

## **9 Broader Issues on the Impact and Control of Computers**

How do computers and telecommunications affect human interaction and community? Will they increase the distance between rich and poor people? What is the impact of computing on the quality of life? Is computer technology, overall, beneficial to us or harmful? How should computing technology be controlled to ensure positive uses and consequences?

### **9.1 Computers and Community**

Many people spend hours online in chat rooms or meandering in cyberspace instead of with their families and in-person friends.

Critics of the Internet worry that computers reduce face-to-face gathering and that the Web hurts local community vibrancy.

Technology puts a much greater emphasis on the individual and downplays the importance of community.

Is working on a computer more isolating than reading a book, an activity that is usually applauded? Is the Internet destroying communities?

Social scientists offer various theories about what makes a strong community.

Critics of computers and the Internet blame them for this decline, but social scientists point to a number of other factors: modern transportation and communications, changes in family patterns, and television.

Some people who are socially awkward communicate more because of e-mail than they would without it.

Online relationships tend to be based on similar interests rather than merely proximity in a neighborhood.

The desire for the advantages of small community life—a slower pace, less commuting, closeness to nature, involvement with neighbors, and so on—is prompting many professionals and information workers to move to small towns.

The Internet, satellite communications, and related technologies bring education, information, and entertainment options that were not available in small, rural towns before.

### **9.2 Information Haves and Have-Nots: The Access Issue**

The term *digital divide* refers to the fact that some groups of people have access to and regularly use high-tech information and communication technology while others do not.

Lack of access to the Internet in much of the world has the same causes as lack of telephones, health care, education, and so on: poverty, isolation, and sometimes politics.

Should the principle of universal service be extended to “universal access” to the Net?

Many universal access advocates see it as an issue of social equity.

Hardware and software for the NII must be easy to use and must fit the needs of all users, including the disabled.

It is clear that advocates of universal access see access as a right—in particular, a positive right—something that must be provided for everyone who cannot afford it.

## **TRENDS IN COMPUTER ACCESS**

When personal computers first became available, they were expensive and difficult to use. The same was true of Internet access.

Virtually all technological innovation is first available to rich. Prices of many consumer products follow this pattern.

In 1990, 22% of households owned a computer; in 2001, 63% did, and 57% had Internet access at home. 84% of homes with children in middle and high school had Internet access.

In 1999, people from low-income households were about half as likely to have Internet access from home as was the general population.

In 2000, the state with the highest percentage of households with Internet access from home was Alaska.

The cost of disk storage fell from hundreds of dollars per megabyte in the 1980s to \$5.23 per megabyte in 1991 to less than a penny per megabyte in 2001.

The phenomenon that new technologies and inventions first are expensive luxuries, then become cheaper and spread throughout the population has led some observers to conclude that it is more accurate to think of people as “haves” and “have-laters” rather than “haves” and “have-nots.”

Ford Motor Company’s decision in 2000 to offer home computers (for free) and Internet access (for \$5 per month) to its 350,000 employees is a solution to the access problem few would have anticipated.

By 2001, more than 42 million people had free access to the Internet at work; many saw no reason to pay for it from home.

By the end of the 1990s, most public libraries provided Internet access for the public for free.

By 2000, 98% of high schools had Internet access.

## **9.3 Loss of Skills and Judgment**

Computers, like other tools and technologies, encourage certain uses and consequences by making them easier.

## **WRITING, THINKING, AND MEMORY**

*I have a spelling checker.  
It came with my PC.  
It plainly marks four my revue,  
Miss steaks aye can knot sea.  
Eye ran this poem threw it,  
I’m sure your pleased too no.  
It’s letter perfect in it’s weigh,  
My checker tolled me sew.*

-Jerrold H. Zar, “Candidate for a Pullet Surprise”

Computers made many steps in the publishing process easier.

The convenience of using a computer can encourage mental laziness, which can sometimes have serious consequences.

Now that research is so easy to do online, students and scholars are less inclined to actually go to a library and look up material in older books and journals that are not on the Web.

From Socrates, the invention of writing destroyed memory and oral skill and obscured the distinction between wisdom and knowledge.

Old skills are not lost; they are enhanced, but not used where the new ones function better.

## **ABDICATING RESPONSIBILITY**

Abdication of responsibility to exercise judgment, and sometimes, a reasonable amount of skepticism, has serious consequences.

Bad decisions are sometimes made because of ignorance of the kinds of errors that can occur in the computer system.

It is critical to remember that, in such complex fields as medicine, the computer systems might not be intended, or good enough, to substitute for an experienced professional's judgment.

## **9.4 Evaluations of the Impact of Computer Technology**

### **9.4.1 The Neo-Luddite View of Computers, Technology, and Human Needs**

There are people who utterly reject the view that computers are a positive development with many important benefits.

They were called Luddites.

## **LUDDITE CRITICISMS OF COMPUTER TECHNOLOGY**

Among their specific criticisms are the following:

- Computers cause massive unemployment and deskilling of jobs.
- Computers “manufacture needs,” that is, we use them just because they are there, not because they satisfy real needs.
- Computers cause social inequity.
- Computers cause social disintegration; they are dehumanizing.
- Computers separate humans from nature and destroy the environment.
- Computers benefit big business and big government the most.
- Use of computers in schools thwarts development of social skills, human values, and intellectual skills in children.
- Computers do little or nothing to solve real human problems.

To the modern-day Luddites, the computer is just the latest, but in many ways the worst, stage in the decline of what was good in human society.

I find it striking that different people look at the same history, the same society, the same products and services, the same jobs—and come to diametrically opposed conclusions about what they see.

## **BUSINESS, CONSUMERS, AND WORK**

What is the purpose of technology? To the Luddites, it is to eliminate jobs to reduce the costs of production. To proponents of technology, it is to reduce the effort needed to produce goods and services. The two statements say nearly the same thing, but the first suggests massive unemployment, profits of capitalists, and a poorer life for most workers. The second suggests improvements in wealth and the standard of living.

### **9.4.2 Accomplishments of Technology**

In the late 1990s, Americans spent about 12% of family income on food, compared to approximately 47% in 1901.

When new forms of wheat and crop management were introduced in India, yields rose from 12.3 million tons in 1965 to 20 million tons in 1970 and 73.5 million tons in 1999. Between 1960 and 1990, U.S. production of its 17 most important crops increased from 252 million tons to 596 million tons, but used 25 million fewer acres.

Worldwide average life expectancy increased from approximately 30 in 1900 to approximately 64 in 1990.

### **9.4.3 Who Benefits Most?**

“It is because the internet revolution is relevant not just to the high-tech, information-intensive sectors but also to the whole organization of economic life that ... developing countries stand a better chance of sharing in its benefits earlier than in previous technological revolutions.”

-United Nations Conference on Trade and Development report

Computers are very beneficial to disabled people.

“The standard of living of commoners is higher today than that of royalty only two centuries ago—especially their health and life expectancy.

-Economist Julian Simon

## **9.5 Prohibiting Bad Technologies**

### **9.5.1 Why and How?**

How should decisions be made about the basic question of whether a whole technology, or major segments of it, will be used at all? Who would make such decisions?

People can choose to use a technology for good or ill.

Some people argue that a new technology should not be used at all until it has been studied, its consequences figured out, and a determination made that the consequences are acceptable.

A brief look at the development of communications and computer technology suggests that they do much more than they were “designed to do.” The computer was designed to calculate ballistics trajectories for the military.

“The failure to predict the computer revolution was the failure to understand how society would modify the original notion of a computational device into a useful tool for everyday activities.”

-Don Norman

The telephone is so important, every city will need one!

-Anonymous

My personal desire would be to prohibit entirely the use of alternating currents. They are unnecessary as they are dangerous.

-Thomas Edison, 1899

I think there is a world market for maybe five computers.

-Thomas J. Watson, chairman of IBM, 1943

Computers in the future may...only weigh 1.5 tons.

-*Popular Mechanics*, 1949

There is no reason for any individual to have a computer in their home.

-Ken Olson, president of Digital Equipment Corp., 1977

The U.S. will have 220,000 computers by the year 2000.

-Official forecast by RCA Corporation, 1966. (The actual number was close to 100 million.)

### 9.5.2 The Difficulty of Prediction

The above quotations reflect a lack of imagination about the myriad uses people would find for each new technology, about what the public would like, and about what they would pay for.

Joseph Weizenbaum in 1975 against development of speech-recognition systems.

- *“The problem is so enormous that only the largest possible computers will ever be able to manage it.”*
- *“...a speech-recognition machine bound to be enormously expensive,...only governments and possibly a very few large corporations will therefore be able to afford it.”*
- *“What can it possibly be used for?”*

Voice-activated, hands-free operation of cell phones and other appliances in automobiles.

Industry analysts estimated that the speech-recognition market would reach \$4 billion by 2001.

*The military planned to control weapons by voice command, “a long step toward a fully automated battlefield.”*

*Governments can use speech recognition to increase the efficiency and effectiveness of wiretapping.*

Should we decline to develop technologies that can be misused, or should we develop the tools because of their beneficial uses.

A common objection to some new medical technologies is that they are so expensive that only the rich will be able to afford them. This shortsighted view can result in the denial of benefits to the whole population.

*Prediction is difficult, especially about the future.*

### **9.5.3 A Few Observations**

What might be lost by prohibiting a new technology?

What level of certainty of dire consequences should we require before restricting the freedom of others to develop technology they believe will be beneficial?

The fundamental problem is not what decision to make about a particular technology; rather, it is to select a decision making process that is most likely to produce what people want, to work well despite the difficulty of predicting consequences, to respect the diversity of personal opinions about what constitutes a desirable life style, and to be relatively free of political manipulation.