, modems, telephones, cellular phones, etc. to communicate with their offices and to perform their work. As a result of the advances in technology and the needs of both employees and employers, the telecommuting work force in the United States has been growing in leaps and bounds. According to a recent study:

> There were about 6.6 million such "telecommuters" [in 1992] ... up 20 percent from 1991. ... And they're growing in number faster than any other kind of home worker.[7]

Telecommuting is so well accepted now that 14 percent of the Fortune 500 and Service five hundred companies now have formal telecommuting policies.[8] Some of the companies that have supported telecommuting are Bankers Trust, American Express Travel Related Services, the Travelers Companies, Sears Roebuck and Telecommunications Inc.[9] According to recent studies, employers have embraced telecommuting because it allows: productivity gains due to fewer interruptions by co-workers, meaning better concentration on the job; retention of valuable employees that would otherwise have had to leave the company; and, lower overhead for office space.[10] Environmentalists have supported telecommuting because of its potential to reduce air pollution with fewer people being transported to work. Vice President Al Gore has cited telecommuting in conjunction with his proposed "information superhighway" as a way to save energy.[11] But like other advances the new media have facilitated, telecommuting is not a panacea. "An employee's absence from the office can mean delays in urgent work and meetings. And the arrangement can be a fiasco if the employee has children who are unattended, or if the employee doesn't have the discipline to work without continuous supervision."[12] On balance, for the right job and the right employee, telecommuting is now a viable option thanks in large part to the advances in electronic personal media.

### 4.1.2 Automation Issue

As mentioned above, another impact on the job that is in part attributable to these media, is the need for potentially fewer employees due to automation of job functions. The

concern about automation eliminating jobs has been going on for as long as automation has been taking place. Originally, the concern was with the automation of jobs in factories that made textiles, steel, automobiles, etc. With the advent of computers and telecommunications systems, the concern spread to telephone workers, office employees and even the seemingly indispensable secretary's job when word processing computer programs started to appear. Shoshana Zuboff, in her study of automation in the information age, noted the legitimate concerns of those who fear their jobs being lost to automation. For example, she quoted the concern of a pulp mill worker:

> I think the country has a problem. The managers want everything to be run by computers. But if no one has a job, no one will know how to do anything anymore. Who will pay the taxes? What kind of society will it be when people have lost their knowledge and depend on computers for everything?[13]

Zuboff doesn't see the inevitability of automation leading to workers losing their job. Instead, she sees it as challenge for business leaders to rethink the way their companies do their work in this information age:

> Should the advent of the smart machine be taken as an invitation to relax the demands upon human comprehension and critical judgment? Does the massive diffusion of computer technology throughout our workplaces necessarily entail an equally dramatic loss of meaningful employment opportunities? Must the new electronic milieu engender a world in which individuals have lost control over their daily work lives? Do these visions of the future represent the price of economic success or might they signal an industrial legacy that must be overcome if intelligent technology is to yield its full value? Will the new information technology represent an opportunity for the rejuvenation of competitiveness, productive vitality, and organizational ingenuity? Which aspect of the future of working life can we predict, and which will depend upon the choices we make today?[14]

Computers, telecommunications, facsimile, and copying machines may be capable of automating certain job functions, especially repetitive laborious functions where machines excel and people don't. If an employer simply takes the approach of automation, people may lose their jobs. These new media would surely be seen by employees as a curse if all employers took this approach. On the other hand, Zuboff has indicated that there is an opportunity here. Instead of firing the secretaries just because personal computers and word processing programs are available, a secretary's job can be upgraded and enriched to a more

meaningful job of administrative assistant now that the secretary doesn't have to spend almost all of the workday typing. While there may no longer be a need for so many of the factory floor jobs, these new media are capable of collecting information on-line about factory operations and there will be a need for people who can analyze this information. Fewer people may be needed to conduct inventories, but people will be needed to review the information captured from automated inventories, point of sales equipment and other automated sources. This approach to automation without significant job loss has a major hurdle implicit in it. In almost all instances, the new jobs that would be created call for higher skilled individuals than the jobs that are being eliminated. A secretary who is a terrific typist might not make a good administrative assistant. The pulp mill worker who's job is automated might not be capable of analyzing production information. How do we retrain these employees to do new higher skilled jobs? The subject of education and training and the role that electronic personal media can play in those areas will be addressed in **Chapter Five**. But before tackling that problem, we need to take up Zuboff's challenge to study the effect of automation on jobs and rethink how to do work in the information age aided by these new media and determine what the new job requirements are. Only in this context will a debate on the automation issue be meaningful.

## 4.2  How Organizations Function

Prior to the introduction of personal computers, modems and telecommunications networks, data processing services were usually rather centralized in an organization with a single staff element responsible for operating the main frame computer or computers, writing the necessary computer programs, and entering data into the computers. When personal computers were first introduced in the 1970s they were often resisted by the central computer organizations for fear of losing control of the information processing function in the organization. While the non-data processing professionals won the battle to have personal computers in most organizations, new unforeseen problems sprang up. For example, these PCs were often introduced at the same time the organization was trying to find ways to cut costs, which meant having fewer computer support personnel at a time when the organization was installing more computers. Having these new computers necessitated someone evaluate and test new software or develop software tailored to the organization's needs. Also, computer support staff would help the non-professionals acquire connections to other computers and telecommunications services. Management of the organization's total

information processing services became far more complex with hundreds of personal computers distributed throughout a business than before when there was a single computer facility. Furthermore, in the days when there was a single mainframe computer in an organization, usually the only non-data processing personnel that used the computer in any way were from lower levels in the organization, such as accounting and clerical personnel. With the installation of personal computers throughout organizations, higher level personnel including some executives became direct users of computers and these higher level users were often more demanding and less forgiving of the computer support staff. Part of the problem was that usually an organization's information systems executives and its chief executives spoke different languages:

> In the age of mainframes, from the 1960's to the mid-1980's, the chief information officers were immersed in technology, spending 80 to 90 percent of their time on pure technology issues. As businesses became more global and competition heated up the emphasis started changing. Senior executives started telling the vice presidents of information systems that they had to become more business-savvy.[15]

This example of the impact of electronic personal media on organizations illustrates how the management of the information processing function has been transformed by the personal computer. Furthermore, the jobs of the chief executives and chief information officers of organizations have also been transformed. Chief executives now must know much more about information technology and chief information officers must know much more about the organization. One wonders to what extent this healthy need for knowledge has been forced upon organizations by employing the technology.

### 4.2.1 Impact of Computer Networks

It is interesting to observe how well organizations have taken to one of the newest technologies, electronic networking. When the Internet was developed about 20 years ago, it was primarily used for research by Defense Department organizations and universities that were working with these organizations. Soon computer professionals and computer hackers found the value and sometimes even the enjoyment of being able to tap distant computers via the Internet. It was not long before people of every motivation imaginable began to use an expanding the Internet, and this included users from the business world. One of the most compelling reasons people took to the Internet so well was for the purpose of sending electronic mail. As pointed out in a recent article in *The Financial Times*:

> For evidence of the rising popularity of electronic mail, a look at the
> business cards collected from clients or contacts lately should be
> enough. The chances are that some of them include electronic mail
> "addresses," along with telephone and facsimile numbers.[16]

The business world has taken so well to E-mail that, according to Vinton Cerf, president of the Internet Society, the Internet is growing faster than any other telecommunications systems ever built, including the telephone network. Commercial users now outnumber academic and government Internet users and by 1998, Cerf predicts, the system will serve more than a hundred million users.[17]

Networking has had an effect on more than just the way the mail function is performed in organizations. Other functions of organizations have also been affected by networking. An extreme example is the case where networking is used to make most of the product of the organization. Publisher Tim O'Reilly, of O'Reilly & Associates, recently told this author how his company used the Internet to find the right person to write one of their books and then produce the book itself.

> Ed Krol had originally written an online document that was available
> for free on the Internet. When I got interested in Internet, I said maybe
> we ought to get a copy of the document, look at it, and see if maybe he
> wants to update it and turn it into a book. One of our editors looked at
> it, said that it looked good, and contacted Ed by electronic mail. They
> met over the net and then negotiated the contract over the net. The
> editor and Ed worked on the book over the net. When we got to the
> final stages, some things were faxed like illustrations. But it was
> basically a net activity.[18]

Few organizations today are able to make whatever they produce primarily by means of the Internet. On the other hand, most organizations would probably not be able to function without electronic personal media in its various forms. Can you imagine any but the smallest businesses getting by without a copying machine, banking without computers to keep track of account balances, or a night watchman walking his beat without a two-way radio?

Organizations have used electronic personal media of various types in their security programs. In addition to hand held radios, video surveillance cameras and personal computers are commonly used. These and other electronic personal media have also been used to monitor the performance of plant operations, helping to detect abnormalities in the manufacturing process, safety hazards, etc. As pointed out in the previous chapter, companies

have also used these media to monitor employee performance on the job. This type of
monitoring has become a continuous issue and led to proposed legislation before Congress
(see section **3.2.4**).

## 4.3 New Businesses, Products, and Services

Electronic personal media are available in the form of many new products and services.
They employ some of the latest in technology and constitute one of the strongest and fastest
growing sectors of business and industry. Consider again the implications of the Internet. In
1981 there were about 2,000 users connected to the Internet. The number of users has grown
exponentially to where by mid-1993 there were at least fifteen million connected and at least a
million more are being connecting each month.[19] Every user of the Internet must have a
minimum of a computer terminal or personal computer, modem and communications link like
a telephone to connect to the net. In addition, they must have sophisticated software capable
of performing telecommunications functions. They will also either have to pay fees for an
account on the Internet or pay some service provider that will connect them to the net, even if
all they want to do is send E-mail. All of these equipment, software and services add up and
the total revenue attributable to the Internet will mount as we approach the hundred million
users forecast for 1998. And none of this business and economic growth would be happening
if it were not for electronic personal media in the form of personal computers, modems,
telephones, and telecommunications networks, that one uses to connect to the Internet.

### 4.3.1  Contributing to Health Care Reform?

The business and economic implications of these media go further than impacting jobs,
affecting how organizations perform a work function, or the products and services associated
with use of the media. These media are playing a significant role in new jobs, new businesses
and new services. For example, the telephone is finding new uses in the health care industry.
Tokos Medical Corporation sells a service that detects early labor in pregnant women:

> To use the Tokos monitor, a woman straps around her abdomen a belt
> containing a sensor that detects uterine contractions. The hour long
> reading is made one or more times a day and is transmitted by
> telephone lines to one of 60 Tokos offices staffed by nurses who
> analyze the data. Should the data suggest that the woman is
> experiencing early labor, a Tokos nurse calls her physician, who may
> prescribe terbutaline or ritodrine, medications dispensed by Tokos in a
> home-infusion kit, to relax the uterus.[20]

While one of our oldest electronic media makes this service possible, it is the subject of controversy. "Some scientists argue educating the patient to recognize symptoms or simply putting her in daily contact with a nurse would be just as helpful—and less expensive."[21]

The potential impact of the controversial Tokos service is small in comparison to the more sweeping potential impact of two other innovations in the $800 billion health care industry in the United States, computerized diagnosis and computerized patient record keeping. Electronic personal media are significant components in both of these innovations. A recent article in *The Economist* pointed out that doctors account for one-third of the nations annual health costs and how a number of companies are developing systems and products aimed at reducing these costs.[22] This same article also noted studies where patients get inconsistent advice from doctors.

> Such inconsistency is why Dr. [John] Wennberg and some colleagues
> set up the Foundation for Informed Medical Decision Making. Together
> with Sony Medical, a division of Japan's big consumer-electronics firm,
> it has launched a computer-based doctor's service. After a quick chat
> with a doctor, the patient is referred to a computer.
> His particulars are typed in, leaving him to watch a video chosen
> for his particular medical needs. The videos include interviews with
> professors advocating different prescriptions and with patients who have
> benefited—or been harmed—by treatment.[23]

Whether such a service can help reduce health costs and whether patients will want to use it remains to be seen. Also, one wonders whether a service like this might be even more effective if the diagnosis included analysis of sanitized information from the actual medical records of patients with similar symptoms rather than canned interview material. But to provide such a service would require the health care industry undertaking the computerization of patient records, something the industry has been reluctant to do on a nationwide basis. But that may soon change:

> In January 1992, the computer-based Patient Record Institute was
> created to spearhead a national effort to build an electronic data system.
> By bringing together hospitals, computer makers, software companies
> and health care professionals, the institute intends to set a clear
> definition of what constitutes the computer-based patient record and how
> to make it a reality.[24]

The potential savings in health care costs by having computerized patient records have been estimated at $40–$80 billion.[25] It would be a costly undertaking for the health care industry

to computerize all of the records of patients which for the most part now exist in paper form. And there are other concerns that would have to be overcome before this is likely to happen. Some means to protect the privacy of patient information will have to be devised. Those who advocate automating the records argue they would be more secure if computerized than if they remain in paper form. Also, they point out that the computer industry has means to protect unauthorized access by employing passwords and encryption of the information (see section 3.5). At least one health care consultant, Charles Singer, has suggested "health care providers must embrace the changes that are sweeping corporations. The computerized record should be the basis for re-engineering of health care in the search for greater productivity."[26]

### 4.3.2 Journalism in the New Age

A good gauge of the impact of electronic personal media's effect on business is in the field of journalism. After all, journalism began with the introduction of printed media. Newspaper, magazine, radio, and television businesses have all been affected by the new electronic personal media similar to all other organizations. At the same time these media have impacted the way the mass media gathers and presents the news itself. We have all seen how for years, reporters have used audio cassette recorders to record interviews. These recorders are just tools that help them take notes of what has been said and used in this manner have little impact on how the news is received by the public. Contrast this with the power of images from videotape recordings journalists are using more and more. Earlier we noted that these powerful video images are raising important political and legal issues (see sections 2.3.1 and 3.1). Videotape recorders are helping journalists bring powerful images to the public that would not have been possible before the existence of these media. Often these recordings are being made by people other than professional journalists. For example:

> Frankie C. always strapped on a gun when he ventured into his
> bullet-pocked North Philadelphia neighborhood. Now the stocky young
> gang member packs something else: a video camera. "The camera is
> my weapon," he says. "For people living here eyes are a punishment.
> But I'm going to take this camera and film the pain straight up."
> Frankie tells his story in "Teen Dreams: Unheard Voices of America's
> Youth."[27]

Video documentaries such as this are being seen more and more as mass media producers provide camcorders to ordinary people to film what their life is really like. The same documentary filmmaker who is producing "Teen Dreams" also had plans to air two other diaries filmed at the West Bank and Gaza: a diary by a Palestinian and another by an Israeli

settler.[28] The philosophy of this particular filmmaker is worth noting. He has people showing their own stories without the intervention of reporters or network producers. As he puts it:

> Slowly you achieve a whole new television discourse, relying on Peruvians to tell us about Peru, Guatemalans about Guatemala. ... The personal style helps you to make a connection.[29]

Journalists have used camcorders and ordinary people to bring us more than just the stories of their lives. They have often been the source of the 6 o'clock news on television as the following example illustrates:

> One of the most zealous adopters of the new technology is the cable station New York 1 News, Time Warner's all-news channel covering the five boroughs of New York. New York 1 runs on a shoe-string budget compared with the news operations at most broadcast stations in the city and in other big metropolitan television markets. But the cable channel, which went on the air last September [1992] has demonstrated a technical nimbleness that is drawing notice in the news ranks.
>
> On Feb. 26 [1993], for example, in the minutes after the bomb blast at the World Trade Center, New York 1 was the first station to show video from inside the Trade Center. A reporter slipped a hand-held camcorder to a still unidentified emergency services worker, who went inside the center and taped the chaos. The videocassette was then rushed outside, fed via microwave to New York 1's studio at West 42nd Street and Ninth Avenue, and broadcast over the network, while most other television stations had little more to show than people staggering out of the building with handkerchiefs over their noses.[30]

Another example shows how these media have facilitated journalism on a shoestring budget—this time with the aid of a personal computer:

> Mr. [Scott] Billups, who now produces and directs commercials and creates special effects, has produced the world's first television program using neither standard motion picture film nor videotape. His recording device: a Macintosh computer.
>
> "A Day in the Life of Melrose Avenue," his documentary on the chic street in Los Angeles, is stored as an electronic imprint on the computer's hard disk. The program [was] scheduled to be shown on July 4 [1993] on the Los Angeles PBS station, KCET.
>
> Although his equipment is cumbersome and relatively expensive, the implications are immense: broadcast-quality TV programs could be produced in the home.[31]

In some respects journalism appears to have the potential to come full circle to the days when printed media first appeared. The new media have made it possible for those who have had no experience in journalism to have a significant role in gathering the news. Equally significant, these media have made it possible to produce the news with modest resources. Technology may soon make it possible for many more journalists than are in the business today. After all, if we are heading for the day when we will have 500 channels of TV to choose from, there will be far more outlets soon available for the news.

### 4.3.3 Five Hundred Channels to Choose From

It isn't only the small news businesses that have benefited from the new media. The very largest are competing for our attention. For example, you can now subscribe electronically to such newspapers and magazines as *The Chicago Tribune*, *The Washington Post*, and *Time* if you have a personal computer, modem, telephone, and service provider such as Prodigy, CompuServe, or America Online. Some services may even help customers select articles to read tailored to their expressed interests (for a discussion of social implications of tailored news, see section **5.1.2**).

It remains to be seen just how popular these electronic publications will be. *Newsweek* magazine will soon find out though:

> At the [June 1993] Consumer Electronics Show in Chicago, the newsweekly [took] the wraps off a new product that combines computerized text, audio, still pictures, animation and video clips. It's the first quarterly news magazine on disk, for PCs equipped with CD-ROM drives.
> Newsweek Interactive ... has segments that can be watched like a TV show. Users also may take control, digging deeper into particular topics and picking from among photos and recorded interviews, or looking up subjects in three months worth of magazine issues.[32]

Of course it is too early to tell yet which of all the new businesses, products and services will be the big money winners. There is also a lot of talk about interactive TV, the result of the merger of television, computer, and telephone technology. With yesterday's technology, it is common for consumers to sit at home and watch home shopping on television. When they see something they want they call an 800 number and order it without having to leave the couch. But technology is currently making this obsolete and the same consumers will soon do it all with their interactive TV sets. And that is only the beginning of

a tidal wave of services that is on the way. With interactive TV and 500 channels to choose from:

> Before long, consumers will have an array of services--everything from late-release movies, rock concerts and video games to educational videos, stock market advice and banking and bill-paying services—at their fingertips. Many of the daily chores that we do by hand or by car will be handled electronically. The only question is: Who or what is going to serve this market, which may be the biggest telecommunications prize of the early 21st century?[33]

There are signs this tidal wave of new services is about to hit our homes. It isn't necessary for us all to have interactive TV sets to use these services. Those with personal computers, modems and a telephone can start today. For example:

> In San Francisco and Chicago, computer-savvy households are reaching out by modem to buy their groceries through a service called Peapod that lets customers shop for their groceries on-line through Safeway in The City and Jewel Food Stores in Chicago.
> Another popular Prodigy offering lets subscribers set up on-line brokerage accounts and they buy stocks without visiting or telephoning a stockbroker. "This service has proven so popular that last year Prodigy subscribers traded $1.5 billion worth of stock on-line," said Steve Hein, a company spokesman.[34]

### 4.3.4 Information in the Palm of Your Hand

Rounding out the sampling of new businesses, products, and services are one of the newest electronic personal media, wireless hand-held devices that incorporate most of what one finds in the latest personal computers. These devices are often referred to as personal digital assistants. Apple Computer Corporation was one of the first to be on the market with one of these devices, called Newton. By the fall of 1993 there were many other companies in the United States and in other countries competing in this new market. Just how large the market will be for personal digital assistants is not clear. Why would one want such a device if they already had a personal computer at home, a cellular phone in their shirt pocket or purse, along with an electronic organizer? John Sculley, former Apple CEO, gave his answer to this question not too long ago:

> If you were walking down the street 10 years ago, you might have asked, 'Why do I need a cellular telephone? Why do I need a pager? Why do I need a fax machine?' You didn't know you needed those because you didn't have them. Now that you have them, millions of

people say they can't get along without them. I believe that's what's
going to happen with Newton. We're going to see some of the most
familiar products that we've ever known, like the telephone, become
completely re-invented as we bring together the ability to send
messages, access information, keep track of things that you're interested
in, and tie that back into the ability to communicate with people. Not
only communicating with voice, but also, eventually communicating
with video.[35]

In addition to those companies presently developing and manufacturing personal digital
assistants, research is underway to develop the next generation of products. For example,
since 1991, the Electrical Engineering and Computer Science Department at the University of
California, Berkeley has been researching wireless access to multimedia data. "A critical
component of this [wireless] environment is the INFOPAD, a very thin, light weight,
inexpensive, wireless portable device that will support a variety of [input/output] capabilities
including speech, pen, text/graphics and video."[36]

The exponential growth in use of the Internet and commercial information service
providers as well as the introduction of all of these new electronic personal media businesses,
products, and services are expected to contribute greatly to the amount of information flowing
through existing cable, copper, and air waves carriers of information throughout the world.
For this and other reasons, there are those that champion the upgrading and expanding of this
information infrastructure.

## 4.4 The Information Infrastructure

In September 1993, the Clinton Administration released the results of its Information
Infrastructure Task Force—*The National Information Infrastructure: Agenda for Action*.[37] As
seen by the Task Force, the information infrastructure in the United States consists of
telephones, fax machines, computers, computer switches, cable, satellites, microwave,
television, and many more electronic personal and mass media, communications equipment ,
and information services. The purpose of the Task Force is "overseeing the integration of
these disparate elements into a seamless network of networks, but leaving the creation of the
networks to private enterprise."[38] Some proponents of the information infrastructure see its
further development and growth as essential to a strong economy in this information age,
analogous to the contribution made by railroads, canals, and motor highways of previous

years. All this is not to imply that an information infrastructure of sorts does not already exist or that what now exists is not being improved. Before considering proposals for the information infrastructure of the future, it would be useful to look at the competition to move information from electronic personal media back and forth using existing technology and building on the existing information infrastructure.

### 4.4.1 Competition for a Share of the Infrastructure

It seems as if every day we learn about another company or combination of companies that are gearing up to move information to and form our interactive TVs, fax machines, digital assistants, phones, and other electronic personal media. A few examples illustrate the competition as of 1993:

- Using fiber optic cable, Bell Atlantic Corp. recently built a demonstration house to show how the telephone company could make it possible for the telephone, the television, and the computer all to communicate on a full service network.[39] Whether telephone companies will be able to compete in this manner is uncertain. There has been a Federal law on the books prohibiting telephone companies from owning cable television systems in their area of operations. Congress is considering legislation that would eliminate the ban.

- Pacific Bell and Intel Corp. are developing technology that capitalizes on existing copper wire networks in providing two way communications to and from the home. Called Integrated Services Digital Network, or ISDN, the technology will allow Pacific Bell to carry digital signals (rather than antiquated and less efficient analog signals), voice, and video over existing wires to and from homes which would have computers or other devices containing Intel computer chips designed to handle ISDN. Pacific Bell plans to have 100 percent of its market in California wired for ISDN by 1997.[40]

- Boston-based Continental Cablevision, Inc., the third-largest cable television company in the United States has teamed up with Performance Systems International Inc. of Herndon, Virginia, the largest commercial provider of commercial access to the Internet. They now offer the Internet access for E-mail and a wide range of other services over cable to Continental's 2.9 million subscribers.[41]

- The largest cable television company in the U.S., Telecommunications Inc. and Bell Atlantic are planning a $30 billion merger which, according to Bell Atlantic chairman Raymond Smith, "will immediately create one of the world's largest information distribution companies." When the merger is completed, 22 million homes will be included in the combined market of the two companies. The Justice Department and the Federal Communications Commission will be reviewing the proposed merger.[42]

- Entergy, the parent of Arkansas Power and Light Co., has linked its main computer to cable TV lines which are connected to the homes it supplies power. The company uses these links to read electric meters at a savings over conventional methods. Most of the time these communications links sit idle and the power company has plans to offer this

spare time to other providers like telephone and cable TV companies which in turn can provide homeowners with digital telecommunications, telephone and TV services. Sprint has already taken up the offer.[43]

• While some ponder whether it will be fiber or copper that wins the competition for the lion's share of the information infrastructure, some have put their money on wireless technology like that used for cellular phones. "America's fourth-biggest cellular operator, PacTel has taken shareholdings in cellular networks in Germany, Portugal, Japan, Sweden, and Belgium. Vodafone, the bigger of Britain's two national cellular companies, has stakes in a dozen overseas networks. On October 11th [1993], Bell Atlantic paid $1 billion for a 42% stake in Iusacel, Mexico's second-biggest cellular company.[44]

With all these companies vying for a piece of the infrastructure action, you might ask what more is needed for us to be able to exchange information with everyone else by means of our fax machines, phones, personal computers, and other electronic personal media? Legislation pending in Congress contains some of the answers to that question, citing obstacles that may need to be overcome, and some of the issues that should be ironed out before the information infrastructure upgrading is completed.

### 4.4.2 Legislative Issues

Another concern related to building a national electronic superhighway grows out of the new forms of cooperations and mergers taking place in the communications industry as of the end of 1993, such as the proposed $2.5 billion deal that year between Time Warner, a cable company, and U S West, a telephone company. Will the government allow these types of cooperations and mergers to continue?

In 1991, Congress passed the High-Performance Computing (HPC) Act of 1991, which became P.L. 102-194. The Act was based on a bill originally introduced by then Senator Al Gore, Jr., calling for the building of an "information superhighway." (Coincidentally, in 1955 his father, then also a senator, had spearheaded legislation to crisscross the nation with interstate highways.) "The HPC Act provided Federal assistance, in collaboration with industry and academia, for development of advanced computer hardware and software, as well as networking technologies. ... [B]asic research and education in computer and computational sciences also were targeted for support."[45] The Act also established the National Research and Education Network (NREN), which would upgrade the existing backbone of the Internet, the National Science Foundation Network (NSFnet), and link an estimated "1,500 colleges,

universities, and research organizations—and their respective libraries" to the NREN.[46] The HPC Act received strong support from some of those who were likely beneficiaries from the NREN. But some with a stake in the network were concerned that free speech needed further protection on the NREN (see section **3.7**).

Stakeholders in the business community also saw issues that needed to be addressed. As *Fortune* magazine put it, "The most controversial question is whether business, without the help of Washington, will act quickly enough. Many people fear the U.S. is lagging dangerously behind its trading partners in building information highways—a failing that could reduce America's competitiveness."[47] The *Fortune* article also highlighted the issues of universal service and standardization:

> The most difficult issue government will face is how—and even whether—to make sure there is basic, low-cost service for every American who wants a phone and other essential services that the highway will provide. On the telephone network, that principle, known as universal service, has been the law of the land for 60 years. It reflects the belief that phones, like mail, electricity, and highways, unite the nation's people and make America strong.[48]
>
> . . .
>
> Letting many companies compete in building the information highway lessens the chance that the country will get married to the wrong technology. Competition will foster continuous innovation. But it also increases that risk that the U.S. will be dotted with networks that can't talk to one another.[49]

The incompatibility problem is not just terrestrial. Cellular phone companies "must agree on how to make each one's databases available to all other providers of telephone services, and how to allocate fairly the price of a call between caller and receiver when it may be forwarded halfway around the world."[50] What's more, "Europe, Asia, and North America have different standards for wireless communication, so portable phones designed for one region won't work anywhere else."[51] Further complicating the wireless problem is the fact that it operates in a realm of scarce resources. To be specific, "the gamut of frequencies at which wireless radio signals can be transmitted—is becoming overcrowded."[52]

It must be emphasized that the information infrastructure in the United States must interface with the rest of the world with which our businesses must deal. One business executive cited to this researcher the need for:

> A much improved global communications structure. Communications
> tend to be a patchwork quilt that is determined by governments and not
> what is needed by the end consumer. If I could have [Vice President]
> Gore working on something, I would have him work on that. I want
> one device I can carry with me any place on the earth so I can get
> access to the facts I need.[53]

Another concern related to building a national electronic superhighway grows out of the recent new forms of cooperation and mergers that have taken place in the communications industry as of the end of 1993. Will the government allow these types of cooperation and mergers to continue? A case in point was the $2.5 billion deal in 1993 between cable company Time Warner and telephone company U S West. This kind of a deal is advantages to both sides in the industry. Cable companies benefit from telephone companies' capital and experience in switched networks. Telephone companies benefit from the cable companies' experience with digital compression technology and video service. But while some may see all this as desirable and necessary to advance the infrastructure, others warn this deal could "fly in the face of everything the 1984 decree [which split the Bell System on the grounds that it constituted a monopoly] was about."[54]

Frequently the debate focuses on the extent of the respective roles by government and industry in seeing the electronic superhighway completed. Robert Frankenberg, vice president and general manager of Hewlett Packard's Personal Information Products Group and a vocal critic of a strong government role, recently defended the role industry had already been playing:

> What I resent is the assumption that the computer companies, cable
> companies and telecommunications companies are not already at work
> on these problems without the help of the government.[55]

Subsequently, Frankenberg responded to the author's question regarding whether it would be necessary for the government to play a significant role to complete the information superhighway:

> I don't think so. In fact the government is one of the biggest inhibitors
> right now. First, there will be more than one highway. There will be
> interactive TV, business focused networks, and cable is going to be one
> too. Government has slowed all that down. For example, the IVDS
> [Interactive Video Data Services] frequencies allocation delays.
> Government's only role is to make the playing field level for
> competitors.[56]

In September 1993 Vice President Gore met with reporters in California and was asked his views on the role of government in building the information superhighway. His response was as follows:

> [T]he role of the federal government was then and remains now critical
> to the national information infrastructure: to establish the standards and
> protocols, to clarify the vision as it evolves, to push the cutting edge so
> that we don't satisfy ourselves as a nation with the capacity that is
> presently practical in the marketplace for the delivery [of] movies on
> cable television or simple two-way exchanges of programs, but rather
> we establish much higher thresholds of data transmission, so that we
> can encourage the evolution of new classes of information services that
> are presently beyond our imagination.[57]

Another industry representative, John Seely Brown, a Xerox corporate officer, offered his views on the role of government in the completion of the information superhighway:

> It sure makes it easier if the government provided the leadership. By
> that I don't mean provide the funding. I mean how do you provide the
> forums for the issues relative to the infrastructure to be discussed? The
> National Academy of Science ought to be playing some sort of role in
> studying some of these issues. The FCC ought to be sponsoring work
> groups like the Aspen Institute recently had to talk through these issues.
> The purpose is not to solve the issues but to create scenarios that launch
> distinctions that shape the discourse about the policy. We don't have the
> right set of distinctions right now. The government, universities and
> centers can all help. Otherwise it is going to get set in concrete by
> mistake.[58]

One final example of the controversy surrounding the role of the government regarding the information infrastructure has to do with who owns the infrastructure. Some are concerned that schools, libraries, and hospitals might not be able to afford an Internet connection if the decision is made to privatize much of the infrastructure.[59] In fact, a vice president of EDUCOM (a communications consortium of colleges and universities) recently expressed his fears:

> There's entirely too much willingness on the part of the National
> Science Foundation to throw the whole business over to the commercial
> marketplace before fundamental issues have been addressed.[60]

EDUCOM concerns notwithstanding, in August 1993 the government sought bids from telecommunications providers to privatize the NSFnet, the backbone of the Internet. Federal

officials said the move would make the Internet more accessible, improve services, and cut costs.[61]

In 1993, the House of Representatives passed H.R. 1757, the National Information Infrastructure Act of 1993, which amends the HPC Act of 1991. As this report is being drafted, H.R. 1757 awaits action in the Senate. H.R. 1757 establishes an interagency program to accelerate the development of an information infrastructure in the United States. H.R. 1757 addresses to varying degrees many of the issues, roadblocks, and obstacles cited above. It is too early to know the extent the legislation satisfies those concerned about these issues for the legislation is rather general, and much of the details have yet to be ironed out. Program components include, but are not limited to the following:

* the National Science Foundation is tasked to assist educational institutions at all levels, libraries and local governments to establishing local networks and to connect to the Internet. ...

* [to] specify research activities to address issues underlying all of the computing and networking applications being developed ... network security, and privacy ... and user-friendly network interfaces.

* specify applications for education at all levels. ...

* specify applications for use in the health care sector, including clinical information systems. ...

* prototype digital libraries, providing public access via the Internet, are to be developed. ...

* specify applications to provide improved public access to information generated by federal, state and local governments. ...[62]

H. R. 1757 modifies that portion of the HPC Act of 1991 in order to define a revised NREN Program:

(1) research and development required for achieving gigabit (billion bits per second) data transmission rates,

(2) test bed networks to demonstrate advanced networking technologies and to support applications requiring levels of network performance not otherwise available, and

(3) provision of support for researchers, educators and students to obtain access to and use of the Internet for purposes consistent with the Act.[63]

The Clinton Administration's *National Information Infrastructure: Agenda for Action* is like the proposed legislation in many respects in that it lays out "the goal it wants to achieve—the provision of easy, affordable access to all who desire it—it does not commit itself on the issue of what regulations, if any, are needed to get there."[64]

## 4.5 Summary

Business and economic implications of electronic personal media include: how jobs are affected by personal computers, how the way a company functions can be affected by the Internet, and how use of electronic personal media in the work place can raise privacy, information security, and other issues. Organizations need to continually rethink how work gets done in light of new opportunities the technology allows. There is a critical need to find ways to upgrade employees' technical skills to fully utilize this technology. New products and services and the potential to help transform businesses in the health care and other industries are due in large part to these media. As the technology is advanced these media are communicating with each other by means of a vast array of new information networks. The competition for a share of the information infrastructure market is fierce. While there are those who favor the new infrastructure being shaped primarily by the marketplace, others see a significant role for government. We hear a lot of ballyhoo regarding the technical merits of the new media, including the infrastructure. We need to guard that technical advances are balanced this with a solid understanding of the business and economic implications and continued debate over anti-trust, privacy, information security, freedom of speech, an other issues associated with the infrastructure.

## Notes

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# Chapter Five

## Social Implications

Business, economic, legal, and political implications of the use of electronic personal media are probably more in the public eye than social implications, but those last are equally important. They include the effect of these media on communities as well as the individuals within them, on education (even our concept of literacy), and their potential to help level the playing field for the disadvantaged. Our society as a whole and our culture have been affected by these media. In fact, some have come to realize that to conceive of and design the new media successfully, one must give full consideration to their social implications.

### 5.1 Implications for Individuals and Society: Is the Technology Driving Us Apart or Bringing Us Together?

**Chapter One** noted that the telephone has evolved into a marvelous device that does far more than simply carry voice communications from one person to another. Among other things, it connects our fax machines, gives us a means to respond to pagers, and hooks up our personal computers with worldwide information networks. But although we all can benefit from these technological advances, some are concerned that the telephone fosters impersonal communication, and they raise the question, "is the telephone driving us apart or bringing us together?"[1] The way telephones have been designed, and the way we react to the design, determines the answer to that question and other social implications of the technology. The same could be said for other electronic personal media.

Consider, for example, the way people have responded to personal computers. In 1984, Sherry Turkle published the results of a study of the relationship between individuals and computers, that is, the way children, adolescents, and adults responded to computers. Her findings on adult response illustrate some of the many ways computers have affected individuals:

> Some people are intimidated by computers and keep their distance.
> Others see them merely "as a tool" and assimilate them into their
> nine-to-five life. But within the world of home computer owners, within
> the world of virtuoso programmers known as "hackers," and within the
> world of artificial intelligence experts, a community dedicated to the
> enterprise of building "thinking machines" and computational theories

of mind, people have taken up the computer in ways that signal the
development of something new. The "something new" takes many
different forms. A relationship with a computer can influence people's
conceptions of themselves, their job, their relationships with other
people, and with their ways of thinking about social processes. It can be
the basis for new aesthetic values, new rituals, new philosophy, new
cultural forms.[2]

The community of hackers Turkle referred to used their technology to meet with others
with similar interests and experience. The technology of computer networking was readily
available, especially in university computer departments, and networks were interconnecting
by means of the Internet. It didn't take long for word to get around to those outside the
computer community; the Internet and other similar networks was a good way to meet people
with similar interests.

### 5.1.1  The Virtual Community

Since Turkle made these observations, computer networking by means of the Internet
and network service providers has evolved at an exponential rate. More and more, people are
meeting over networks. We have new words to describe such groupings of people and the
place where they meet. They are grouped in "virtual communities" and meet in "cyberspace."
The groups are no longer just those who have a love for the computer. The various interest
groups include just about any subject one could imagine: ham radios, politics, sexual
preference, religion, the environment, genealogy, computer science, etc. An on-line network
service in Sausalito, California, The Well, has a large following of writers among its more
than eight thousand users.[3] The General Manager of The Well told this author:

> We view The Well itself as a community. Probably a quarter of the
> people who use our service feel the same way. They are here to connect
> with other people. They are not here to get a piece of information or to
> get their E-mail. Some do, and that is all they do and they are gone.
> For the most part this is a "virtual community." In many cases we
> don't know what each other looks like. We don't have to know where
> they live. People are very intimate with each other and share common
> dreams and fears and treat one another as though they were neighbors.[4]

The Well is an example of how electronic personal media have allowed people with similar
interests to meet and become members of a community; they probably would not have done
so, at least so easily, without the technology.

### 5.1.2 The Community Role of the Newspaper

Media have had a role in building communities prior to the introduction of electronic personal media, as for example, print media in the form of a newspaper. As John Seely Brown and Paul Duguid observed, newspapers have helped to build and support communities:

> The modern newspaper, for instance, grew out of a long historical, social development. A newspaper is not simply an aggregate of "information" that can be selected by readers and transmitted in any form. The newspaper is a cultural artifact in a political and cultural tradition that goes back at least to the 18th century. It draws a great deal of its political and social effect from the fact that many thousands and even millions of people are reading roughly the same copy at the same time. Journalism presupposes a reading public engaged in reading a common text. To destroy the uniformity of a newspaper will be to destroy its particular cultural role. What remains will not be just a paperless newspaper; it will not be a newspaper in the conventional sense at all.[5]

This observation also has significance for modern electronic personal media and their relationship to the community. With today's technology one can use a personal computer, modem, telephone line, and on-line information service to read a newspaper or magazine. One can read the newspaper on the computer screen just as one would ordinarily read the traditional paper. One can use many of the on-line services to search for specific information in a database of past issues of the paper using key words and sophisticated search criteria. This is a real boon to researchers. With today's technology it is possible to ask an information services to select newspaper and magazine articles on the basis of criteria tailored to particular areas of interest. On the surface, that would seem a way we could all save time in reading all the newspaper and magazine articles of interest to us. It would be a way to avoid "drowning in information," a potential crisis of the information age according to Vice President Gore, among others.[6]

But if we use the technology to avoid "drowning," we have to keep in mind what Brown and Duguid said about how traditional newspapers contribute to the sense of community. If we all read news that has been selected on the basis of our previously stated interest profile, we can lose the sense of community. On the other hand, when we read a traditional local newspaper, we might see an article on the front page about how the local elementary school may be forced to lay off some teachers or cut back on student field trips because of budgetary constraints. The article might not be selected by very many people in the community who

received tailored news on the basis of certain criteria. But because the editors played it up big on the front page, maybe even with a photo, it might catch our attention. Later, when we meet face to face with members of the local community, we might talk to them about the school situation. When we go to vote in the next election and one of the items on the ballot has to do with the budget for schools, we might remember the article in the newspaper, and it could influence our voting. The point is that the traditional newspaper can contribute to our sense of community by building a common understanding of what is going on in the community. We need to be aware of such social implications when we think about designing and using new technology like electronic personal media.

The *San Jose Mercury News* is a traditional newspaper that now also offers on-line subscriptions to its paper. When the editor of its on-line version of the news, *Mercury Center*, was asked about these social implications by this researcher, his response indicated there is a role for both the traditional newspaper and the on-line news that takes into consideration the advantages of the respective media, including the social value:

> If things turn out the way we hope, services like *Mercury Center* will
> free up the traditional newspaper to be more of what it was originally, a
> mass media publication. So if people's individual and specialized needs
> are served better electronically, they can be served better doing things
> like delivering people's particular news profile. That frees the
> traditional paper from the struggle we have been involved in for over
> the past twenty years—to serve lots of niche interests in the publication.
> I don't see this happening any time real soon. I think for the foreseeable
> future the newspaper will continue to have lots of niche areas, but long
> term, what is exciting to me, is, to see the traditional newspaper
> become more of a publication in terms of the entire community—the
> common publication from which everyone can draw from and refer to.[7]

### 5.1.3 An Experiment in Telluride, Colorado

**Chapter Two** included consideration of how a community might use electronic personal media to vote in a manner similar to the way New England town meetings were once conducted (see section **2.1.1**). In that discussion it was noted that if the electorate does not participate in the refining of legislation, they probably will not be able to cast informed opinions. Research is underway and experiments are being carried out to find out if these media can be used to bring people together to help govern a community if one takes into consideration such social implications. According to findings of the Institute for Research on Learning:

> Knowledge, activity and social relations are closely intertwined, whether
> in families, scientific communities, jump rope groups, jazz bands or
> design teams. United by a common enterprise, people come to develop
> and share ways of doing things, ways of talking, beliefs, values—in
> short, practices—as a function of their joint involvement in mutual
> activity. We call such informal aggregations communities of practice.[8]

Some of these concepts involving communities of practice are being put to use with the new media. In Telluride, Colorado, the local community is using electronic personal media in an experiment in town democracy. Brown et al. see this experiment as a proper application of the media, one that takes into consideration the social relationships necessary to govern effectively:

> Telluride, Colorado, has wisely distinguished between means to support
> information and participation within the community, on the one hand,
> and between it and other communities, on the other. The town's goal is
> not simply to connect everyone to the Internet or a future information
> superhighway; and assume that will solve all problems of informing and
> participation on local and national levels. Rather, they have made it
> their primary goal to connect town members to one another—to support
> local participation as much as possible in a shared, informal system that
> honors the local sense of community.[9]

The Well, *Mercury Center*, and the Telluride, Colorado, experiment are examples that illustrate the way the new technology can affect communities.

## 5.2 Implications for Education

While the new media has potential for reshaping communities and their practices, it is playing and important role in educating individuals within the communities. The Institute for Research on Learning (IRL) has concluded that to successfully employ technology in learning it must be based on community relationships and practices:

> The design of technology is as much a social challenge as it is a
> technical one. Whether "low-tech" or "high-tech," whether complex or
> simple, it is to the extent that technology is integrated into the practices
> of social communities that its potential can be realized. For instance, the
> learning potential of information systems lies as much in the
> connections that they open among people, and in the collaboration that
> they support, as in the information that they deliver. It is therefore
> essential that we think of technology not as a means of delivering
> knowledge and manipulating activity, but as a means of empowering the
> development of communities of practice, access to participation in them,
> and communication among them.[10]

IRL has undertaken several projects to prove the findings of its research. Quite often these projects employ electronic personal media in the form of personal computers and computer networks as tools in learning. One of the most challenging projects has been to find ways to teach mathematics concepts:

> [In 1992, IRL] helped middle-school math teachers work with scientists from the Sandia National Laboratories to develop a curriculum based on designing a mock research station in Antarctica. The object, says [project] director Shelley Goldman, was "to attract kids who traditionally drop out and make them feel confident that they could see the world mathematically."
>
> When 160 seventh- and eighth-graders in the San Francisco Bay Area drew up blue prints and built models of their Antarctica research stations this spring, once vague concepts like proportion became real. As the students spent time converting polar temperatures from Fahrenheit to Celsius, negative numbers finally made sense to them. Rather than thumbing through textbooks to resolve questions, classes consulted the Sandia scientists via electronic mail.[11]

In 1989, Peter Drucker saw the new media as having significant implications for education in the information age:

> Within the next decades education will change more than it has changed since the modern school was created by the printed book over three hundred years ago. An economy in which knowledge is becoming the true capital and the premier wealth-producing resource makes new and stringent demands on the schools for educational performance and educational responsibility.[12]
>
> Just as the printed book became the new "high tech" of education in the fifteenth century, so computer, television, and video cassettes are becoming the high tech of education in the twentieth century. Thus the new technology is bound to have a profound impact on the schools and how we learn.
>
> The printed book, fiercely resisted by the schoolmasters of the fifteenth and sixteenth centuries, did not triumph until the Jesuits and Comenius created schools based on it in the early seventeenth century. From the beginning the printed book forced the schools however to change drastically how they were teaching. Before then, the only way to learn was either by laboriously copying manuscripts or by listening to lectures and recitations. Suddenly people could learn by reading. We are in the early stages of a similar technological revolution, and perhaps an ever bigger one. The computer is infinitely more "user-friendly" than the printed book, especially for children. It has unlimited patience. No matter how many mistakes the user makes, the computer will be ready for another try. It is at the command of the learner the way no teacher in a classroom can be.[13]

The Antarctica project is probably consistent with Drucker's prognosis for the impact of these new media on education. On the other hand, these technologies are not inherently user friendly. Children are not going to automatically take to the computer unless it is designed with their use in mind and includes applications that engage them in its use.

As for computers being better suited for certain tasks than teachers, Drucker gave further insight into this notion in 1993:

> Here, the new technologies might make the greatest difference. They free teachers from spending most, it not all, their time on routine learning, remedial learning, and repetitive learning. Teachers will still need to lead in these activities. But most of their time has traditionally been spent on "follow-up"; teachers, in an old phrase, spend most of their time being "teaching assistants." And that the computer does well, indeed, better than a human being. Teachers, we can hope, will thus increasingly have the time to identify the strengths of individuals, to focus on them, and to lead students to achievement. They will, we can expect, have the time to *teach*.[14]

A recent article in *The Economist* echoed this view of the impact on teaching.[15] The same article raises another implication of the new media, specifically interactive TV when used as a learning tool. The article points out that both children and adults will be able to dial up an education tool anytime from their home set to learn whatever they want and raises the intriguing question:

> What will happen to school as we know it, if one can learn anything at a time and place of one's choosing?[16]

### 5.2.1 Impact on Literacy

While we marvel at the prospects the new technologies offer in the area of education, we need to remember there are those that will not be able to take advantage of them if they don't have basic literacy skills. The new technologies have implications that go beyond our concept of education, beyond our concept of the school, and affect our very concept of literacy. In 1993, the Office of Technology Assessment (OTA), a component of the U.S. Congress, completed a study of the current and potential impact of technologies for literacy.[17] The study report pointed out how the concept of literacy has changed and continues to change:

Literacy is not a static concept. Almost 100 years ago, the proxy for literacy in the United States was being able to write one's name. ... Scholars, educators, and policy makers are all struggling with how to redefine literacy to reflect changes in society, a global economy, higher educational standards for all students, and advances in technology.[18]

When one looks at some of these efforts to redefine literacy, the impact of new technologies is quite evident, especially the impact of the computer. For example, Donald Philips, in his study of human communications and information technologies, projects the information literacies that may be necessary as we move into the twenty-first century:

it appears a variety of electronic-oriented technological and also traditional (but rather differently expressed) literacies will be required. ... My position is that comprehensive but selectively developed literacies for particular contexts will be required, including, for example, reading, writing, visual, auditory (listening), computer, and media use literacies. In my view, interdisciplinary literacies are necessary. While specialization is understandable and necessary in complex societies, it is and would be tragic and threatening to produce students who are computer-literate and technologically literate but semiliterate and illiterate in history, art, music, literature, and other social and cultural studies and skills. Likewise, it may be equally tragic and dangerous to produce students in the social sciences and humanities who are semiliterate or illiterate in at least basic information processing technology skills.[19]

Drucker also sees the need for a new literacy, one in which the new media play a significant role:

Since school learning and school diplomas increasingly control access to jobs, livelihoods, and careers in the knowledge society, members of society need to be literate. And not only in "reading, writing, and arithmetic." Literacy now includes elementary computer skills. It requires a considerable understanding of technology, its dimensions, its characteristics, its rhythms—something almost totally absent today in any country. It requires considerable knowledge of a complex world in which boundaries of town, nation, and country no longer define one's horizons. For this reason, knowledge of one's roots and community is however also becoming more important. The new media provide quite a bit of this new literacy. For today's small child, the television set and the video cassette recorder surely provide as much information as does the school—in fact probably more. But only through the school— through organized, systematic, purposeful learning—can this information be converted into knowledge and become the individual's possession and tool.[20]

There is a new federal definition of what it means to be literate, that incorporates some of the above concepts. According to the 1991 National Adult Literacy Act, adult literacy is defined as:

> an individual's ability to read, write, and speak in English, and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals, and develop one's knowledge and potential.[21]

OTA sees a significant role for technology in achieving adult literacy. According to OTA, in order to achieve this goal, the following are needed: an improved base of hardware and software technology for literacy, improved systems of literacy programs and services, and further research.[22]

Personal computers have been used in adult literacy programs for several years, often in conjunction with literacy programs offered at libraries. But from the very start the lack of adequate technology was evident:

> In 1982 the NCLIS [National Commission on Libraries and Information Science] decided to investigate the use of computers as a tool to augment tutor instruction in library-based adult literacy programs. A year long project [1983-84] was set up in conjunction with Carnegie Mellon University and two libraries: The Reading Resource Center of the Enoch V. Pratt Free Library in Baltimore, Maryland, and the Mary H. Weir Library in Weirton, a small industrial town in West Virginia (NCLIS 1985). Right at the start of the project a minor problem surfaced, namely, the lack of software suitable for adults. The NCLIS turned to the Armed Forces who had been experimenting with computers as a possible way to help recruits lacking basic reading skills. Robert Wisher and Thomas Duffy, attached to the Navy R&D Center in San Diego, California, had developed a program called LASCAI (Language Skills Computer Assisted Instruction). It was written in the Pascal programming language and ran on Apple IIe computers.[23]

NCLIS was fortunate to find any software that could serve as a literacy tool in the early 1980s. A computer like the Apple IIe was advanced for a personal computer and was quite popular in its day but that largely text oriented computer pales in comparison to what is available with today's technology. OTA sees considerable potential for the new multimedia technologies:

Today's technology offers enormous potential for substantially changing the field of adult literacy. It could provide an alternative to the labor-intensive, tutorial-based teaching that makes up the bulk of today's literacy training. For instance, multimedia technologies with speech, video, and graphics could offer a new hope for those who have experienced repeated failures in paper-and-pencil-based educational activities.[24]

It is all well and good that we have identified technology that has potential to reduce adult literacy. The problem is that often the people who need literacy training are lower income individuals who cannot afford to acquire the technology. In the past these people have often turned to the libraries for assistance as indicated by the NCLIS projects referred to above.

## 5.3  Aid to the Disadvantaged

One of the social implications of the new information technologies is that they will potentially widen the gap between information "haves" and "have-nots," which can in turn widen the gap between economic "haves" and "have-nots." Nearly everyone this researcher interviewed and many of the written works that were consulted expressed this concern. If all that one needs is paper and pencil, schooling, and a library card to get educated, that has been available to nearly everyone in the U.S. ever since public education and public libraries were instituted. But how does the economically disadvantaged compete when his or her peers have all this and a personal computer at home connected to a CD-ROM drive, and by means of a modem and telephone line to the rest of the world of information via the Internet?

### 5.3.1  New Concept of Libraries?

Part of the answer to the information "have-nots" issue may lie in rethinking the concept of the community library just as we are rethinking the concept of education in light of the new technologies. John Seely Brown suggests the following:

One of the things we have to think seriously about is the new roles for the community library. What should their mission be? In a way, I think the community library did more this century to change the landscape of learning in America than almost anything else. ... I have found a very interesting gedanken experiment to ask not how do we take digital technology and replace the old library with digital books. But rather what is the fundamental role in a democracy for the community library? What service should it provide? Should it assist people learning from

each other instead of from books? Should it be a site to bring people together? It obviously is a place that directly addresses the have nots because the community library is neutral to haves and have nots. With the national information infrastructure, duplicating books and having standing libraries all over makes no sense. On the other hand we may have things called document reading machines that you check out with the book. You borrow the machine. That digital book comes from sucking it down from the national information infrastructure.[25]

Consider the implications of what Brown is suggesting. Instead of the lion's share of the money that is budgeted for community libraries going to buying books and building large facilities to house them, that money could go to training librarians in helping people become literate, find information, and learn. What's more, in those libraries, one would have access to the personal computers, CD-ROM drives, copying machines, videotape recorders, and other devices that could open to the entire information infrastructure to all who wanted it.

### 5.3.2  The Seattle Community Network Project

Most of us have seen libraries where some of these things are starting to take place. There are growing numbers of libraries that will give residents in the community access to the Internet. Libraries commonly have personal computers (at least for searching library catalogs), copying machines, and other electronic personal media. Many libraries offer adult literacy programs. There are also some experiments going on involving comprehensive programs that have as a goal empowering the community with the information it needs. One such project is the Seattle Community Network (SCN), a project of the Seattle Chapter of Computer Professionals for Social Responsibility. Excerpts from SCN's principles show the project is aimed at the problem of information have nots, as well as several other issues this report has addressed:

> SCN is a free public-access computer network for exchanging and accessing information. Beyond that, however, it is a service conceived for community empowerment. ...
>
> **Commitment to Access**—Access to the SCN will be free to all. We will strive to provide access to all groups of people particularly those without ready access to information technology. We will strive to provide access to people with diverse needs. This may include special-purpose interfaces. We will strive to make the SCN accessible from public places.

**Commitment to Service**—The SCN will offer reliable and responsive service. ... We will provide access to databases and other services.

**Commitment to Democracy**—The SCN will promote participation in government and public dialogue. The community will be actively involved in the ongoing development of the SCN. ... We will support democratic use of electronic technology.

**Commitment to the World Community**—In addition to serving the local community, we will strive to become part of the regional, national and international community. ...

**Commitment to the Future**—We will continue to evolve and improve the SCN. We will explore the use of innovative applications such as electronic town halls for community governance, or electronic encyclopedias for enhanced access to information.[26]

It will be interesting to follow projects such as this to see how well they do in addressing the needs of the community, including those in it that are disadvantaged. Note that one of the principles of the SCN project calls for access from public places. This would include public libraries. The same principle includes access by special-purpose devices. This raises the possibility access will be provided to those disadvantaged physically.

### 5.3.3 Aiding the Physically Disadvantaged

Electronic personal media have shown great promise in aiding the physically disadvantaged, especially the blind and deaf. Telecommunications has been cited as the great equalizer whereby "a blind person can access, research, transmit, and receive information on a parity with others, regardless of the medium."[27] Electronic personal media play a critical role in providing this information to the blind. Today there are a number of electronic reading services and devices geared for the visually impaired. For example:

Computer telephone reading services store the recorded human voice of volunteer readers on a computer disk. The recording is then converted into digital information that the computer can use. As a subscriber, you simply call the service on the phone, their computer answers the phone, and, using the signals from a touch-tone phone keypad, you select the articles or sections of the newspaper you choose to read.[28]

A braille display device produces braille much the same way a speech synthesizer generates sound. Like a speech synthesizer, it connects to your computer with a cable. Basically, it takes information appearing on a computer screen, translates it, and displays it in braille *a line at a*

*time.* A line of refreshable braille consists of tiny electronically-driven plastic pins that pop up to form the braille characters.[29]

A device which seems to be popping up everywhere is the Braille' n Speak, a portable machine with a braille keyboard and speech output.[30]

Those that are hearing or speech impaired also benefit from electronic personal media technology as a recent Associated Press article indicates:

> When Mark Goldfarb needs to make dinner reservations or consult his doctor, he sits down at a machine resembling a laptop computer and types out what he has to say.
> Goldfarb is one of thousands of deaf Americans who use a combination of text telephone and hearing operators at special relay centers around the United States. Using the machine, Goldfarb calls the center, types his message, and an operator reads those words to the person he's calling. The operator then types replies to him, and thus they communicate, back and forth.[31]

The Americans with Disabilities Act now requires long-distance telephone carriers to provide this service to the estimated twenty-six million people in the U.S. who are hearing- or speech-impaired.[32]

## 5.4 Effect on Culture

Electronic personal media have social implications that go beyond the specialized needs of some people and transcend any segment of our society. These media have implications for our culture and society as a whole. A world of information is available to all who seek it. The effect of this instant access to information about other communities, other cultures, crises in distant lands, and political and economic events worldwide is constantly being assessed and reassessed. Ganley sees the real importance of these media is that they "have brought globalization, with all its shifting power structures, opportunities, and problems right down to the level of the individual."[33] John Naisbitt observed similar trends due to the introduction of these media in the information age:

> global television and video cassettes have curbed the power of dictators....[34]

> Computers, cellular phones, and fax machines empower individuals, rather than oppress them, as previously feared [by Orwell and Huxley].[35]

### 5.4.1 Cities Obsolete?

Naisbitt went on to say that by linking a new breed of information workers by telephones, fax machines, and personal computers in global networks we are creating a new electronic heartland, especially in the U.S.[36] He foresees rural areas "as technologically linked to urban centers as are other cities.[37] He says that "in many ways, if cities did not exist, it now would not be necessary to invent them."[38] As we move further into the information age, one would expect a greater percentage of information workers in the work force and an increased trend to telecommuting (see section **4.1.1**). Writing in 1989, Drucker observed the same trend:

> Today's city was created by the great breakthrough of the nineteenth century: the ability to move people to work by means of train and streetcar, bicycle and automobile. It will be transformed by the great twentieth-century breakthrough: the ability to move work to people by moving ideas and information. In fact, the city—central Tokyo, central New York, central Los Angeles, central London, central Paris, central Bombay—has already outlived its usefulness. We no longer can move people into and out of it, as witness the two-hour trips in packed railroad carriages to reach the Tokyo or New York office building, the chaos in London's Piccadilly Circus, or the two-hour traffic jam on the Los Angeles freeways every morning and evening. We are already beginning to move the information to where the people are—outside the cities. ... Increasingly people will work in their homes or, as many more are likely to do, in small 'office satellites' outside the crowded central city. The facsimile machine, the telephone, the two-way video screen, the telex, the teleconference are taking over from the railroad, automobile, and from the airplane as well.[39]

It is probably safe to say electronic personal media are at least beginning to play an important role, along with worldwide information networks, in making possible the reshaping of population patterns. As people are more and more dependent upon information in electronic form for work and leisure, they will live where they want. This trend will probably be greatest in the nations with the most advanced information industries such as the United States, Western Europe, and Japan. But this trend is likely to spread to some degree at least to countries with less developed information industries as they leapfrog technology in developing their information infrastructures. Countries that do not have a heavy investment in copper wire telephone lines may not choose to build such systems; they may go immediately to fiber optic cable which has far superior capacity and transmission rate, and has a more favorable cost-benefit ratio.

### 5.4.2 English the Language of the Future?

As information technology spreads throughout the world in the form of electronic personal media and other devices and systems, it is having another effect. It is helping to spread the use of the English language. English is clearly the language of international business. When two people from countries outside the U.S. meet on business, the chances are they will both speak English to one another. More and more of the world's business has to do with information industries, and the world's leader in information industries is the United States. So it stands to reason that the language of the U.S. will spread at a greater rate as international information commerce increases. In 1990, Naisbitt estimated that "80 percent of all information stored in the more than 100 million computers around the world is in English."[40] And one would expect that, if anything, by now his numbers have increased significantly. Naisbitt concluded that "The language of the information age is English."[41]

### 5.4.3 The Problem of Preserving Information

More and more of the world's history in the information age is being written electronically. Earlier we noted this has implications for retaining historical records since there can be problems with preserving electronic media (see section **3.1.2**). Some of us have found out the hard way that those wedding pictures that were videotaped several years ago have been destroyed by storing them too close to radiation from the TV set or that the audio cassette of an important business meeting has been ruined by leaving it in a hot and humid location. There are precautions one can take to avoid these kinds of losses. But there are even more complex problems to deal with involving these electronic media. Think of the problems facing historians trying to preserve these times for posterity:

> All over the country, manuscripts are pouring into libraries in new
> shapes, sizes and textures: large floppy disks, small floppy disks ...
> faxes, tapes. ...[42]

It used to be a relatively simple task to deal with manuscripts of a president, famous inventor, or author that were written with pen and paper. It was just a laborious task of organizing the material and plodding through it. But to even organize it you have to be able to read it. Increasingly that means historians need to ensure preservation of whatever wrote the information on the disks or tapes. In other words:

> perhaps more pressing than the issue of storing and cataloging these
> new manuscripts is whether or not one will even be able to gain access

to them in the future. If, for example, the Beinecke Library wants to insure that our next generation of scholars will be able to use Mr. [William F.] Buckley's floppy disk (of "Mongoose, R.I.P.") for something more than a coffee coaster, they may need to preserve the software to run it. And not just the software, but all the obsolescent hardware as well.

"I'm rather gloomy about it," admits Edmund Morris, a political scholar and biographer of Theodore Roosevelt. One can only imagine what would have become of the nearly 150,000 letters Roosevelt composed during his lifetime had they been sent through E-mail. Or, for that matter, our notion of the Civil War had Robert Gould Shaw phoned home instead. When asked how one might go about reconstructing contemporary history, Mr. Morris, who is now at work on a biography of Ronald Reagan, replied sotto voice: "The truth is, you don't—the vacuums are everywhere."[43]

A recent article in *The Economist* stated that the problem of being able to retrieve archival data is of growing concern.[44] It notes that paper could be preserved for centuries and accessed by anyone able to read. Thanks to electronic personal media technology, that may no longer be the case. "Today's computer disks, audio recordings and videotapes have a maximum life of 20 years."[45] But as mentioned above, just being able to preserve the information will not suffice if one doesn't have the wherewithal to read it. For example:

> Deep in its archives, Princeton University stores reels of footage documenting George McGovern's 1972 presidential campaign. This is a potential treasure trove for historians. Unfortunately, the historic archive is on an historic medium: two-inch (51mm) videotape. When it recently came to light, Princeton's archivists found that they had no machine capable of copying it to a newer and better medium. The National Archives in Washington does own such a machine; but when asked to copy the tapes, the staff refused. They feared that the rare and fragile machine would break, and thus spoil their plan to preserve similar footage of Richard Nixon.[46]

Unfortunately, the impact of these media on the recording of history is even more subtle than these examples indicate. Many have seen early sketches of a famous artist or early manuscripts of a famous written work and marveled at the thought process of that person. We also got some insight into their creative process from the marginal notes or doodles that we saw. But today's author can sit down and type a novel on a personal computer using a word processing program that allows easy correction of mistakes, checks for spelling errors, checks for proper meaning in the dictionary, etc. and produces a final version that will be sent to the

publisher via a modem and telephone line. All previous versions, corrections, false starts, etc. will be lost forever. A similar outcome can occur with a great photographer. Today's photographer can take a picture of some natural wonder and then scan it as input to a personal computer. Then using a graphics editor, the picture can be enhanced with colors that did not even exist in the original, blurred portions can be sharpened, the lighting can be softened, unwanted power lines can be removed, etc. Similarly, this image in digital form can be sent via modem and telephone line to a print shop and leave no record of the creative process.

In short, the article in *The Economist* may have put it best when referring to the implications of these media for historians and future generations:

> Historians of the future may find much to say about the fact that the
> most thoroughly recorded years in the history of humanity ended up
> among the least well preserved.[47]

### 5.5 Conceptualizing New Uses for Technology and Designing New Technologies

While we are still playing catch-up in devising ways to ensure that we can preserve information residing in the new media, research continues to introduce even more advanced technologies into the media. However, these advancements are sometimes difficult to sell or fall short of the design mark.

> [Xerox founder and former Chairman of the Board Chester] Carlson's
> attempts to interest people in the idea of dry photocopying—xero-
> graphy—provide an example of organizations' tendency to resist
> enacting innovation. Carlson and the Batelle Institute, which backed his
> research, approached most of the major innovative corporations of the
> time—RCA, IBM, A.B. Dick, Kodak. All turned down the idea of a
> dry copier. And it was the *idea* they turned down. They did not reject a
> flawed machine; indeed, they all seemed to have agreed that it worked.
> They rejected the concept of an office copier because they could see no
> use for one. Even when Haloid bought the patent, marketing firms
> consistently reported that the new device had no role in office
> practice.[48]

To understand why companies might fail to conceive of the use of the office copier, one needs to remember that secretaries used to make carbon copies of a document. In fact some secretaries would routinely make a dozen carbon copies or more, which at the time was seen as sufficient for the file copies and for everyone that could conceivably need a copy of a document. The failure of corporations to foresee the use of this electronic personal media

technology, xerography, is difficult to comprehend today when it is not unusual to have to stand in line to use an office copier. One of the things companies failed to foresee was the need for copies of the copies. They overlooked the fact that receiving a document is not always the end of the distribution of the document. People continue to interact with other people after they receive a document and that often leads to others also wanting a copy. Looking at the distribution of documents in this broader social context might have helped companies foresee the greater use of xerography.

### 5.5.1 Designing for the Social Implications

Equally puzzling is how corporations sometimes develop an electronic personal media technology with great expectations for it and then it seems to fail miserably in living up to its touted potential. One of the best known examples of course is the VCR—the device we make jokes about knowing how use to play tapes but not being able to program. Why does the industry make products that are sometimes so difficult to learn to use? Perhaps this is all to be expected when dealing with the introduction of new technology, especially when the technology involves something as sophisticated and complex as electronic personal media. On the other hand, some think the fault often lies in the design. Brown and Duguid subscribe to the view that to be successful, designers must consider the social implications of technology:

> people who are judged unfit to learn to operate relatively simple tools
> or who fail to learn rudimentary domestic appliances usually learn to
> operate an enormously complex machine that presents users with a
> hazardous and continually changing environment and an enormous array
> of increasingly sophisticated technology—the car. Cars are socially so
> well integrated that the learning becomes almost invisible. The success
> of learner drivers—with or without instruction—should undoubtedly be
> the envy and the object of many who design far less complex consumer
> or workplace appliances. Consider, by contrast, the triumphal despair
> with which people frustratedly boast that they can't use their VCR.[49]

Brown and Duguid explain that learning to drive "is a fundamentally social practice."[50] People start to learn even as children passengers in automobiles. Learning to play a tape on the VCR is similarly social. A child learns to play a favorite tape by watching a parent or older sibling. An adult learns from another person when invited to someone's house to see a movie. But the chances are slim one will be invited to someone's house to see someone record a tape. The challenge for designers is to take into consideration the social contexts in which people learn to use technology.

Research is underway to develop technology that takes into consideration social implications such as these. Recently, Philips Electronics NV and the Institute for Research on Learning undertook a joint project to develop new methods for the design of consumer electronics products. The project, called the Picasso Project, "resulted in the design of a unified computer communications tool which included fax, remote screen sharing and control, file transfer and 'chat' facilities."[51] The project staff observed how individuals in actual work sites performed their work and then set out to design the product which was implemented on personal computers. The project staff then tested the product in the work places and observed how the workers were adapting to the new product. Modifications were made to the product on the basis of these observations to make the product easier to learn to use and then the testing and design cycles were reiterated until the workers and project staff both were satisfied with the product. Throughout the project, videotape recordings were made of the actual workplace experience, especially how the workers interacted in learning to make use of the new product. These tapes were scrutinized by the project staff for ways to make the product design easier to learn to use. Philips computer scientist John De Vet has noted some of the things his company has learned about design from this research:

> Now we see that we can't limit our focus to the interface between the computer and the user. ... It is much more important to focus on human-human interaction and the whole social issue. We have to recognize that the computer or the product being used is just a tool to achieve communication—because communication is really what it's all about.[52]

Note that the product Philips was developing would be used on personal computers. Also, another electronic personal medium, videotape recordings, was used in assessing the learning process. Most important, the success of the project hinged on taking into consideration the social implications of how workers interacted in learning to use the product.

## 5.6 Summary

A new form of community, the "virtual community," is evolving due in large part to electronic personal media. These communities know no borders, they are linked by electrons and common interests. On the other hand, these media can detract from established communities. For example, the traditional newspaper's contribution toward the sense of a community may never be equaled by tailored electronic news services. Meanwhile, research

and ongoing projects hold promise that these media have the potential to contribute to the transformation of how people interact in local communities and may even impact their form of government. These new media are playing an important role in helping to reshape education. The media are also playing a significant role in helping people that are disadvantaged physically or economically. Social impacts include the possible transformation of the city and the increased use of English worldwide. Unresolved issues and questions stemming from the social implications of these media include the extent their potential will be employed in further increasing adult literacy, aiding the physically disadvantaged, and as mentioned in previous chapters whether there is sufficient support for an information infrastructure with universal service. Also, the problems these media make for the preservation of information for posterity are far from resolution. These social implications and issues probably don't get the attention they deserve. But that has the potential to change with adequate attention. For example, there are some organizations beginning to research these implications when conceptualizing and designing the new technologies.

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## Chapter Six

## Summary

This report has presented a snapshot of electronic personal media in 1993—of the political, legal, business, economic and social implications of the design, manufacture, and use of these media and of the issues and controversies stemming from these implications. It was not possible to cover all the implications and issues associated with these media and do justice to them in one brief report; the goal here was to report on a representative sampling and on some of the most important implications and issues. **Chapter One** reviewed some of the history of different media and showed that it is not uncommon for controversy to surround the introduction of new media. It also showed that the impact of the new media can be gradual and that major implications and significant features can go unnoticed without careful observation and study. A major finding of this research is that in many areas technology advances have outpaced both the study and the debate on the implications and issues surrounding the new media. The following is a summary of the major implications; areas of active research, study, and debate; and areas where research, study, and debate significantly lag behind the technology advances. The implications and issues are not covered in order of priority; it would require a major study to assign such priorities.

## 6.1  Major Implications

A review of the current evolution in the design, manufacture, and use of electronic personal media indicates the following significant implications:

- *Potential to help transform the political process in the U.S.* Electronic personal media are critical to plans for on-line Congressional hearings, the ability to communicate with our representatives almost instantly, and the ability to cast ballots electronically.

- *Tremendous effect on government decisionmaking in times of crisis.* The new media have played a significant role in complicating government decisionmaking at the highest levels during international hostage crises. They have also helped elicit responses from our leaders in times of other sensational events at home and abroad.

- *Difficulty stemming the free flow of information throughout the world.* Authoritarian regimes as powerful as the former Soviet Union and China have been unsuccessful in totally cutting off the international flow of information.

• *Added value these media allow in mitigating infringement of intellectual property rights*. Continual technology advances together with buyers' continued replacement of obsolescent media hardware and software help reduce the demand for pirated hardware and software.

• *Significant effect on how and where work gets done in government and private industry*. These media have had a major effect on workers' efficiency, new products and services, and even whether workers need to commute to the office.

• *Potential to help transform the health care industry*. The health care industry has lagged behind others in entering the information age. It has been estimated that electronic personal media and other information processing tools could help reduce health care costs drastically.

• *Potential to help transform communities, reshape population patterns, and spread the English language*. New forms of communities are springing up linked by copper, fiber, the air waves, and electronic personal media. With new means of communication, cities may be near obsolescence. English, the language of the leading country in information industries, is spreading with the information age.

• *Potential to help revitalize education*. These media may indeed give teachers more time to teach, taking over from the teachers the more routine tasks with infinite patience.

• *Potential to help level the playing field for the disadvantaged*. Electronic personal media have been put to work helping the blind read, the deaf communicate, and the illiterate read and write.

• *Contribution to a major problem in the preservation of information*. As the technology continues to advance and make hardware and software obsolete, the information that has been recorded with the old technology is at risk of being lost forever.

## 6.2 Areas of Active Research, Study, and Debate

Several issues and problems stemming from the political, legal, economic, and social implications of the new media appear to be receiving adequate scrutiny:

• *Export control policy*. Private industry is not about to let the government relax its continual update of export control policy, especially regarding the vital information industries' products.

• *Privacy and freedom of speech in using the new media*. These rights are so fundamental to the American way of life there is little danger they will not continue to receive attention by private citizens, various interest groups, and the body politic.

- *Role of government vs. private industry in upgrading the information infrastructure.*
The historical debate over the respective roles of government and private industry will
probably ensure continuing adequate attention to this question.

- *Business and economic implications of the information infrastructure as well as debate
on related issues such as antitrust and information security.* The Clinton Administration,
industry leaders, and various interest groups appear bent on keeping the spotlight on
these matters.

- *Social implications of conceptualizing and designing new technologies.* There are
encouraging signs private industry and research organizations are beginning to apply
lessons learned in considering social implications of the technology.

## 6.3 Areas Where Research, Study, and Debate Significantly Lag Behind the Technology

All of the areas listed below have received some attention in the mass media, academia,
government, or business circles. However, based on this author's observations, the following
areas run the greatest risk of unintended consequences by lagging technological advances in
electronic personal media:

- *Transformation of the political process in the U.S.* Just because it is technical possible
to cast ballots from our interactive television sets does not make it politically feasible. It
may be feasible to vote for elected officials this way. But, to cast an informed vote on
policy matters requires participation in the policy formulation process. The entire
process needs review in context.

- *Growing gap between information "haves" and "have-nots.."* Some have raised the
issue of whether people in the United States have a right to an "information tone" just
like they now have a right to a dial tone. But guaranteeing access to information does
not solve the problem for those who can't afford to use it.

- *How leaders should respond to crisis and other sensational events in the media.*
Increasingly, electronic personal media are feeding mass media with crisis and
sensational information. In a world of instant information, thoughtful consideration is
needed on how our leaders go about formulating policy during such events as opposed to
knee jerk reactions.

- *How to treat potential evidence in the form of electronic personal media prior to and
during judicial proceedings.* Study and debate is needed on how to deal with pretrial
publicity regarding such material. What responsibility does the mass media have in
presenting such evidence? What weight does it deserve in a court of law? How should
our elected officials react to such evidence when it appears in mass media?

- *Junk E-mail, fax, and other media.* It is being paid for one way or the other. Who
should bear the costs? Some have suggested that it is an invasion of privacy and should
be banned.

• *Encryption issue*. In order to protect privacy, information security, and the integrity of information systems involving the new media, many advocate that information be encrypted. In addition to raising national security questions, this issue involves law enforcement, national and international business, and other questions needing resolution.

• *Increased criminal use of electronic personal media*. White collar crime and drug related crime increasingly involve the new media. Law enforcement and justice are both hampered by laws that significantly lag the technology.

• *Rethinking how work gets done in an organization and how to ensure an adequately skilled work force*. Depending on how the new media and other information technologies are introduced in organizations, it can be an opportunity or a threat to vested interests. Also, to use the new technology there must be changes in how the future work force is educated and trained.

• *Extent to which the new media will be employed in increasing adult literacy and aiding the physically disadvantaged*. While the new media have potential to help raise literacy levels and level the playing field for the physically disadvantaged, the extent they will be employed is dependent upon much more attention to these issues and strong public support.

• *Preservation of information issue*. Except for occasional mention in mass media and elsewhere, the problems the new media cause in recording and at a much later time retrieving information goes practically unnoticed. Solutions will probably require a major undertaking by government and industry. If more research, study, and public scrutiny is not given to this problem, we do indeed run the risk of living in the age where historical records were least well preserved.

# Acronyms

ARPAnet        Advanced Research Projects Agency Network (Department of Defense)

EDUCOM        Educational institution consortium
EFF           Electronic Frontier Foundation

HPC           High-Performance Computing

IRL           Institute for Research on Learning
IVDS          Interactive Video Data Services

LASCAI        Language Skills Computer Assisted Instruction

NCLIS         National Commission on Libraries and Information Science
NFSnet        National Science Foundation Network
NREN          National Research and Education Network

OTA           Office of Technology Assessment

PC            personal computer
POTS          plain old telephone service

SCN           Seattle Community Network
SEC           Securities and Exchange Commission