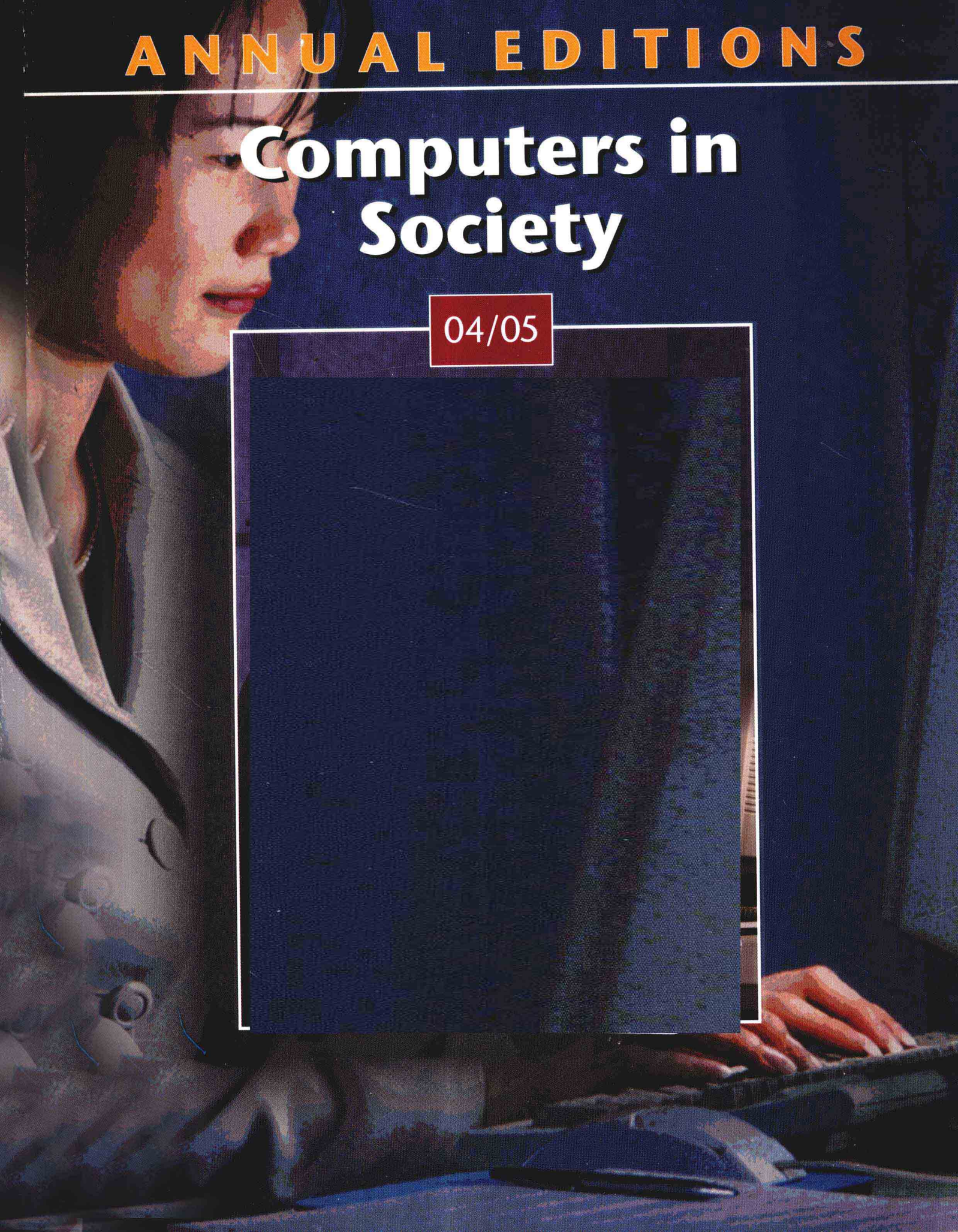
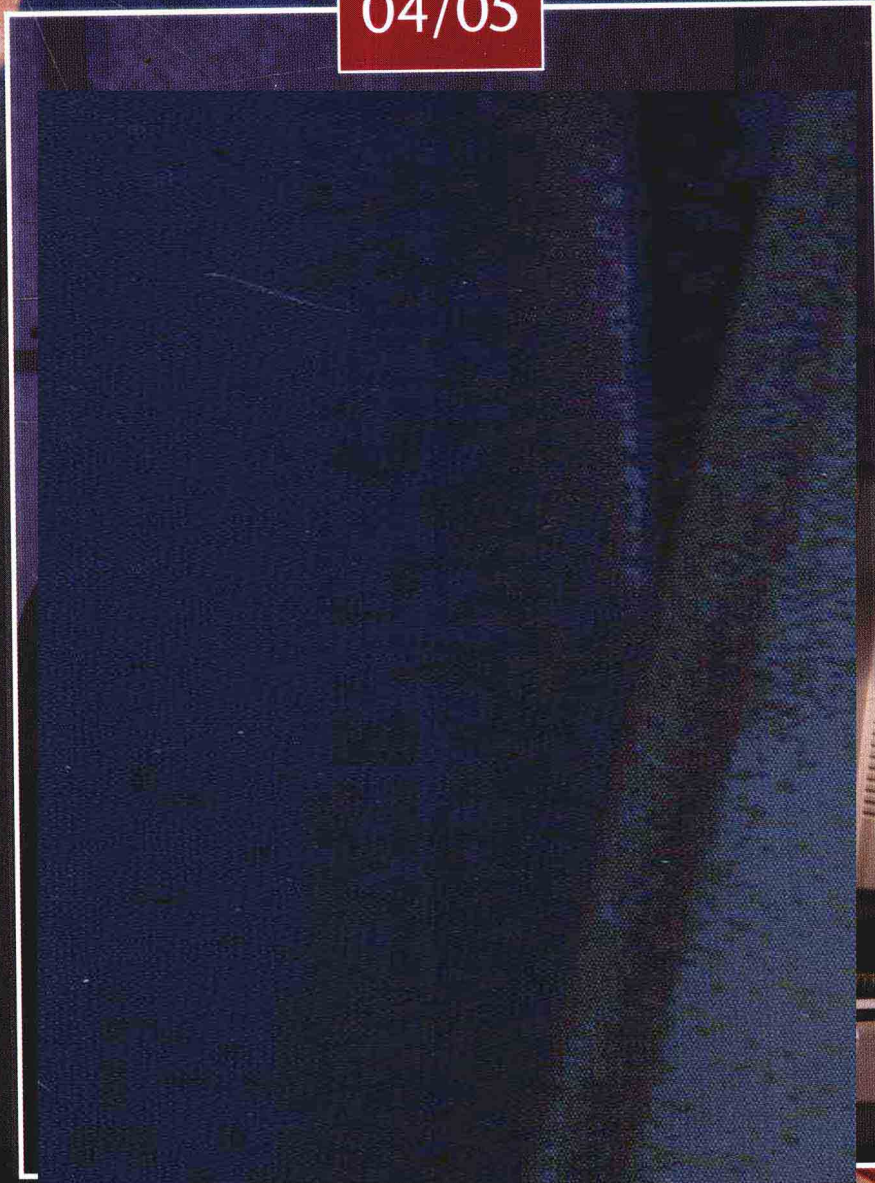


ANNUAL EDITIONS

Computers in Society

04/05



Computers in Society

Eleventh Edition

04/05

EDITOR

Paul De Palma

Gonzaga University

Paul De Palma has degrees from St. Louis University, Temple University, and the University of California at Berkeley where he was a Woodrow Wilson Fellow. When he discovered computers, he was working on a doctorate in English. He retrained and spent a decade developing software for two large companies on the East Coast. He joined the Gonzaga faculty as a professor of computer science in 1990. His professional interests include artificial intelligence and the social implications of computing. Professor De Palma is currently conducting research into the use of genetic algorithms, loosely based on the ideas of natural selection, for structural engineering. He is also working on a collection of essays about the experience of computing entitled *Dim Sum for the Mind*.

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Eleventh Edition

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Editors/Advisory Board

Members of the Advisory Board are instrumental in the final selection of articles for each edition of ANNUAL EDITIONS. Their review of articles for content, level, currentness, and appropriateness provides critical direction to the editor and staff. We think that you will find their careful consideration well reflected in this volume.

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To the Reader

In publishing ANNUAL EDITIONS we recognize the enormous role played by the magazines, newspapers, and journals of the public press in providing current, first-rate educational information in a broad spectrum of interest areas. Many of these articles are appropriate for students, researchers, and professionals seeking accurate, current material to help bridge the gap between principles and theories and the real world. These articles, however, become more useful for study when those of lasting value are carefully collected, organized, indexed, and reproduced in a low-cost format, which provides easy and permanent access when the material is needed. That is the role played by ANNUAL EDITIONS.

In a now famous scene from the 1968 movie, *The Graduate*, the hapless main character, Ben, is pulled aside at his graduation party by one of his father's business associates who asks him about his plans. As Ben fumbles, the older man whispers a single word in his ear: "plastics." The question is just what would Ben, now a middle-aged man himself, say to a new graduate today? Surely not "plastics," even though petrochemicals, for good and ill, have transformed the way we live over the past three decades. Odds are that computers have replaced plastics in the imaginations of today's graduates, this despite the current slump in the industry's fortunes. To test this hypothesis, I did a Google search on "plastics." It produced 2, 470, 000 hits, an indication that Ben was offered good advice. I followed this with a search on "computers," to which Google replied with an astonishing 30,700, 000 articles. You can learn more about Googling in "The World According to Google." For now, the point is that computers are a phenomenon to be reckoned with.

In culling forty-six articles for the eleventh edition of *Annual Editions: Computers in Society* from the sea of contenders, I have tried to continue in the tradition of former editor Kathryn Schellenberg. The writers are journalists, computer scientists, lawyers, and academics, the kinds of professions you would expect to find in a collection on the social implications of computing. Their writing is free from both the unintelligible jargon and the breathless enthusiasm that is so often found in writing about computers.

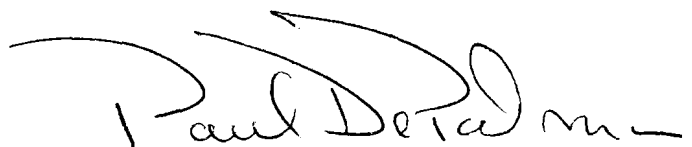
Annual Editions: Computers in Society 04/05 is organized around important dimensions of society rather than of computing. The book's major themes are the economy, community, politics considered broadly, and the balance of risk and reward. In a field as fluid as computing, the intersection of computers with each of these dimensions changes from year to year. In this edition, several articles consider the growing problem and growing costs of unwanted e-mail, rather than the importance of e-commerce which, in just a few years, has moved into the mainstream.

But computing is about more than the economy. More than any other technology, computers force us to think about limits. What does it mean to be human? Are there kinds of knowledge that should not be pursued? When combined with the truly revolutionary discoveries in biology, computers require that we ask the really big questions: what is possible and what is to be feared?

A word of caution. As Kathryn Schellenberg pointed out in the tenth edition, "Each article has been selected for its informational value, but to say that an article is 'informative' does not necessarily imply that the information is correct or valid." This is as true of the facts presented as it is of the points of view. Several articles in unit 2, for instance, assert that nearly half of all e-mail is spam. Yet, when reading startling assertions, it is well to remember that writers gather facts from other sources who gathered them from still other sources that may ultimately rely upon a selective method of fact-gathering. "The Computers and the Dynamo," originally written for the *American Scientist*, examines this very issue. I hope you approach these articles as you might approach a good discussion among friends. You might not agree with all their opinions, but you come away perhaps nudged in one direction or another by reasoned arguments.

This book includes several features that I hope will be helpful to students and professionals. Each article listed in the *table of contents* is followed by a short abstract with key concepts in bold type. The social implications of computing, of course, are not limited to the seven broad areas represented by the unit titles. A *topic guide* lists each article by name and number, along with still other dimensions of computers in society.

We want *Annual Editions: Computers in Society* to help you participate more fully in some of the most important discussions of the time. Your suggestions and comments are very important to us. If you complete and return the postage-paid article rating form in the back of the book, we can try to incorporate your thoughts into the next edition.



Paul De Palma
Editor

Topic Guide

This topic guide suggests how the selections in this book relate to the subjects covered in your course. You may want to use the topics listed on these pages to search the Web more easily.

On the following pages a number of Web sites have been gathered specifically for this book. They are arranged to reflect the units of this *Annual Edition*. You can link to these sites by going to the DUSHKIN ONLINE support site at <http://www.dushkin.com/online/>.

ALL THE ARTICLES THAT RELATE TO EACH TOPIC ARE LISTED BELOW THE BOLD-FACED TERM.

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- 45. Kurzweil vs. Dertouzos

Children

- 45. Kurzweil vs. Dertouzos

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- 39. The Quiet Revolution

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- 12. The Great Prosperity Divide

Education

- 12. The Great Prosperity Divide
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- 21. Cyber-Stars

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Stress

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46. *Hyperculture—Stress: How Fast Times Are Transforming America*

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16. *Security vs. Privacy*
17. *Searching for Answers*
23. *Bad Documents Can Kill You*
37. *Immigration and the Global IT Workforce*

World Wide Web Sites

The following World Wide Web sites have been carefully researched and selected to support the articles found in this reader. The easiest way to access these selected sites is to go to our DUSHKIN ONLINE support site at <http://www.dushkin.com/online/>.

AE: Computers in Society 04/05

The following sites were available at the time of publication. Visit our Web site—we update DUSHKIN ONLINE regularly to reflect any changes.

General Sources

Livelihood Intranet Guided Tour

<http://www.opentext.com/>

Livelihood Intranet helps companies to manage and control documents, business processes, and projects more effectively. Take this tour to see how.

UNIT 1: Introduction

Beyond the Information Revolution

<http://www.theatlantic.com/issues/99oct/9910drucker.htm>

Peter Drucker has written a three-part article, available at this site, that uses history to gauge the significance of e-commerce—"a totally unexpected development"—to throw light on the future of, in his words, "the knowledge worker."

Short History of the Internet

<http://w3.ag.uiuc.edu/AIM/scale/nethistory.html>

Bruce Sterling begins with the development of the idea for the Internet by the cold war think tank, the Rand Corporation, and goes on to explain how computer networking works. There are links to other sites and to further reading.

UNIT 2: The Economy

CAUCE: Coalition Against Unsolicited Commercial Email

<http://www.cauce.org>

This all-volunteer organization was created to advocate for a legislative solution to the problem of UCE, better known as spam. Read about the fight and how you can help at this Web page.

E-Commerce Times

<http://www.ecommercetimes.com/>

E-Commerce Times is a gateway to a wealth of current information and resources concerning e-commerce.

The End of Cash (James Gleick)

<http://www.around.com/money.html>

This article, previously published in the *New York Times*, on June 16, 1996, discusses the obsolescence of cash.

Fight Spam on the Internet

<http://spam.abuse.net>

This is an anti-spam sight that has been in operation since 1996. Its purpose is to promote responsible net commerce, in part, by fighting spam. Up-to-date news about spam can be found on the home page.

The Linux Home Page

<http://www.linux.org>

This Web site explains that Linux is a free Unix-type operating system, originally created by Linus Torvalds, that is causing a revolution in the world of computers. The site features the latest news about Linux, and everything else you would need to know to switch to the service.

Mersch Online: E-Cash Links

<http://www.mersch.com/links/moneyzz.htm>

This page has a good series of links to other sources of information about E-cash.

The Rise of the Informediary

<http://www.ait.unl.edu/crane/misgrad/sglee/informediary.htm>

The author of this site explains what an informediary is and what an informediary does. He also shows why the informediary is so important in today's business environment.

Smart Cards: A Primer

<http://www.javaworld.com/javaworld/jw-12-1997/jw-12-javadev.html>

This article by Rinaldo Di Giorgio brings the smart card to life with a real-world smart-card example. Five pages explain what a smart card is, how it is used, its limitations, and its strengths.

Smart Card Group

<http://www.smartcard.co.uk>

This Web site bills itself as "the definitive Web site for Smart Card Technology. At this site you can download Dr. David B. Everett's definitive "Introduction to Smart Cards."

UNIT 3: Work and the Workplace

American Telecommuting Association

<http://www.knowledgetree.com/ata-adv.html>

What is good about telecommuting is examined at this site that also offers information regarding concepts, experiences, and the future of telecommuting.

Cisco E-Learning

<http://www.cisco.com/warp/public/10/wwtraining/elearning/>

E-learning is Internet-enabled learning. This site explains why e-learning is important and contains an e-learning glossary.

Computers in the Workplace

<http://www.msci.memphis.edu/~ryburnp/cl/cis/workpl.html>

In this lecture, some of the advantages of computers in the workplace are examined as well as some of the negative aspects, including issues of training, ethics, and privacy.

InfoWeb: Techno-rage

<http://www.cciw.com/content/technorage.html>

Techno-rage is becoming more and more common. This site provides information and resources regarding techno-rage and techno-stress.

STEP ON IT! Pedals: Repetitive Strain Injury

<http://www.bilbo.com/rsi2.html>

Data on carpal tunnel syndrome are presented here with links to alternative approaches to the computer keyboard, and links to related information.

What About Computers in the Workplace

http://law.freeadvice.com/intellectual_property/computer_law/computers_workplace.htm

This site, which is the leading legal site for consumers and small businesses, provides general legal information to help people understand their legal rights in 100 legal topics—including the answer to the question, "Can my boss watch what I'm doing?"

UNIT 4: Computers, People, and Social Participation

Adoption Agencies

<http://www.amrex.org/>

Here is an example of the much-talked-about new trend of online adoption agencies.

Alliance for Childhood: Computers and Children

<http://www.allianceforchildhood.net/projects/computers/index.htm>

How are computers affecting the intellectual growth of children? Here is one opinion provided by the Alliance for Childhood.

The Core Rules of Netiquette

<http://www.albion.com/netiquette/corerules.html>

Excerpted from Virginia Shea's book *Netiquette*, this is a classic work in the field of online communication.

How the Information Revolution Is Shaping Our Communities

<http://www.plannersweb.com/articles/bla118.html>

This article by Pamela Blais is from the Planning Commissioners Journal, Fall 1996 issue, and deals with our changing society. It points out and explains some of the far-reaching impacts of the information revolution, including the relocation of work from office to home.

SocioSite: Networks, Groups, and Social Interaction

<http://www2.fmg.uva.nl/sociosite/topics/interaction.html>

This site provides sociological and psychological resources and research regarding the effect of computers on social interaction.

UNIT 5: Societal Institutions: Law and Politics

ACLU: American Civil Liberties Union

<http://www.aclu.org>

Click on the Supreme Court's Internet decision, plus details of the case *Reno v. ACLU*, and the ACLU's campaign to restore information privacy; "Take Back Your Data"; and cyber-liberties and free speech for opinions on First Amendment rights as they apply to cyberspace.

Information Warfare and U.S. Critical Infrastructure

<http://www.twurled-world.com/Infowar/Update3/cover.htm>

The "twURLed World" contains a pie chart of URLs involved in IW (information warfare) as well as report main pages that list Internet domains, keywords in contexts and by individual terms, and listing of all URLs and links to details.

Issues in Telecommunications and Democracy

<http://www.benton.org/publibrary/workingpapers/working8.html>

This article by Daniel A. Mazmanian, part of the Benton Foundation's Communication Policy Working Papers series, discusses the issues surrounding telecommunications in the twenty-first century. Other papers in the series can be found at <http://www.benton.org/publibrary/index.html>.

Living in the Electronic Village

<http://www.rileyis.com/publications/phase1/usa.htm>

This site addresses the impact of information in technology on government. Shown is the executive summary, but seven other sections are equally pertinent.

Patrolling the Empire

<http://www.csrp.org/patrol.htm>

Reprinted from *CovertAction Quarterly*, this article by Randy K. Schwartz details the plans of NIMA (National Imagery and Mapping Agency) for future wars by helping to fuse high-tech surveillance and weaponry.

United States Patent and Trademark Office

<http://www.uspto.gov/>

This is the official homepage of the U. S. Patent and Trademark Office. Use this site to search patents and trademarks, apply for patents, and more.

World Intellectual Property Organization

<http://www.wipo.org/>

Visit the World Intellectual Property Organization Web site to find information and issues pertaining to virtual and intellectual property.

UNIT 6: Risk and Security

AntiOnline: Hacking and Hackers

<http://www.antionline.com/index.php>

This site is designed to help the average person learn how to protect against hackers.

Copyright & Trademark Information for the IEEE Computer Society

<http://computer.org/copyright.htm>

Here is an example of how a publication on the Web is legally protected. The section on Intellectual Property Rights Information contains further information about reuse permission and copyright policies.

Electronic Privacy Information Center (EPIC)

<http://epic.org>

EPIC is a private research organization that was established to focus public attention on emerging civil liberties issues and to protect privacy, the First Amendment, and constitutional values. This site contains news, resources, policy archives, and a search mechanism.

Internet Privacy Coalition

<http://www.epic.org/crypto/>

The mission of the Internet Privacy Coalition is to promote privacy and security on the Internet through widespread public availability of strong encryption and the relaxation of export controls on cryptography.

Center for Democracy and Technology

<http://www.cdt.org/crypto/>

These pages are maintained for discussion and information about data privacy and security, encryption, and the need for policy reform. The site discusses pending legislation, Department of Commerce Export Regulations, and other initiatives.

Survive Spyware

<http://www.cnet.com/internet/0-3761-8-3217791-1.html>

Internet spying is a huge problem. Advertisers, Web designers, and even the government are using the Net to spy on you. CNET.com provides information about spyware and detecting spying eyes that will help you eliminate the threat.

An Electronic Pearl Harbor? Not Likely

<http://www.nap.edu/issues/15.1/smith.htm>

Is the threat of information warfare real? Yes. Do we need to be completely concerned? Probably not. This site tries to dispel some of the myths and hoaxes concerning information warfare.

UNIT 7: International Perspectives and Issues

Encryption in the Service of Human Rights

<http://www.aaas.org/spp/dspp/cstc/briefing/crypto/dinah.htm>

Here is a briefing paper from the Human Rights Watch concerning encryption in the service of human rights. What role does encryption play in the Human Rights Movement?

www.dushkin.com/online/

Information Revolution and World Politics Project

http://www.ceip.org/files/projects/irwp/irwp_descrip.ASP

This project, launched by the Carnegie Foundation in 1999, has as its purpose to analyze the political, economic, and social dimensions of the world-wide information revolution and their implications for U.S. policy and global governance.

National Security in the Information Age

<http://www.terrorism.com/documents/devostthesis.html>

This thesis project by Matthew G. Devost from the University of Vermont explores the new role that national security will play in the information age.

Satellite Imagery in Court

<http://www.crowsey.com/spacearticle.htm>

This article explains how satellite imagery works and predicts that it will be an important tool in the future. The article also asks whether or not satellite imagery technology will invade our homes and impinge upon our human rights.

UNIT 8: Philosophical Frontiers

Introduction to Artificial Intelligence (AI)

<http://www-formal.stanford.edu/jmc/aiintro/aiintro.html>

This statement describes A.I. Click on John McCarthy's home page for a list of additional papers.

Kasparov vs. Deep Blue: The Rematch

<http://www.chess.ibm.com/home/html/b.html>

Video clips and a discussion of the historic chess rematch between Garry Kasparov and Deep Blue are available on this site.

PHP-Nuke Powered Site: International Society for Artificial Life

<http://alife.org/>

Start here to find links to many alife (artificial life) Web sites, including demonstrations, research centers and groups, and other resources.

We highly recommend that you review our Web site for expanded information and our other product lines. We are continually updating and adding links to our Web site in order to offer you the most usable and useful information that will support and expand the value of your Annual Editions. You can reach us at: <http://www.dushkin.com/annualeditions/>.

UNIT 1

Introduction

Unit Selections

1. **From Movable Type to Data Deluge**, John Gehl and Suzanne Douglas
2. **Whom to Protect and How?** Robert J. Blendon et al.
3. **Five Things We Need to Know About Technological Change**, Neil Postman

Key Points to Consider

- All American school children learn that the first message Samuel F.B. Morse transmitted over his newly invented telegraph were the words, "What hath God wrought?" What they, perhaps, do not learn is that Morse was quoting from the poem of Balaam in the Book of Numbers, chapter 23. (<http://www.cforc.com/kjv/numbers/23.html>) Read the text of this poem. The overview to this unit presents two ways to understand technical and scientific discoveries. In which camp is Morse? Explain your answer.
- Early on in *Walden*, Thoreau remarked that "Our inventions are wont to be pretty toys, which distract our attention from serious things. They are but an improved means to an unimproved end, an end that it was already but too easy to arrive at.... We are in great haste to construct a magnetic telegraph from Maine to Texas; but Maine and Texas, it may be, have nothing important to communicate." Substitute "Internet" for "magnetic telegraph." Do you agree or disagree with Thoreau? Defend your answer.
- The invention of the computer is often compared in social impact to the invention of moveable type in the fifteenth century. Do you agree? Why or why not.



Links: www.dushkin.com/online/

These sites are annotated in the World Wide Web pages.

Beyond the Information Revolution

<http://www.theatlantic.com/issues/99oct/9910drucker.htm>

Short History of the Internet

<http://w3.ag.uiuc.edu/AIM/scale/nethistory.html>

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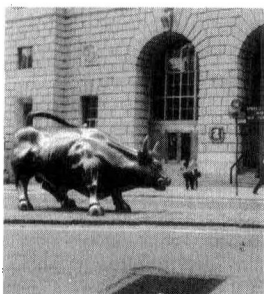


UNIT 1 Introduction

The three articles in this section provide a framework for the social context of computing. The first places the “digital revolution” in historical context. The second gives important data on American attitudes toward computing. The final essay offers a general (and personal) perspective on technological change.

Unit Overview xvi

- 1. From Movable Type to Data Deluge**, John Gehl and Suzanne Douglas, *The World & I*, January 1999
The authors discuss the **societal transformation** that began with the invention of the printing press in the fifteenth century and speculate on some potential consequences of the **“digital revolution.”** 2
- 2. Whom to Protect and How?**, Robert J. Blendon et al., *Brookings Review*, Winter 2001
“The United States,” the authors say, “is now in the second stage of a major **technological transformation**” that is changing American life. Some people are calling for more federal **government protection.** 7
- 3. Five Things We Need to Know About Technological Change**, Neil Postman, *McGraw-Hill/Dushkin*, 2003
Neil Postman, a well-known cultural critic, suggests that **computer technology** is too important to be left entirely to the technologists. “Embedded in every technology,” he says, “is a powerful idea....” 11



UNIT 2 The Economy

From the growing burden of unwanted e-mail, through the charge that PC power consumption played a part in the California energy crisis, to the smart cards that may be in our future, the six articles in this section demonstrate that computers are inseparable from the economy.

Unit Overview 16

- 4. Beyond the Bar Code**, Charlie Schmidt, *Technology Review*, March 2001
Charlie Schmidt explains how **radio frequency identification tags** may someday be able to track the location of “every single manufactured item” in real time. This will allow manufacturers to stay in sync with consumer demand, collect a wealth of data about individual consumer habits, and pose new challenges to **privacy.** 19
- 5. How You’ll Pay**, Evan I. Schwartz, *Technology Review*, December 2002/January 2003
Smart cards can now be used to store medical data, debit bank accounts, authenticate identity, and decrypt e-mail. The potential profits are enormous, but so are the hurdles. 23

6. **You've Got Spam**, Jonathan Krim, *Washington Post National Weekly Edition*, March 24–30, 2003
 “Roughly 40 percent of all e-mail traffic in the United States is *spam*,” according to Jonathan Krim. He explains how *unsolicited messages* find your computer and what the computer industry is doing to control this scourge. 28
7. **Start-Up Finds Technology Slump Works in Its Favor**, John Markoff, *New York Times*, March 24, 2003
 This short piece showcases the ingenuity of one entrepreneur who sells *software to block spam*. 31
8. **The Computer and the Dynamo**, Brian Hayes, *American Scientist*, September/October 2001
 Not long ago California suffered under rolling blackouts and startlingly high electric bills. Soon, Americans began hearing that the culprit was not deregulation and energy traders like Enron but, rather, the “*gluttonous energy appetite of computers*.” This struck Brian Hayes as “quite remarkable.” 33
9. **Bringing Linux to the Masses**, Fred Vogelstein, *Fortune*, February 3, 2003
 Could the *Linux operating system*, long the province of geeks, emerge as a challenge to Microsoft Windows? 39



UNIT 3

Work and the Workplace

Eight articles in this unit look at what happens when most of us work in an office: we are angry, watched, and dangerously prone to write intemperate e-mails. Computing has even altered the old debate about whether immigration displaces native born workers.

- Unit Overview** 42
10. **Brain Circulation: How High-Skill Immigration Makes Everyone Better Off**, AnnaLee Saxenian, *Brookings Review*, Winter 2002
 Do *immigrants* displace *native workers*? Is the United States siphoning off talent from countries that can ill afford to lose it? This Berkeley professor argues that high-skill immigration is more complex than that. 45
11. **The Perils of E-Mail**, Nicholas Varchaver, *Fortune*, February 17, 2003
 “Think of e-mail as the corporate equivalent of DNA evidence, the single hair left at the crime scene that turns the entire case.” Several recent high-profile *corporate scandals have hinged on e-mail*, as Nicholas Varchaver reports. 49
12. **The Great Prosperity Divide**, Kevin Dobbs, *Training*, February 2000
 “Two Americas” have emerged in the *new economy*. Kevin Dobbs shows how new technologies lead to wider *social inequality* and asks whether publicly funded *training* can help those who are being left behind in the *new economy*. 54
13. **“You’re Hired, Now Go Home”**, Jeanne L. Allert, *Training & Development*, March 2001
 Because *virtual companies* lack a physical place, they have to rewrite a lot of rules or make up new ones in hiring employees. Drawing from experience, Jeanne Allert offers advice on “how to hire *virtual workers* and keep them connected.” 59
14. **Dealing With Tech Rage**, Chris Wood, *Maclean’s*, March 19, 2001
 If you ever feel like hurling your computer out the window, you are not alone. Chris Wood explains how quirky software, e-mail overload, and other technology-related irritations can lead to *rage* or *techno-stress*. 62
15. **They’re Watching You**, Sarah Boehle, *Training*, August 2000
 A majority of U.S. firms record and review some form of *employee communications*, and the number is expanding rapidly. In this article, Sarah Boehle asks and answers the question, “What’s behind this rush to *Orwellian oversight*?” 64

The concepts in bold italics are developed in the article. For further expansion, please refer to the Topic Guide and the Index.

16. **Security vs. Privacy**, Jonathan A. Segal, *HR Magazine*, February 2002

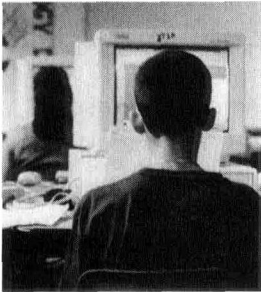
In this first part of a two-part series, a lawyer advises employers about **how to violate employee privacy** within legal parameters. Here, Jonathan Segal offers guidance on how to design policies that give employers **the right to “search” employees** (including their electronic communications).

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17. **Searching for Answers**, Jonathan A. Segal, *HR Magazine*, March 2002

In this second part of a two-part article, Jonathan Segal tells employers how to be “circumspect” and to **respect employees’ privacy rights** when implementing the right to search.

73



UNIT 4 Computers, People, and Social Participation

Five selections discuss the complexity of computing devices, virtual community and its temptations, the inclusion of women and African Americans in computer science, and the meaning of “to google.”

Unit Overview

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18. **Is That a Computer In Your Pants?**, Jesse Walker, *Reason*, April 2003

“We’re entering a world in which the **complexity of devices** and the system of interconnecting devices is beyond our capability to easily understand,” says veteran tech observer Howard Rheinholt in this interview with *Reason*.

79

19. **Do Cheaters Ever Prosper? Just Ask Them**, Peter Wayner, *New York Times*, March 27, 2003

“One lesson the game industry learned the hard way,” says Peter Wayner, “is that **dedicated cheats will rewrite software** to give themselves an advantage.”

84

20. **Why Women Avoid Computer Science**, Paul De Palma, *Communications of the ACM*, June 2001

In this essay, Paul De Palma criticizes the view that **women** avoid computer science because of “**math anxiety**.” He argues, rather, that women “embrace” mathematics and that computer science programs would attract more women if they were more like math.

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21. **Cyber-Stars**, *Black Issues in Higher Education*, February 28, 2002

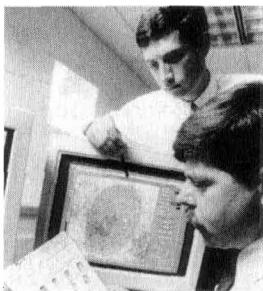
This special report profiles 10 **African Americans** who are “making history in the arena of information technology.” These individuals are making major contributions in a wide range of academic fields as well as working to help **disadvantaged minorities** succeed in the digital revolution.

89

22. **The World According to Google**, Steven Levy, *Newsweek*, December 16, 2002

When a company name, “Google,” becomes a transitive verb, “**to google someone**” in just a few short years, you know that something big is happening.

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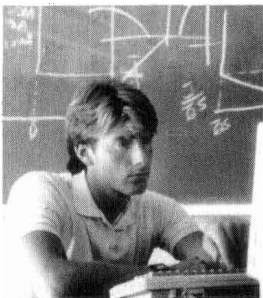
UNIT 5 Societal Institutions: Law and Politics

New technologies often have unintended consequences that require a rethinking of legal and political structures. Seven articles demonstrate that this is true in the debates surrounding intellectual property, “e-democracy,” and governing the Internet itself.

Unit Overview

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23. **Bad Documents Can Kill You**, Valli Baldassano and Roy Speed, *Across the Board*, September/October 2001
Increasingly, companies that become targets of **legal actions** find that “Exhibit A against them is their own employees’ **written correspondence** ... and in more and more cases, the starring role is played by **e-mail**.” In this article, a former prosecutor and an expert on business writing offer advice on the do’s and don’ts of e-mail and how to legally prevent **bad documents**. 105
24. **The Digital Dilemma**, Randall Davis, *Communications of the ACM*, February 2001
Intellectual property laws, policies, and practices reflect a careful balancing of public good and private interests that is threatened by the changing **information infrastructure**. Focusing on publication, copyright, and licensing issues, Randall Davis identifies the origins and possible solutions to this emerging dilemma. 110
25. **The Control of Ideas**, George Scialabba, *The American Prospect*, January 28, 2002
George Scialabba, in his review of two books, offers a rebuttal to arguments favoring strong **intellectual property** protections. “A specter is haunting culture,” he says, “the specter of intellectual-property law.” 116
26. **Democracy in an IT-Framed Society**, Åke Grönlund, *Communications of the ACM*, January 2001
The January 2001 issue of the CACM featured several articles on **electronic democracy**. Here, guest editor Åke Grönlund gives readers an overview of the subject and highlights various authors’ contributions to understanding **e-democracy** in the areas of formal **politics, administration, and civil society**. 119
27. **Should Democracy Online Be Quick, Strong, or Thin?**, Joachim Åström, *Communications of the ACM*, January 2001
In this article, Joachim Åström outlines three models of **democracy**. Each model embodies different ideals and implies different interpretations of what an electronic manifestation of government by the people might look like. 123
28. **As Goes Software...**, *The Economist*, April 14, 2001
The **institutional structure of the Internet** may help solve some of the **regulatory issues** that networked computers raise. 126
29. **Governing the Internet**, Zoë Baird, *Foreign Affairs*, November/December 2002
“A reliance on markets and self-policing has failed to address ... the important interests of Internet users such as privacy protection, security, and access to diverse content,” says Zoë Baird. It is necessary for governments to step in. 128



UNIT 6 Risk and Security

With the spread of computers and computer networks, comes an entirely new set of risks. Seven selections examine computer security, terrorism, and the vulnerabilities of digital documents.

Unit Overview

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30. **Homeland Insecurity**, Charles C. Mann, *The Atlantic Monthly*, September 2002
Charles Mann learns from computer security expert Bruce Schneier that “the trick is to remember that technology can’t save you.” 134
31. **Are You the Weak Link?**, Kevin D. Mitnick, *Harvard Business Review*, April 2003
Kevin Mitnick spent 5 years in federal prison for **computer crimes**. He says that in the rush to invest in ever more sophisticated security technologies, companies have “neglected the weakest link: employees.” 147

- 32. Code Red for the Web**, Carolyn Meinel, *Scientific American*, October 2001
 In July 2001, "more than 359,000 servers were infected with the **Code Red Worm** in less than 14 hours." Carolyn Meinel explains how the worm was spread and the damage it caused. She also reports on more virulent plagues in the making and the possibilities of future **cyberwars** and their potential consequences. 150
- 33. Networking the Infrastructure**, Wade Roush, *Technology Review*, December 2001
 Several federal agencies and private industry partnerships are working to improve **warning systems** and reduce threats posed by **terrorism**. In this article, Wade Roush gives us an overview of developing innovations that will lead to **intelligent cities** that can better protect **critical infrastructures**. 157
- 34. Will Spyware Work?**, Kevin Hogan, *Technology Review*, December 2001
 The United States has the world's most sophisticated **intelligence-gathering** technologies, yet it "failed to discover a band of **terrorists** that plotted within its borders." Kevin Hogan explains the limits of **electronic surveillance**. State-of-the-art **spyware** can be stymied by "embarrassingly primitive" countermeasures, and technologies such as FBI **Carnivore programs** may not solve these problems. 162
- 35. The Shock of the Old**, Edward Tenner, *Technology Review*, December 2001
 Edward Tenner discusses the September 11, 2001, attacks in the context of other historical events. He argues that the focus on **new technology** as both a source of vulnerability and an answer to problems can go too far. Rather, we should concentrate on improving **tact knowledge** and developing a better understanding of terrorists and their neighbors. 166
- 36. Data Extinction**, Claire Tristram, *Technology Review*, October 2002
 Underscoring the point that **technology** has limitations, Claire Tristram explains that documents created by **obsolete digital equipment** are inaccessible. 168



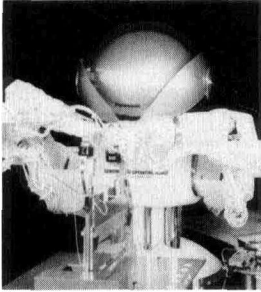
UNIT 7

International Perspectives and Issues

From Indian software engineers to satellite-delivered American television, computer technology is an international phenomenon. Five articles look at aspects of this phenomenon.

- Unit Overview** 174
- 37. Immigration and the Global IT Workforce**, Lawrence A. West and Walter A. Bogumil, *Communications of the ACM*, July 2001
 There is a worldwide shortage of information technology (**IT**) **workers**. Wealthy nations offer attractive incentives to lure IT specialists from other countries, but this strategy can exacerbate IT labor shortages in disadvantaged parts of the world. Therefore, IT may contribute to a "pervasive **gap in the wealth-creation potential** between nations." 177
- 38. Wiring the Wilderness in Alaska and the Yukon**, Seymour E. Goodman, James B. Gottstein, and Diane S. Goodman, *Communications of the ACM*, June 2001
 In theory, **wireless technologies** have advanced to where Internet access could become available to isolated parts of the world. The authors consider communities in Alaska and the Yukon and discuss technical, political, social, and cost factors in providing **Internet access** to **remote villages**. 182
- 39. The Quiet Revolution**, Sulette Dreyfus, *The UNESCO Courier*, March 2001
 In many nations, human rights groups are learning the art of **encryption**. Other computer applications are allowing organizations to track abuses with scientific rigor. Such developments are subtly changing the balance of power between repressive governments and the **human rights** groups that watch them. 186

40. **Dot Com for Dictators**, Shanthi Kalathil, *Foreign Policy*, March/April 2003
According to Shanthi Kalathil, "Many **authoritarian regimes** have realized that adapting to the information age means **relinquishing a measure of control**." 188
41. **ACM's Computing Professionals Face New Challenges**, Ben Shneiderman, *Communications of the ACM*, February 2002
In light of September 11, 2001, a computer scientist challenges technologists to help find **terrorism solutions** that avoid sacrificing valued liberties. Ben Shneiderman encourages colleagues to work toward preventing terrorism, strengthening communities, broadening participation, and reducing **global inequities**. 194



UNIT 8 Philosophical Frontiers

Five articles explore these questions: What does it mean to be human? Are there kinds of knowledge that should not be pursued? What is possible and what is to be feared?

Unit Overview 198

42. **Humanoid Robots**, Rodney Brooks, *Communications of the ACM*, March 2002
"The future promises lots of **robots** in our everyday lives." Many of them may look and behave like people. Rodney Brooks gives us a brief overview of robot history as well as current and future developments in **humanoid robotics**. 200
43. **The Real Scientific Hero of 1953**, Steven Strogatz, *New York Times*, March 4, 2003
March 2003 was the 50th anniversary of the concept of a **computer experiment**, the idea that nature may be understood by running **simulations** on a computer. Real progress in many areas of medicine "will require a melding of both great discoveries of 1953," the other being the structure of DNA. 204
44. **The Race to Computerise Biology**, *The Economist*, December 14–20, 2002
"Wet lab processes that took weeks to complete are giving way to digital research done **in silico**." This marriage is called "**bioinformatics**." Though powerful drugs are the promise, the danger "is that it is seductively easy for biologists to rely on ... computers and to ignore the scientific grind of hypothesis and proof." 205
45. **Kurzweil vs. Dertouzos**, Ray Kurzweil and Michael Dertouzos, *Technology Review*, January/February 2001
Two renowned commentators on the **social implications of technology** contribute to the debate about whether some kinds of knowledge are too dangerous to pursue. Both agree that we cannot judge where new technologies are headed. 209
46. **Hyperculture—Stress: How Fast Times Are Transforming America**, Stephen Bertman, *Vital Speeches of the Day*, January 15, 1999
Modern technologies accelerate the pace of life, inducing **speed-driven stress** and altering the fundamental **nature of existence** argues Stephen Bertman. 213
- Index** 219
- Test Your Knowledge Form** 222
- Article Rating Form** 223