CHAPTER

16 Societal Issues

After completing this chapter, you will be able to:

- **Question the potentially negative impact of multimedia on violence, game addiction, sexual exploitation, pornography, and obscenity**
- **Know what the V-chip is and how it works in conjunction with the TV Parental Guidelines**
- **Understand the regulatory nightmare facing lawmakers on issues of privacy, encryption, censorship, and protectionism**
- **Realize how fortune seekers have tried to profit from the legal system's lack of experience by patenting basic multimedia technologies that were already widely used**
- **Consider the copyright law and a teacher's right to fair use of multimedia**
- **Understand the issues of entitlement, equity, cost, usability, and universal access, and then question whether the building of the Information Superhighway will create a technological underclass in our society**

Until now this book has touted the great advantages of multimedia. But will its true potential be reached? Who will control access? Almost any good thing can be misused; how can multimedia harm society?

Human Impact

A lot of people worry about graphic violence in video games. Is it right to have laser shooting games in video arcades, which can train young people how to aim and fire weapons at people, when the leading cause of death among urban youth is gunshot wounds? Sex CDs let men exploit women virtually. With more than 60% of families reporting problems of marital violence, should CDs and DVDs in which men can torture women on-screen be legal? Research shows that virtual reality is even more addictive than conventional video games. What effect will this have on humankind?

Violence and Game Addiction

In her review of violence in video games, Stefanac (1994) reports that there were more than 10,000 murders involving handguns in the United States in 1990. During the same year, only 10 such murders occurred in Australia, 13 in Sweden, 22 in Great Britain, and 87 in Japan. In 1991, 55% of those arrested for murder in the United States were under the age of 25. According to federal crime reports, the number of children arrested for murder during the past decade has risen by 55%.

The author suggests that you visit your local arcade and try one of the video games that have laser-targeting firearms. As you hold the weapon, people appear on the screen in front of you. They are not mere "pixellated" computer graphics that only suggest human forms, but real live video recordings of street scenes. You must aim accurately and fire quickly to avoid being shot. Now go outside and walk down the street. Someone appears from around the corner in front of you. What is your basic instinct after playing the game?

Not everyone agrees that video game violence provokes street crime. According to popular culture Professor Christopher Geist (Stefanac 1994):

> People often assume that findings for one medium apply necessarily to the next. Some people are saying that interactive games will have more impact. That's a guess. It could turn out that the interactivity in some of these combat games actually lessens the negative impact; it could serve a cathartic effect. Much more research needs to be done before we start drawing absolute conclusions.

Sex

Sex is very important to most people. Traffic on the Internet reflects this: The newsgroup *alt.sex* has more than 350,000 readers with more than 10 MB of new messages per month; that is the equivalent of three Bibles. But multimedia is being used for more than just distributing erotic stories and pictures. Interactivity is letting users live out their fantasies virtually. For example, *NightWatch* allows the voyeur/player to snoop around a plush singles resort via a bank of security monitors. *Virtual Valerie* lets users roam about and explore Valerie's apartment and have cybersex with her in the bedroom. Linea Jacobson, editor of *CyberArts,* has a warning about the dangers of these applications (Stefanac 1994):

> What's wonderful about interactive media is also what's reprehensible about this kind of application: the idea of handing control over to the user. Smut on paper or video is much more benign than interactive stroke books. These products show men that they can have control over women. You can force them to do your bidding and they do it willingly. I am absolutely opposed to censorship, but I think men have to be made aware that this kind of thing can make women feel very uncomfortable.

Pornography and Obscenity

Mike Godwin (1994), online counsel for the Electronic Frontier Foundation, also has concerns about the risks of putting graphic sexual materials on the Internet. The GIF, JPG, and PNG file formats are capable of reproducing over the Net full-color photos of explicit "hardcore" pornography and child pornography. The federal government has been searching and seizing servers that contain such material. These are so popular that Delft University in the Netherlands has had to limit each user to eight downloads per day from its erotic image file server.

The Supreme Court's 1973 *Miller* ruling gave communities the right to legislate obscenity. To help interpret the laws, Godwin (1994: 58) developed the following four-part test, based on the Supreme Court's 1966 definition of obscenity:

1. Is the work designed to be sexually arousing?
2. Is it arousing in a way that one's local community would consider unhealthy or immoral?
3. Does it picture acts whose depictions are specifically prohibited by state law?
4. Does the work, when taken as a whole, lack sufficient literary, artistic, scientific, or social value?

Distributing such materials over the Internet raises some difficult issues. For example, while an erotic picture might not be immoral in the community where it was uploaded, it may very well be considered obscene in the place it gets downloaded. Internet resources like e-mail, FTP, and the Web make it very easy to take things out of context; who can prevent users from circulating an image devoid of the supplementary material that made it legitimate? Moreover, children can easily access over the Internet materials that were intended for adults.

The U.S. child protection laws forbid any pornographic images that use children, whether or not the images meet Godwin's obscenity test. Individuals convicted can be fined up to $100,000 and imprisoned up to 10 years. As the result of a nationwide FBI investigation of online porn, for example, a distributor of child pornography was sentenced to five years in prison for sending sexually explicit photos of children via his America Online account (*Tampa Tribune* 2/24/96: A6).

Canada's best-known computer science school, the University of Waterloo, banned from its campus five Internet bulletin boards dealing with violent sex out of concern that their contents break laws on pornography and obscenity (*Toronto Globe & Mail* 2/5/94: A1).

The Recreational Software Advisory Council on the Internet (RSACi) has created an open, objective, content rating system called RSACi. It provides users with information about the level of sex, nudity, violence, vulgarity, or hate-motivated language in software games and Web sites. Parents and teachers can set the level at which to block offensive content. To learn how to set the level at which content will be blocked, follow the *Multilit* Web site link to RSACi.

Multi-User Domains

In her fascinating book *Life on the Screen,* Sherry Turkle (1995) describes what it is like to participate in **Multi-User Domains**, or **MUDs**, which are virtual spaces in which you can navigate, strategize, and converse with other users. Turkle views MUDs as a new kind of parlor game and a new form of community that lets people generate experiences, relationships, identities, and living spaces that arise only through interaction with technology. One of the dangerous aspects is how men can stalk women in MUDs. For example, Turkle tells of a virtual rape:

> One MUD player had used his skill with the system to seize control of another player's character. In this way the aggressor was able to direct the seized character to submit to a violent sexual encounter. He did all this against the will and over the distraught objections of the player usually "behind" this character, the player to whom this character "belonged." Although some made light of the offender's actions by saying that the episode was just words, in text-based virtual realities such as MUDs, words *are* deeds (Turkle 1995: 15).

Parents need to be aware of the dangers of MUDs, because young people are especially susceptible. Discussing childhood encounters with "netsex," Turkle warns:

> Parents need to be able to talk to their children about where they are going and what they are doing. This same commonsense rule applies to their children's lives on the screen. Parents don't have to become technical experts, but they do need to learn enough about computer networks to discuss with their children what and who is out there and lay down some basic safety rules. The children who do best after a bad experience on the Internet (who are harassed, perhaps even propositioned) are those who can talk to their parents, just as children who best handle bad experiences in real life are those who can talk to an elder without shame or fear of blame (Turkle 1995: 227).

To find Multi-User Domains online, follow the *Multilit* Web site link to the MUD Connector. For the latest MUD research, follow the link to the *Journal of Virtual Environments.* The *Multilit* Web site also links to *Cybersociology Magazine,* which is a webzine dedicated to the critical discussion of the Internet, cyberspace, online culture, and life online. In an article dealing with online relationships, for example, Sannicolas (*Cybersociology,* 1997, *Multilit* Web site) observed that 40% of the chatrooms open on the network at 7 p.m. were advertised as having sexual content and also being chats appropriate for teenagers. Sannicolas worries about the effect that adults entering these rooms to have virtual sex with teenagers may have on the development, socialization, and sexual behavior of adolescents.

Internet Addiction Disorder

The Internet can be addicting, so much so that the term **Internet Addiction Disorder (IAD)** has entered the medical lexicon. University of Pittsburgh researcher Kimberly Young maintains that IAD is as real as alcoholism, characterized by loss of control, cravings and withdrawal symptoms, social isolation, marital discord, academic failure, excessive financial debt, and job termination (*Toronto Globe & Mail* 6/15/96: A1).

At the 1999 meeting of the American Psychological Association, researcher David Greenfield reported the findings of the largest study of Internet use conducted to date. According to the report, nearly 6% (i.e., more than 11 million users) suffer from some form of addiction to the World Wide Web. As Greenfield (1999, ABCNEWS.com, *Multilit* Web site) states, "Marriages are being disrupted, kids are getting into trouble, people are committing illegal acts, people are spending too much money. As someone who treats patients, I see it." Arguing that the number of Internet addicts will grow, Greenfield pointed out that just as a drug is most addictive when absorbed directly into the bloodstream, the Internet's potential for abuse will grow with modem speeds and ease of access. For the complete story, follow the *Multilit* Web site link to Internet Addiction.

To borrow from the title of Sherry Turkle's book, there is "life on the screen," and certain kinds of people may prefer cyberlife to real life. If you feel yourself becoming addicted, set a time limit for how long you spend on the Internet each day, and try to stay focused on the task at hand. Many Web pages contain enticing ads intended to draw you away from your original purpose. You can reduce the amount of time you spend online if you stay focused on accomplishing your intent instead of surfing off in other directions.

For more information about Internet Addiction Disorder, follow the *Multilit* Web site links to Virtual Addiction and the Center for Online Addiction.

Regulation

With the broadcast television, cable TV, telephone, and computer network industries all jockeying for position, the Information Superhighway presents a regulatory nightmare. With Regional Bell telephone companies wanting to compete in the long distance marketplace, cable companies hoping both to offer local phone service and keep local phone companies from providing video services, and TV broadcasters demanding the right to provide data services along with their regular programming, Congress faces a legislative quagmire. To avoid endless delay in the construction of the Information Superhighway, the White House proposed to deregulate the telecommunications industry to a point where any company can offer any services to any set of consumers. According

to a survey by the National Consumers League, the public sided with the administration on this issue by a two-thirds majority (*BNA Daily Report for Executives* 2/1/94: A12).

On February 8, 1996, the Telecommunications Deregulation Act was signed into law. To read the provisions of the Act, follow the *Multilit* Web site link to the Telecommunications Act of 1996. To find out how America's local phone companies have been working hard to realize the promise of the Act, follow the *Multilit* link to TelecommPolicy.net.

Privacy

Do you realize that many employers claim the legal right to read all of the e-mail and other electronic correspondence that flows through their company's computer network? While the Federal Electronic Communications Privacy Act of 1986 protects the privacy of messages sent over public networks like MCI Mail and CompuServe, it does not cover a company's internal e-mail (*New York Times* 12/6/93: A8). The author believes this infringes upon freedom of speech and should be changed. Even though your employer pays for the telephone line in your office, your employer cannot listen in on your telephone conversations without having a court order. How then can it be legal to eavesdrop on your electronic conversations? As Neal J. Friedman, a specialist in online computer law, explains: "Employees are under the misapprehension that the First Amendment applies in the workplace—it doesn't. Employees need to know they have no right of privacy and no right of free speech using company resources" (*Computerworld* 2/5/96: 55). Beware of this: Do not ever communicate anything electronically that you would not want read by your employer or network administrators.

You should also be aware that when you send e-mail on the Information Superhighway, it passes through one or more **gateways**. Each gateway is a computer that can (and often does for backup and reliability purposes) retain a copy of your communications. Any computer systems analyst with access to that network can read your messages. It is also possible to write sophisticated snooper software that can monitor all of your electronic communications and alert the eavesdropper when your messages contain certain key words or phrases. The Canadian Security Intelligence Service, for example, contracted with a Montreal firm for a system that can quickly isolate key words and phrases from millions of airborne phone, fax, and radio signals (*CTV National News* 1/31/94: 11:00 P.M.).

Do you write messages in Internet newsgroups? If you do not set the x-no-archive flag on your messages, anyone on the Internet can find your messages via the *DejaNews* newsgroup search engine at www.deja.com. Imagine the implications of this kind of technology for job seekers. Sometimes young people do foolish things. Suppose that when you were young, you got on the Internet and wrote immature messages in newsgroups. Later on, when you apply for a job, your potential employer can look you up in *DejaNews* and obtain an indexed list of everything you have ever written in newsgroups. Is this an invasion of privacy? As you attempt to answer this question, keep in mind that *DejaNews* did not exist prior to its invention in 1995; suddenly, a search engine appears that makes it possible for anyone to search through newsgroups in which you may have expressed your feelings and orientations on sensitive topics and issues.

While it is possible to remove a message from the Deja archives, it is usually not possible to remove it from the Usenet at large. To learn how to remove a message from the Deja archives, follow the *Multilit* Web site link to Deja Nuke. For more tips on safeguarding your online privacy, follow the *Multilit* Web site link to the Electronic Frontier Foundation (EFF) and read the EFF's "Top 12 Ways to Protect Your Online Privacy."

Encryption and the Clipper Chip

To prevent people from reading electronic correspondence, many firms encrypt their messages. The government is concerned that this prevents law enforcement agencies who have court orders from eavesdropping on digital communications. For many years, the White House wanted to control the encryption process by requiring that every government computer contain a **Clipper chip**, which is an encryption device with a "back door" that allows detectives with the proper access to decipher the messages. In opposition to the White House plan, more than 250 members of Congress cosponsored legislation that would prohibit requiring such back-door devices on computers. The Clipper chip has been denounced by industry groups as well as civil liberties groups concerned about privacy (*New York Times* 2/5/94: A1). The Computer Professionals for Social Responsibility (CPSR) organized a protest; to learn more about civil liberties and privacy, follow the *Multilit* Web site link to CPSR.

In 1999, the White House revised its policy and proposed legislation entitled the Cyberspace Electronic Security Act, which limits government use of decryption keys obtained by the courts. According to the Center for Democracy and Technology, however, the proposed policy would give the government access to decryption keys without adequate Fourth Amendment privacy protections. According to the Fourth Amendment to the U.S. Constitution, "The right of the people to be secure in their persons, houses, papers and effects, against unreasonable searches and seizures, shall not be violated . . ." In defense of this right, Americans for Computer Privacy (ACP) endorsed the Security and Freedom Through Encryption (SAFE) Act, which protects the right of the American citizen to use the strongest possible encryption and prevents the government from building in back-door access to private online communications. For more information about privacy legislation and online activism, follow the *Multilit* Web site link to Americans for Computer Privacy. To study the details of the proposed Cyberspace Electronic Security Act, follow the link to The Center for Democracy and Technology.

InfoWorld publisher Bob Metcalfe opposes back doors for technological reasons: "I am against Clipper simply because it will not work, and it will cost an unnecessary amount of tax money to outfit government computers with the chips. . . . Smart criminals can easily get around Clipper by using additional encryption. Stupid criminals will continue to do stupid things and get caught" (*Wall Street Journal* 3/22/94: A14).

Pretty Good Privacy (PGP) is an encryption program written by Phil Zimmerman. It is the kind of "additional encryption" to which Metcalfe refers. PGP runs on almost every brand of computer and is the most common way of encrypting e-mail messages. For example, there is a PGP plug-in for the popular Eudora e-mail package. For more information, follow the *Multilit* Web site link to PGP. Also written by Zimmerman is PGPfone, which uses a complex algorithm called Blowfish to scramble phone calls made through a computer modem. For details, follow the *Multilit* Web site link to PGPfone. You can download both PGP and PGPfone for free.

Censorship

Many people are concerned that in addition to being able to read electronic communications, network administrators also have the ability to censor them. To what extent and under what circumstances should the government act as a censor on the Information Superhighway?

Few would argue that the University of Waterloo erred in banning obscene bulletin boards from its network. But what prevents users from avoiding the ban by distributing the material through e-mail? During a well-publicized criminal trial in Toronto, the Canadian government exercised its right to ban any publicity about the case, lest prospective jurors become biased and the hearings end in mistrial. So the University of Toronto stopped carrying an Internet bulletin board that disclosed banned information about the case. But that did not stop people from distributing the information through e-mail. It has become virtually impossible to intercept the electronic exchange of such information (*Toronto Globe & Mail* 12/2/93: A4).

There has been a lot of controversy surrounding the Communications Decency Act of 1996 (CDA), which made it illegal to distribute indecent or offensive materials on the Internet. Ruling that the act violates free speech, a three-judge federal court blocked enforcement of the CDA, describing it as "a government-imposed content-based restriction on speech," in violation of the Constitution. In defense of the CDA, the Justice Department appealed to the Supreme Court. The Citizens Internet Empowerment Coalition (CIEC) lobbied hard, however, and the Supreme Court ruled that the CDA was unconstitutional because it violated the First Amendment right of free speech. For more on the Supreme Court decision, follow the *Multilit* Web site link to the Citizens Internet Empowerment Coalition.

For more information about freedom of speech and censorship, follow the *Multilit* Web site link to the American Communication Association (ACA). The ACA Center for Communication Law maintains an extensive list of organizations dedicated to opposing censorship and preserving the right of free speech. To learn about the Blue Ribbon Campaign for Online Free Speech, for example, follow the *Multilit* Web site link to the Electronic Frontier Foundation.

Violence and the V-Chip

To provide a way for parents to censor TV programs containing adult content, the Federal Communications Commission invented the V-chip, which is a technology for blocking the display of television programming based upon its rating. The *V* stands for violence, but the V-chip also blocks other kinds of adult content, such as erotic, obscene, and profane materials. As of January 1, 2000, all television sets with picture screens 13 inches or larger must contain the V-chip. Set-top boxes permit parents to set the level at which the programs will be blocked.

The rating system is called TV Parental Guidelines. It was established in conjunction with the National Association of Broadcasters, the National Cable Television Association, and the Motion Picture Association of America. Ratings are displayed on the TV screen for the first 15 seconds of rated programming. To see the ratings, follow the *Multilit* Web site link to the FCC's V-Chip home page. For a parent's guide to the TV ratings, follow the link to the Kaiser Foundation's V-Chip Education Project.

Protectionism

Some countries view multimedia technology as a cultural threat and are taking steps to counteract it. To protect the French language, for example, France passed a law in 1996 requiring that all software sold in France must be provided in a French-language version. People who live in France should protest such a Machiavellian law.

China has a history of human rights abuses and denial of individual freedom. Continuing that tradition, China is building a centrally administered Internet backbone that will allow government monitoring of e-mail and other online activities (*Wall Street Journal* 1/31/96: A1).

Viewing the Internet as the end of civilization, Iraq has denied access to all of its citizens. An editorial in the Iraqi government newspaper *Al-Jumhuriya* says that the Internet is "the end of civilizations, cultures, interests, and ethics," and "one of the American means to enter every house in the world. They want to become the only source for controlling human beings in the new electronic village" (Associated Press 2/17/97). This viewpoint fails to realize that many of the key Internet inventions came from outside the United States. Packet switching originated in Great Britain, for example, and the Web was invented in Switzerland.

The Internet is a worldwide resource in which every country should participate and become a co-inventor. Restricting or denying access to the Internet will severely retard a nation's status in the twenty-first century. Every citizen in the world should have the right to unrestricted Internet access.

Internet Taxes

Taxation is a tricky problem on the Internet because any company can establish a storefront on the Web and sell products to anyone in the world. The White House and Congress have lobbied with the World Trade Organization to impose a moratorium on Internet tariffs and taxes. Several European countries have objected, however, because they want to collect their value-added tax (VAT) for goods purchased over the Internet. In France, for example, the value-added tax on goods exceeds 20% of the purchase price. Of particular concern is the bit tax that the United Nations is considering. Bit, which stands for binary digit, is a unit of measure for computer files. The larger the file, the more bits it has in it. Anderson tells how the bit tax would increase based on the size of the file being transferred (*ABC News* 1999, *Multilit* Web site).

A law which banned new U.S. Internet taxes for three years has also established an Advisory Commission on Electronic Commerce. Members of the commission are divided on the issue of the ban, with conservatives fearing the loss of government revenue to tax-free Internet business, and liberals arguing that sales taxes or bit taxes would hamper the network's growth. To learn more about electronic commerce and tax policy, follow the *Multilit* Web site link to the Advisory Commission on Electronic Commerce.

Multimedia and the Law

Multimedia is putting new pressures on the legal system. Initially slow to learn about new media, the patent office was tricked into granting some patents too broad in scope. Misinterpretations of the copyright law have prevented fair use of multimedia by teachers and students. Lawmakers and enforcers need to be multiliterate so they can bolster the use of new media on the Information Superhighway instead of retarding its progress through lack of understanding. *Note:* This chapter is not intended as a substitute for legal advice. You should consult a lawyer or a campus copyright official before taking action in specific cases, because your circumstances may differ from what is described here.

Patents

The U.S. Patent and Trademark Office granted two multimedia patents so broad in scope that the awardees blatantly announced all other vendors owed them royalties on all past, present, and future products. This created an industrywide protest so severe that one of the vendors withdrew its claim; the patent office overturned the other patent. In both cases, there was so much prior art that for people in the industry these claims were likened to trying to patent sunlight (*Wall Street Journal* 3/25/94: B2).

THE OPTICAL DATA PATENT

The first case involved a patent awarded to Optical Data Corporation for the syllabus-based curriculum outlining method used in the *Windows on Science* program. The syllabus is so basic to the teaching process that many other products already used it. Kinnaman (1993) describes how Videodiscovery filed a lawsuit seeking a declaratory judgment finding the patent invalid because of prior art and the obviousness of the claims. The Interactive Multimedia Association (IMA) supported the Videodiscovery complaint; as IMA president Philip Dodds politely stated, "Patents such as these, which require nearly every company involved in interactive multimedia and education to license an idea and application that have a long history and are widely known, are not in the best interest of the industry or educators" (Kinnaman 1993).

To stop the flow of negative publicity stemming from the patent, Optical Data dedicated the patent permanently to the public. According to Optical Data chair William Clark, "It was never our intent to use this patent to inhibit the development of multimedia based interactive teaching methods. A tremendous amount of concern—including a lawsuit by one of our competitors—arose from this patent award. We hope that by voluntarily dedicating this patent to the public, we will end any unfounded fears that Optical Data, or any other company, might try to limit the diversity of interactive, multimedia programs available to educators" (Kinnaman 1994).

But Foremski (1994) reports another company attempting to do just that. Compton's caused an uproar by claiming at COMDEX/Fall '93 that they had been awarded a patent that would require all multimedia developers to pay them royalties. As Compton's CEO Stanley Frank said, "We helped kick start this industry. We now ask to be compensated for our investments. We will do whatever it takes to defend our patent."

THE COMPTON'S PATENT

The Compton's patent is very broad. It covers any type of computer-controlled database system that allows a user to search for mixed media that includes text with graphics, sound, or animation. Compton's did not limit their claims to CD-ROM products; they also claimed rights to any type of database involving interactive TV or the Information Superhighway.

The title of the Compton's patent is "Multimedia search system using a plurality of entry path means which indicate interrelatedness of information." It claims:

> A computer search system for retrieving information, comprising:
>
> means for storing interrelated textual information and graphical information;
>
> means for interrelating said textual and graphical information;
>
> a plurality of entry path means for searching said stored interrelated textual and graphical information, said entry path means comprising:
>
> textual search entry path means for searching said textual information and for retrieving interrelated graphical information to said searched text;
>
> graphics entry path means for searching said graphical information and for retrieving interrelated textual information to said searched graphical information;
>
> selecting means for providing a menu of said plurality of entry path means for selection;
>
> processing means for executing inquiries provided by a user in order to search said textual and graphical information through said selected entry path means;
>
> indicating means for indicating a pathway that accesses information related in one of said entry path means to information accessible in another one of said entry path means;
>
> accessing means for providing access to said related information in said another entry path means; and
>
> output means for receiving search results from said processing means and said related information from said accessing means and for providing said search results and received information to such user.

Compton's presented all multimedia developers with four patent royalty payment options. Kinnaman (1994) explains how they included "entering into a joint venture with Compton's; distributing products through the company's Affiliated Label Program; licensing Compton's SmarTrieve technology; or paying royalties." Compton's had the audacity to require back royalties of 1% of net receipts from sales before June 30, 1994, and 3% thereafter.

To say the least, developers reacted negatively to Compton's demands. Some suggested that users should burn all Compton's CD-ROMs and refuse to purchase future titles from any company that would try to force such a Machiavellian proviso on the multimedia industry. As a result of public hearings held by the U.S. Patent and Trademark Office to review its handling of software patents, the Compton's patent was rescinded.

The furor over Optical Data's and Compton's patents caused the patent office to initiate reforms that include publicizing patent applications, hiring seven software specialists as examiners, revamping the examiner bonus program so it does not encourage superficial review, and requiring more information about patent applications before decisions are made (*Wall Street Journal* 4/11/94: B6). In fairness to the government, industry leaders like Optical Data and Compton's (who know better) should stop trying to profit from patenting prior art; instead, they should concentrate on improving their products and moving the industry forward.

UNISYS GIF PATENT

Unisys owns the patent on the compression scheme used in the GIF file format, which is one of the most popular image formats in the world. In 1994, Unisys decided to begin charging developers a licensing fee for using the GIF file format. This resulted in a backlash of harsh opposition from developers and users who felt Unisys had acted unfairly, and Unisys backed down. Recently, Unisys began to try again to charge for the use of GIF images. This time, Unisys is asking WebMasters to pay $5,000 if their Web site uses one or more GIF images created by a program that is not licensed by Unisys to use GIF images.

By trying a second time to make users pay for something they thought was free, Unisys has caused another uproar among GIF users and developers who, instead of paying the $5,000 fee, have begun converting their graphics to the PNG format. *PNG* stands for Portable Network Graphics. It is a format created largely in response to the Unisys patent fiasco. As this book goes to press, however, the PNG format cannot do animated GIFs, and an MNG format that can is not yet supported by browsers. To learn the latest on this problem, follow the *Multilit* Web site link to the PNG Home Page and Burn All GIFs.

To perform patent searches and read the latest news from the U.S. Patent and Trademark Office, follow the *Multilit* Web site link to PTO.

Copyright

Article I, section 8, of the U.S. Constitution grants Congress the power "to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." Congress used this power to pass the Copyright Act of 1976, which defines and allocates rights associated with "original works of authorship fixed in any tangible medium of expression, now known or later developed, or otherwise communicated, either directly or with the aid of a machine or device" (U.S. Constitution, 17 § 102). This means that all of the elements presented in the taxonomy of multimedia in Chapter 2 of this book—including illustrations, text, movies, video clips, documentaries, animations, music, and software—are protected by copyright. There are stiff penalties for copyright offenders. For example,

the Software Publishers Association took action in 1993 against 577 organizations for pirating commercial software, resulting in $3.6 million in fines (*Atlanta Journal-Constitution* 2/3/94: C2).

Whenever you plan to publish a multimedia work, whether on a CD, DVD, or the Information Superhighway, you must make sure you have the right to use every object in it. Similarly, you should register a copyright for your multimedia creations. On your application's home screen, and on the title page of any printed documentation, print the following copyright notice, replacing *xx* with the current year: **Copyright © 20*xx* by *your_name_goes_here.* All rights reserved.**

Although this notice legally suffices to protect your copyright, it is also a good idea to register the copyright with the U.S. Copyright Office. If someone infringes your copyright and you take legal action to defend it, copyright registration can help your case. To register a copyright, follow these steps:

1. Go to the U.S. Copyright Office Web page at http://www.loc.gov/copyright and choose Copyright Registration.
2. Choose Multimedia Works to display the policies and procedures for multimedia copyright registration. Read the policy to determine what form to use to register your copyright.
3. Go back to http://www.loc.gov/copyright and choose Copyright Application Forms. Download the form you need.
4. Complete the application form and make a copy to retain in your files.
5. Mail the application along with a copy of the work and the $20 registration fee to the Register of Copyrights, Copyright Office, Library of Congress, Washington, D.C. 20559.

If you want a receipt, have the post office mail your application "return receipt requested." It will take several weeks for the Library of Congress to process your application and send you the registration number. For more information, follow the links to Copyright at the *Multilit* Web site.

Fair Use

The **Fair Use** provision of the U.S. Copyright Act allows the use of copyrighted works in reporting news, conducting research, and teaching. The law states:

Notwithstanding the provisions of section 106 [which grants authors exclusive rights], the fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright. In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include:

1. the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
2. the nature of the copyrighted work;
3. the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
4. the effect of the use upon the potential market for, or value of, the copyrighted work.

INTERPRETING FAIR USE FOR EDUCATION

To summarize the Fair Use law for education, one may paraphrase its first paragraph as follows: "the fair use of a copyrighted work for . . . teaching (including multiple copies for classroom use) . . . is not an infringement of copyright." The difficulty arises from interpreting the four tests, which are intentionally left vague, as the law goes on to state: "Although the courts have considered and ruled upon the fair use doctrine over and over again, no real definition of the concept has ever emerged. Indeed, since the doctrine is an equitable rule of reason, no generally applicable definition is possible, and each case raising the question must be decided on its own facts."

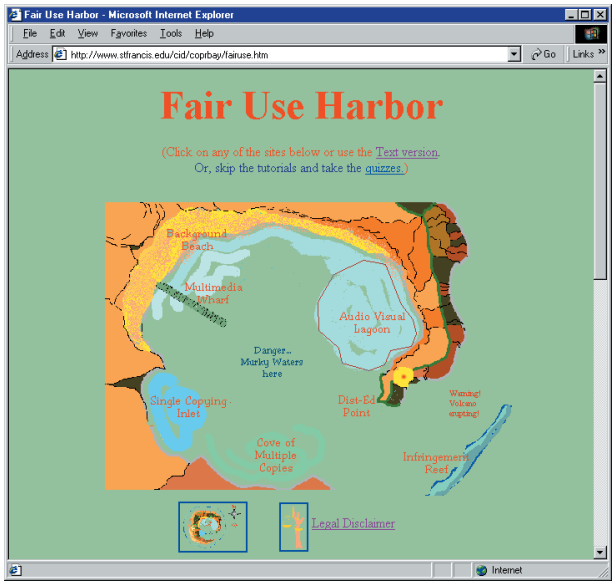

Figure 16-1 Copyright Bay is based on the metaphor of a Fair Use Harbor. The metaphor stems from the belief that the Fair Use guidelines provide a "safe harbor" within which multimedia users can exercise the right of Fair Use.

Courtesy of Gummess, Glen; Agnew, Janet; Hudson, Mike. Artwork: Gummess, Glen. University of St. Francis.

THE FAIR USE GUIDELINES FOR EDUCATIONAL MULTIMEDIA

To help educational institutions interpret the Fair Use law with regard to multimedia, the CCUMC (Consortium of College and University Media Centers) spearheaded the creation of the "Fair Use Guidelines for Educational Multimedia." The committee that created these guidelines consisted of representatives from print, film, music, and multimedia publishing companies, who spent many months discussing and debating fair use issues with representatives from educational institutions. Professor Lisa Livingston, director of the Instructional Media Division of the City University of New York, chaired the committee, and well-known copyright attorney Ivan Bender was retained to advise on legal issues. As a member of this committee, the author can attest to the rigor of the process.

The "Fair Use Guidelines for Educational Multimedia" are linked to the *Multilit* Web site. They specify what is fair for students as well as for teachers. The author encourages you to study these guidelines carefully and use them to exercise your right of fair use. Also linked to the *Multilit* Web site is Copyright Bay, which uses the metaphor of a harbor, as pictured in Figure 16-1. Clicking the bay's links brings up tutorials on the Fair Use issues illustrated in the harbor.

THE DIGITAL MILLENNIUM COPYRIGHT ACT

In 1998, the Digital Millennium Copyright Act (DMCA) was enacted into law in the United States. One of the primary purposes of this complex act was to bring the United States into conformance with the World Intellectual Property Organization (WIPO) Treaty. The DMCA contains many new statutory provisions, including:

- New rules prohibiting the circumvention of Technological Protection Measures (TPM), with stiff penalties for infringers.
- Prohibition of the removal from a copyrighted work of information related to ownership, copyright, and licensing.
- Limitation of liability of Online Service Providers if someone using their service infringes a copyright.
- Promoting distance education over digital networks while maintaining an appropriate balance between the rights of copyright holders and the needs of teachers and students making fair use of copyrighted works.

The DMCA charges the Library of Congress to work toward the implementation of these measures by proposing appropriate policies and guidelines. A key issue is whether fair use can be made of a work protected by a TPM since the DMCA makes it illegal to bypass the TPM. For more information about the status and implications of the DMCA, follow the *Multilit* Web site links to the Digital Millennium Copyright Act, the Library of Congress, the DMCA Primer, and the WIPO treaties.

Ethics

Ethics is a two-way street. If the Information Superhighway is to succeed, users must both behave and be treated ethically and responsibly. Because the Internet is a frontier, new users need a way to find out the rules of the road. In 1990, American University Professor Frank Connolly recognized this need. He led a project at EDUCOM (now EDUCAUSE) to create "The Bill of Rights and Responsibilities for Electronic Learners." The goal was to create a computer network policy addressing the rights and responsibilities of individuals, schools, and colleges in the twenty-first century.

Published in 1993, the Bill of Rights has four sections. The first section recognizes the right of all individuals to access the Information Superhighway, to find out what kind of information is being collected about them, and to exercise the right of free speech on the Internet. The second section holds individuals accountable for honoring the intellectual property of other users, protecting the integrity and authenticity of information, respecting and valuing each user's right to privacy, and refraining from activities that waste resources or prevent others from using them. Section three gives institutions the right to access the Internet, protect intellectual resources mounted on the Net, and allocate resources. Section four holds institutions accountable for making sure that software has been legally acquired, maintaining security to protect the integrity of individual files, treating personal files as the confidential property of the user, and providing training in the effective use of information technology.

The complete text of "The Bill of Rights and Responsibilities for Electronic Learners" is linked to the *Multilit* Web site. Every user should abide by this Bill of Rights and Responsibilities.

Equity, Cost, and Universal Access

As this book goes to press, only one in four American households has regular access to the Internet. We have a long way to go before achieving universal access.

In 1996, Congress expanded the Universal Service program to cover information technologies. True to its name, the Universal Service program subsidizes the cost of telecommunications in remote and rural areas so the fees paid by end users are roughly compatible. A Link-Up America program helps low-income households pay installation costs, and a Lifeline Assistance program subsidizes their monthly service fees. The National Telecommunications and Information Administration (NTIA) monitors the success of these programs in a series of reports, entitled *Falling Through the Net.*

According to the reports, people with high incomes are 20 times more likely to have access to the Internet, and more than nine times as likely to have a computer at home. Only 10% of households earning less than $20,000 have Internet access, while 60% of households earning $75,000 or more are connected. Whites are more likely to have access to the Internet at home than Blacks or Hispanics from any location. Black and Hispanic households are one-third as likely to have home access as Asian/Pacific Islander households, and roughly two-fifths as likely as White households. Rural Americans lag behind regardless of income level. City dwellers are twice as likely to

have Internet access than rural Americans earning the same income. Only 18.9% of Native Americans have access, compared to the national average of 26.2%. In the Southwestern United States, 78% of the 56,000 homes on the Navajo Indian Reservation do not even have telephone service.

To understand what needs to be done to achieve universal access, follow the *Multilit* Web site links to the Universal Service Fund, the Digital Divide, and *Falling Through the Net*.

Multimedia Careers

As the growth charts presented in Chapter 1 demonstrate, multimedia is the fastest-growing industry in the world today, and as such, it is creating new job opportunities. Josephson and Gorman (1997) have written a book entitled *Careers in Multimedia: Roles and Resources* that can help you position yourself for a job in multimedia. You can order it online at amazon.com or barnesandnoble.com. The book covers multimedia industries, projects, work issues, roles, resources, and locations where most jobs are found. Dozens of successful professionals working in multimedia are profiled. Table 16-1 lists sample careers in multimedia.

Another strategy for finding work in multimedia, or any other field for that matter, is to put your résumé on the Web. McGraw-Hill's *Internet Literacy* textbook contains a step-by-step tutorial on creating Web résumés. Once your résumé is online, the Web crawlers will find it and make it accessible to potential employers who search the Net for talent. Several of the author's students have been invited to job interviews in this manner.

If you are looking for a job, or if you are an employer looking to fill a position opening, be sure to visit America's Job Bank (AJB) at www.ajb.org. Created by the U.S. Department

Table 16-1 Career Opportunities in Multimedia

Advertising	Online services
Animation	Presentations
CD recording	Public relations
Construction planning	Real estate marketing
Content design	Scientific modeling
Courtroom trial reenactment	Screen design
Electronic publishing	Scripting and storyboarding
Facilities design	Simulation
Front-Ending	Sound tracks
Games design	Special effects
Graphics production	Training
Instructional design	Travel systems
Interface design	Video production
Kiosking	Virtual reality
Landscape design	Webmaster

of Labor, America's Job Bank lists hundreds of thousands of job openings that you can search by occupation, location, qualifications, and salary. While you are visiting the AJB, also follow the links to America's Career Infonet and America's Learning Exchange, where you will find online career and job-training services, respectively.

Bandwidth

Traffic on the Information Superhighway is growing at a rate faster than the bandwidth needed to carry that traffic. The popularity of real-time audio and videoconferencing products has caused Web traffic to increase far beyond what Tim Berners-Lee envisioned when he invented the Web back in 1989.

When the amount of data exceeds the capacity of the routers and switches through which the data flow, a situation known as **Internet brownout** occurs. In an Internet brownout, packets of data sent over the network slow to a crawl and can be lost forever, never getting to their destinations. When your Web browser pops up an alert box telling you that a host is unreachable, brownout could be the culprit. NetStar's vice president for sales and marketing maintains that brownouts have caused the Internet to become "about as reliable these days as the phone system in Russia" (*Business Week* 4/8/96: 82).

The Internet Engineering Task Force (IETF) is working on these problems. Since the World Wide Web is the biggest culprit, the IETF is examining whether there is a way to streamline the transmission of data to and from Web servers. Another proposed solution would meter Internet usage, charging heavy users more and light users less. You can find out more by following the *Multilit* Web site link to the IETF.

Internet2

A consortium of research universities is conducting a project called **Internet2**. The goal is to create a higher speed version of the Internet that will revolve around a high-speed connection point called the Gigapop. Strategically placed throughout the network, Gigapops will guarantee high-speed bandwidth between universities implementing the Internet2 standards.

Internet2 uses three protocols to provide high-speed transmission and guaranteed bandwidth:

- RSVP permits a user to reserve bandwidth from the workstation to the network host computer.
- IPv6 is a packet delivery protocol that lets the user assign priority to certain kinds of information. You may want your Web search traffic to have a higher priority than your e-mail traffic, for example, so your searches get completed faster.
- Multicast will use IP tunneling and multithreading to increase multimedia throughput.

To find out the current status, follow the *Multilit* Web site link to Internet2.

exercises

1. If you have never played the *Mortal Kombat* video game, find a friend who has it and give it a try. Set it for the highest level of violence; if you cannot figure out how to do this, ask the kids who play it. Do you believe that this kind of graphic violence in video games is good for children to experience? What do you think should be done about it?

2. Visit your local video arcade and try the latest laser shooting games. Notice how real video footage is used to put you in a situation in which you must kill or be killed. See how realistic the interaction is, and how well you can learn to aim and fire the weapons. Do you believe these games should be available to the kind of crowd attracted to video arcades, especially when gunshot wounds are the leading cause of death among teenagers in our cities? What do you think should be done about this?

3. How do you feel about the use of multimedia for sex? Does virtual sex serve any useful role in our society? How can it be misused? Could it help solve any societal problems?

4. Do you believe software that lets men force women to do their bidding encourages men to believe they can and should have control over women in real life? If so, what should be done about this?

5. As explained earlier in this chapter, a lot of traffic on the Information Superhighway deals with sex. Do you believe this large amount of sexual traffic detracts from the goals and objectives of the Internet? Do you object to the use of public funds to transmit such material? Why or why not?

6. Do you agree that the University of Waterloo was justified in banning obscene bulletin boards from its network? Should obscene bulletin boards be banned from the Information Superhighway as a whole? Are obscene bulletin boards accessible from your connection to the network?

7. Has a government regulation ever prevented you from accessing services you felt you had a right to? For example, when the FCC ruled that cable companies cannot rebroadcast FM signals, the author's community lost its cable access to National Public Radio and several other FM stations. Since we live in an area too remote for good FM reception, we became disconnected from these important stations. And without any warning! This made the author wonder how the government will manage the Information Superhighway if it cannot regulate access to a simple FM radio station. Have you had a similar experience of being denied access to services you felt you had a right to? What service were you denied? Why did you feel you had a right to it?

8. How do you feel about encryption and Clipper chip technology? Since court-ordered wiretaps on the analog telephone lines of criminals will no longer be effective when all of the communication channels go digital, is the government justified in requiring that a back door be built into the system through which it can eavesdrop on digital communications? Why or why not?

9. The White House has promised the public that everyone will have equal access to the Information Superhighway. Do you believe this, or do you feel that its construction will create a technological underclass in our society? What do you see as the major obstacles that must be overcome to provide equal access for everyone?

10. Table 16-1 lists career opportunities in multimedia. Can you think of any multimedia careers that are not included in the table?

11. Go to America's Job Bank at www.ajb.org. When this book went to press, there were 1,521,306 available jobs. How many jobs are open now?