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MULTIMEDIA: THE CONVERGENCE OF NEW TECHNOLOGIES AND TRADITIONAL COPYRIGHT ISSUES

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INTRODUCTION

In October 1993, the Bell Atlantic Corporation and Tele-Communications Inc. proposed the largest merger in history for media companies.¹ The now abandoned \$33 billion deal² is the latest in a series of announcements of mergers and working partnerships as entertainment, communications, computer software, and computer equipment manufacturing companies attempt to position themselves to best exploit the emerging multimedia technologies.³

Multimedia has become a catch-phrase which refers to an ever-widening range of developing technologies promising "interactive" home entertainment, virtual reality, and the delivery of fully manipulative sound, images, and text into the computers of the average consumer.⁴ Nineteen ninety-three saw a "gold rush" of sorts in the burgeoning multimedia in-

* J.D., University of Denver College of Law, 1985. Mr. Sprague would like to thank Bobbie McMorrow and the associates of McMorrow Associates for their kind efforts in arranging interviews with various legal experts in the emerging fields of multimedia law.

1. John Markoff, *A Phone-Cable Vehicle for the Data Superhighway*, N.Y. TIMES, Oct. 14, 1993, at A1.

2. *Id.*

3. Lawrence M. Fisher, *Computer and Phone Link Is Studied by Intel and MCI*, N.Y. TIMES, Sept. 10, 1993, at C4.

The Intel Corporation and the MCI Communications Corporation said . . . that they had agreed to explore and develop ways to integrate the personal computer and the telephone.

. . . .
The first product to emerge from the agreement . . . will be an add-on circuit board for personal computers that will allow users to simultaneously transmit data, audio and video over telephone lines. Such a device would facilitate video conferencing, and allow co-workers across the globe to collaborate on projects.

. . . .
Analysts said Intel was well positioned to broaden its dominance of the personal computer market to include telephones as the computer, communications and media industries converged.

"It's the hottest game in town, the market opportunity every semiconductor maker is chasing," said Richard Whittington, an analyst with Gruntal & Company. "This will be the boom business for the next 10 years, and Intel will be a major player."

Id. See also *infra* note 11.

4. L.R. Shannon, *On Getting Started in Multimedia*, N.Y. TIMES, Sept. 21, 1993, at B6. The "Computer Dictionary" (Microsoft Press) defines "multimedia" as: "The combination of sounds, graphics, animation, and video. In the world of computers, multimedia is a subset of hypermedia, which combines the elements of multimedia with hypertext, which links the information." Less formally, "Jargon" (Peachpit Press) defines "multimedia," in part, thus: "The buzzword of the 90's." *Id.* See *infra* Part I and accompanying text for more detailed discussions of specific multimedia-related products and services.

dustry, despite the fact that most participants have no idea what the industry will fully entail or how it will be received by the public.⁵ "Every company in the entertainment and communications business is going to be under pressure to form partnerships . . ."⁶ This cacophony of technologies, industries and strategic alliances raises a substantial number of legal issues.⁷

This Article focuses on Copyright Act issues as they relate to the emerging industry commonly known as multimedia. Part I discusses the basic elements of multimedia in order to provide an understanding of its constituent parts. Most multimedia products and services are either a technological extension or derivative of computer software. Part II sets forth how copyright law provides protection for computer software and its

5. Peter H. Lewis, *The Next Tidal Wave? Some Call It 'Social Computing,'* N.Y. TIMES, Sept. 19, 1993, § 3, at 8.

Perhaps without knowing exactly what it will all mean, everyone seems to be talking about the impending convergence of computer networks, groupware, telephone services, handheld electronic devices, cable television, the Internet and other on-line information services, mixed in with the entertainment industry, traditional news media and other communications technologies.

6. . . .
 "A technological shock wave is about to strike society and the workplace," Mr. [William M.] Bluestein[, a senior analyst with Forrester Research Inc.] said. "In the last six months, computer hardware manufacturers, software providers, cable TV operators, and phone companies have been caught up in a frenzied mating dance."
 Id. Peter H. Lewis, *What Evil Lurks in the Chips Of Men? The Shadow Knows,* N.Y. TIMES, Sept. 19, 1993, § 3, at 8.

For the first time, there will be people from broadcasting and telecommunications. This has everything to do with the convergence of computing, communication and entertainment. Everyone in all three industries is trying to be uniquely positioned to take the money of the people in the other two industries. I wonder, though, once the PC guys learn that Joe Eszterhas gets \$3 million for a 135-page screenplay, whether some of them will want to switch from writing software to dialogue.

Id. (Interview with Robert X. Cringely, nom-de-poison-plume for the back-page gossip columnist of Infoworld, a computer industry weekly newspaper, discussing the recent Agenda 94 conference, which attracted 450 of the biggest names in the personal computer industry); William M. Bulkeley & John R. Wilke, *Can the Exalted Vision Become Reality? Early Attempts Show Buyers May Be Leery,* WALL ST. J., Oct. 14, 1993, at B1.

[I]n a few early experiments, consumers did not enthusiastically embrace the idea [of interactive systems]. In the early 1980s Knight-Ridder Inc. lost millions on an interactive video-text experiment in Florida that let people request and read news on their TV screens. J.C. Penney & Co. spent \$106 million on Telaction, an interactive shopping system, before shutting it down in 1989. Sears Roebuck & Co. and International Business Machines Corp. have spent an estimated \$800 million on their jointly owned, and unprofitable, Prodigy Services Corp., in part because they overestimated the desire of computer users to shop on-line.

"The technology is all there," says Nancy Bushkin, a spokeswoman for Viacom Inc., which is building a test interactive cable system in Castro Valley, California. "What's missing is the consumer and exactly what the consumer wants and what they'll pay for."

Id. Prodigy Services, the IBM-Sears joint venture, is redesigning its service and is "seeking opportunities to offer the Prodigy lineup of information and games, stock trading, home shopping and electronic mail directly to the television sets of cable customers." Glenn Rifkin, *At Age 9, Prodigy On-Line Reboots,* N.Y. TIMES, Nov. 8, 1993, at D1.

6. Richard Turner, *Bell-TCI Deal Puts Hollywood in the Spotlight,* WALL ST. J., Oct. 14, 1993, at B1.

7. For an excellent overview of the various multimedia-related intellectual property issues, see William A. Tanenbaum & William K. Wells, Jr., *Multimedia Works Require Broad Protection,* NAT'L. L. J., Nov. 1, 1993, at S11.

relevance to multimedia applications. The scope of copyright protection available to computer software is not precisely defined, however, and continues to evolve in reaction to the ever-changing role of software in our society. Part II.A. reviews the current scope of copyright protection available to computer software. Part II.B. discusses specific copyright issues related to multimedia. The various analyses and controversies in software copyright protection should prove insightful and will most likely serve as a precursor to the issues confronting copyright protection for multimedia applications.

I. MULTIMEDIA APPLICATIONS

Multimedia may best be viewed as a convergence of technologies from which a vast number of specific products and services will emerge.⁸ In general, multimedia refers to a variety of information media—text, sound, images (both still and motion)—delivered in digital form.⁹ The key element of multimedia is that the recipient no longer passively receives the information but actually “interacts” with it. The recipient can control the manner in which the information is delivered, change the order and method in which it is presented, and alter the final product.

While this description of multimedia may be vague, that is partially due to the fact that all the resultant products and services have yet to be designed or even conceived.¹⁰ The common thread throughout these multimedia products and services is their interactive capability. The ability of individuals to interact with the delivered information makes the emerging products and services unique.

One element of multimedia which has received a great deal of attention is the creation of an “information superhighway” incorporated in “a single powerful box on top of each home television set that would combine the diverse streams of information that now flow separately into the home: telephone calls, television shows, video rentals, newspapers and even books.”¹¹ The convergence of cable operators and telephone com-

8. Steve Lohr, *For Computer Convention, Be Sure to Pack Vision*, N.Y. TIMES, Sept. 25, 1993, § 1, at 37.

“[D]igital convergence,” . . . means the expected technological melding of computers, telecommunications, television and publishing.

Convergence is a big conceptual ball of string that wraps in 500 television channels and the information superhighway, hand-held personal digital assistants and massively parallel supercomputers, computers that talk back and intelligent software “agents” programmed to act as a person’s alter ego. It is the ultimate high-tech vision — and a \$3.5 trillion business, by one estimate — beckoning on the horizon.

Id.

9. Information (data), whether it is text, images or sounds, is converted to an electrical impulse represented by either a one or a zero. For example, music is initially composed of analog sound waves which can be converted into digital code by breaking the waves into small bits that are represented by a number. See *A New Spin on Music Sampling: A Case for Fair Play*, 105 HARV. L. REV. 726, 726-27 n.2 (1992). Computers manipulate (process) information in digital form. For example, computer programs are ultimately converted into a series of ones and zeros for use by the computer. See generally *infra* note 76.

10. See *supra* note 5 and accompanying text.

11. Markoff, *supra* note 1, at A1. In the information superhighway, “this set-top device will be the steering wheel, combining the video controls of a cable converter box, the two-way

panies exploits the resources of each industry, allowing not only the delivery of information to consumers, but also providing the channels through which consumers can communicate (interact) with the service providers as well as other consumers.¹² At present, the interactive products which appear closest to being market-ready are systems focusing on electronic program guides to help viewers navigate the maze of channels available on cable systems.¹³ These systems are designed to offer to viewers information, commercial opportunities, and games.¹⁴

capabilities of a telephone and the information-processing power of a personal computer." *Id.*

12. *See id.*

Currently, cable networks have the capacity to carry hundreds of channels of television programs or other information, but most cable systems are not very good at letting consumers send information back over the network, whether to order a movie or play video games with other cable customers.

Telephone "channels," by contrast, can handle only limited amounts of information, but they have an almost magical ability through switching systems to let anyone on the network communicate with anyone else.

Therein lies the promise of this [the Bell Atlantic Corporation and Tele-Communications Inc.] mega-merger, which will blend the information cargo-carrying capacity of the nation's largest cable company and the traffic-control talents of one of America's most technically sophisticated telephone companies.

Id. The now-abandoned Bell Atlantic/Tele-Communications merger is not the only alliance between telephone and cable companies. Time Warner Inc., the second-largest cable television company in the country, has teamed up with U.S. West; The Nynex Corporation is teaming with Viacom Inc. in its bid for Paramount Communications; and Southwestern Bell has recently purchased two cable systems outside Washington. Edmund L. Andrews, *A Marriage of Media*, N.Y. TIMES, Oct. 14, 1993, at D10. There are a number of examples of computer, cable and communications companies forming alliances. Silicon Graphics has agreed to provide Time Warner Inc., a cable, media and entertainment concern, with technologies for cable-TV boxes. *See* Don Clark & Stephen K. Yoder, *Computer Industry Sees A Feast of New Markets*, WALL ST. J., Oct. 14, 1993, at A7. Hewlett-Packard Co. will develop technologies to let interactive-TV subscribers use color printers. *Id.* International Business Machines Corp. (IBM) is developing products for everything from the wiring for the back of TV sets and chips for set-top boxes to mainframe computers that work as "servers," storing data and playing traffic cop in huge interactive networks (IBM and Ameritech Corp., a Midwest regional Bell company, are testing out mainframes as servers in the Chicago area). *Id.* IBM is also in trials with Bell Atlantic using smaller computers to serve up full-motion videos. *Id.* Intel Corp., the big semiconductor maker, is working with Microsoft and General Instrument Corp. to make sophisticated set-top boxes for interactive TV; as is 3DO Co., a startup company that just began selling a new interactive entertainment system that plays software on compact disks. *Id.* "These companies' plans require networks that can carry more data, along with sophisticated switching systems to move interactive video information around. Today's cable systems, for the most part, are one-way networks without that switching capability. Phone companies are good at switching but need cable companies' higher data capacity." *Id.*

13. *See Software Patent Hearings*, CONSUMER ELECTRONICS, Feb. 7, 1994, § 6.

14. *See* Anthony Ramirez, *Challenge Within a Single Wire*, N.Y. TIMES, Oct. 27, 1993, at C1 (graphics). In a hypothetical example of how the combined technologies of telephone and cable companies may provide services, a football fan in Chicago can watch a televised game with a friend located in Los Angeles. *Id.* In addition, the Chicago fan could supplement the viewing with past highlights from a video archive and team statistics from a remote data base. *See id.*

Software publishers are eagerly anticipating the arrival of interactive television as a means of delivering computer programs to customers who will be able to permanently acquire the software or merely temporarily use it for a reduced fee. The software publishers believe interactive television will lead to a greater number of software titles, available to more persons, at reduced costs. "[M]any software companies are looking at ways to use interactive television to get their titles into more homes . . ." Tim Deady, *Software Companies Gearing Up To Travel On 'Superhighway'*, L. A. BUS. J., Oct. 18, 1993, at 1.

Virtual reality, another form of multimedia product, is an interactive experience which presents a synthetically generated environment to the user through visual, auditory, and other stimuli.¹⁵ Although motion pictures also attempt to place the user in synthetically generated environments, the two major differences between virtual reality and traditional motion pictures are that virtual reality technology can create a much stronger illusion and that it is an interactive, not passive, experience.¹⁶ Virtual reality experimentations and applications include: allowing doctors and medical students to practice surgery on three dimensional "patients";¹⁷ remote operation of robots by NASA;¹⁸ remote operations by surgeons;¹⁹ allowing architects and engineers to "walk" through a building before it is built;²⁰ flight simulation²¹ and aircraft design;²² arcade games;²³ and to generally allow individuals to "journey" to places they would otherwise not be able to go.²⁴

Combined interactive movies and video games are an additional emerging multimedia product. These video games are actually movies with multiple plot lines and endings. Players interact with the characters in the movies/games and determine the course of events by their (the players') actions.²⁵

15. Randy Pausch, *Three Views of Virtual Reality: An Overview*, COMPUTER, Feb. 1993, at 79.

16. *Id.* Virtual reality completely immerses the user in the synthetic environment by mounting small displays inside a headset placed on the user's head. *Id.* Because the display is computer generated, different views are created for each eye, providing a true stereo display that gives depth information. *Id.* In addition, both the user's head position and orientation are tracked, resulting in the views changing in relation to the movement of the user. *See id.* The result is that users perceive themselves as being inside the scene, with a three-dimensional understanding of objects' location with respect to the user's own body. *See id.* Users can also interact with virtual objects contained within the three-dimensional space by wearing instrumented gloves—reaching out and manipulating objects. *See id.* When combined with directional audio, the illusion of interacting with "real" objects is quite strong. *See id.*

17. John Holusha, *Carving Out Real-Life Uses for Virtual Reality*, N.Y. TIMES, Oct. 31, 1993, § 3, at 11. It is predicted that patient-specific diagnostic data will be entered into a computer which will allow the doctor to "operate" in virtual reality to determine the best approach to an operation for that patient. *See id.*

18. *See* Pausch, *supra* note 15, at 79.

19. *See* Holusha, *supra* note 17, at 11. The Army is developing a system using virtual reality to link doctors behind battle lines with mobile operating rooms near the front lines. *Id.*

20. *See* Pausch, *supra* note 15, at 79; *see also* Andrew H. Rosen, *Virtual Reality: Copyrightable Subject Matter and the Scope of Judicial Protection*, 33 JURIMETRICS J. 35, 37 n.5 (1992) (explaining how researchers converted an architect's plans to a 3-D model before actually building, to show future occupants how the building would look and feel).

21. *See* Michael Moshel, *Virtual Environments in the US Military*, COMPUTER, Feb. 1993, at 81.

22. *See* Holusha, *supra* note 17, at 11.

23. *See* Richard Brandt, et al., *It's Blasting Beyond Games and Racing to Build a High-Tech Entertainment Empire*, BUS. WK., Feb. 21, 1994, at 66.

24. *See* John Tierney, *Jung in Motion*, N.Y. TIMES, Sept. 16, 1993, at C1.

25. John Tierney, *Movies That Push Buttons*, N.Y. TIMES, Oct. 3, 1993, § 2, at 1. Examples of interactive movie/video games include: "Mortal Kombat," a graphics image-based kick-and-punch game; "Aladdin," based upon the Disney Company movie, which combines graphics and hand-drawn animated characters; and "Voyeur," a game which shows real motion pictures on the screen while players control which of hundreds of twists and turns the plot will take. Philip Elmer-Dewitt, *The Amazing Video Game Boom*, TIME, Sept. 27, 1993, at 66.

Multimedia also encompasses the intermingling of text, sound and graphics images (both still and moving) in personal computers. Interactive encyclopedias allow users to not only read text about a given person or historical event, but also to view and hear newsclips of the event.²⁶ Most of these sounds and images can be captured by the user and altered or combined with other electronic works.²⁷

II. COPYRIGHT LAW AS APPLIED TO MULTIMEDIA

There are myriad legal issues inherent in combining multiple industries in order to create new technologies. Antitrust and regulatory issues raised by the recently announced mergers and partnerships deserve their own detailed commentary, which is certainly beyond the scope of this article. While mergers such as the now-abandoned merger announced by Bell Atlantic and Tele-Communications²⁸ caused some members of Congress to urge the Justice Department's antitrust division and other agencies to investigate before approving the deal, the Clinton Administration cautiously supported the merger.²⁹ In addition, as entertainment, communications and computer companies seek strategic alliances, they are not raising antitrust objections; they are instead urging the federal government not to interfere with the mergers.³⁰ Whether the Clinton Adminis-

26. For example, Britannica Software has put Compton's Encyclopedia, which contains nine million text words, 15,000 still images, 45 moving-image sequences and 60 audio minutes, on one CD-ROM disk. Barbara Zimmerman, *The Tangle of Multimedia Rights*, PUBLISHERS WKLY, Nov. 22, 1991, at 17.

Leonard Bernstein's personal archive, including correspondence, musical manuscripts, photographs, recordings and memorabilia, is to be donated to the Library of Congress, which plans to digitally copy the materials. Allan Kozinn, *Bernstein Archive to be Digitized for Public Access*, N.Y. TIMES, Nov. 9, 1993, at C17. It is planned that sometime in the future other researchers and music lovers will be able to use computers, for example, to view correspondence by the composer, note a reference to a piece of music, retrieve music, as well as watch a video of the piece being performed—all from a computer workstation thousands of miles away. *Id.*

27. Eastman Kodak has, for example, a system for storing images with color-photo resolution. Zimmerman, *supra* note 26, at 17. If a personal computer user can see it or hear it, he or she can essentially capture and digitally manipulate it with the addition of a few pieces of equipment:

[I] have now heard the famous fake-orgasm scene from *When Harry Met Sally* . . . approximately a million times as a . . . file in PC multimedia soundtracks. It's funny, it's unexpected, audiences (usually) love it. That track must be a close second to the collected works of the [Monty] Python [sound bytes] in terms of multimedia copyright abuse. Meg Ryan's coital exclamations and "Bring out yer dead!" are an odd pair, but some apparently think they have broad meaning for our times.

Jim Seymour, *The Multimedia Copyright Swamp*, PC MAG., Feb. 23, 1993, at 99.

28. Markoff, *supra* note 1, at A1.

29. See Edmund L. Andrews, *Sudden Synergy Among Communications Rivals*, N.Y. TIMES, Oct. 21, 1993, at D1; Geraldine Fabrikant, *Bell Atlantic Deal for 2 Cable Giants Put at \$33 Billion*, N.Y. TIMES, Oct. 13, 1993, at A1; Daniel Pearl & Mark Robichaux, *First White House Signal Has Look of a Green Light*, WALL ST. J., Oct. 14, 1993, at A6; John J. Keller & Laura Landro, *Bell Atlantic, Viacom Chairmen Snipe At Each Other as Senators Study Deals*, WALL ST. J., Oct. 28, 1993, at B8.

30. Andrews, *supra* note 29, at 101.

tration will take any antitrust action related to the various mergers and strategic alliances is unknown.³¹

The aggressive participation of telecommunications and cable companies in multimedia also raises FCC concerns.³² The FCC has cleared the way though for local telephone companies to transmit video services provided by third parties, and has further allowed them to own as much as five percent of video programmers.³³

Licensing issues complicate the multimedia picture. As a result of the mixture of different publishers involved in multimedia (software, text, images, and music), legal issues related to general contracting and licensing remain undefined. Licensing concepts and procedures familiar to the entertainment industry may be foreign to the computer industry, and vice versa.³⁴

As the software, film, music and book publication industries merge into the multimedia publishing world, rights acquisition must now include a number of new permissions, such as digital rights, transmittal rights, and rights for multiple showings of a work.³⁵ These industries operate under different practice histories and statutory controls. Music composers, for example, have a statutorily mandated right to record any song.³⁶ Rather than attempt to retain control over their individual works, composers generally accept public performance license fees administered and enforced by their major rights collectives, ASCAP and BMI.³⁷ The rights situation for still images—photos, art, cartoons, etc.—is, on the other hand, chaotic.³⁸ "Rights to copyrighted works are owned by individual artists and their estates, who are completely unorganized and whose fees and terms vary too widely to be described at all."³⁹

"The movie companies that own the rights to their films, and TV production companies that own most TV shows have been accustomed to sell-

31. Bob Davis & Joe Davidson, *Clinton Team Is Split About Antitrust Policy As Big Mergers Wait*, WALL ST. J., Oct. 28, 1993, at A1.

Antitrust policy runs along one of the fault lines of the Clinton administration, separating populist trustbusters from new-age technologists. Right now, the two forces exist in a relatively stable condition. But that could explode in dissension as the government takes up such high-profile deals as the Bell Atlantic Corp.-Telecommunications Inc. merger and sorts out its policy in the high-tech, health and defense industries.

Id.

32. See James Gleick, *We Are the Wired: Some Views on the Fiberoptic Ties That Bind: A Frontier That Is Building Itself*, N.Y. TIMES, Oct. 24, 1993, § 4, at 16 (explaining that the blending of telephones and television will require more than FCC approval).

33. Beth Melville, *Interactive Video Projects Test Technology, Limits of Law*, TELEPHONE WK., Aug. 31, 1992, at 5, 6.

34. Michael D. Scott & James L. Talbott, *Multimedia: What Is It, Why Is It Important And What Do I Need To Know About It?*, COMPUTER L. ASS'N BULL., Vol. 8 No.3, 1993, at 14.

35. See *Multimedia Seminar Stresses Control of Rights*, PUBLISHERS WKLY, May 17, 1993, at 16; Billie Munro, *Copyrights and Multimedia*, MULTIMEDIA & VIDEODISC MONITOR, Mar. 1993.

36. 17 U.S.C. § 115 (1988). See also Zimmerman, *supra* note 26, at 18 (explaining that the right to record any song is the only permission in the United States whose basic terms are statutorily mandated).

37. Zimmerman, *supra* note 26, at 18.

38. *Id.*

39. *Id.*

ing short clips for use in television productions or for commercials."⁴⁰ While short clips from old films and TV shows are relatively easy to license, longer sections and clips of any size from very well-known and recent works are almost impossible to obtain.⁴¹ In addition, permissions are needed from all the creators involved—writers, directors, musicians and every actor appearing on the clip.⁴²

At present, consistent industry practices for licensing all multimedia elements do not exist.⁴³ The result is that multimedia publishers will often find it more economical and practical to create all the various works incorporated in a product.⁴⁴ Efforts are underway, however, to improve the multimedia licensing environment.⁴⁵

The technology complicates multimedia licensing issues. Scanners, sound boards, and multimedia authoring programs make it very easy to record sights and sounds.⁴⁶ "Therein lies a dilemma for most new PC [personal computer] multimedia devotees: How far can you go, both legally and practically, in lifting pictures, sound, and video from the world around you for PC use?"⁴⁷ The industry response has been inconsistent. Some multimedia publishers distribute electronic images which require the purchase of publication rights for any additional reproduction while others allow the user to freely reproduce the information (short of wholesale verbatim copying in competition with the original publisher).⁴⁸ Licensing issues are moot, however, unless the medium is subject to copyright protection.

To properly anticipate the level of copyright protection that will be available to multimedia products, it is imperative to understand the current scope of protection afforded multimedia's principal precursor—computer programs. A brief overview of the historical development of computer software copyright protection is insightful.

40. *Id.* These sales come at a very steep price, however. *Id.*

41. *Id.*

42. Zimmerman, *supra* note 26, at 17-18.

43. *Id.*; Seymour, *supra* note 27 at 99; *Multimedia Seminar Stresses Control of Rights*, *supra* note 33 at 16; Kozinn, *supra* note 26, at C17 (discussing the fact that licensing and technological hurdles must be overcome before Leonard Bernstein's personal archive can be copied to a computer by the Library of Congress).

44. *See generally* Zimmerman, *supra* note 26, at 19; Seymour, *supra* note 27, at 99.

45. *See* Brian Kahin, *The IMA Intellectual Property Project*, MULTIMEDIA & VIDEODISC MONITOR, Mar. 1993. The Interactive Multimedia Association has created the Intellectual Property Project with the goal of facilitating the licensing of content to multimedia applications and the licensing of multimedia applications to users. *Id.*

46. *See* Seymour, *supra* note 27, at 99. Some of the concerns go beyond licensing issues. The Computer Emergency Response Team, established by the Pentagon's Advanced Research Projects Agency, recently issued a warning advisory to users of Sun Microsystems work stations with built-in microphones that someone could electronically eavesdrop on conversations taking place near the computer. John Markoff, *Keeping Things Safe and Orderly In the Neighborhoods of Cyberspace*, N.Y. TIMES, Oct. 24, 1993, § 4, at 7.

47. Seymour, *supra* note 27, at 99.

48. *Id.*

A. Computer Software Copyright Issues

Identifying the specific copyright issues raised by emerging multimedia technologies is difficult because the technology is both new and evolving.⁴⁹ In addition, United States copyright protection has historically lagged behind technological developments. From the first Copyright Act in 1790⁵⁰ up to the present Copyright Act,⁵¹ Congress has amended the Act numerous times specifically to incorporate technological developments.⁵²

Copyright protection arises from the constitutional provision granting Congress the power to pass laws “[t]o 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.”⁵³ “[T]he purpose of the copyright law is to create the most efficient and productive balance between protection (incentive) and dissemination of information, to promote learning, culture and development.”⁵⁴

In 1976, Congress attempted to embrace current and future technological developments by enacting an all-encompassing scope of copyright protection. The Copyright Act of 1976⁵⁵ extends copyright protection to “original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.”⁵⁶ This broad definition of protection would appear

49. See *supra* note 5 and accompanying text.

50. Act of May 31, 1790, ch. 15, § 1, 1 Stat. 124, 124 (repealed 1831). This first Copyright Act limited protection to “any map, chart, book or books already printed.” *Id.*

51. The Copyright Act of 1976, Pub. L. No. 94-553, 90 Stat. 2541, amended by Act of Dec. 12, 1980, Pub. L. No. 96-517, §§ 9-10, 94 Stat. 3015, 3028 (codified at 17 U.S.C. §§ 101-1010 (1988 & Supp. IV 1992)).

52. Congress extended copyright protection to designs, prints, etchings and engravings in 1802, musical compositions in 1831, dramatic compositions in 1856, photographs and the “negatives thereof” in 1865, and statutory and “models or designs intended to be perfected as works of the fine arts” in 1870. Act of Apr. 29, 1802, ch. 36, § 2, 2 Stat. 171, 171, repealed by Act of Feb. 3, 1831, ch. 16, §§ 1, 14, 4 Stat. 436, 436, 439, amended by Act of Aug. 18, 1856, ch. 169, 11 Stat. 138, 139, amended by Act of Mar. 3, 1865, ch. 126, §§ 1, 2, 13 Stat. 540, 540, repealed by Act of July 8, 1870, ch. 230, § 86, 16 Stat. 198, 212 (repealed 1909).

In 1909, Congress attempted a broader approach to the types of works to be protected by extending protection to “all the writings of an author.” Act of Mar. 4, 1909, ch. 320, § 4, 35 Stat. 1075, 1076 (previously codified at 17 U.S.C. § 4, reprinted in 17 U.S.C.A. App. § 4 (West Supp. 1990); recodified 1947; repealed 1976). Again, Congress was forced to amend the Copyright Act in response to technological developments. In 1912, motion pictures were added (Act of Aug. 24, 1912, ch. 356, § 5(l)-(m), 37 Stat. 488, 488 (previously codified at 17 U.S.C. § 5(l)-(m), reprinted in 17 U.S.C.A. App. § 5(l)-(m), recodified 1947, repealed 1976)), as were sound recordings in 1972 (Act of Oct. 15, 1971, Pub. L. No. 92-140, § 1(b), 85 Stat. 391, 391 (previously codified at 17 U.S.C. § 5(n), reprinted in 17 U.S.C.A. App. § 5(n), repealed 1976)).

53. U.S. CONST. art. I, § 8, cl. 8.

54. *Whelan Assocs. v. Jaslow Dental Lab.*, 797 F.2d 1222, 1235 (3d Cir. 1986), cert. denied, 479 U.S. 1031 (1987).

55. Pub. L. No. 94-553, 90 Stat. 2541, amended by Act of Dec. 12, 1980, Pub. L. No. 96-517, §§ 9-10, 94 Stat. 3015, 3028 (codified at 17 U.S.C. §§ 101-1010 (1988 & Supp. IV 1992)).

56. 17 U.S.C. § 102(a) (1988).

to encompass every conceivable multimedia product.⁵⁷ The actual scope of copyright protection available to multimedia is in reality unclear, regardless of the 1976 Copyright Act.

Despite the fact that Congress made significant attempts to incorporate technology into the copyright framework,⁵⁸ defining the scope of copyright protection available to electronic-based works, particularly computer software, has been wrought with confusion and imprecise judicial analysis.⁵⁹ "Defining the scope of software copyright has become one of the most intractable problems in the emerging field of computer law."⁶⁰

In order to establish computer software copyright infringement, the owner of the allegedly infringed work (usually the plaintiff) must both establish ownership of that work and that it was copied.⁶¹ A Certificate of Registration, if timely obtained, constitutes prima facie evidence of the validity of the copyright.⁶² Because the act of copying is rarely proved through direct evidence,⁶³ copying may be proved inferentially by showing that the alleged infringer (usually the defendant) had access to the copyrighted work and that the allegedly infringing work is substantially similar to the copyrighted work.⁶⁴ "Ultimately, to prove factual copying, the plaintiff must come forward with sufficient evidence that a reasonable fact finder, taking together the evidence of access and the similarities between

57. This statement is probably only true for the near term. See, e.g., Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?*, 106 HARV. L. REV. 977, 1073 (1993). Mr. Miller concludes that for the foreseeable future, copyright protection extends to computer programs created by other computer programs because of the human involvement in the creation of the programs through artificial intelligence. *Id.*

58. In 1974, Congress created the National Commission for New Technological Uses of Copyrighted Works (CONTU) with the purpose of studying the use of the copyright laws for "automatic systems capable of storing, processing, retrieving, and transferring information," and to make recommendations to ensure that such works were protected by the copyright laws. Pub. L. No. 93-573, § 201(b)-(c), 88 Stat. 1873, 1873-74 (1974). For a thorough discussion of CONTU and its impact on current computer software copyright protection, see Miller, *supra* note 57.

59. See, e.g., Miller, *supra* note 57, at 980; John W. L. Ogilvie, *Defining Computer Program Parts Under Learned Hand's Abstractions Test in Software Copyright Infringement Cases*, 91 MICH. L. REV. 526, 526-27 (1992); Mary L. Mills, *New Technology and the Limitations of Copyright Law: An Argument for Finding Alternatives to Copyright Legislation in an Era of Rapid Technological Change*, 65 CHI.-KENT L. REV. 307, 309 (1989); Pamela Samuelson, *The Ups and Downs of Look and Feel*, COMMUNICATIONS OF THE A.C.M., Apr. 1993, at 29; and *Brief AMICUS CURIAE of Eleven Copyright Professors in Sega Enterprises, Inc. v. Accolade, Inc.*, 33 JURIMETRICS J. 147, 148 (1992).

60. Richard A. Beutel, *Software Engineering Practices and the Idea/Expression Dichotomy: Can Structured Design Methodologies Define the Scope of Software Copyright?*, 32 JURIMETRICS J. 1, 1 (1991). For additional commentaries regarding the difficulty in defining the scope of computer software copyright protection, see *id.* at 1 n.1.

61. See *Whelan Assocs. v. Jaslow Dental Lab.*, 797 F.2d 1222, 1231 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987); *Sid & Marty Krofft Television Prods. v. McDonald's*, 562 F.2d 1157, 1162 (9th Cir. 1977); *Reyher v. Children's Television Workshop*, 533 F.2d 87, 90 (2d Cir. 1976), *cert. denied*, 429 U.S. 980 (1976); 3 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT, § 13.01 at 13-15 (1993).

62. 17 U.S.C. § 410(c) (1988); *Gates Rubber Co. v. Bando Chem. Indus.*, 9 F.3d 823, 831 (10th Cir. 1993).

63. *Whelan Assocs.*, 797 F.2d at 1231; *Roth Greeting Cards v. United Card Co.*, 429 F.2d 1106, 1110 (9th Cir. 1970).

64. *Whelan Assocs.*, 797 F.2d at 1231-32.

the programs, could find that the second work was copied from the first."⁶⁵

Critical to the determination of illicit copying is the differentiation between a work's expression and its underlying ideas. The overriding concern of courts has been to ensure that copyright protection is not extended to ideas but only to the expression of ideas.⁶⁶ This principle was first expressed by the Supreme Court⁶⁷ and recently codified in the Copyright Act.⁶⁸ As modestly stated by the Second Circuit, "[d]rawing the line between idea and expression is a tricky business."⁶⁹

Initially, computer software was viewed primarily as a utilitarian form of literary work.⁷⁰ Faced with a new form of an original "work," courts had no choice but to turn to more traditional examples of literary works, such as dramatic performances and fictional works, to formulate methods to determine the scope of copyright protection available to computer programs.⁷¹

Before 1980, the Copyright Act never specifically mentioned computer programs, though Congress did intend that software and other forms of electronic works be provided protection.⁷² The 1980 amend-

65. *Gates Rubber Co.*, 9 F.3d at 833.

66. *E.g.*, *Computer Assocs. Int'l v. Altai, Inc.*, 982 F.2d. 693, 703 (2d Cir. 1992).

67. *Mazer v. Stein*, 347 U.S. 201, 217 (1954); *see also Baker v. Selden*, 101 U.S. 99 (1879) (holding that a copyrighted book on a peculiar system of bookkeeping was not infringed by a similar book, using a similar plan, which achieved similar results, where the alleged infringer made a different arrangement of the columns and headings).

68. 17 U.S.C. § 102(b) (1988) provides: "In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work."

69. *Computer Assocs. Int'l*, 982 F.2d at 704.

70. *See id.*

71. *See, e.g., id.* at 706-07. Computer programs and software are synonymous. The Copyright Act defines a computer program as "[a] set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." 17 U.S.C. § 101 (1988). Software is a generic reference to computer programs, as contrasted with computer hardware, which refers to the computer equipment itself, including its electronic components and peripheral devices (such as printers and disk drives).

72. *Lotus Dev. v. Paperback Software Int'l*, 740 F. Supp. 37, 48 (D. Mass. 1990).

The history of copyright law has been one of gradual expansion in the types of works accorded protection, and the subject matter affected by this expansion has fallen into two general categories. In the first, scientific discoveries and technological developments have made possible new forms of creative expression that never existed before. In some of these cases the new expressive forms — electronic music, filmstrips, and *computer programs*, for example — could be regarded as an extension of copyrightable subject matter Congress had already intended to protect, and were thus considered copyrightable from the outset without need of new legislation. In other cases, such as photographs, sound recordings, and motion pictures, statutory enactment was deemed necessary to give them full recognition as copyrightable works.

Authors are continually finding new ways of expressing themselves, but it is impossible to foresee the forms that these new expressive methods will take. The bill [to enact the 1976 Copyright Act] does not intend either to freeze the scope of copyrightable subject matter at the present stage of communications technology or to allow unlimited expansion into areas outside the present congressional intent.

H.R.REP. NO. 1476, 94th Cong., 2d Sess. 51, *reprinted in* 1976 U.S.C.C.A.N. ADMIN. NEWS 5659, 5664 (emphasis added); *Lotus Dev. v. Paperback Software Int'l*, 740 F. Supp. 37, 48 (D. Mass. 1990).

ment to the Copyright Act⁷³ and initial judicial decisions clearly established that computer programs are, if original, proper subject matter for copyright protection:

[T]he category of "literary works" . . . is not confined to literature in the nature of Hemingway's *For Whom the Bell Tolls*. The definition of "literary works" in section 101 [of the 1976 Copyright Act] includes expression not only in words but also "numbers, or other . . . numerical symbols or indicia," thereby expanding the common usage of "literary works." Thus a computer program, whether in object code or source code, is a "literary work" and is protected from unauthorized copying, whether from its object or source code version.⁷⁴

The focus of early software copyright cases such as *Apple Computer v. Franklin Computer*⁷⁵ was upon the copyrightability of computer programs in their various forms.⁷⁶ At issue in the early cases was not so much whether the computer programs in question had been copied by the defendants (or were substantially similar), but whether the programs themselves were subject to copyright protection.⁷⁷ At present, it is undisputed that literal manifestations of computer programs, provided they are original, are copyrightable.⁷⁸

What degree of copyright protection is available for non-literal manifestations of computer programs has proved to be an issue of concern for judges, commentators, attorneys, and software professionals. *Whelan Asso-*

73. The Copyright Act of 1976, Pub. L. No. 94-553, 90 Stat. 2541, amended by Act of Dec. 12, 1980, Pub. L. No. 96-517, §§ 9-10, 94 Stat. 3015, 3028 (codified at 17 U.S.C. §§ 101-1010 (1988 & Supp. IV 1992)).

74. *Apple Computer v. Franklin Computer*, 714 F.2d 1240, 1249 (3d Cir. 1983), cert. dismissed, 464 U.S. 1033 (1984) (citations omitted).

75. *Id.*

76. *See id.* Computer programs are represented in two literal forms: source code is the literal text of a program's instructions written in a human-readable programming language. Ogilvie, *supra* note 59, at 531; *Lotus Dev.*, 740 F. Supp. at 44. Source code is then translated into a machine-readable form, known as object code, which the computer uses to actually implement the program's instructions. Ogilvie, *supra* note 59, at 531; *Lotus Dev.*, 740 F. Supp. at 44.

The purpose of a computer program is also generally categorized by whether it is an application program or an operating system program. *See Apple Computer*, 714 F.2d at 1249-52. An application program is one that a computer user generally uses to interact with a computer, such as a word processing program, a spreadsheet program, or an accounting program. An operating system program is one that provides basic instructions to the computer for its internal operations. A computer user may instruct an application program to save a spreadsheet file; it is the operating system program that will receive the instruction from the application program and provide the instructions to the computer hardware to carry out the actual file saving procedures.

In *Apple Computer*, Franklin had argued that operating system programs were not copyrightable under the premise that they were methods or processes, which are not copyrightable subject-matter pursuant to 17 U.S.C. § 102(b). *Id.* at 1250; *supra* note 68. The court in *Apple Computer* flatly rejected Franklin's argument, relying on the CONTU Final Report which stated that works of a program which are "used ultimately in the implementation of a process should in no way affect their copyrightability." *Apple Computer*, 714 F.2d at 1252.

77. *See Apple Computer*, 714 F.2d at 1253; *Apple Computer v. Formula Int'l*, 725 F.2d 521, 524-25 (9th Cir. 1984).

78. *Lotus Dev.*, 740 F. Supp. at 45 (providing a list of citations supporting this rule of law).

ciates v. Jaslow Dental Laboratory,⁷⁹ was one of the first cases to specifically address this issue and provides a perfect example of how it is raised. Whelan developed a dental laboratory management computer program for Jaslow, with Whelan retaining the ownership of the program.⁸⁰ Jaslow later decided to create its own version of the program.⁸¹ Because the programs were written in two different programming languages, they were not literally similar.⁸² The court in *Whelan Associates* found, however, that the two programs were substantially similar, not in their literal manifestations, but in their overall structure and organization.⁸³

The rule of law that literal similarities are not necessary to establish infringement was established long before the creation of computer programs: “[A]n infringement is not confined to literal and exact repetition or reproduction; it includes also the various modes in which the matter of any work may be adopted, imitated, transferred, or reproduced, with more or less colorable alterations to disguise the piracy.”⁸⁴ Copyright protection “cannot be limited literally to the text, else a plagiarist would escape by immaterial variations.”⁸⁵

Rather than dealing with exact, literal copying, courts have been forced to consider whether similarities between two works are the result of impermissible copying by the alleged infringer.⁸⁶ Critical to determining whether there has been a copyright infringement in these situations is whether the defendant has impermissibly copied too much of the plaintiff’s original expression.⁸⁷ Separating protectable expression from its underlying ideas, however, has proved difficult and controversial.⁸⁸

The real task in a copyright infringement action, then, is to determine whether there has been copying of the expression of an idea rather than just the idea itself. “[N]o one infringes, unless he descends so far into what is concrete [in a work] as to invade . . . [its] expression.” Only this expression may be protected and only it may be infringed.⁸⁹

79. 797 F.2d 1222 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987).

80. *Id.* at 1225.

81. *Id.*

82. *Id.* at 1225. “Each programming language has a unique grammar and set of meanings. Two programs may perform the same functions despite differences in their source code. Conversely, two programs with nearly identical source code can perform very differently.” Ogilvie, *supra* note 59, at 531.

83. *Whelan Assoc.*, 797 F.2d at 1248.

84. *Universal Pictures Co. v. Harold Lloyd Corp.*, 162 F.2d 354, 360 (9th Cir. 1947).

85. *Nichols v. Universal Pictures Corp.*, 45 F.2d 119, 121 (2d Cir. 1930), *cert. denied*, 282 U.S. 902 (1931).

86. *Sid & Marty Krofft Television Prods. v. McDonald’s Corp.*, 562 F.2d 1157, 1162 (9th Cir. 1977).

87. *Id.* at 1163.

88. “The difficulty comes in attempting to distill the unprotected idea from the protected expression.” *Id.*

89. *Id.* (quoting *National Comics Publications v. Fawcett Publications*, 191 F.2d 594, 600 (2d Cir. 1951)).

This separation between idea and expression is accomplished through the "abstractions test" first articulated by Judge Learned Hand in *Nichols v. Universal Pictures Corp.*⁹⁰

Upon any work, and especially upon a [dramatic] play, a great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out. The last may perhaps be no more than the most general statement of what the play is about, and at times might consist of only its title; but there is a point in this series of abstractions where they are no longer protected, since otherwise the playwright could prevent the use of his "ideas," to which, apart from their expression, his property is never extended.⁹¹

Courts must therefore determine not only whether two works are substantially similar, but also whether the similarities involve protected expression.⁹² Courts have been faced with the dual roles of determining whether the works, as a whole, are so similar that copying is inferred by the similarity, and whether protectable expression was indeed copied.⁹³ There "must be substantial similarity not only of the general ideas but of the expressions of those ideas as well."⁹⁴ Initially, courts applied an "extrinsic/intrinsic" analysis to determine substantial similarity.⁹⁵

The "extrinsic" test determines whether there is substantial similarity of ideas.⁹⁶ The "intrinsic" test determines whether there is substantial similarity in expressions.⁹⁷ This second test has also been referred to as the "ordinary observer"⁹⁸ test because it is made solely from the perspective of the lay observer without the assistance of experts.⁹⁹ Application of the intrinsic test is particularly difficult. "As Judge Hand candidly observed, 'Obviously, no principle can be stated as to when an imitator has gone beyond copying the "idea," and has borrowed its "expression." Decisions must therefore inevitably be ad hoc.'"¹⁰⁰

If a substantial similarity of ideas is established through the extrinsic test, then the trier of fact must apply the intrinsic test to determine whether the expression of the ideas is substantially similar so as to consti-

90. 45 F.2d 119 (2d Cir. 1930), *cert. denied*, 282 U.S. 902 (1931)).

91. *Id.* at 121.

92. *Sid & Marty Krofft Television Prods.*, 562 F.2d at 1164.

93. *See id.*

94. *Id.* at 1164.

95. *See id.* at 1164-66.

96. *Id.* at 1164.

It is extrinsic because it depends not on the responses of the trier of fact, but on specific criteria which can be listed and analyzed. Such criteria include the type of artwork involved, the materials used, the subject matter, and the setting for the subject. Since it is an extrinsic test, analytic dissection and expert testimony are appropriate. Moreover, this question may often be decided as a matter of law.

Id.

97. *Id.*

98. *See Whelan Assocs. v. Jaslow Dental Lab.*, 797 F.2d 1222, 1232 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987).

99. *Id.*

100. *Sid & Marty Krofft Television Prods.*, 562 F.2d at 1164 (quoting *Peter Pan Fabrics v. Martin Weiner Corp.*, 274 F.2d 487, 489 (2d Cir. 1960)).

tute infringement.¹⁰¹ The *Whelan Associates* court followed this basic line of reasoning to find infringement resulting from the substantial similarity of non-literal expressions.¹⁰²

As the *Whelan Associates* court noted, applying the extrinsic/intrinsic test to determine whether the non-literal elements of computer programs are substantially similar is not without its failings. "The ordinary observer test, which was developed in cases involving novels, plays, and paintings, and which does not permit expert testimony, is of doubtful value in cases involving computer programs on account of the programs' complexity and unfamiliarity to most members of the public."¹⁰³ This criticism has gained acceptance in infringement cases not involving software,¹⁰⁴ and was also adopted by the Federal District Court for the District of Colorado in *Gates Rubber Co. v. Bando American*.¹⁰⁵

The result is that courts have been relying upon experts to dissect the works in question and to assist in determining whether the dissected elements are substantially similar.¹⁰⁶ There is a threat, however, that in focusing on the second element of this test, whether protectable expressions have been copied, courts are ignoring the first element of the test, namely whether the works as a whole are substantially similar.¹⁰⁷

101. *Id.*

102. *Whelan Assocs.*, 797 F.2d at 1232-33, 1238-40.

103. *Id.* at 1232.

Moreover, the distinction between the two parts of the . . . [extrinsic/intrinsic] test may be of doubtful value when the finder of fact is the same person for each step: that person has been exposed to expert evidence in the first step, yet she or he is supposed to ignore or "forget" that evidence in analyzing the problem under the second step. Especially in complex cases, we doubt that the "forgetting" can be effective when the expert testimony is essential to even the most fundamental understanding of the objects in question.

Id. at 1232-33.

104. In *Dawson v. Hinshaw Music*, the Fourth Circuit stated:

We suspect that courts have been slow to recognize explicitly the need for refining the ordinary observer test in such a way that it would adopt the perspective of the intended audience because, in most fact scenarios, the general lay public fairly represents the works' intended audience. . . . Fortunately, the advent of computer programming infringement actions has forced courts to recognize that sometimes the non-interested or uninformed lay observer simply lacks the necessary expertise to determine similarities or differences between products.

As *Whelan* reveals, only a reckless indifference to common sense would lead a court to embrace a doctrine that requires a copyright case to turn on the opinion of someone who is ignorant of the relevant differences and similarities between two works. Instead the judgment should be informed by people who are familiar with the media at issue.

Dawson v. Hinshaw Music, 905 F.2d 731, 735 (4th Cir. 1990), *cert. denied*, 498 U.S. 981 (1990).

105. 798 F. Supp. 1499, 1513 (D. Colo. 1992), *aff'd in part, vacated in part*, 9 F.3d 823 (10th Cir. 1993).

106. *Id.* at 1513-14.

107. *See, e.g., Gates Rubber Co. v. Bando Chem. Indus.*, 9 F.3d 823, 834-35 (10th Cir. 1993).

We suggest that a court will often be assisted in determining the factual issue of copying if both programs are first compared in their entirety without filtering out the unprotected elements. Such a preliminary step does not obviate the ultimate need to compare just the protected elements of the copyrighted program with the alleged infringing program. *However, an initial holistic comparison may reveal a pattern of copying that is not obvious when only certain components are examined.*

Id. at 841 (emphasis added).

Again, because the Copyright Act does not protect ideas, only their expressions,¹⁰⁸ courts must delineate between abstract ideas and protectable expression. In *Whelan Associates*, the court held that "the purpose or function of a utilitarian work would be the work's idea, and everything that is not necessary to that purpose or function would be part of the expression of the idea."¹⁰⁹ This holding has been severely criticized as being overly simplistic when confronting the intricacies of computer programming.¹¹⁰

Unfortunately, however, courts can only give general guidance as to how to differentiate between ideas underlying a computer program and protectable expressions of those ideas. "Application of the abstractions test will necessarily vary from case-to-case and program-to-program. Given the complexity and ever-changing nature of computer technology, we decline to set forth any strict methodology for the abstraction of computer programs."¹¹¹

The "abstractions test" is not the only method employed by courts to ensure that copyright protection is extended only to protectable expression. If there is only one way to express an idea, the idea and its expression will be deemed to have merged. Under the "merger" doctrine, no protection will be granted the expression because doing so would effectively grant copyright protection to the underlying idea.¹¹²

108. See *supra* text accompanying notes 66-69.

109. *Whelan Assoc.*, 797 F.2d at 1236. As the court stated in relation to the infringed Dentalab program:

[T]he idea of the Dentalab program was the efficient management of a dental laboratory (which presumably has significantly different requirements from those of other businesses). Because that idea could be accomplished in a number of different ways with a number of different structures, the structure of the Dentalab program is part of the program's expression, not its idea.

Id. at 1236 n.28.

110. For a discussion of the specific criticisms leveled at this aspect of the *Whelan* decision, see *Computer Assoc. Int'l v. Altai, Inc.*, 982 F.2d 693, 705-06 (2nd Cir. 1992),

111. *Gates Rubber Co.*, 9 F.3d at 834-35. *Lotus Dev. v. Paperback Software Int'l*, 740 F. Supp. 37 (D.Mass. 1990) provided the same guidance:

[I]n making the determination of "copyrightability," the decisionmaker must focus upon alternatives that counsel may suggest, or the court may conceive, *along the scale from the most generalized conception to the most particularized*, and choose some formulation—some conception or definition of the "idea"—for the purpose of distinguishing between the idea and its expression.

Id. at 60. One commentator has suggested that courts adopt a standardized approach to separating the basic elements of computer programs into six levels of generally declining abstraction: (i) the main purpose, (ii) the program structure or architecture, (iii) modules, (iv) algorithms and data structures, (v) source code, and (vi) object code. See Ogilvie, *supra* note 59, at 533. This approach was applied in *Gates Rubber Co.*, 9 F.3d at 835. *But see Computer Assoc.*, 982 F.2d at 707:

Initially, in a manner that resembles reverse engineering on a theoretical plane, a court should dissect the allegedly copied program's structure and isolate each level of abstraction contained within it. This process begins with the code and ends with an articulation of the program's ultimate function. Along the way, it is necessary essentially to retrace and map each of the designer's steps — in the opposite order in which they were taken during the program's creation.

Computer Assoc., 982 F.2d at 707.

112. *Gates Rubber Co.*, 9 F.3d at 838; *Concrete Machinery Co. v. Classic Lawn Ornaments*, 843 F.2d 600 (1st Cir. 1988); *Herbert Rosenthal Jewelry v. Kalpakian*, 446 F.2d 738, 742 (9th Cir. 1971).

Closely related to the merger doctrine are concerns about efficiency: [W]hen one considers the fact that programmers generally strive to create programs "that meet the user's needs in the most efficient manner," the applicability of the merger doctrine to computer programs becomes compelling. In the context of computer program design, the concept of efficiency is akin to deriving the most concise logical proof or formulating the most succinct mathematical computation. *Thus, the more efficient a set of modules are, the more closely they approximate the idea or process embodied in that particular aspect of the program's structure.*¹¹³

There are three additional restrictions to protection which relate to originality. "To qualify for copyright protection, a work must be original to the author."¹¹⁴ Under the *scenes a faire* doctrine, protection is denied to expressions which are standard, stock, or common to a particular topic or that necessarily follow from a common theme or setting such as hardware specifications.¹¹⁵

Granting copyright protection to the necessary incidents of an idea would effectively afford a monopoly to the first programmer to express those ideas. Furthermore, where a particular expression is common to the treatment of a particular idea, process, or discovery, it is lacking in the originality that is the *sine qua non* for copyright protection.¹¹⁶

The second restriction is that facts are not afforded copyright protection. Facts exist independently of the discoverer, who is not the author of the facts but merely the recorder.¹¹⁷ Finally, the third restriction is that expressions which are in the public domain, and therefore not original to the author, are not afforded protection.¹¹⁸

While some subsequent courts agree that the *Whelan Associates* court's overall approach for determining infringement for non-literal elements was basically sound,¹¹⁹ significant attempts have been made to formulate more precise analyses.¹²⁰ In *Lotus Development v. Paperback Software International*,¹²¹ Judge Keeton formulated a three-part process: 1) the underlying idea of the work must be identified; 2) individual elements of expression which comprise the work must be evaluated to determine whether each expression is limited to the functional requirements of the work or is in the public domain, or whether, conversely, it constitutes an original ex-

113. *Computer Assocs.*, 982 F.2d at 705 (citation omitted) (emphasis added). *Computer Associates* essentially states that if a programmer selects a particular implementation methodology because it is the most efficient approach, that expression merges with its underlying idea and is unprotectable. *Id.*

114. *Feist Publications v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345 (1991).

115. *Gates Rubber Co.*, 9 F.3d at 838.

116. *Id.* (citation omitted).

117. *See Feist Publications*, 499 U.S. at 348; *Gates Rubber Co.*, 9 F.3d at 837.

118. *See Gates Rubber Co.*, 9 F.3d at 837-38; *Computer Assocs.*, 982 F.2d at 710.

119. *See, e.g., Computer Assocs.*, 982 F.2d at 7050; *Gates Rubber Co.*, 9 F.3d at 840.

120. *See, e.g., Ogilvie, supra* note 59 at 550-59 (identifying four distinct substantial similarity tests: (1) the iterative test; (2) the structure, sequence and organization (SSO) test; (3) the "look and feel" or "total concept and feel" test; and (4) the successive filtering test).

121. 740 F. Supp 37 (D. Mass. 1990).

pression; and 3) to determine copyrightability of the work, it must be determined whether any of the elements not determined to be limited to the functional requirements of the work or in the public domain constitute a substantial part of the work.¹²²

Currently, the analysis gaining the most acceptance by courts is the "Abstraction-Filtration-Comparison" test adopted by the Second Circuit in *Computer Associates International v. Altai, Inc.*¹²³ In step one of this test, the court applied a traditional abstractions test.¹²⁴ In step two, expressive elements which do not qualify for protection were filtered out in order to separate protectable expression from non-protectable material.¹²⁵ In the third and final step:

Once a court has sifted out all elements of the allegedly infringed program which are "ideas" or are dictated by efficiency or external factors, or taken from the public domain, there may remain a core of protectable expression. . . . At this point, the court's substantial similarity inquiry focuses on whether the defendant copied any aspect of this protected expression, as well as an assessment of the copied portion's relative importance with respect to the plaintiff's overall program.¹²⁶

The "Abstraction-Filtration-Comparison" test was substantially adopted by the Tenth Circuit in *Gates Rubber Co. v. Bando Chemical Industries*.¹²⁷ Judge Keeton applied his three-part substantial similarity test in the subsequent case of *Lotus Development v. Borland International*,¹²⁸ and ruled that it is fundamentally compatible with the "Abstraction-Filtration-Comparison" test.¹²⁹ The Ninth Circuit and the District Court for the

122. *Id.* at 60

FIRST, in making the determination of "copyrightability," the decisionmaker must focus upon alternatives that counsel may suggest, or the court may conceive, along the scale from the most generalized conception to the most particularized, and choose some formulation — some conception or definition of the "idea" — for the purpose of distinguishing between the idea and its expression.

. . . .

SECOND, the decisionmaker must focus upon whether an alleged expression of the idea is limited to elements essential to expression of that idea (or is one of only a few ways of expressing the idea) or instead includes identifiable elements of expression not essential to every expression of that idea.

THIRD, having identified elements of expression not essential to every expression of the idea, the decisionmaker must focus on whether those elements are a substantial part of the allegedly copyrightable "work."

Id. at 61.

123. 982 F.2d 693, 706 (2d Cir. 1992).

124. *Id.* at 706-07

125. *Id.* at 707. This process entails examining the structural components at each level of abstraction to determine whether their particular inclusion at that level was "idea" or was dictated by considerations of efficiency, so as to be necessarily incidental to that idea; required by factors external to the program itself; or taken from the public domain and hence nonprotectable expression. *Id.*

126. *Id.* at 710.

127. 9 F.3d 823, 824 (10th Cir. 1993).

128. 799 F. Supp. 203 (D. Mass. 1992).

129. *Id.* at 211-12.

Northern District of California have also effectively adopted the "Abstraction-Filtration-Comparison" test.¹³⁰

The principal difficulty with the Abstraction-Filtration-Comparison test is that, taken to its logical extreme, a work may be found to contain no protectable elements of expression, and is, therefore, not subject to copyright protection. The *Whelan Associates* court found support in the Copyright Act as well as prior decisions for its holding that the structure and organization of a computer program can be proper subjects of copyright protection.¹³¹ Recently, the Supreme Court expressly reinforced that a work containing no individual protectable expressions can still be subject to copyright protection.¹³² In language very similar to *Whelan Associates*, the Supreme Court stated:

The compilation author typically chooses which facts to include, in what order to place them, and how to arrange the collected data so that they may be used effectively by readers. These choices as to selection and arrangement, so long as they are made independently by the compiler and entail a minimal degree of creativity, are sufficiently original that Congress may protect such compilations through the copyright laws. Thus, even a directory that contains absolutely no protectable written expression, only facts, meets the constitutional minimum for copyright protection if it features an original selection or arrangement.¹³³

Granted, the level of protection provided is very thin.¹³⁴ "[A] subsequent compiler remains free to use the facts contained in another's publi-

130. *Sega Enters. v. Accolade, Inc.*, 977 F.2d 1510, 1525 (9th Cir. 1993); *Atari Games v. Nintendo of Am.*, No. C 88-4805 FMS, C 89-0027 FMS, 1993 WL 207548, at *1-3 (N.D. Cal. May 18, 1993); *Apple Computer v. Microsoft*, 821 F. Supp. 616, 623 (N.D. Cal 1993).

131. *Whelan Assoc.*, 797 F.2d at 1239.

The Copyright Act of 1976 provides . . . support . . . that Congress intended that the structure and organization of a literary work could be part of its expression protectable by copyright. Title 17 U.S.C. § 103 (1982) specifically extends copyright protection to compilations and derivative works. Title 17 U.S.C. § 101, defines "compilation" as "a work formed by the collection and *assembling* of preexisting materials or of data that are selected, *coordinated, or arranged* in such a way that the resulting work as a whole constitutes an original work of authorship," and it defines "derivative work," as one "based upon one or more preexisting works, such as . . . *abridgement, condensation, or any other form in which a work may be recast, transformed, or adapted.*" Although the Code does not use the terms "sequence," "order" or "structure," it is clear from the definition of compilations and derivative works, and the protection afforded them, that Congress was aware of the fact that the sequencing and ordering of materials could be copyrighted, *i.e.*, that the sequence and order could be parts of the expression, not the idea, of a work.

Id. The *Whelan* Court also based its decision on early cases which held that a copyright infringement can exist in the absence of literal similarities. *Id.* at 1234; *see also* *Twentieth Century-Fox Film Corp. v. MCA, Inc.*, 715 F.2d 1327, 1329 (9th Cir. 1983) (thirteen alleged distinctive plot similarities between *Battlestar Galactica* and *Star Wars* may be basis for a finding of copyright violation); *Sid & Marty Krofft Television Prods. v. McDonald's Corp.*, 562 F.2d 1157, 1167 (9th Cir. 1977) (similarities between McDonaldland characters and H.R. Pufnstuf characters can be established by "'total concept and feel'" of the two productions).

132. *Feist Publications v. Rural Tel. Serv. Co.*, 499 U.S. 340, 348-49 (1991). Compilations of facts generally are copyrightable. *Id.* at 344

133. *Id.* at 349 (citations omitted).

134. *Id.*

cation to aid in preparing a competing work, so long as the competing work does not feature the same selection and arrangement."¹³⁵

Courts must be careful in their pursuit of this "protectable core"¹³⁶ of a compiler's work. As noted by one commentator:

Hypothesize two computer programs that contain many of the same nonliteral elements, and an efficiency and *scenes a faire* analysis that revealed that, in each instance, several practical options to those nonliteral elements existed. The correspondence between the programs, taken in the aggregate, would be beyond coincidence. Nevertheless, a mechanical application of an expansive merger doctrine might dictate that these similarities should be eliminated from consideration in the court's filtration analysis, and could lead the court to conclude that the plaintiff's program was completely unprotectable. Unless the *Altai* process is invested with some flexibility, it could defeat Congress's desire to accord computer programs full copyright protection, and deprive authors of these works of Congress's intended incentives and rewards.¹³⁷

The *Computer Associates International v. Altai, Inc.* court itself recognized, to a limited degree, the potential pitfalls of its analysis.¹³⁸

In order to impose liability for copyright infringement, the basic approach taken by courts is to "find that the defendant copied protectable elements of the plaintiff's program and that those protectable elements comprise a substantial part of the plaintiff's program when it is considered as a whole."¹³⁹ At present, there is very little guidance as to what non-literal elements of an allegedly infringed computer program are protectable, as well as whether those elements comprise a substantial part of the program. For example, in *Lotus Development v. Paperback Software International*¹⁴⁰ Judge Keeton examined the non-literal elements of the popular Lotus 1-2-3 spreadsheet program.¹⁴¹ It is not exactly clear which specific element Judge Keeton found to be protectable. On the one hand, Judge Keeton found that the structure, sequence, and organization of the program's menu command system constituted a substantial part of the alleged

135. *Id.* at 349 (emphasis added).

136. "Protectable core" means those compilations of facts that are sufficiently original in their use, order of placement, and arrangement. See *supra* note 133-35 and accompanying text.

137. Miller, *supra* note 57, at 1010 n.156.

138. *Computer Assocs. Int'l v. Altai, Inc.*, 982 F.2d 693, 706 (2d Cir. 1992).

[W]e are cognizant that computer technology is a dynamic field which can quickly outpace judicial decisionmaking. Thus, in cases where the technology in question does not allow for a literal application of the . . . [Abstraction-Filtration-Comparison test], our opinion should not be read to foreclose the district courts of our circuit from utilizing a modified version.

Id.

139. *Gates Rubber Co. v. Bando Chem. Indus.*, 9 F.3d 823 (10th Cir. 1993) (citing *Autoskill v. National Educ. Support Sys.*, 1476, 1496-98 (10th Cir. 1993)).

140. 740 F. Supp. 37 (D. Mass. 1990).

141. *Id.* at 51-52.

copyrighted work.¹⁴² Judge Keeton then merely concluded that "copyrightability of the user interface of [Lotus] 1-2-3 is established."¹⁴³

It is interesting to note that Judge Keeton's determination that the Lotus 1-2-3 menu command system is a substantial part of the program is based solely upon the finding that "[t]he user interface of [Lotus] 1-2-3 is its most unique element, and is the aspect that has made 1-2-3 so popular. That defendants went to such trouble to copy that element is a testament to its substantiality."¹⁴⁴

The defendants in *Lotus Development* attempted to create a "feature-for-feature work-a-like for [Lotus] 1-2-3."¹⁴⁵ Because infringement was based solely upon the copying of the Lotus 1-2-3 user command system, one must wonder if Lotus may have found itself with an essentially unprotected computer program if the defendants had not copied the Lotus 1-2-3 menu command system essentially verbatim.

Judge Keeton then found the Lotus 1-2-3 menu command system to be an original expression and thus protectable,¹⁴⁶ despite the fact that the ordering of the menu command structure was presented in predicted order of "frequency of use rather than alphabetically."¹⁴⁷ In other words, the structure of the Lotus 1-2-3 menu command system was significantly dictated by considerations of efficiency. The Second Circuit has indicated that when programmers strive to "meet the user's needs in the most efficient manner"; however, idea and expression may have merged and therefore, protection is not available.¹⁴⁸

Copyright protection arises from the Constitutional provision granting Congress the power to pass laws "[t]o 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."¹⁴⁹ "[T]he purpose of the copyright law is to create the most efficient and productive

142. *Id.* at 68.

143. *Id.*

144. *Id.* The defendants in *Lotus* had attempted to create a spreadsheet which was completely "compatible" with Lotus 1-2-3, hence the decision to copy Lotus 1-2-3 as closely as possible. *Id.* at 69. Judge Keeton pointed out, however, that the defendants' premise that they had to have an identical menu command structure proved "incorrect in hindsight." *Id.* For example, a spreadsheet program created by Microsoft has proved commercially successful despite having a different menu command system. *Id.* It is difficult to understand how the Lotus 1-2-3 user command system can be so substantial, based partly on the fact that defendants had gone to the trouble of copying it, when the defendants' purpose for copying it is essentially commercially pointless. *See id.* at 68.

145. *Lotus Dev.*, 740 F. Supp. at 69.

146. *Id.* at 68. "I conclude that a menu command structure is capable of being expressed in many if not an unlimited number of ways, and that the command structure of 1-2-3 is an original and nonobvious way of expressing a command structure." *Id.*

147. *Id.* at 67.

148. *Computer Assocs. Int'l v. Altai, Inc.*, 982 F.2d 693, 708 (2d Cir. 1992) (quoting Peter S. Menell, *An Analysis of the Scope of Copyright Protection for Application Programs*, 41 *STAN. L. REV.* 1045, 1052 (1989)). *See supra* notes 112-13 and accompanying text.

149. U.S. CONST. art. I, § 8, cl. 8.

balance between protection (incentive) and dissemination of information, to promote learning, culture and development."¹⁵⁰

The defendants in *Lotus* had made every effort to produce an identical version of the plaintiff's program in order to achieve commercial success.¹⁵¹ In fact, they even discarded certain improved features because they were not completely compatible with Lotus 1-2-3.¹⁵² Protecting against such illicit copying clearly falls within the balance the copyright laws are designed to achieve.¹⁵³

The issue arises whether the same analysis applied by Judge Keeton in *Lotus* should be applied when a competing program, which contains a completely different menu command structure and is considered superior to Lotus 1-2-3,¹⁵⁴ also contains a feature which emulates the Lotus 1-2-3 menu command system.¹⁵⁵ When a computer program is independently created and is considered an improvement over its competing works, keeping in mind the balance to be struck between protecting authors and promoting learning, culture and development, it is arguable that incorporation of the Lotus 1-2-3 menu command system into an optional feature is not copying a substantial part of the Lotus 1-2-3 program.¹⁵⁶ Regardless, Judge Keeton subsequently ruled in *Lotus Development v. Borland International* that Borland's Quattro programs infringed upon Lotus 1-2-3:

150. *Whelan Assocs. v. Jaslow Dental Lab.*, 797 F.2d 1222, 1235 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987).

151. *Lotus Dev. v. Paperback Software Int'l*, 740 F. Supp. 37, 69 (D. Mass. 1990).

152. *Id.*

153. *See Whelan Assocs. v. Jaslow Dental Lab.*, 797 F.2d 1222, 1231 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987); *Sid & Marty Krofft Television Prods. v. McDonald's*, 562 F.2d 1157, 1162 (9th Cir. 1977); *Reyher v. Children's Television Workshop*, 533 F.2d 87, 90 (2d Cir. 1976), *cert. denied*, 429 U.S. 980 (1976); 3 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT, § 13.01 at 13-15 (1993).

154. *See Peter H. Lewis, When Computing Power Is Generated By The Lawyers*, N.Y. TIMES, July 22, 1990, at F4.

155. *See Lotus Dev. v. Borland Int'l*, 799 F. Supp. 203, 222 (D. Mass. 1992). The *Lotus* court stated:

That Borland, in developing the Quattro programs, has added functional and expressive elements that do not exist in [Lotus] 1-2-3 is irrelevant in view of the fact that Borland copied virtually the whole menu command structure of 1-2-3 into its emulation interfaces. Borland's additions have caused some variation in the manner in which the elements taken from 1-2-3 are expressed in the Quattro programs. . . . A decisionmaker in this case (whether judge or jury) must ignore the added expression to the extent that it does not change the expression Borland copied from Lotus. I conclude that no reasonable jury could find for Borland that Borland did not take the menu commands, menu command structure . . . and keystroke sequences substantially as they were.

Id.

156. It is interesting to note that Microsoft offers a feature in its spreadsheet program, Excel, which allows users to display a menu system with the same Lotus 1-2-3 commands (though expressed vertically instead of horizontally). By pressing the same keystrokes as if they were using Lotus 1-2-3, Excel will then execute the equivalent command through its own menu command system. To date, Lotus has not instituted a suit for infringement against Microsoft and the author is unaware of any licensing arrangement between Lotus and Microsoft.

"The extent of copying of copyrightable elements of 1-2-3 rendered the Quattro programs substantially similar to 1-2-3."¹⁵⁷

The Tenth Circuit also addressed the question of which non-literal elements are copyrightable. In *Gates Rubber Co. v. Bando American*¹⁵⁸ the district court found that the defendants had infringed the plaintiff's copyright for a computer program it used in its course of business.¹⁵⁹ Many of the individual defendants were former employees of the plaintiff who worked for one of the corporate defendants.¹⁶⁰ One of the individual defendants allegedly stated that when he left the plaintiff's employ, he brought with him to the defendant all the computer files he could "get his hands on."¹⁶¹ In addition, the district court found the testimony of the individual defendant who claimed to have independently created the allegedly infringing program unbelievable.¹⁶²

In this case, significant evidence was presented that the defendants illicitly copied the plaintiff's copyrighted computer program.¹⁶³ The Tenth Circuit, however, has remanded the case back to the district court on the issue of copyright infringement.¹⁶⁴ They instructed the district court to determine through application of the Abstraction-Filtration-Comparison test whether the defendants' copying constitutes actionable infringement.¹⁶⁵

While these cases indicate that courts are willing to provide only a very narrow range of protection for non-literal elements of computer programs, it must be kept in mind that Congress intended that computer programs be provided copyright protection.¹⁶⁶ The balancing between protecting an author's work and dissemination of information¹⁶⁷ has, however, tilted toward dissemination.¹⁶⁸ Moreover, the fact that an author has expended considerable effort to produce an original work is of no consequence.¹⁶⁹ The *sine qua non* of copyright is originality.¹⁷⁰

157. *Borland Int'l*, 799 F. Supp. at 221. For an excellent review of this decision, see Martin Glenn & Dale M. Cendali, *Lotus Case Highlights Copyright Issues and High-Tech Problems*, NAT'L. L. J., Nov. 1, 1993, at S17.

158. 798 F. Supp. 1499 (D. Colo. 1992).

159. *Id.* at 1516.

160. *Id.* at 1502.

161. *Id.* at 1509.

162. *Id.* at 1520.

163. *See id.* at 1515, 1519-20.

164. *Gates Rubber Co. v. Bando Chem. Indus.*, 9 F.3d 823, 849 (10th Cir. 1993).

165. *Id.*

166. *See supra* note 72.

167. *Whelan Assocs. v. Jaslow Dental Lab.*, 797 F.2d 1222, 1235 (3rd Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987).

168. *See supra* notes 135-65; *infra* notes 170-81 and accompanying text.

169. Over time courts developed a theory known as the "sweat of the brow" doctrine with "the underlying notion . . . that copyright was a reward for the hard work that went into compiling facts." *Feist Publications v. Rural Tel. Serv. Co., Inc.*, 499 U.S. 340, 352. In *Feist*, the Supreme Court expressly rejected the "sweat of the brow" doctrine: "[T]he 1976 revisions to the Copyright Act leave no doubt that originality, not 'sweat of the brow,' is the touchstone of copyright protection in directories and other fact-based works." *Id.* at 359-60.

170. *Id.* at 355.

Computer programmers are then free to use the ideas contained in other programs as long as they do not impermissibly copy protected expression.¹⁷¹ Developers have therefore examined computer programs to extract the underlying ideas, and then passed those ideas to programmers who have not seen the other program, and who then create their own expression based on those ideas in a "clean room" environment.¹⁷²

Necessary to this "clean room" process is the making of intermediate verbatim copies of the other work.¹⁷³ Both the Federal and the Ninth Circuits have held that making such intermediate copies is excused under the "fair use" provisions of the Copyright Act.¹⁷⁴ Noting that the legislative history of the fair use provisions of the Copyright Act "suggests that courts should adapt the fair use exception to accommodate new technological innovations,"¹⁷⁵ the Federal Circuit in *Atari Games v. Nintendo of America*¹⁷⁶ held that "[w]hen the nature of a work requires intermediate copying to understand the ideas and processes in a copyrighted work, that nature supports a fair use for intermediate copying."¹⁷⁷ Likewise, the Ninth Circuit held in *Sega Enterprises v. Accolade*,¹⁷⁸ "that where disassembly¹⁷⁹ is the only way to gain access to the ideas and functional elements embodied in a copyrighted computer program and where there is a legitimate reason for seeking such access, disassembly is a fair use of the copyrighted work, as a matter of law."¹⁸⁰

The *Sega* court further stated:

Disassembly of object code necessarily entails copying . . . If disassembly of copyrighted object code is per se an unfair use, the owner of the copyright gains a de facto monopoly over the functional aspects of his work—aspects that were expressly denied copyright protection by Congress. . . . In order to enjoy a lawful monopoly over the idea or functional principle underlying a work, the creator of the work must satisfy the more stringent standards imposed by the patent laws.¹⁸¹

171. See *supra* notes 66-69 and accompanying text.

172. See *NEC v. Intel*, 645 F. Supp. 590 (N.D. Cal. 1989); *Computer Assocs. Int'l v. Altai, Inc.*, 775 F. Supp. 544 (E.D.N.Y. 1991).

173. See *Sega Enters. v. Accolade*, 977 F.2d 1510, 1518 (9th Cir. 1993).

174. See *Atari Games v. Nintendo of Am.*, 975 F.2d 832, 842-43 (Fed. Cir. 1992). The Atari court stated: "Section 107 of the Copyright Act states that 'fair use of a copyrighted work, including such use by reproduction in copies . . . for purposes such as criticism, comment, news reporting, teaching . . . scholarship or research' is not an infringement." *Id.* (quoting 17 U.S.C. § 107 (1988 & Supp. IV 1992)); *Sega Enters. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1993).

175. *Id.* (referring to H.R. Rep. No. 1476, 94th Cong., 2d Sess. 66 (1976), reprinted in 1976 U.S.C.C.A.N. 5659, 5679-80).

176. 975 F.2d 832 (Fed. Cir. 1992).

177. *Id.* at 843.

178. 977 F.2d 1510, 1514 n.2 (9th Cir. 1993).

179. Computer programs are translated from source code to object code through the use of an "assembler" or "compiler." Disassembly, or decompiling, is the process of reconverting object code into human-readable source code. See *id.*; see also *supra* note 76.

180. *Id.* at 1514 n.2. In this case, the "legitimate" use was Accolade's attempts to bypass a security system Sega had designed for its game cartridge consoles. *Id.* at 1527-28.

181. *Id.* at 1526 (citation omitted).

Partly as a result of the latest decisions regarding software copyright protection, more and more software developers are seeking patent protection.¹⁸² Patent protection, however, will not necessarily provide a stable environment for protection of the multimedia industry. The patent office recently issued a patent to a publisher of an interactive CD-ROM encyclopedia. Industry protests over the breadth of this particular patent led to the patent office ordering a rare re-examination of the patent.¹⁸³

It is with this perspective of the copyright protection granted to computer programs that this Article examines copyright protection as it applies to emerging multimedia applications. Because multimedia applications are for the most part inextricably linked to computer software,¹⁸⁴ the above analysis is particularly applicable.

B. *Multimedia Copyright Issues*

The interactive aspect of multimedia which allows users to manipulate sounds and images raises the most significant copyright issues. Sounds and images (both still and motion) are, if original, copyrightable subject matter. They are works of authorship fixed "in [a] . . . tangible media of expression . . . from which they can be perceived, reproduced or otherwise communicated, either directly or with the aid of a machine or device."¹⁸⁵ The Copyright Act grants to the copyright owner the exclusive right to reproduce, distribute, perform, display, and to prepare derivative works based upon their works.¹⁸⁶

182. See Michael J. Lennon, *A Statistical Analysis of the Enforcement of United States Patents Relating to Computer Software*, THE COMPUTER L. ASS'N BULL., No. 2, 1993, at 3, 6 (concluding that software-related patents appear to have fared at least as well, and possibly somewhat better, as those issued for other technologies, when litigated in the federal district courts and the Court of Appeals for the Federal Circuit); see also John S. Wiley, Jr., *Copyright at the School of Patent*, 58 U. CHI. L. REV. 119 (1991) (discussing how patent law can be applied to copyright protection issues).

183. See generally John Markoff, *A High-Technology Outcry Against the U.S. Patent System*, N.Y. TIMES, Jan. 3, 1994, at C16; James Evans, *Patently Offensive: Compton's CD-ROM Coup Could Unleash Multimedia Litigation*, L.A. DAILY J., Dec. 29, 1993, at 1; Peter H. Lewis, *The New Patent that is Infuriating the Multimedia Industry*, N.Y. TIMES, Nov. 28, 1993, § 3, at 10.

184. See *supra* Part I.

185. 17 U.S.C. § 102(a) (1988 & Supp IV 1992).

186. 17 U.S.C. § 106 (1988) states:

Subject to sections 107 through 120 [17 U.S.C. §§ 107-120], the owner of copyright under this title has the exclusive rights to do and to authorize any of the following:

- (1) to reproduce the copyrighted work in copies or phonorecords;
- (2) to prepare derivative works based upon the copyrighted work;
- (3) to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending;
- (4) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works, to perform the copyrighted work publicly; and
- (5) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work, to display the copyrighted work publicly.

Computer technology makes it possible to make exact copies of original sounds and images.¹⁸⁷ Entire works, as well as "samples," are easily copied.¹⁸⁸ The music industry has some experience with this form of copying. Digital sampling was first introduced in the music industry in the 1970s.¹⁸⁹ The principal implication of digital sampling is that a person may record small pieces (samples) of pre-existing works by others and recombine those samples into a completely different work.¹⁹⁰ While digital sampling may involve as little as three words,¹⁹¹ it can also involve substantial portions of a previous recording.¹⁹² Digital sampling has been applied to sound clips from movies and television shows¹⁹³ as well as visual images.¹⁹⁴

It initially appears that copying the original, as well as distributing or displaying the digital copies, constitutes an infringement. The phenomenon of digital sampling has been pervasive in the music industry¹⁹⁵ and will most certainly increase as digital technology becomes more widely available.

While an artist is permitted to make a new sound recording based upon the same composition upon which the first sound recording is based, the Copyright Act expressly prohibits the reproduction, distribu-

187. See Mary B. Percifull, *Digital Sampling: Creative or Just Plain "CHEEZ-OID?"*, 42 CASE W. RES. L. REV. 1263, 1263 (1992).

188. *Id.*

189. See *id.* Musical digital sampling involves recording sounds and storing them in digital format in a computer. The samples can then be replayed and edited, allowing a musician "to create virtually any type of recording instead of hiring individual instrumentalists to play each part." For a complete description of the digital sampling process, see *id.* at n.4-6. For a discussion of the technical aspects of digital sampling of sounds, see *id.* at 1264-66 n.11-29 and accompanying text. See also Note: *A New Spin on Music Sampling: A Case for Fair Play*, 105 HARV. L. REV. 726, 726-27 (1992).

190. See Percifull, *supra* note 187, at 1264-66.

191. See *Grand Upright Music v. Warner Brothers Records*, 780 F. Supp. 182, 183 (S.D.N.Y. 1991).

192. One example of the capabilities of digital sampling is the ability of singer Natalie Cole to record a "duet" with her deceased father Nat "King" Cole. Jeffrey H. Brown, Comment, *"They Don't Make Music the Way They Used To": The Legal Implications of "Sampling" in Contemporary Music*, 1992 WIS. L. REV. 1941, 1942 (1992). Another recent recording session exemplifies also the convergence of the various multimedia technologies. A new Frank Sinatra album, "Duets," was released November 3, 1993. On the album, Mr. Sinatra sings duets with a number of different singers. The duets were recorded while Mr. Sinatra was in a studio with the band in Los Angeles and his singing partners were located around the world, some recording their parts at later dates with others almost literally phoning in their contributions via a fiber-optic system that links recording studios by telephone. Stephen Holden, *Pop's Patriarch Makes Music Along With His Heirs*, N.Y. TIMES, Oct. 31, 1993, § 2, at 1; Steve Eddy, *Frankie!: Sinatra Returns With 'Duets,' His First New Material In a Decade*, ORANGE COUNTY REGISTER, Oct. 29, 1993, at 1.

193. See Seymour, *supra* note 27, at 99; Brown, *supra* note 192, at 1943-44.

194. Brown, *supra* note 192, at 1943 n.9. One of the most popular examples of digital sampling of images is a Diet Coke commercial in which the actors Humphrey Bogart and James Cagney and the musician Louis Armstrong join the contemporary musician Elton John and other actors in a nightclub. *Id.*

195. Percifull, *supra* note 187, at 1264-66 and accompanying text. For an example of copyright infringement based on digital sampling, see *Grand Upright Music*, 780 F. Supp. at 183, at 1264-66 "[T]he defendants in this action for copyright infringement would have this court believe that stealing is rampant in the music business and, for that reason, their conduct here should be excused." *Id.*

tion, or the making of a derivative work based upon, the actual copyrighted work.¹⁹⁶ Digital sampling, whether of sounds or images, therefore appears to be prohibited without the authorization of the copyright owner.¹⁹⁷ Before there can be infringement, however, a substantial portion of the copyright holder's work must be appropriated.¹⁹⁸

Determining what constitutes a substantial portion is a qualitative, not a quantitative, analysis.¹⁹⁹ Although a digital sample may consist of only a

196. 17 U.S.C. § 114(a) (1988) provides that the exclusive rights of the owner of the copyright in a sound recording are limited to the rights specified in 17 U.S.C. §§ 106(1)-(3). Further, § 114 (b) provides that the exclusive right to reproduce (§ 106(1)) a sound recording is limited to the right to duplicate the sound recording in the form of phonorecords, or of copies of motion pictures and other audiovisual works, that directly or indirectly recapture the actual sounds fixed in the recording; the exclusive right to prepare a derivative work (§ 106(2)) based upon a sound recording is limited to a work in which the *actual sounds* fixed in the sound recording are rearranged, remixed, or otherwise altered in sequence or quality; and the exclusive rights granted under §§ 106(1) & (2) do not extend to the making or duplication of another sound recording that consists entirely of an independent fixation of other sounds, even though such sounds imitate or simulate those in the copyrighted sound recording.

In addition, 17 U.S.C. § 115 (1988 & Supp. IV 1992) provides that in the case of nondramatic musical works, the exclusive rights provided under §§ 106(1) & (3), to make and to distribute phonorecords of such works, are subject to compulsory licensing as specified in § 115. Section 115(a)(1) provides that a person may obtain a compulsory license to make and distribute phonorecords of a nondramatic musical work once phonorecords of the work have been distributed to the U.S. public under the authority of the copyright holder, provided the compulsory licensee's primary purpose in making phonorecords is to distribute them to the public for private use. Section 115(a)(2) further provides that the compulsory license does not permit the licensee's arrangement of the nondramatic musical work to change the basic melody or fundamental character of the work.

17 U.S.C. § 101 (1988) defines "phonorecords" as material objects in which sounds, other than those accompanying a motion picture or other audiovisual work, are fixed by any method now known or later developed, and from which the sounds can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. The term "phonorecords" includes the material object in which the sounds are first fixed. *Id.*

17 U.S.C. § 101 (1988) defines "sound recordings" as works that result from the fixation of a series of musical, spoken, or other sounds, but not including the sounds accompanying a motion picture or other audiovisual work, regardless of the nature of the material objects, such as disks, tapes, or other phonorecords, in which they are embodied.

197. Percifull, *supra* note 187, at 1272.

It seems that digital sampling would be explicitly proscribed by the copyright act. After all, digital samples "directly or indirectly recapture the actual sounds fixed in the recording," and the samples are not entirely "independent fixations[s]" of new sounds. Congress, however, has not prohibited all copying. The House Report accompanying the Copyright Act of 1976 states that "infringement takes place whenever all or *any substantial portion* of the actual sounds that go to make up a copyrighted sound recording are reproduced . . . by repressing, transcribing, recapturing off the air, or *any other method*." The report indicates that the purpose of the statute was to protect "substantial portions" of a copyrighted piece, rather than individual notes. Digital sampling technology was not readily available at the time this report was released.

Id. (quoting H.R. REP. NO. 1476, 94th Cong., 2d Sess. 106, reprinted in 1976 U.S.C.C.A.N. 5659, 5721).

198. *Id.*

199. *Feder v. Videotrip*, 697 F. Supp. 1165, 1173 (D. Colo. 1988).

[S]uppose the similarity, although literal, is not comprehensive, that is, the fundamental substance, or skeleton or overall scheme of the plaintiff's work has not been copied. . . . At what point does such fragmented similarity become substantial so as to constitute the borrowing an infringement?

No easy rule of thumb can be stated as to the quantum of fragmented literal similarity permitted without crossing the line of substantial similarity. The question in each case is whether the similarity relates to matter which constitutes a substantial

few seconds of another's sound recording, it can still be considered a substantial portion of the original work. "Even if the similar material is quantitatively small, if it is qualitatively important, the trier of fact may properly find substantial similarity."²⁰⁰

This approach was followed in the recent sampling case of *Jarvis v. A&M Records*.²⁰¹ In particular, the *Jarvis* court noted that while determining substantial similarity, non-copyrightable elements must be removed from the analysis.²⁰² The court recognized, however, that although the copying involved cliched phrases typical in the musical field, their use together in a particular arrangement and in the context of a particular melody could constitute copyrightable expression.²⁰³ The court held that "the precise relationship of the phrases *vis a vis* each other was copied"²⁰⁴ and denied the "defendant's motion for summary judgment as to liability on plaintiff's musical composition copyright claim."²⁰⁵

Although different types of works were involved (sound recordings versus computer programs), the *Jarvis* court used an analysis very similar to that used in *Computer Associates International v. Altai, Inc.*²⁰⁶ Because the *Jarvis* court was dealing with fragmented literal copying, as opposed to non-literal copying, there was no need to apply an abstractions test.²⁰⁷ As in *Computer Associates*, however, the *Jarvis* court made sure to filter out non-protectable elements before making a comparison between the works to determine whether they were substantially similar.²⁰⁸ Courts must be careful not to carry this analysis too far in their attempt to ascertain a protectable core of material, otherwise they may find themselves limiting Congress' intended scope of copyright protection.²⁰⁹

To avoid restricting the scope of copyright protection, courts, as well as multimedia users, should keep in mind the balancing of interests required by the Constitution.²¹⁰ "Digital technology requires a balancing of the interests of artists in retaining artistic and economic control over their works against the interest of artists in having access to raw material for use in creative works."²¹¹

portion of plaintiff's work — not whether such material constitutes a substantial portion of defendant's work.

Id. (citations omitted).

200. *Id.* at 1176; see also Percifull, *supra* note 187, 1274-75.

201. 827 F. Supp. 282 (D. N.J. 1993).

202. *Id.* at 291. "Since it is not unlawful to copy non-copyrightable portions of a plaintiff's work, non-copyrightable elements must be factored out in an inquiry into infringement." *Id.*

203. *Id.* at 292. "There is no question that the combined phrase 'ooh ooh ooh ooh ooh move . . . Free your body' is an expression of an idea that was copyrightable." *Id.*

204. *Id.*

205. *Id.*

206. 982 F.2d 693 (2d Cir. 1992); see *supra* text accompany notes 123-26.

207. *Jarvis*, 827 F. Supp. at 290 (abstraction test used to separate idea from underlying expression where copied material consisted of general statement of what original material was about).

208. *Id.* at 291.

209. See *supra* notes 113-18, 133 and accompanying text.

210. See *supra* text accompanying notes 149-50.

211. Percifull, *supra* note 187, at 1269.

Despite the fact that a substantial portion of a copyrighted work may have been copied, infringement may be excused under the Copyright Act's "fair use" doctrine.²¹² *Acuff-Rose Music v. Campbell*,²¹³ concerned the 2 Live Crew's version of the Roy Orbison/William Dees song "Oh, Pretty Woman."²¹⁴ Although the plaintiff's expert witness testified that portions of the original recording may have been sampled and incorporated into the 2 Live Crew's version,²¹⁵ the case did not involve literal copying of any portion of the original sound recording.²¹⁶ Initially, 2 Live Crew (defendants) had sought to make payments to the plaintiff under the Copyright Act's compulsory license provisions.²¹⁷ They later raised the affirmative defense that their song was a parody of the original and therefore not an infringement.²¹⁸

Parody and satire are considered an extension of "comment" and "criticism" allowed under § 107 of the Copyright Act.²¹⁹ The *Acuff-Rose Music* court was quick to point out that all parodies are not fair uses.²²⁰ Instead, courts analyze each of the four factors expressed in § 107.²²¹

The purpose and character of the use of the original song is the first factor analyzed.²²² The *Acuff-Rose* court initially noted that the purpose of the use was parody and that the character of the use was commercial.²²³ The second factor to consider is the nature of the copyrighted work.²²⁴ "As a general rule, creative works—literary works of fiction or artistic

212. 17 U.S.C. § 107 (1988 & Supp. IV 1992), provides, in part:

[T]he fair use of a copyrighted work, including such use by reproduction in copies or phonorecords . . . for purposes such as criticism, comment, news reporting, teaching, . . . 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 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.

213. 972 F.2d 1429, 1451 (6th Cir. 1992), *rev'd*, 114 S. Ct. 1164 (1994) (addressing the issue of whether the alleged infringers' commercial parody was a 'fair use' within the meaning of 17 U.S.C. § 107).

214. *Id.* at 1432.

215. *Id.* at 1433.

216. *Id.* at 1432.

217. 17 U.S.C. § 115 (1988 & Supp. IV 1992); *Acuff-Rose Music*, 972 F.2d at 1432.

218. *Acuff-Rose Music*, 972 F.2d at 1432.

219. *Id.* at 1432. "Indeed, the fair use formulation found in section 107 is a reflection of Congress's intent to codify the common law fair use doctrine, which has long included parody." *Id.* at 1435 (citing *Harper & Row Publishers v. Nation Enter.*, 471 U.S. 539, 549, (1985)).

220. *Acuff-Rose Music*, 972 F.2d at 1435.

221. *See supra* note 212.

222. *Id.*

223. 972 F.2d at 1435-36. It should be noted, however, that the Sixth Circuit concluded with great reluctance that the defendants' song was a parody of the original, as found by the district court. *Id.* at 1435. The Court of Appeals in its parody analysis noted that the second work must at least make a comment on, and not just copy, the original work in order to constitute a parody. *Id.* at 1436.

224. *Id.*; 17 U.S.C. § 101 (1988 & Supp. IV 1992).

works—are afforded greater protection from the fair use determination than are works of fact.”²²⁵ The third factor to consider is the amount and substantiality of the portion of the copyrighted work used in the second work.²²⁶ At first glance, this analysis seems redundant to the requirement that a substantial portion of the copyrighted work be copied before there can be infringement.²²⁷ The final factor, and “undoubtedly the single most important element of fair use,”²²⁸ is the effect of the use upon the potential market for or value of the copyrighted work.²²⁹

Actual present harm need not be shown; such a requirement would leave the copyright holder with no defense against predictable damage. Nor is it necessary to show with certainty that future harm will result. What is necessary is a showing by a preponderance of the evidence that *some* meaningful likelihood of future harm exists. If the intended use is for commercial gain, that likelihood may be presumed. But if it is for a noncommercial purpose, the likelihood must be demonstrated.²³⁰

The “inquiry under the fourth statutory factor not only considers harm to the market for the original but harm to the market for derivative works as well.”²³¹

As noted previously, courts have applied the fair use doctrine to the making of intermediate copies of computer programs.²³² In *Sega Enterprises v. Accolade*,²³³ the parties developed, manufactured and marketed competing video games.²³⁴ The defendant, Accolade, produced video game cartridges that could be played in consoles manufactured by other video game manufacturers, including those manufactured by Sega.²³⁵ Sega incorporated a security system into its video game console so that only game cartridges Sega manufactured or licensed could be used with the console.²³⁶ Accolade then “reverse engineered” Sega’s video game programs in order to bypass Sega’s security system.²³⁷

Like the Sixth Circuit in *Acuff-Rose Music*, the Ninth Circuit in *Sega Enterprises* analyzed the four principal considerations under § 107 of the Copyright Act. As to the first factor, the *Sega Enterprises* court ruled that

225. *Acuff-Rose Music*, 972 F.2d at 1437 (citing *Harper & Row*, 471 U.S. at 563).

226. *Id.*; 17 U.S.C. § 107 (1988 & Supp. IV 1992).

227. *See supra* notes 198-204 and accompanying text.

228. *Acuff-Rose Music*, 972 F.2d at 1438.

229. 17 U.S.C. § 107 (1988 & Supp. IV 1992).

230. *Acuff-Rose*, 972 F.2d at 1438.

231. *Id.* at 1439. 17 U.S.C. § 101 (1988), defines a “derivative work” as:

[A] work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which a work may be recast, transformed, or adapted. A work consisting of editorial revisions, annotations, elaborations, or other modifications which, as a whole, represent an original work of authorship, is a “derivative work”.

232. *E.g.*, *Sega Enters. v. Accolade*, 977 F.2d 1510 (9th Cir. 1993). *See supra* notes 163-74 and accompanying text.

233. 977 F.2d 1510 (9th Cir. 1993).

234. *Id.* at 1514.

235. *Id.*

236. *Id.* at 1515.

237. *Id.* at 1514-15.

the presumption of unfairness arising from the copying for a commercial purpose was rebutted for the following reasons: the copying was intermediate, and done solely to discover the functional requirements of compatibility with Sega's game console—aspects of Sega's programs not protected by copyright.²³⁸ Therefore, any commercial exploitation resulting from the copying was indirect.²³⁹

The nature of the copyrighted work is the second factor to consider, and was fundamental to the Ninth Circuit's decision in *Sega Enterprise*. As noted previously, fictional works receive much greater protection than fact-based or functional works.²⁴⁰ The *Sega Enterprise* court, noting the difficulties courts have had defining the copyrightable nature of computer programs,²⁴¹ did not determine whether they should be classified as primarily fictional or fact-based works.²⁴² Instead, the court focused its attention on the one element that makes computer programs unique: computer programs are generally distributed in object code form.²⁴³ As a result, the unprotected ideas they may contain are not readily ascertainable.²⁴⁴ On this basis, the court concluded that disassembly of the object code, which included intermediate copying, was permissible.²⁴⁵ Otherwise the copyright holder would be effectively granted protection for the underlying ideas which could only be discerned through the disassembly process.²⁴⁶

The court next evaluated the amount and substantiality of the portion of the copyrighted work used in the second work.²⁴⁷ Although the defendant copied the plaintiff's entire work, the court indicated this third factor had very little weight in light of its consideration of the second factor.²⁴⁸ Finally, even though the defendant was making copies of the plaintiff's work in order to directly compete with the plaintiff, the Ninth Circuit actually believed this factor weighed in favor of the defendant.²⁴⁹ Contrary to the decision of the Sixth Circuit in *Acuff-Rose Music v. Campbell*,²⁵⁰ the Ninth Circuit in *Sega Enterprise* obviously did not believe that the defendant's "blatantly commercial purpose" for copying prevented a finding of fair use.²⁵¹

The varying emphases on different factors by the Sixth and Ninth Circuits illustrate the differing views courts take as to whether a particular use is a fair use.²⁵² As works traditionally considered fictional in nature be-

238. *Id.* at 1522. See 17 U.S.C. § 102(b) (1988).

239. *Sega Enters.*, 977 F.2d at 1522.

240. See *supra* notes 115-18; *Sega Enters.*, 977 F.2d at 1524.

241. *Id.*

242. See *id.*

243. *Id.* at 1525.

244. *Id.*

245. *Sega Enters.*, 977 F.2d at 1526.

246. *Id.*

247. *Id.* at 1526-27.

248. *Id.*

249. *Id.* at 1525-26.

250. 972 F.2d 1429, 1451 (6th Cir. 1992), *rev'd*, 114 S. Ct. 1164 (1994).

251. See *supra* note 231 and accompanying text.

252. See *supra* notes 212-51 and accompanying text.

come more integrated into computer technology, it is unknown which of the four factors courts will determine dispositive of the issue of fair use.

For example, computer users seem to enjoy playing sound "bytes" from movies on their computers.²⁵³ The author has personally witnessed a number of personal computers configured so that the famous line spoken by Arnold Schwarzenegger in the movie *The Terminator*—"I'll be back"—is heard when the computer is shut down. While this portion of the motion picture is quantitatively small, it is qualitatively significant. For most of the public, the phrase is synonymous with Mr. Schwarzenegger and the movie.

Its unlicensed use appears to constitute an unfair use. Although it is a qualitatively substantial portion from a fictional work, most people use it for their own personal amusement, and not for commercial gain. Such use will unlikely have an effect on the potential market for, or value of, the copyrighted work. Such use is not for purposes of criticism, comment, news reporting, teaching, scholarship, or research as required by the Copyright Act of 1976.²⁵⁴ As noted previously, however, commentators have argued that the fair use doctrine should be adaptable.²⁵⁵

Could someone instead permissibly imitate Mr. Schwarzenegger's voice and make a recording of the exact phrase? In general, the substantial similarity analysis under the Copyright Act must be made for fictional characters.²⁵⁶ However, "[a] character in a work in which the character is central to the story is copyrightable."²⁵⁷ For example, in *Universal City Studios v. Kamar Industries*,²⁵⁸ the defendant marketed merchandise copied from *E.T.*, Universal's copyrighted motion picture,²⁵⁹ with inscriptions such as "I love You E.T." and "E.T. Phone Home!"²⁶⁰ The court held that "[t]he inscriptions on the defendant's products would be readily recognizable to the lay observer as key lines of dialogue from the copyrighted movie and, therefore, the test for copyright infringement has been satisfied."²⁶¹

Multimedia applications are much more manipulative and powerful than the mere fragmented literal copying that digital sampling provides. Works, or portions of works, including sound recordings,²⁶² motion pic-

253. See Seymour, *supra* note 27 at 99.

254. 17 U.S.C. § 107 (1988 & Supp. IV 1992). *But see* Harper & Row, Publishers v. Nation Enters., 471 U.S. 539, 552, 554 (1985) (list of examples in § 107 is not intended to be exhaustive).

255. See *supra* note 175.

256. See generally Note, Michael T. Helfand, *When Mickey Mouse Is as Strong as Superman: The Convergence of Intellectual Property Laws to Protect Fictional Literary and Pictorial Characters*, 44 STAN. L. REV. 623 (1992) (explaining the nature of fictional characters and how their unauthorized use can result in a judgement of infringement); David B. Feldman, *Finding a Home for Fictional Characters: A Proposal for Change in Copyright Protection*, 78 CALIF. L. REV. 687 (1990) (considering the varying ways in which courts apply copyright protection for fictional characters).

257. *Universal City Studios v. Kamar Indus.*, 217 U.S.P.Q. 1162 (D.S.D. Tex. 1982)

258. *Id.*

259. *Id.*

260. *Id.* at 1166.

261. *Id.*

262. See *supra* note 196 for the Copyright Act definition of sound recording.

tures,²⁶³ and audiovisual works,²⁶⁴ may also be altered. Consider, for example, Humphrey Bogart appearing in a scene in which he was never physically present and performing an act which he never would have done while he was alive (*e.g.*, ordering a Diet Coke).²⁶⁵ Creating such alterations constitutes preparing a derivative work²⁶⁶—an exclusive right of the copyright holder²⁶⁷—subject only to a fair use defense.²⁶⁸ The ability to alter a broad range of expression creates myriad problems.

For the most part, however, once certain types of works (including sound recordings, motion pictures, and audiovisual works) are no longer protected by copyright (through lapse or expiration of the copyright), or ownership of the copyright has been transferred (without express language to the contrary in the transfer of copyright ownership), they may be freely altered.²⁶⁹ For example, a multimedia-type application in use for some time now is a process known as “colorization.”²⁷⁰ Colorization is a process by which motion pictures originally recorded in black and white are altered so that they appear to have been recorded in color.²⁷¹

The opposition to colorization was swift and extreme, with exclamations of moral outrage and “cultural butchery.”²⁷² While supporters of colorization claim they are merely providing older and classic films in a form desired by the public,²⁷³ its opponents raise two basic arguments against colorization: colorization will inhibit the availability of classic motion pictures in their original black and white form, and colorization is inconsistent with the artist’s original creative intent.²⁷⁴ Alteration of an existing work, however, particularly a type of work which may be incorporated into a multimedia application, (therefore a derivative work), is essentially limited only by the exclusive rights granted under § 106 of the Copyright Act²⁷⁵ and the fair use doctrine.²⁷⁶

263. 17 U.S.C. § 101 (1988), defines “motion pictures” as “audiovisual works consisting of a series of related images which, when shown in succession, impart an impression of motion, together with accompanying sounds, if any.”

264. 17 U.S.C. § 101 (1988 & Supp. IV 1992), defines “audiovisual works” as:

[W]orks that consist of a series of related images which are intrinsically intended to be shown by the use of machines or devices such as projectors, viewers, or electronic equipment, together with accompanying sounds, if any, regardless of the nature of the material objects, such as films or tapes, in which the works are embodied.

265. *See supra* note 194.

266. *See supra* note 231 for the Copyright Act definition of derivative work.

267. 17 U.S.C. § 106(2) (1988).

268. 17 U.S.C. § 107 (1988 & Supp. IV 1992); *see also supra* notes 212-51 and accompanying text.

269. *See* 17 U.S.C. §§ 106-120 (1988 & Supp. IV 1992).

270. *See* Comment, Anna S. White, *The Colorization Dispute: Moral Rights Theory As a Means of Judicial and Legislative Reform*, 38 EMORY L. J. 237, 237 (1989). Colorization is a registered trademark of Colorization, Inc. *Id.* at n.1

271. *Id.* For a more detailed discussion of the colorization process, *see id.* at 237 n.2.

272. *Id.* at 240-41.

273. *Id.* at 239.

274. Brown, *supra* note 192, at 240-43.

275. 17 U.S.C. § 106 (1988). In response to the colorization controversies, Congress passed the National Film Preservation Act of 1988. Pub. L. No. 100-446, 102 Stat. 1782 (1988) (codified at 2 U.S.C. § 178 (1988)). It essentially allows a limited number of motion pictures to be protected and requires a notice on colorized films that such films have been materially altered. *See* White, *supra* note 270, at 238.

*Lewis Galoob Toys v. Nintendo of America*²⁷⁷ involved the alteration of a copyrighted work and the alleged creation of a derivative of that work. Galoob manufactured a device which allowed players to alter features of Nintendo games.²⁷⁸ Nintendo alleged that Galoob's device created a derivative work in violation of Nintendo's exclusive rights under 17 U.S.C. § 106(2).²⁷⁹

The Ninth Circuit held that Galoob's device did not create an independent work; it merely enhanced the audiovisual displays that originate in Nintendo game cartridges.²⁸⁰ "The altered displays do not incorporate a portion of a copyrighted work in some concrete or permanent form."²⁸¹

The court also considered whether the Galoob device constituted a fair use under § 107 of the Copyright Act even if the device was found to be a derivative work.²⁸² Judicial decisions have broadened the fair use doctrine: "The doctrine of fair use allows a holder of the privilege to use copyrighted material in a reasonable manner without the consent of the copyright owner."²⁸³ The court then analyzed the four factors expressed in § 107.²⁸⁴ In particular, Nintendo argued that Galoob's device was supplanting Nintendo's commercially valuable right to make and sell derivative works.²⁸⁵ Noting that the fourth factor is the "most important and indeed central fair use factor,"²⁸⁶ the court upheld the district court's finding that Nintendo had "failed to show any harm to the present market for its copyrighted games and [had] failed to establish the reasonable likeli-

Congress also passed the Visual Artists Rights Act of 1990. Pub. L. No. 101-650, 104 Stat. 5128 (Dec. 1, 1990) (codified at 17 U.S.C. §§ 101, 106A, 107, 113, 301, 411, 412, 501, 506, 608-610 (1990)). These amendments essentially prevent the use of an author's name as the author of any work of visual art which he or she did not create, and prevent the use of an author's name as the author of the work of visual art in the event of a distortion, mutilation, or other modification of the work which would be prejudicial to his or her honor or reputation. 17 U.S.C. §§ 106A(a)(1)(B) & (a)(2) (Supp. IV. 1992). A "work of visual art" is defined in 17 U.S.C. § 101 as encompassing certain paintings, drawings, prints and photographs. As expressly provided by the Visual Artists Rights Act, a work of visual art *does not* include any motion picture or audiovisual work, data base, electronic information service, electronic publication, or similar publication. 17 U.S.C. § 101 (Supp. IV 1992). For the most part, therefore, the Visual Artists Rights Act of 1990 is inapplicable to most multimedia applications.

For more information regarding the Visual Artists Rights Act, see Brett Sirota, *The Visual Artists Rights Act: Federal Versus State Moral Rights*, 21 HOFSTRA L. REV. 461 (1992); Edward J. Damich, *The Visual Artists Rights Act of 1990: Toward a Federal System of Moral Rights Protection for Visual Art*, 39 CATH. U. L. REV. 945 (1990).

276. 17 U.S.C. § 107 (1988 & Supp. IV 1992); see also *supra* notes 212-51 and accompanying text.

277. 964 F.2d 965 (9th Cir. 1992), *cert. denied*, 113 S. Ct. 1582 (1993).

278. *Id.* at 967.

279. *Id.*

280. *Id.* at 968.

281. *Id.* at 969.

282. *Id.*

283. *Id.*

284. *Id.* at 970.

285. *Id.* at 970.

286. *Id.* at 971.

hood of a potential market for slightly altered versions of the games at suit."²⁸⁷

CONCLUSION

Cases such as *Lewis Galoob Toys* and *Sega Enterprises* illustrate how courts must apply traditional copyright principles in ways not previously envisioned. While the rush of multimedia products is under way, all of their various forms and interactions with existing technologies are yet to be conceived or anticipated. Existing copyright laws, however, are expected to provide protection.

Computer software is a form of work for which courts have had difficulty categorizing the extent of available copyright protection. In particular, recent judicial holdings have severely limited the scope of protection.²⁸⁸ Certain courts have even questioned whether copyright is the appropriate form of protection.²⁸⁹ In addition, the risk of inconsistent results arise as courts attempt to formulate approaches for determining the level of protection to be afforded computer programs. Software developers face the prospect of seeing their original expressions commercially exploited by competitors.

Into this uncertain judicial environment comes a tidal wave of multimedia applications. While, for the most part, they consist of "traditional" works—sound recordings, motion pictures, dramatic works—multimedia applications are fundamentally computer programs. Exclusive rights available to authors to copy, distribute, and display multimedia works, as well as restrictions on those exclusive rights, are subject to doubt based upon the existing software copyright decisions.²⁹⁰

The fundamental elements of copyright—exclusive rights, idea versus expression, and fair use—are sound. It is the application of these elements to emerging technologies that leave courts struggling to extrapolate existing approaches to new concepts.²⁹¹ History demonstrates that copyright laws have had difficulty keeping pace with technological developments. The experience of software copyright protection has been one of courts struggling to apply traditional precedents to unfamiliar technologies. The rapid development of multimedia only promises new challenges.

287. *Lewis Galoob Toys*, 964 F.2d at 971.

288. See *supra* notes 135-65, 171-82 and accompanying text.

289. See *Computer Assocs. Int'l v. Altai, Inc.*, 775 F. Supp. 544, 560 (E.D.N.Y. 1991) ("Indeed, it has been suggested that computer software is better protected by patent law than by copyright law."); Randall M. Whitmeyer, Comment, *A Plea for Due Processes: Defining the Proper Scope of Patent Protection for Computer Software*, 85 Nw. U. L. REV. 1103, 1123-25 (1991).

290. See *supra* Part II.A.

291. See *supra* Part II.B.

