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Copyright in the Digital Electronic Environment

Practicing Law Institute “Understanding Basic Copyright Law”

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I. Introduction: Digital Works and the Internet—New and Continuing Challenges to Copyright Law

It has been twenty years since, at the dawn of the modern computer age, Congress determined that computer programs would be protected under copyright law. Since then, and especially in the decade and a half since the rise of the personal computer, the courts have struggled with the thorny issues which arose from that decision to treat computer software as works of “authorship.” Many of those issues have been resolved in the last decade, but many important questions are still without authoritative answers. Inevitably, the advance and the spreading use of computer technology have generated new copyright issues and new uncertainties as to the scope of protection for computer software and as to legal exposure for infringement of copyrights in digital works.

The recent explosive growth of the Internet—fueled by the emergence of simplified user interfaces, the accelerating development of online technologies, and the swift evolution of new business models and new uses—has given rise to myriad fresh copyright questions, also without “right” answers. Underlying many of these issues is the capacity of digital technology to create essentially perfect copies of many textual, audiovisual and multimedia works, at virtually no cost, and to instantaneously distribute those copies across the globe. These developments—and especially the transmission and world-wide distribution possibilities inherent in use of the Internet—have created a new pressure to internationalize the copyright system, a pressure reflected in part in the new WIPO treaties discussed below.

This presentation, then, seeks to help you understand the principal issues arising from, and the current state of the law governing, copyright protection for computer programs; to make you conversant with many of the new copyright issues arising from the use and development of the Internet; and to explain some of the implications of the new WIPO treaties for copyright law in the digital environment.

II. Copyright Protection of Computer Software

A. What Is A Computer program?

A computer can be defined as a general purpose machine that is capable of processing data and instructions and generating useful information, in various forms, as “output.” A computer is merely a hunk of hardware that cannot do a thing, however, unless it is accompanied by computer programs that instruct the machine how to operate in general and how to produce particular kinds of results for particular purposes. Programs that tell the machine how to go about its most basic and general operations (for example, seeking, importing, processing, verifying, and storing data from a floppy disk) are known as “operating systems.” Windows 95 is an example of an operating system designed to run on, and to operate, a wide range of personal computers. Programs that do the actual work for

which we use computers (for example, payroll, word processing, graphics design or videogame software programs) are known as “application programs.” WORDPERFECT, LOTUS 1-2-3, ADOBE PAGEMAKER and MYST are examples of application programs.

B. Affording Copyright Protection to Computer Programs

Following some debate over whether some sui generis form of intellectual property protection should be devised for computer programs, Congress determined in the Copyright Act of 1976 (the “Act”) that computer program should be protectable by copyright law¹. Although computer programs are not mentioned in the Act’s list of categories of works of authorship (§102(a)), the legislative history leaves no doubt that Congress intended computer programs to be considered literary works, and the courts have uniformly so held. See H.R. Rep. No. 1476, 94th Cong., 2d Sess. 54 (“House Report”), reprinted in 1976 U.S.C.C.A.N. 5659, 5667. (Unless otherwise stated, hereafter all section references are to the Copyright Act, 17 U.S.C. pp. 101 *et seq.*)

Once Congress made clear that computer programs could be protected under copyrightable law, an unresolved and perhaps irresolvable tension in the law arose. On the one hand, copyright law generally does not protect functional aspects of works, and Section 102(b) of the Act expressly provides that procedures, processes, systems or methods of operation are not protected by copyright.² On the other hand, computer programs are inherently functional works, and the most important and creative aspects of computer programs can often be appropriately described as procedures, processes, systems, or methods of operation. Given the job of squaring the circle, the courts have adapted to the task such doctrinal tools as the idea-expression continuum, merger, and *scènes à faire* (as well as refining infringement standards and fair use and other defenses), and have slowly wrought a body of law defining the scope of rights in various elements of machine-readable works.

C. Doctrines Which Limit The Scope Of Protection Given To Computer Programs

A computer program enjoys protection from copying under the Copyright Act. But how far that protection extends—just which elements or aspects of a program are protected by its copyrights—what a later developer can copy or use without liability—have been the subject

¹ The determination that copyright protection was available for computer programs does not mean that this is the only form of intellectual property which affords protection for programs. Although copyright protection is available for the “expression” embodied in a program, the *processes* embodied in a program can be protected by patent law if the requirements of novelty, nonobviousness and usefulness are met. Also, undisclosed information or technologies contained within a program can be protected by copyright, by state trade secret law, and by contractual nondisclosure and “no-reverse-engineering” clauses.

The December 1996 WIPO Copyright Treaty, discussed further below, confirms international copyright protection of computer programs. Article 4 provides: “Computer programs are protected as literary works within the meaning of Article 2 of the Berne Convention. Such protection applies to computer programs, whatever may the mode or form of their expression.”

² See 17 U.S.C. § 102(b); see, e.g., *Apple Computer, Inc. v. Microsoft Corp.*, 799 F. Supp. 1006, 1023 (N.D. Cal. 1992) (“[p]urely functional items or an arrangement of them for functional purposes are wholly beyond the realm of copyright”), affirmed 35 F.3d 1435 (9th Cir. 1994).

of a prolonged process of clarification by the courts, a process that is far from over.

Different courts have taken different approaches to the analysis of copyright infringement claims. Notwithstanding, all courts usually consider three main issues in one form or another:

- Whether the allegedly copied work or the allegedly copied elements of the work are protected by copyright law;
- If protected, whether the protected work has been “copied” or infringed; and
- If protectable matter has been infringed, whether the defendant has any defenses that nonetheless prevent the defendant from being held liable.

The Act and the case law establish that the scope of the protection given to computer programs (like that afforded other works) is subject to a number of important limitations, based on well-established legal doctrines. Most courts consider these so-called “limiting doctrines” in deciding the first point above, whether the copyright on a work extends to certain elements of the work. But other courts consider these doctrines in deciding whether a “protectable” element of a work has been infringed, and in some cases, a limiting doctrine is considered in the context of an affirmative defense such as fair use. The distinction does not matter greatly for current purposes. The main limiting doctrines applied to computer programs are discussed below.

1. The Idea-Expression “Dichotomy”

Section 102(b) of the Act 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.” The legislative history of the Act confirms that this restriction applies fully to computer programs, which congress intended to protect only “to the extent that they incorporate authorship in a programmer’s *expression* of original ideas, as distinguished from the *ideas themselves*.” House Report at 5667 (emphasis added).

What does this mean in the context of a computer program? It means that, for example, the idea of “an electronic spreadsheet program” can be used by anyone—anyone can “copy” that idea and write their own electronic spreadsheet program—but the *expression* of that idea in a body of computer source code is protectable and cannot be copied. Which elements of the software, in between that very generally-stated idea and its ultimate, underlying expression as source code, are deemed ideas and which are deemed expression presents difficult legal issues. That which is an “idea” from the perspective of one level of generality or abstraction could be deemed “expression” when compared with another level of generality or abstraction. For this reason, although courts commonly refer to the “idea—

expression *dichotomy*,” it is plain that they are really considering a continuum. See discussion in the oft-cited *Computer Associates Int’l, Inc. v. Altai, Inc.*, 982 F.2d 693, 703-11 (2d Cir. 1992) (hereafter “Altai”).

Most courts have focused on the “idea—expression” distinction under §102(b). But some courts have applied a similar analysis to the other bars stated in §102(b), against copyright protection for procedures, processes, systems or method of operation. *Autoskill v. National Educational Support Systems*, 994 F.2d 1476 (10th Cir.), cert. denied, 114 S. Ct. 307 (1993) (“we must go beyond the literal language of the statute and apply the idea/expression distinction” to resolve the issue of whether “17 U.S.C. § 102(b) precludes copyright protection of any process or method of operation.”); see *Gates Rubber Co. v. Bando Chem. Indus., Ltd.*, 9 F.3d 823, 836-37 (10th Cir. 1993) (“The Process-Expression Dichotomy . . . Although processes themselves are not copyrightable, an author’s description of that process, so long as it incorporates some originality, may be protectable.”). *But see Lotus Development Corp. v. Borland International, Inc.*, 49 F.3d 807, 816 (1st Cir. 1995), *aff’d without opinion by equally divided Supreme Court*, 116 S. Ct. 804 (1996) (“the initial inquiry is not whether the Lotus menu command hierarchy incorporates any expression. Rather, the initial [and dispositive] inquiry is whether the Lotus menu command hierarchy is a ‘method of operation.’”).³

2. The Merger Doctrine

An important doctrine known as “merger” denies copyright protection even to the expression of an idea if the underlying idea can be expressed only in a limited number of ways. To take an example involving computer user interfaces, consider the idea of displaying a list of currently-available functional options on screen so the list is visible while the user works with the program. There are only be a few practical ways of “expressing” that idea, such as putting a menu bar along the top of the screen, along the bottom, or on one of the sides. If each of these few possible “expressions” of the idea could be monopolized by one or another copyright holder, it would soon be impossible for anyone else to use the underlying idea at all. When the possible ways of expressing an idea is so limited, the idea and the expression are said to have merged, and none of the “expressions” is considered copyrightable. *See, e.g., Toro Company v. R&R Products Co.*, 787 F.2d 1208, 1212 (8th Cir. 1986) and *CMAX/Cleveland, Inc. v. UCR, Inc.*, 804 F. Supp. 337, 354 (M.D. Ga. 1992). *See also Altai*, 982 F.2d at 708.

³ The *Borland* court emphasized: “The ‘expressive’ choices of what to name the command terms and how to arrange them do not magically change the uncopyrightable menu command hierarchy into copyrightable subject matter. The fact that there may be many different ways to operate a computer program using a set of hierarchically arranged command terms, does not make the actual method of operation chosen copyrightable; it still functions as a method for operating the computer and as such is uncopyrightable.” *Id.* at 816-18.

3. *Scènes à faire*

The doctrine known as “*Scènes à faire*” excludes from copyright protection any “expressions” that are standard, stock, or common to a particular topic. In the genre of monster/disaster movies, for example, the story usually includes having a handsome young scientist (accompanied by a beautiful female assistant) devise a solution that rescues the planet just in time. Although plot and character elements are usually protectable in novels and screenplays, these formulistic elements are standard treatments, and anyone can use them. In the field of software user interfaces, double-clicking on an object or icon to open the file or directory it signifies would now be considered standard treatment, available to all, and not protectable under the *scenes a faire* doctrine.

The *Scènes à faire* doctrine is also used in the computer context to deny protection to expression dictated by “extrinsic” factors or “externalities” which limit or constrain the programmer’s choices. *Altai*, 982 F.2d at 710; *Data East USA v. Epyx*, 862 F.2d 204, 208 (9th Cir. 1988). In *Altai*, the Second Circuit identified, as examples of such constraints, “(1) the mechanical specifications of the computer on which a particular program is intended to run; (2) compatibility requirements of other programs with which a program is designed to operate in conjunction; (3) computer ‘manufacturer’s design standards; (4) demands of the industry being serviced; and (5) widely accepted programming practices within the computer industry.” 982 F.2d at 710; accord, *Gates Rubber Co. v. Bando Chem. Indus., Ltd.*, 9 F.3d 823, 838 (10th Cir. 1993); see also *Brown Bag Software v. Symantec Corp.*, 960 F.2d 1465, 1473 (9th Cir.), *cert. denied*, 113 S. Ct. 198 (1992) (expression that is, if not standard, commonplace in the computer software industry is not protectable). (We note that the term “compatibility” is used by different courts to refer to different things, and whether “compatibility” in any particular sense is a basis for denying copyright protection poses a difficult question.)

4. *Functional Elements*

Copyright protection is often held not to extend to purely functional elements of computer programs. See, e.g., *Apple Computer, Inc. v. Microsoft Corp.*, 799 F. Supp. 1006, 1023 (N.D. Cal. 1992), *aff’d*, 35 F.3d 1435 (9th Cir. 1994) (In the context of computer user interfaces, “[p]urely functional items or an arrangement of them for functional purposes are wholly beyond the realm of copyright as are other common examples of user interfaces or arrangements of their individual elements—the dials, knobs and remote control devices of a television or VCR, or the buttons and clocks of an oven or stove.”); see also, *Lotus Development Corp. v. Borland International, Inc.*, *supra*, 49 F.3d at 815 (menu structure unprotectable as method of operation; “The Lotus menu command hierarchy does not merely explain and present Lotus 1-2-3’s functional capabilities to the user; it also serves as the method by which the program is operated and controlled”).

5. Matter in the Public Domain

Material found in the public domain is also free for the taking and cannot be appropriated by an author of a computer program. *Altai*, 982 F.2d at 710.

D. Current Treatment of Elements of Computer Programs

The status of protectability of the extremes can be easily, and with some confidence, described:

1. Source And Object Code.

As the Tenth Circuit recently observed in *Gates Rubber, supra*, “source and object code, which are the literal elements of a program, will almost always be found to be protectable expression unless the doctrines of merger and *Scènes à faire* come into play.” 9 F.3d at 836. That is to say, insofar as some portions of the code of a program are virtually the only way to do the job or have become standard, such parts of a program may not be protectable. But the chances are remote that any very substantial portion of a commercial program would be held unprotectable on such grounds. If there is proof that a defendant either copied the entirety of a program’s source code or object code or engaged in line-by-line copying on a significant scale, consequently, protectability simply will not be an important issue. We note that courts often refer to source code and object code as “literal” elements of a program because they are within the literal definition of a computer program that is provided in §101 of the Act: “a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.”

2. Main Function or Functions of the Program

“[T]he main purpose or function of a program,” on the other hand, “will always be an unprotectable idea,” and “the basic function or purpose of a module [of code] will nearly always be an unprotectable idea or process.” *Gates*, 9 F.3d at 836.

Between these extremes of general purpose or functions, on the one hand, and code, on the other, the analysis is far less certain. But many areas have become clearer in recent years.

3. Structure, Sequence and Organization of the Source Code

A literary work such as a novel or screenplay may be infringed without word-for-word copying where there are sufficient “articulable similarities between the plot, themes, . . . and sequence of events in two works” (among other factors) and where the “total concept and feel” of the works are substantially similar. *Kouf v. Walt Disney Pictures & Television*, 16 F.3d 1042, 1045 (9th Cir. 1994). Similarly in the case of computer programs, at an appropriate level of generality, the structure, sequence and organization of the source code may be held to be protectable and to be infringed if copied. *See, e.g., Softel, Inc. v. Dragon Medical and Scientific Communications, Inc.*, 118 F.3d 955 (2d Cir. 1997) (choice and manner of arrangement of software design elements and commands copyrightable).

Focusing on alleged structural similarities in source code, in 1992 the Second Circuit set forth what is now a much-used model for the analysis of computer program infringement in *Computer Associates Int'l, Inc. v. Altai, Inc.*, *supra*, 982 F.2d 693. Although *Altai's* model was expressly limited to the analysis of claims that “non-literal” elements of *source code* were copied (982 F.2d at 703), many courts have found its systematic and logical approach to the analysis of infringement claims to be helpful, and the *Altai* analytical structure has been widely adopted by other circuits and applied to other kinds of claims of infringement of computer programs.⁴

The Second Circuit adopted the following a three-stage analysis (abstraction—filtration—comparison) for judging substantial similarity of non-literal elements of computer programs:⁵

1. *Abstraction*: “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 [from the top down].” *Id.* at 707.
2. *Filtration*: “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 is non-protectable expression.”⁶ (*Id.*)
3. *Comparison*: “Once a court has sifted out all elements of the allegedly infringed program which are ‘idea’ 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

⁴ See, e.g., *Engineering Dynamics, Inc. v. Structural Software Inc.*, 31 U.S.P.Q. 2d (BNA) 1641 (5th Cir. 1994); *Control Data Sys., Inc. v. Infoware, Inc.*, 903 F. Supp. 1316 (D. Minn. 1995); *Atari Games Corp. v. Nintendo of America Inc.*, 30 U.S.P.Q. 2d (BNA) 1401 (N.D. Cal. 1993); *Gates Rubber Co. v. Bando American, Inc.*, 9 F.3d 823 (10th Cir. 1993); *Productivity Software Int'l Inc. v. Healthcare Technologies Inc.*, 37 U.S.P.Q. 2d (BNA) 1036 (S.D.N.Y. 1995); *Bateman v. Mnemonics Inc.*, 79 F.3d 1532 (11th Cir. 1996); *MiTek Holdings Inc. v. Arce Eng'r Co.*, 864 F. Supp. 1568 (S.D. Fla. 1994).

⁵ The court cautioned that its test was not fixed in stone. “[I]n cases where the technology in question does not allow for a literal application of the procedure we outline below, our opinion should not be read to foreclose the district courts of our circuit from utilizing a modified version.” *Id.* at 706.

⁶ The Second Circuit’s filtration step is based upon the “successive filtering method” for separating protectable expression from non-protectable material advocated by Professor Nimmer. See generally 3 M. Nimmer & D. Nimmer, *Nimmer on Copyright* § 13.03[F].

of the copied portion's relative importance with respect to the plaintiff's overall program." *Id.* at 710.

Setting up a framework for analysis is not the same thing as setting forth criteria for implementing the analysis, and although it was useful for *Altai* to clearly identify a critical issue—the need to decide what level of generality is appropriate for analysis—*Altai* really says nothing about how the district courts were supposed to decide that question. Indeed, the court acknowledged: “To be frank, the exact contours of copyright protection for non-literal program structure are not completely clear.”*Id.* at 712. They are not much clearer today.

4. The ‘Look & Feel’ or User Interface of the Program

The “user interface” of a computer program comprises all the means employed by the user to provide the program with information and instructions, and all of the means through which the program communicates options and results to the user. Once, ‘long ago’ by computer software standards, the user interface of computer programs consisted principally of a ‘prompt’ on the computer screen which looked like this—

C:\>

—along with rules for keying in text, using specified terminology, such as (for example) the following textual instruction:

```
C:\> copy a:pli/drafts/cpyrght/basics.txt  
c:pli/speeches/basics.txt
```

Commonly, what you got back from the computer was also purely textual.

Modern user interfaces for personal computers, such as the interfaces of programs running under the Macintosh or Windows operating systems, employ graphical user interfaces, replete with suggestive icons, adjustable windows, mouse-controlled cursors, pull-down menus, and a host of other graphical devices and features which allow users to access the functionality of complex programs more easily.

As programs employing such easy-to-use and intuitive graphical interfaces began to proliferate, it was recognized that the inventiveness and creativity of those programs dwelt not so much in the program's source code as in the design of the user interface—that it was the unique “look and feel” of a program, as perceived by the end-users, which really distinguished one program from another, and embodied the true value of a program. Computer lawyers argued that these program characteristics were therefore protected by the program's copyrights. See, *e.g.*, Russo, “Copyright in the ‘Look and Feel’ of Computer Software,” *Computer Law* (Feb. 1985).

Although there was some initial hesitation over the step, the courts early on recognized that user interfaces and (on some level of specificity) the “look and feel” of a program were indeed protectable. *Telemarketing Resources v. Symantec Corporation*, 12 U.S.P.Q.2d (BNA) 1991 (N.D. Cal. 1989), affirmed sub nom *Brown Bag Software v. Symantec, supra*, 960 F.2d 1465 (9th Cir. 1992); *Whelan Assoc., Inc. v. Jaslow Dental*, 797 F.2d 1221 (3d Cir. 1986); *Broderbund Software, Inc. v. Unison World*, 648 F.Supp. 1127 (N.D. Cal. 1986). The debate quickly moved on to whether particular elements of a user interface were protectable, how the limiting doctrines discussed above were to be applied to user interface elements, and how infringement of such aspects of program were to be judged. See detailed discussion of these issue in the district court opinion in *Apple Computer, Inc. v. Microsoft Corp.*, 799 F. Supp. 1006, 1023 - 1024 (N.D. Cal. 1992) *aff’d*, 35 F.3d 1435 (9th Cir. 1994). We turn next to some of those issues.

5. Computer screen displays

In general, it has been recognized that, irrespective of the protectability of various elements of the underlying program code, computer screen displays generated by a program’s code may be independently protected by copyright. *Broderbund Software, Inc. v. Unison World*, 648 F.Supp. 1127, 1132-33 (N.D. Cal. 1986); *Data East USA v. Epyx, supra*, 862 F.2d at 206-07; *Altai*, 982 F.2d at 703 (‘If a computer audiovisual display is copyrighted separately as an audiovisual work, apart from the literary work that generates it (*i.e.*, the program), the display may be protectable regardless of the underlying program’s copyright status.’). The displays are protectable even if, as in the case of videogames, the precise displays that are generated during one instance of play may not previously have existed. *Williams Electronics, Inc. v. Artic International, Inc.*, 685 F.2d 870 (3d Cir. 1982).

Copying a set of screen displays may represent infringement even though no claim is made that the underlying code was copied. See *Broderbund, supra*; *CMAX/Cleveland, Inc. v. UCR, Inc.*, 804 F. Supp. 337, 343-44 (M.D. Georgia 1992); see generally *Apple Computer, Inc. v. Microsoft Corp.*, 35 F.3d 1435, 1442 (9th Cir. 1994), *cert. denied*, 115 S. Ct. 1176 (1995). Of course, whether particular elements of a program’s screen displays or even the entirety of some displays are protectable turns on such doctrines as merger, *Scènes à faire*, the idea-expression distinction, and public domain. *Id.*; *Telemarketing Resources v. Symantec Corporation*, 12 U.S.P.Q.2d (BNA) 1991 (N.D. Cal. 1989), affirmed sub nom *Brown Bag Software v. Symantec, supra*, 960 F.2d 1465 (9th Cir. 1992).

6. Command Hierarchies.

As mentioned, “menus” of available commands, which allow users to access the functionality of the program, are important user interface elements. In the word-processing program used to write these materials, for example, a “menu bar” (line of text) appears at the top of the computer screen which uses the following words:

FILE EDIT VIEW INSERT FORMAT FONT TOOLS WINDOW

By “clicking” a mouse/cursor on one of these menu headings, the user can cause a box to drop down from that heading, displaying other words which can be selected either to invoke functions (such as “CUT”, “PASTE” or “FIND”) or to cause a further display of sub-menus which, in turn, offer additional functional choices or access to still further sub-menus. The hierarchical arrangement of commands or functions that are accessed through menus, sub-menus, sub-sub-menus, etc., can be conceptualized as trees with as many branches as there are menus, sub-menus and commands.

Given the rich and elaborate functionality of a modern business application program, the designer of a computer program can provide access to scores of program functions through such command structures, and considerable thought and ingenuity go into selecting the titles of the function labels and the sequence in which they are presented. Once a body of users gets used to navigating through the menu command hierarchy of a program to reach the commands that let them do what they want to do, they are likely to find it burdensome to learn a different hierarchy that may be used by another program. As a result, the developer of a new spreadsheet program (for example) who wants to lure users away from an earlier popular program may wish to use the same menu command hierarchy, so that users are not discouraged from switching to the new program by the requirement that they learn a new command hierarchy.

Can a newcomer simply copy the menu command hierarchy from an earlier program without infringing the copyrights of the original author? Those who maintain that the arrangement of menu commands constitute copyrightable subject matter argue that a command hierarchy represents an expression of ideas which could be expressed in myriad other forms and arrangements; that a command hierarchy is a creative textual element of a computer program worthy of protection; that it is a familiar principle of copyright law that selections and arrangements (even of unprotectable elements such as individual words) are themselves entitled to copyright protection as compilations; and that, when Congress determined that computer programs were protectable under copyright, it encompassed the protection of menu command hierarchies through copyright. Opponents argue, on the other hand, that the menu commands represent unprotectable ideas, systems or methods of operation; that they are no more protectable by copyright law than the “H” gearshift pattern of a car’s standard transmission or the arrangement of buttons on a VCR; and that the effect of protecting such hierarchies by copyright is to unreasonably give a windfall competitive advantage to the first popular developer of a program and to lock users into that program.

Although the battle has been joined,⁷ the issue has yet to be authoritatively resolved. It was

⁷ Compare *Ashton-Tate Corp. v. Ross*, 916 F.2d 516 (9th Cir. 1990) (a certain set of commands held unprotectable ideas) with *Lotus v. Paperback Software*, [**cite] (command hierarchy of Lotus 1-2-3 protectable and infringed); see also *Autoskill Inc. v. National Educational Support Sys.*, 994 F.2d 1476 (10th Cir.), cert. denied, 114 S. Ct. 307 (1993) (keying system using “1”, “2” and “3” keys to select responses is copyrightable subject matter); *Consul Tec, Inc. v.*

most squarely presented in the head-on clash over whether a direct competitor could use or copy the menu command hierarchy of the leading computer spreadsheet program, *Lotus 1-2-3*. A Boston district court found the 1-2-3 command hierarchy was copyrightable and infringed. The Court of Appeals for the First Circuit *reversed*, holding that a menu command hierarchy was not protectable under copyright law because it was a “method of operation” within the meaning of 17 U.S.C. 102(b). *Lotus Development Corp. v. Borland International, Inc.*, 49 F.3d 807 (1st Cir. 1995). The United States Supreme Court granted certiorari to review the First Circuit’s decision. However, Justice Stevens did not participate in the decision, and the remaining justices split 4 to 4 over the issue. 116 S.Ct. 804 (1996). The result was to affirm (without opinion) the Court of Appeals outcome. But—outside of the First Circuit, where the legal standard is now quite clear—the issue is still up for grabs.

7. Technical Interfaces⁸

In order for a computer program to “work with” another program in certain ways, the source code of the later program must copy or use certain structures, terms, or rules of the earlier program. These technical features of the two programs are invisible to users, but are essential for the program interaction, and are known as technical interfaces.

Some examples of technical features, and of the issues they raise:

- In order for an application program to invoke certain functions that are built into the operating system it is designed to run under, the source code of the application program must use the same “command” terms (roughly, “words” such as “AfxGetResourceHandle” or “SetWindowPos”) that are recognized by that operating system.

Copyright issues would arise in the following situation: The manufacturer of a computer distributes an operating system designed for the computer (let’s call it “FirstOS”). Over the years, many third parties write application programs (accounting, personnel, payroll, document management and other software) for manufacturer’s machines, using FirstOS’s command terms, and numerous corporations are using those applications. Now another software company, NewCo, believes it can write a better operating system, NewOS, for the machine. But NewCo won’t be able to sell NewOS to the existing customer base unless the existing body of application programs originally written to run under FirstOS will also run under NewOS. To be compatible with the existing applications, then, NewOS will have to use or copy the command terms from FirstOS.

Interface Systems, Inc., 22 U.S.P.Q.2d 1538 (E.D. Mich. 1991) (copyright holder had an enforceable copyright in the “unique compilation of commands, command line syntax, and status message codes” contained in its program).

⁸ The current state of the law concerning protection of technical interfaces is discussed at length a recent article by the author, “*Baystate: Technical Interfaces Not Copyrightable-On to the First Circuit*,” *The Computer Lawyer* (April 1997). The same article is available on-line at Fenwick & West LLP’s Web site: www.fenwick.com/pub/baystate.html.

Unresolved issue: Does copyright law prevent the copying of the collection of such commands, each commonly a coined semi-mnemonic term, either by itself or in conjunction with other system elements? See *Bateman v. Mnemonics, Inc.*, 79 F.3d 1532 (11th Cir. 1996) (opining that “interface specifications” are not uncopyrightable “as a matter of law,” but remanding for further proceedings without clear guidance); *Control Data Systems, Inc. v. Infoware, Inc.*, 903 F. Supp. 1316 (D. Minn. 1995) (granting preliminary injunction against “emulator” program alleged to have copied original operating system’s commands and other features, but apparently relying primarily on source code copying). See also *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992) (holding unprotectable the “system interface procedures” which were “functional requirements for compatibility” with Sega videogame consoles).

- In order for a software engineer who is developing an application program to employ the functionality of a computer language such as “C” or an operating system, her program must issue instructions in accordance with the system’s “rules” or syntax or state parameters in a certain way. So, for example, to draw a line on a screen, it is necessary to state in a specified order, using specified terms, within a specified range, the starting and ending points, color, thickness and other characteristics of the line. Again, conflicts can arise when later developers seek to develop programs that will employ the same syntax or parameter structures, either to develop complementary products or substitute programs for the original ones which maintain compatibility. Are such parameter structures or rules copyrightable subject matter? Again, few cases have addressed these issues and fewer have provided clear answers. See *Baystate Technologies, Inc. v. Bentley Systems, Inc.*, 946 F. Supp. 1079 (D. Mass. 1996) (holding that data structure names and the organization of data structures of a mechanical computer aided design program are not copyrightable); *Bateman v. Mnemonics, Inc.*, 79 F.3d 1532 (11th Cir. 1996) (*dicta*) discussing issue ambiguously; see also *Sega and Control Data, supra*.
- Application programs require that data be input to them (for example, mechanical data for a structural analysis program), and often produce data as an output for use by other programs (for example, for a spreadsheet). Input and output formats specify the ordering, structure and type of data that must be input or that can be output by the program, and sometimes those formats require certain file structures to be used, if other programs are to read data developed by a program or to supply data to it (for example, use data prepared for a spreadsheet in a financial report). Are such file structures and formats protectable? See *Engineering Dynamics, Inc. v. Structural Software, Inc.*, 26 F.3d 1335 (5th Cir. 1994) (protectable); *CMAX/Cleveland, Inc. v. UCR, Inc.*, 804 F. Supp. 337 (M.D. Georgia 1992) (protectable); *Baystate, supra* (comparable data structures not protectable); see generally *Apple Computer, Inc. v. Microsoft Corp.*, *supra*, 799 F. Supp. 1006 (N.D. Cal. 1992) (purely functional elements not protectable).

8. Data Bases

Although limited protection is afforded the selection and arrangement of mere facts and information which a publisher or author compiles, under U. S. law, copyright offers no protection for the content of the underlying information, and if the arrangement is sufficiently obvious and non-creative (for example, alphabetical order), even the arrangement may be considered to lack sufficient originality to qualify for copyright protection as a compilation. *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 113 L.Ed.2d 358, 371 (1991). This means that unless the use or copying of information contained in a program or CD-ROM is controlled by the terms of a license agreement, *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447 (7th Cir. 1996), it is dubious (at best) whether copying digital versions of many directories, databases or other compilations of data (such as phone listings, genealogy records, corporate data, etc.) constitutes a violation of any copyrights.

E. Infringement

For the most part, infringement of computer programs (like infringement of other works) requires proof that the plaintiff is the owner of a copyrighted work and that the defendant copied protected elements of the work. Copying, in turn, can be proven either by direct evidence or by demonstrating that the defendant had access to the original work and that the copyrighted and accused works are substantially similar. See, e.g., *Brown Bag, supra*; *Altai, supra*; *Bateman, supra*.

Particularly in the context of computer works, determining whether a defendant has infringed the original work by engaging in “copying” is not just a factual matter of deciding whether the defendant deliberately used something he or she saw in the original work or based his or her work on the original work. Rather, to decide whether there has been ‘copying’ in the legal sense, a court or the jury compares the allegedly infringing work with the protected work to decide whether they are (essentially) “too similar.”

The courts use two basic standards to determine the level of similarity: the “substantial similarity” standard and the “virtual identity” (or “bodily appropriation”) standard.⁹

Under the substantial similarity standard, the test for substantial similarity is “whether an average lay observer would recognize the alleged copy as having been appropriated from the copyrighted work.” *Warner Bros. Inc. v. ABC, Inc.*, 654 F.2d 204, 208 (2d Cir. 1981). Some courts will, if they find substantial similarity, then determine if the defendant misappropriated a substantial portion of plaintiff’s work or if the appropriation is so small as to be trivial (“*de minimis*”). See, e.g., *MiTek Holdings, Inc. v. Arce Engineering Co., Inc.*, 864 F. Supp. 1568, 1584 (S.D. Fla. 1994), aff’d, 89 F.3d 1548, 1579 (11th Cir. 1996) (court found

⁹ The terms “virtual identity” and “bodily appropriation of expression” have been used synonymously. Both terms convey a level of similarity greater than “substantial similarity.” *MiTek Holdings, Inc. v. Arce Engineering Co., Inc.*, 89 F.3d 1548, 1559, fn. 24 (11th Cir. 1996).

that of the protectable elements that were substantially similar, their lack of importance in the context of the programs as a whole rendered any copying by defendant to be *de minimis*, and entered judgment for defendant). Allegedly infringing elements of a work can be qualitatively or quantitatively *de minimis*. These terms, and the standard itself, are obviously fairly vague, and the method of applying the standard (*e.g.*, exactly what is compared to what) is also not entirely clear.

Works consisting largely of uncopyrightable elements, or capable of only a narrow range of expression, or works protectable only as “compilations,” will typically receive only limited protection, if any. Claims that such works have been infringed will usually be judged under the virtual identity standard. Under this standard, a court does not find infringement unless there has been a “bodily appropriation of expression,” which occurs only if there is “copying or unauthorized use of substantially the entire item.” See, *e.g.*, *Apple Computer, Inc. v. Microsoft Corp.*, 821 F. Supp. 616, 623 (N.D. Cal. 1993), *aff’d*, 35 F.3d 1435, 1442 (9th Cir. 1994) (citing *Harper House, Inc. v. Thomas Nelson, Inc.*, 889 F.2d 197, 205 (9th Cir. 1989)); see also *MiTek*, *supra* at 1584 (where a work consists “largely of uncopyrightable elements,” a standard of “virtual identity” or “bodily appropriation” must be used to adjudicate infringement). In the computer software context, these terms probably mean that an “accused” program must be virtually a clone of the original program to be held to infringe.

F. Affirmative Defenses: Fair Use of Computer Programs

If a copyrightable work has been used or copied in a manner as to warrant a conclusion of infringement, liability for copyright infringement can nonetheless still be avoided if the defendant proves it is entitled to the benefit of a defense such as the “fair use” doctrine. Section 107 of the Act sets forth a list of (non-exclusive) factors to consider in determining whether there is a “fair use,” namely:

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

These are applied in a “flexible,” hence not wholly predictable, manner.

Two important issues arise in the context of digital works, whether intermediate copying and copying for compatibility represent fair uses.

1. *Intermediate Copying*

In order to generate a new, non-infringing work that is competitive or compatible with an earlier copyrighted program, software developers may first have to copy the earlier work in order to study or “reverse engineer” it. Although this important issue has not been addressed much, an important decision of the Ninth Circuit indicates that such copying would not infringe the copyrights of the original work, assuming that the ultimate work was not infringing. *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992); accord, *DSC Communications Corporation v. Pulse Communications Corporation*, 1997 WL 475702 (E.D. Va. June 10, 1997).

Defendant Accolade sought to develop videogames that could run on the Genesis videogame console of Sega. But in order for any game to be “recognized” by the Sega console and to operate, the game must use certain interface specifications. Those were not published, but were stored in object code form within the Genesis itself. Accolade purchased a Genesis machine, made an intermediate copy of the object code in the device, and then disassembled (or reverse engineered) the copied object code in order to discover the interface specifications. Accolade then used those interface specifications in its new game cartridges, so that its games were compatible with the Genesis console.

Accolade contended that its unauthorized intermediate copying was protected as fair use. Sega responded that Accolade’s activities were not fair uses because Accolade’s object was the commercial purpose of creating competing works which competed with those of Sega’s licensees.

The Ninth Circuit rejected Sega’s position. “Accolade’s ultimate purpose was the release of Genesis-compatible games for sale,” the Ninth Circuit pointed out; “its direct purpose in copying Sega’s code and, thus its direct use of the copyrighted material, was simply to study the functional requirements for Genesis compatibility so that it could modify existing games and make them usable with the Genesis console.” *Id.* at 1522. Observing that the public benefited from the increase in independently available games, the court concluded that “[i]t is precisely this growth in creative expression, based on the dissemination of other creative works and the [use of] unprotected ideas contained in those works, that the Copyright Act was intended to promote.” *Id.* at 1523. has been cited with approval by courts in several other jurisdictions,¹⁰ and we are aware of no decisions, to date, criticizing the ruling.¹¹

¹⁰ See, e.g., *Bateman v. Mnemonics, Inc.*, 37 U.S.P.Q. 2d 1225 (11th Cir. 1995); *Gates Rubber Co. v. Bando Chemical Indus., Ltd.*, 9 F.3d 823 (10th Cir. 1993); *Mitel, Inc. v. Iqtel, Inc.*, 896 F. Supp. 1050 (D. Colo. 1995); *Compaq Computer Corp. v. Procom Technology, Inc.*, 908 F. Supp. 1409 (S.D. Tex. 1995); and *DSC Communications Corp. v. DGI Technologies, Inc.*, 898 F. Supp. 1183, 1188-92 (N.D. Tex. 1995), *aff’d*, 81 F.3d 597 (5th Cir. 1996).

¹¹ See also *Atari Games Corp. v. Nintendo of America, Inc.*, 24 U.S.P.Q.2d 1015 (Fed. Cir. 1992) (holding that the copy obtained for intermediate purposes must be an “authorized” copy).

2. Copying for Compatibility

As discussed earlier, elements of a computer program that were dictated for reasons of “compatibility” with other programs may, under *Altai* and other cases, be deemed unprotectable per the *Scènes à faire* doctrine. However, courts have sometimes addressed compatibility considerations under the rubric of fair use instead of protectability. In *Sega*, the defendant’s ultimate product contained no infringing code, and there was only intermediate copying for purposes of study and analysis, in order to create a compatible new work. Can a defendant claim that limited copying is a fair use if it is necessary for reasons of compatibility?

There have not been enough cases to squarely address compatibility under the fair use doctrine to represent any clear trend, and the few opinions to discuss the issue have not reached clear and consistent conclusions. See *Mitel Inc. v. Iqtel, Inc.*, 896 F. Supp. 1050 (D. Col. 1995) (fair use found) (use of command codes for engaging particular functions of manufacturer’s telephone call controller represents fair use, when the original manufacturer’s market dominance and user expectations “require” the use of the same codes); *Bateman v. Mnemonics, Inc.*, 79 F.3d 1532 (11th Cir. 1996) (fair use analysis ambiguous) (opining that copying of interface specifications “may” not be precluded by copyright, without resolving whether “fair use” or §102(b) considerations would cause that result); *Compaq Computer Corp. v. Procom Technology, Inc.*, 1995 WL 728372 (S.D. Tex. Dec. 6, 1995) (no fair use) (copying onto competing hard drive of values embodying plaintiff’s system for predicting hard drive failure not fair use).

G. Affirmative Defenses: Copyright Misuse

The notion that “misuse” of a copyright can cause the holder to lose the power to enforce it has now been accepted by three federal circuit courts, and has been embraced specifically in the context of computer programs. The underlying theory of the defense is that the copyright holder has “abused” its copyright by trying to leverage it, in license agreements, into an unfair restraint on the right of licensees to engage in competition or to create competing works. Some recent authority holds that copyright misuse occurs when elements of a program (such as ideas and unprotectable functional elements) are not protected by copyright, and the copyright-holder/licensor’s agreements nonetheless preclude licensees from using these ideas and unprotectable elements to create competitive products.

The result is not only that the limiting license terms are rendered unenforceable, but that the copyright holder is barred from enforcing its copyrights in the work until the misuse is purged. *DSC Communications Corp. v. DGI Technologies, Inc.*, 81 F.3d 597, 601 (5th Cir. 1996) (“The defense of copyright misuse ‘forbids the use of the copyright to secure an exclusive right or limited monopoly not granted by the Copyright Office,’ including [in that case] a limited monopoly over microprocessor cards.”); *Lasercomb America, Inc. v. Reynolds*, 911 F.2d 970, 972, 977-79 (4th Cir. 1990) (because Lasercomb tried to use its copyright in a manner “adverse to the public policy embodied in copyright law” [t]o promote the [p]rogress

of [s]cience and useful [a]rts,” specifically, to control competition in an area outside its copyright, the court applied the doctrine and refused to enforce the copyrights); *Practice Management Information Corp. v. American Medical Assn.*, 121 F.3d 516 (9th Cir. 1997).

H. Garden-Variety Infringement and the SPA

The most common forms of infringement of computer programs do not involve subtle or interesting issues as to the relationship between the accused program and the original work. Rather, the most common forms of infringement involve, on the one hand, commercial piracy (pirates who manufacture and distribute exact, illicit “counterfeits” of well-known programs), or, on the other hand, casual unauthorized copying by friends, co-workers and others who give away copies of programs as a “friendly” gesture. Addressing the available means for responding to commercial piracy is beyond the scope of these materials,¹² and we offer only a few observations regarding casual infringement.

Unauthorized copying of computer programs is quite widespread, and is perhaps uncontrollable when it involves individuals giving copies to friends and acquaintances. Widespread reproduction of copyrighted works within the business or corporate context is another matter. Although a detailed discussion of company policies and practices for avoiding copyright infringement is also beyond the scope of these materials, a few passing comments are in order.

Infringement can become widespread within an organization, not as a result of any concerted or intentional practice of unlawful duplication of basic business application programs, but because workers are casual about “sharing” programs which they have found useful or entertaining. As everyone should be aware by now, however, the Software Publishers Association (SPA) takes a dim view of such copying. If they learn of any substantial practices of the kind, it is common for their response to take the form of either a court-authorized, unannounced raid involving seizure of the unauthorized programs and various sanctions (often including copious adverse publicity) and/or a demand for substantial payments (including attorneys fees) for addressing the problem. It therefore behooves every business organization of any size to create policies and practices which inform all employees of the need to observe copyright limitations on the use of computer programs, prevent unlawful copying, and—importantly—document the licensed status of all of the programs that the company uses.

I. Registration of Copyrights in Computer Programs

1. Introduction: advantages of registration

Registration of copyrights in computer programs is not, of course, a prerequisite to the acquisition of copyrights in any works created after March 1, 1989, any more than it is for other works. But there are a number of important advantages to registration. For example:

¹² For a short discussion concerning piracy, see the author’s article, “Obtaining Ex Parte Relief Against Copyright Pirates,” available on-line at: www.fenwick.com/pub/exparte.html.

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- Registration is a prerequisite for recovering “statutory damages” and attorneys fees for infringement. (Statutory damages are those which the court may award in its discretion if the plaintiff cannot or does not prove actual damages; no award of statutory damages may be made for infringements occurring before registration, unless registration has been made within three months of first publication.)
 - Registration is a prerequisite to filing a lawsuit for infringement of works whose country of origin is the United States.
 - Registration cuts off certain defenses of so-called “innocent infringers”.
 - A registration certificate constitutes prima facie evidence of the existence of a valid copyright, shifting the burden to the defendant to prove invalidity.
 - Registration is required to record security interests in copyrights, or for recordation with U.S. Customs.

Although registration of copyrights is generally a fairly straightforward (and inexpensive) procedure, there are some special wrinkles that appear in the context of digital works, which we discuss below.

2. Ownership Issues

Copyrights can only be registered in the name of the authors, and registration sometimes prompts the first review by an attorney concerning who actually owns the work. Two significant issues always need to be thoroughly explored in the case of copyrights in digital works.

Relationship between author and company. Because computer programming is often done by consultants and others with special relationships to the company, disturbing issues can arise as to who owns the copyrights. As an initial matter, the answer turns on the nature of the relationship between the human author and the corporation or other entity who retained her to do the work. If the person who wrote the program is an employee, acting within the scope of her employment, the company automatically owns the copyrights in the work and is the author. If the person is a consultant, on the other hand, absent appropriate other arrangements, the consultant owns the copyrights even though the company paid for the work under a written or nonwritten agreement and even though there may have been an implied or express agreement that the company has exclusive rights to the program.¹³ The

¹³ There is a narrow exception to the principle that companies are the authors only of employee-prepared works. So-called “works made for hire” are also deemed to be authored by the company. 17 U.S.C. §§ 101, 201. However, only certain limited categories of works qualify to be treated as works made for hire (*e.g.*, certain kinds of contributions to collective works or to audio-visual works, test questions, etc.), and for qualifying works, the agreement *must* be in writing and *must* expressly state that the work is being prepared as a work made for hire. If all of these conditions are met, the party for whom the work is prepared is the author and owns all the copyrights.

line between “employee” and “consultant” can be a hazy one, and “consultant” is often defined broadly in the context of copyright law.

Ownership of the copyrights can be critically important in the case of digital works. It is often sufficiently clear from the relationship between the parties that (the company having paid for creating the program and the consultant understanding that the company and only the company was to exploit it), there is no issue as to the company’s right to copy and distribute the program which a consultant created. Problems arise when, as is inevitable in the case of successful software, it is time to create a new version of the program. Such a later version will constitute a derivative work of the first work, and the right to create such a derivative work belongs exclusively to the copyright holder, the consultant.

There is a simple way around this problem: If anyone works on a program whose employee status is open to the least doubt, he or she must be asked to sign an agreement in writing that he or she will assign all of the copyrights in the work to the company. If such an agreement is not obtained in advance, however, sticky problems can arise. At least in cases when it is clear that the author is a consultant, usually the assignment should also be filed with the Copyright Office.

Supposed “public domain” elements of the work. Programmers are notorious for re-using little software routines or sections of code which “everyone uses” or which they wrote for their last employer, and often have an overly-expansive view of what is in the public domain. It is very important to probe these issues and to confirm that nothing prepared in the scope of anyone’s prior employment or previously assigned to another is part of the code now being used, and that anything asserted to be in the public domain is indeed public domain software.

3. Preservation of Trade Secrets in Registered Software and the Deposit Requirements for Computer Programs

Ordinarily, a copyright applicant submits a complete copy of the work along with the copyright application. However, works of authorship can be protected both under copyright and under trade secret law, and the Copyright Office recognizes that computer software commonly contains trade secrets which their owners do not want to disclose. The Office therefore offers several options regarding deposit of computer programs.

First, the applicant can submit the program only in object code or machine-readable form. Under this procedure, however, the registration is issued under the Office’s “Rule of Doubt,” meaning that the presumption of validity normally accorded by the registration certificate does not apply.

Second, the applicant can submit selected excerpts of source code. Any of the following will suffice: (i) the first and last 25 pages of the source code with up to 50% of the material

blocked out (literally blocked out, with a black marker) to protect trade secrets; (ii) the first and last 10 pages of source code with nothing blocked out; or (iii) the first and last 25 pages of object code in eye-readable form (such as hexadecimal) and any 10 consecutive pages of source code with nothing blocked out.

Questions can arise about what it means for a modularized program to have a “first and last 25 pages,” and what to submit requires careful judgments made after consultations between client and counsel.

4. Other Registration Considerations

Although a copyright registration form is short, and a client could (in principle) prepare one in minutes, important issues arise that require legal judgment and guidance.

Register as textual or audiovisual work? A single registration of a computer program as a textual work will protect all copyrightable subject matter within the work. Sometimes, however, there are advantages to seeking separate audio-visual work registration for the screen displays. There are also risks, since the Copyright Office sometimes rejects or files adverse comments on audio-visual work applications for computer software.

Which version(s) to register initially and later? One should always register the original version of the work. The extent to which each later version needs to be registered turns in part on the significance of changes from the previous version.

How to treat preexisting works? Preexisting works on which the current work is based must be identified, but note that the current registration may cover only the differences between the preexisting work and the instant work.

Whether to register other materials than the program? The company should consider registering other materials associated with the program, such as user’s manuals, graphic artwork on product packaging and the like - any copyrighted material that is important to the business and which the company believes might be copied by others.

III. Copyright and The Internet ¹⁴

A. Introduction: The Rise of the Internet and the Challenges to Copyright Law

The Internet, and its graphical venue, the World Wide Web, continue to undergo explosive, exponential growth. The number of Web sites has grown from 10,000 in December 1994 to 100,000 in January 1996 to 230,000 in June 1996 to well over 1.3 million a year ago, roughly

¹⁴ The content of this section of these materials relies heavily on the ideas and analysis contained in a monograph by David L. Hayes, “The Coming Tidal Wave of Copyright Issues on the Internet” (Palo Alto: Fenwick & West LLP, 1997), as well as on the author’s own experiences counseling internet enterprises and companies that are active on the Web.

tripling each six months. A large proportion of high-technology entrepreneurial energy is focusing on the Web, and a large part of the most advanced software industry talent is now devoted to “Web-centric” developments. The quantities of data being processed over the Internet is doubling every 100 days, according to an April 15, 1998 Commerce Department report. The numbers of Americans using the Internet has grown from 3 million in 1994 to approximately 68 million today, and an estimated 100 million people worldwide now use the Internet.¹⁵

Whether this is a good thing or not,¹⁶ the Internet is growing fast and is here to stay. How profound may be its social and economic implications is perhaps open to debate, and one of the few safe predictions one can make (in light of the rapid pace of technical innovation and of Internet business developments) is that the nature of Internet use and the shape of viable Internet business models are likely to be vastly different three years from now, and perhaps unrecognizable.

One can also state with some confidence, however, that intellectual property protection in general and copyright law in particular will play a major role in shaping who owns what and how they can use it on the net. This is so for two reasons.

First, whatever additional roles the Internet may come to play in commerce or otherwise, it is certain to grow and develop as a major conduit of creative expression and information, and much of the content moving across the Internet will be works of authorship, including textual matter, software, multimedia works, music, audiovisual works, movies, etc.

Second, “copying”—the quintessential subject of copyright law and arguably the most important of the exclusive rights granted by copyright law—is simply a ubiquitous activity on the Web. Even leaving aside intentional “copying” of works found on or transmitted over the Internet, ordinary accessing of Web sites itself involves the repeated reproduction of material placed on and intended to be accessed over the Web. Add to that the fact that digital works are, by their nature, capable of perfect, fast, and near-costless reproduction, and that such works can now be transmitted across the world instantly, and three further points become clear:

The practical problems of control of intellectual property posed by the Internet will dwarf those presented by the introduction of Xerox machines.

A host of entirely novel copyright issues, arising in unprecedented contexts, are marching toward confrontations in the marketplace and in the courts.

¹⁵ “Communications,” *IEEE Spectrum* (Jan. 1997), p. 27; “Net use surging,” *San Jose Mercury News* (May 7, 1997), p. 1A; “Internet Use Is Doubling Every 100 Days,” *San Francisco Chronicle*, April 16, 1998.

¹⁶ Compare any issue of *Wired Magazine* with Stoll, *Silicon Snake Oil: Second Thoughts on the Information Highway* (New York: Anchor Books, 1995).

The transnational character of the Internet and of the emerging legal disputes concerning distribution and transmissions rights and practices on the web will add to the pressure to internationalize the world's intellectual property system.

In this section of these materials, we will attempt to provide a context for understanding these developments by (1) briefly explaining certain technical aspects of the web that give rise to copyright issues; (2) identifying the issues implicated by them; and (3) discussing some examples of the actual concerns that have given rise to the Internet—intellectual property lawsuits that have already been launched.

B. The Internet and the World Wide Web: What They Are And How They Work

The Internet is a international network of computer networks over which a computer can transmit messages or any form of digital data (including text, data, database content, graphics, sound and music, video and audiovisual works, computer software) to computers anywhere and everywhere in the world. The World Wide Web, sometimes referred to as the “graphical” part of the Internet, is that sub-set of sites and supporting facilities which utilize certain technical protocols that facilitate the transmission of graphical and other content and support a simple, friendly, browseable, graphical user interface.

End-users can interact with the Web by “surfing” from Web site to Web site with the aid of browser services and programs, using “links” that allow the user to jump from one section (page) of a Web site to another in a nonlinear fashion, and to jump with equal facility from one site to another, be they in California, England, Hong Kong, Cairo or Australia.

The Web is characterized by substantial and growing capabilities for content searching anywhere on the Web, and increasingly by a shift from “passive” availability of information, via Web searching and surfing, to the use of active software tools. Some of these new tools seek out and retrieve information that the user indicates interest in, and (under still-being-defined circumstances) allow providers to “push” certain categories of information into part of an end-user's computer screens while he or she is engaged in other tasks.

Physically and organizationally, the Internet includes the following elements:

- an international network of “node” computers (giant file servers which store and transmit data), connected to each other via telephone lines;
- countless thousands of computer file servers acting as “hosts” for the currently hundreds of thousands of Web sites (now approaching a million) and other data sources;
- myriad Internet service (access) providers (“ISPs,” whose file servers and modems provide either simple connectivity to the Internet or, like America On-Line or

CompuServe, provide connectivity plus content and facilities for email communication, on-line conferencing, etc.);

- local area networks of companies, schools and other institutions that are connected via modem or wire to an Internet service provider;
- tens of millions of individual computers equipped with modems and similarly linked; and
- the telephone lines, cables or other telecommunication connections by which all of these elements hook themselves up together.

All use of the Web involves copying and transmission of information, though whether each such action constitutes 'copying' within the meaning of copyright law is as yet unresolved. When a user accesses, for example, Sun Microsystems' Java Web site, and downloads and saves a copy of the Java Developer's Kit onto the hard drive of his personal computer, he has assuredly created a copy. But the mere action of accessing a Web page itself involves the creation of many reproductions of the site's content.

Accessing a site does not, of course, literally mean that you go there. It literally means that information on a site located somewhere else is digitally transmitted to your computer and is recreated and displayed on your computer screen. This display may or may not be stored in any form that persists at your end when you turn your computer off.

Intellectual property attorney David L. Hayes explains some of the events that routinely occur in the course of Internet transmissions which may give rise to copyright issues:

“Under current technology, information is transmitted through the Internet using a technique known broadly as ‘packet switching.’ Specifically, data to be transmitted through the network is broken up into smaller units or “packets” of information, which are in effect labeled as to their proper order. The packets are then sent through the network as discrete units, often through multiple different paths and often at different times. As the packets are released and forwarded through the network, each “router” computer makes a temporary (ephemeral) copy of each packet and transmits it to the next router according to the best path available at that instant, until it arrives at its destination. The packets, which frequently do not arrive in sequential order, are then “reassembled” at the receiving end into proper order to reconstruct the data that was sent. Thus, only certain subsets (packets) of the data being transmitted are passing through the RAM [the temporary memory] of a node computer at any given time, although a complete copy of the transmitted data may be created and/or stored at the ultimate destination computer, either in the destination computer's RAM, on its hard disk, or in portions of both.

To illustrate the number of interim “copies,” in whole or in part, that may be made when transmitting a work through the Internet, consider the example of downloading a picture from a Web site. During the course of such transmission, no less than *seven* interim copies of the picture may be made: the modem at the receiving and transmitting computers will buffer [temporarily store] each byte of data, as will the router, the receiving computer itself (in RAM), the Web browser, the video decompression chip, and the video display board. These copies are in addition to the one that may be stored on the recipient computer’s hard disk.

* * *

“Caching is another activity that is, under current technology, virtually ubiquitous on the Internet. Caching (sometimes known as “mirroring” usually when it involves storage of an entire site or other complete set of material from a source) means storing copies of material from an original source site (such as a Web page) for latter use when the same material is requested again, thereby obviating the need to go back to the original source for the material. The purpose of caching is to speed up repeated access to data and to reduce network congestion resulting from repeated downloads of data. The cached material is generally stored at a site that is geographically closer to the user, or on a more powerful computer or one that has a less congested data path to the ultimate user. The cached information is usually stored only temporarily, although the times may vary from a few seconds to a few days, weeks, or more.”

Hayes, “Advanced Copyright Issues on the Internet” (Palo Alto: Fenwick & West LLP, 1998), pp. 4, 60 (footnotes omitted).

Thus, a service provider such as AOL may store on its own server for a period of time web pages that have previously been requested by users; when a later user calls up the same page, AOL may download the stored page from its own server rather than fetching it again from the original source.

Before addressing some of the legal issues and practical concerns posed by these aspects of Internet technology, it is necessary to set the stage by considering the meaning of “copying” under existing law and under the new “WIPO” Copyright Treaty.

C. When is a Copy a Copy?

1. The Act’s “Fixation” Requirement and the MAI Decision

At least some of the reproductions discussed above are certainly exact “copies” of copyrightable matter found at a Web site, in the ordinary language sense of the word. However, to implicate a copyright holder’s exclusive rights under §106 “to reproduce the copyrighted work in copies” or “to distribute copies” of it, they must be copies within the meaning of the Act: “material objects . . . in which a work is fixed by any method . . . from

which the work can be perceived, reproduced, or otherwise communicated, whether directly or with the aid of a machine or device.” And a work is “fixed” in a tangible medium of expression when its embodiment in a copy . . . is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration. 17 U.S.C. §101.

Computers, file servers and related computer hardware use two types of memory: temporary Random Access Memory (“RAM”) and permanent memory (hard drives, floppy disks and other media). When the computer is turned on and used, documents, programs and other information must be loaded into “RAM” in order for the computer to work with or display the document or information. But when you are through working with a document and “close” it, the document disappears entirely from RAM. If you haven’t stored it on your hard drive (either deliberately or because your computer crashed before you “saved”), it’s probably gone forever! Similarly, when the computer is turned off, everything that was in RAM disappears from RAM completely. Depending on how your computer works with data in RAM, Web pages that are received via modem from the Internet may never be saved by your computer, and may disappear as completely, when you log off, as an unrecorded television program disappears if you haven’t recorded it on your VCR.

The critical issue, then, is whether such “temporarily” created copies are “fixed” within the meaning of copyright law. Although many computer lawyers had assumed that copies in RAM were not fixed for copyright law purposes, based *inter alia* on the legislative history of the Act,¹⁷ several cases have held that copies held in RAM (at least, copies stored for more than a few seconds and capable of being perceived by people during that period) are fixed. *MAI Systems Corp. v. Peak Computer, Inc.*, 991 F.2d 511 (9th Cir. 1993); *Triad Sys. v. Southeaster Express Co.*, 64 F.3d 1330 (9th Cir. 1995); *Advanced Computer Servs. v. MAI Sys.*, 845 F.Supp. 356 (E.D. Va. 1994); see *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255 (5th Cir. 1988). The issue is not entirely settled, however; see *Lewis Galoob Toys, Inc. v. Nintendo of America, Inc.*, 964 F.2d 965 (9th Cir. 1992). Moreover, the scope of the MAI holding is unclear, and no case has to date applied these principles to Internet ‘copying’.

2. “Copies” and the Right of Transmission and Access Under the WIPO Treaties

The World Intellectual Property Organization (“WIPO”) is a United Nations organization responsible for questions of copyrights and trademarks. Under its auspices, 160 countries met in December 1996 to consider the adjustments in copyright law that were appropriate in light of the impact of the Internet, among other factors. Two treaties were adopted in the course of the three-week conference, the WIPO Copyright Treaty and the WIPO Performances

¹⁷ “[T]he definition of “fixation” would exclude from the concept purely evanescent or transient reproductions such as those . . . captured momentarily in the “memory” of a computer.” H.R. Rep. No. 94-1476, 94th Cong., 2d Sess. 52-53 (1976).

and Phonograms Treaty.¹⁸ The United States signed both treaties, which have a number of important implications for international copyright protection of computer software and digital works on the Internet. The process of ratification and implementation of these treaties appears to be proceeding slowly. As of early May 1998, only Indonesia and Moldova had ratified the WIPO Copyright Treaty, and only Moldova, the Performances and Phonograms Treaty.

Insofar as the treaties involve provisions not already embodied in U. S. law, these new provisions are not self-executing, and will only become effective after the treaty is ratified, and implementing legislation enacted. Since the U.S. sponsors of the treaty are taking the position that various points are already “clear” under present law, few substantive changes in U.S. copyright law have been proposed in any of the implementing bills under consideration as of Spring 1998.

An earlier draft of the Copyright Treaty contained a proposed Article 7 concerning the right of reproduction that clearly would have given copyright owners substantial control over the right to create even temporary copies. This provision would likely have extended their rights to full control over the right to make interim copies in the course of transmitting a work through the Internet. The provision was the subject of a major struggle between content holders such as the software, publishing and sound recording industries (on the one hand) and telecommunications interests and Internet access providers (on the other). In the end, the article was simply deleted, and an “Agreed Statement” (the WIPO version of “legislative history”) was accepted which does little more than to confirm that the established principles governing the right of reproduction apply fully in the digital environment to works in digital form. (Agreed Statement For the Right of Reproduction [Previous Article 7].)

However, a new “right of transmission and access” was agreed to in both the Copyright Treaty and the Performances and Phonograms Treaty, a right which (if read for all it’s worth and fully implemented through legislation) would as a practical matter sweep within copyright the right to transmit and access content found on Web sites, regardless of whether any particular embodiment were deemed a fixed copy under present law. The WIPO Copyright Treaty provides that:

“authors of literary and artistic works shall enjoy the exclusive right of authorizing any communication to the public of their works, by wire or wireless means, including the making available to the public of their works in such a way that members of the public may access these works from a place and at a time individually chosen by them.”
(Article 8.)¹⁹

¹⁸ Copies of the two treaties are available on-line at <www.wipo.org/eng/diplconf/distrib/94dc.htm> and <www.wipo.org/eng/diplconf/distrib/95dc.htm>.

¹⁹ See also Articles 10 and 14 of the WIPO Performances and Phonograms Treaty, which contain similar rights in relation to sound recordings.

This does not literally encompass and therefore expand the right to make copies, but the effect is substantially the same as if it did, because “Copying” and “Communicating” digital works to the public are probably just different ways of saying the same thing when we refer to these activities on the Internet. The reach of Article 8 is not, however, wholly clear—does, for example, storing and retransmitting a “packet” through a node server constitute a “communication to the public?” Whether the activities of mere tele-communications providers impinge the new transmission/access right was clarified, at least in part by the Agreed Statement accompanying Article 8, which states *inter alia* that “the mere provision of physical facilities for enabling or making a communication does not in itself amount to communication within the meaning of this Treaty or the Berne Convention.”

As mentioned, none of the bills to implement the new treaties that have been introduced in Congress contains any provisions to implement the right of transmission and access. It therefore appears that this right will come into force in the United States only insofar as it is partially embodied in current and future decisions that may follow and possibly extend the *MAI Systems* line of cases.

It is very difficult at this time to describe the practical effect that the new rights created in the WIPO treaties will have in and affecting U.S. parties. On the one hand, it is unlikely that U.S. case law will ever fully implement many of the substantive terms of the new treaties. On the other hand, inasmuch as other countries more fully implement the WIPO treaty provisions, U.S. parties doing business abroad may find themselves subject to a body of treaty-driven law more protective of copyright holders’ rights than U.S. law.²⁰

It is ironical that although the basic purpose of the new WIPO treaties was to create a consistent and relatively uniform body of international copyright law governing the new digital technologies, the U.S. approach to implementation is likely to create new tensions between U.S. and foreign law on such critical points as the right of transmission and access.

D. The Range Of Copyright Issues Raised By Common Internet Activities

1. Are We All Infringers?

A wide range of ordinary, “accepted” Internet behaviors raise the issue of whether Web publishers, browser enterprises, Web site owners providing links to other sites, Internet access providers, end-users and others are “reproduc[ing] . . . copyrighted work[s] in copies,” “distribut[ing] copies” of them or “prepar[ing] derivative works” etc.—*i.e.*, exercising the exclusive rights of copyright owners—without express authorization.

²⁰ It is noteworthy, in this regard, that some countries consider themselves to have personal jurisdiction over any company anywhere in the world that has a web site that can be accessed from that country. Such is the position that Germany has taken, for example, in various trademark law disputes involving Internet sites. See, *e.g.*, Landgericht Berlin, November 20, 1996, 5 U 659/97, 97 O 193/96 (upheld on appeal March 25, 1997); Landgericht Dusseldorf, April 4, 1997, 34 O 191/96.

Of course, this does not necessarily mean that “we are all infringers.” Most of these activities would, at least in the first instance, appear to be quite defensible on the basis of implied licenses or fair use. After all, companies create Web sites and ask the public to access them precisely because they expect members of the public to do whatever it takes to cause the companies’ Web pages to be displayed on users’ computers.

But, as we shall see, many related activities may not be perceived so agreeably by Web site content owners. Moreover, implied licenses can be expressly revoked, and express licenses which warn users, ‘don’t even think about distributing, modifying, transmitting . . . or anything else uncool with any of [our] stuff’ (CBS site) are open to interpretation. Many uses of copyrighted matter on the Web might be deemed presumptively ‘unfair’ on the ground that the uses are for commercial policies. And, in any event, the Internet’s reach is world-wide, and the law of every country does not protect implied licensees or fair users the way U. S. law does. That so much of routine Internet activity may impinge on the exclusive rights of copyright holders is therefore disturbing, and the fact that there may be defenses to infringement charges is not wholly comforting to those who must make business plans now, while so many issues are unresolved.

Although legislation may dramatically alter the rules under which the issues are argued, there is little chance that clear answers to most of these questions can be provided by anything but litigation.²¹ Even a cursory discussion of each of the copyright issues posed by the Internet is beyond the scope of these materials. (See Hayes, “Advanced Copyright Issues on the Internet” (Palo Alto: Fenwick & West LLP, 1998) for a more nearly complete discussion.) In the following section, we consider the concerns of copyright holders that may prompt assertions of rights and discuss two recent cases that have been filed, challenging “linking” and “framing” in different contexts. Here, we merely identify some of those issues, an identification which makes clear the climate of uncertainty in which so much Internet commercial activity is developing.

2. Some Issues Posed By Common and Emerging Web Activities

- Does browsing a work on the Internet implicate the right of display, either by the browser service or the end-user? If copyright owners place their works on the web with the understanding that such works will be browsed and viewed by myriad end-users, to what extent can they still control the power of end-users to use, display or copy such works?

- What is a “public” display or performance on the Internet?

- Under the new WIPO right of transmission and access, which entities could be liable or responsible for unauthorized communications of copyrighted matter? Who is

²¹ Legislation has been introduced in Congress, for example, to reverse the holding of *MAI* that loading temporary copies of a program into RAM itself constitutes the making of a copy. (H.R. 533; H.R. 1861; H.R. 72.)

protected by the Agreed Statement's exclusion of "mere provi[ders] of physical facilities for enabling or making a communication"?

- Is the mere act of breaking copyrighted matter into packets for transmission and reassembly itself the preparation of a derivative work?
- Does caching by an end-user's computer, either in RAM or on her hard disk, create a "fixed" copy under U. S. law? Does it matter whether such "copying" is intentional or automatic?
- Does caching by an Internet service provider violate the rights of copying, distribution, public display or public performance? Does it matter how long the material is cached for?
- Are the intermediate transmitters of "packets" containing incomplete portions of the work "communicating" the work to the public or reproducing or distributing copies?
- If caching results in the delayed receipt of information or the receipt of out-dated and therefore erroneous information, causing damage to end-users, would the original provider of such information be liable if it does not attempt to prevent caching? Would the entity that caches be liable? What would be the scope of liability? Whose law would govern?
- Is caching a fair use?
- What is the liability, if any, of the end-user who employs a "Web crawler" to automatically seek out and copy to hard disk for later review all pages that match his pre-identified categories of interest or various pre-identified sites?
- What is the liability, if any, of the producer of software which permits such activity?
- To what extent is the "need" for caching, based on current limited bandwidth, important to an argument that caching is either a fair use or impliedly licensed?
- What is the liability of on-line providers for infringing activities transmitted through their facilities?
- Should Internet service providers (ISPs) who provide no other services at all be treated like publishers or magazine vendors? Are they responsible for infringing activities of users at all? If "on notice" of allegations of infringement? Do or should they have a duty to investigate?

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- If there is ever liability for providing “out-links” which send the user to other sites, can it turn on where the user is sent at the destination site? Can a link provider be liable merely for sending users to an “interior” page of a site, thereby skipping the destination site’s advertisements?
 - Can the juxtaposition of “out-links” to sites which do not wish to be associated with each other give rise to liability? Is copyright law relevant to such concerns?
 - If a collection of links are provided to another’s site by using headlines or short phrases found on that site, does the reproduction of the collection violate a copyright in the “compilation” of phrases?
 - Should a site comprised substantially of out-links to other sites be appropriately treated as a collective work or a derivative work comprised of others’ works? Or as a bibliography or collection of citations? Or neither?
 - If copyrighted material from another’s is accessed and pulled into one’s own site (in-line linking), which continues to display one’s own site name, advertising, trade dress, etc., has a derivative work been created? Shifting to trademark law, is there a false suggestion of sponsorship or association?
 - In the context of such possible uses, what is the interplay between copyright law and such trademark doctrines as reverse palming off, false designation of origin, etc.?
 - What changes, shaping or framing of material from other sites can be made before a derivative work is created?²²
 - Will programs that allow continuous real-time display of information from others’ sites in small windows on the user’s screen infringe?
 - To what extent are “unfair competition” and related state law claims based on linking preempted by copyright law?

²² Whether “framing” creates a derivative work in violation of the copyright holder’s exclusive rights is one of the issues being litigated in a California case that has thus far generated two federal district court opinions, although neither is heavy on analysis, and their scope is quite limited. See *Futuredontics, Inc. v. Applied Anagramics, Inc.*, 45 USPQ2d (BNA) 2005, 1997 U.S. Dist. LEXIS 22249 (C.D. Cal. filed Dec. 2, 1997) (Order Re: Plaintiff Futuredontics, Inc.’s Motion for Preliminary Injunction [Denied]); and *Futuredontics, Inc. v. Applied Anagramics, Inc.*, 45 USPQ2d (BNA) 2005, 1998 U.S. Dist. LEXIS 2265 (C.D. Cal. Feb. 3, 1998) (Order Re: Defendants’ Motion to Dismiss [Denied]). The preliminary injunction denial was, as of Spring 1998, on appeal to the Ninth Circuit.

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- To what extent should the advertising concerns and practices of linking and destination sites determine the answers to fair use issues? How should courts take into consideration the fact that the business models on which much of web activity is built are tentative and evolving at great speed?
 - Would a utility program that strips all advertising from a site when it is viewed be deemed to create a derivative work? If so, would the author of such software be a contributory infringer?
 - As new user interfaces are developed for browsing and Web exploration (using virtual reality technologies, for example) will the “look and feel” of such interfaces be protectable under copyright?

These are only some of the issues that have already been identified; the pace of technological and business change on the Internet suggests that new developments will spawn still more issues and will put existing issues in a new light.

E. Copyright Holders' Concerns and Current Suits

Copyright owners do place their material on web sites with the intent that they be accessed and viewed by large numbers of “netizens” and other consumers, whatever rights may theoretically be affected by the processes that make this possible. In order to understand the struggles that are emerging or likely, it is therefore necessary to understand the sources of concern and differences of interests that will give rise to the legal disputes which will define rights on the net.

On the broadest level, the differences over the scope of copyrights in the age of digital transmission—as they unfolded at the 1996 WIPO Conference and in the earlier debates over the Clinton Administration’s September 1995 ‘White Paper’ on the information infrastructure,²³ and as they will unfold in the ratification and implementation of the WIPO treaties and in future legislative fights—reflect a deeper struggle between the industries that own content, on the one hand (*e.g.*, the entertainment, news media, recording and software publishing industries), and those which transmit and use content, on the other (*e.g.*, the telecommunications, Internet access provider and on-line services industries along with various software developer and end-user interests). These materials will not further address the conflict among these interests on this level.²⁴

²³ “Intellectual Property and the National Information Infrastructure: The Report of the Working Group on Intellectual Property Rights.”

²⁴ For an interesting discussion of these broader issues, see Pamela Samuelson, “The U.S. Digital Agenda at WIPO,” *Virginia Journal of International Law* (forthcoming).

Interesting though those strategic disputes among the giants may be, copyright practitioners will see the scope of Internet copyright law defined in the course of lawsuits over smaller, but important, concerns of those who hold copyrights. What do copyright holders care about and why might it be threatened if they are unable to control the use of their works?

Linking, framing and advertising revenues. Although the World Wide Web has grown by leaps and bounds, and investment capital has flowed freely into Internet companies, scarcely anyone has made much money on a Web-based enterprise. One emerging and promising model for Internet businesses relies heavily on advertising revenue, however, and such revenues may depend on proving the size of one's audience and guaranteeing certain kinds of advertising placements. Two lawsuits filed in 1997 against those providing links to the plaintiffs' sites reflect concern over the impact of the linking on the plaintiffs' advertising. Adverse impacts could involve obscuring the destination site's advertising, juxtaposing destination site advertising with other advertisers or with other uncontrolled content, and diminishing or reducing the number or value of recordable "hits" on which revenues may be based.

- In *Washington Post Co. v. TotalNews*, U.S. District Court Action No. 97 Civ. 1190 (PKL), filed on or about February 20, 1997), and since settled,²⁵ The Post, Time, CNN and several other major news organizations which maintain free Web sites supported in part by advertising revenues sued TotalNEWS. TotalNEWS is a Web site/service which provides no content of its own, but provides access to over 1,300 other news-related information sites, including the plaintiffs'. By "clicking" on CNN's logo, for example, on a list of news sources displayed on the home page of the TotalNEWS Web site, users could access CNN's news site and could read CNN's unedited news content—but in a window that was smaller than the screen devoted to Web access. While the CNN site was in view, TotalNEWS' logo and a 'frame' which includes banner ads from TotalNEWS' advertisers remained on the computer screen, in some cases obscuring the advertising which CNN's advertisers had placed on CNN's site, and possibly juxtaposing CNN's advertisers with TotalNEWS advertisers in undesired ways. (TotalNEWS site can be accessed at "www.totalnews.com").²⁶

²⁵ Complaint available on-line at: <www.ljx.com/internet/complain.html>.

²⁶ That different outcomes, involving internationally-accessible web sites, may take place in different countries is illustrated by another case involving linking and competing news organizations. In the *Shetland Times* case, since settled, the defendant newspaper publisher's web site included, as hyperlinks, current headlines copied from the plaintiff's web site. When the headline links were clicked on, the reader jumped to the full texts of the news stories that had been prepared by the plaintiff publisher, on the plaintiff's web site. An interim injunction or interdict was entered against the defendant, based in large part on copyright law claims. *Shetland Times v. Wills [Shetland News]*, Scot. Sess. Cas. (10/24/96) 1 EIPLR 723 (11/1/96) (the text of the interdict is available at: <<http://www.jmls.edu/cyber/cases/shetld1.html>>). Under the settlement, defendant can only link to plaintiff's news stories if the headlines are accompanied by the plaintiff's logo and the legend, "A Shetland Times Story".

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- *Ticketmaster Corporation v. Microsoft Corporation*, U.S. District Court Action No. 97-3055 DDP (C.D. Cal., filed on or about April 28, 1997, and still pending a year later),²⁷ reflects somewhat similar concerns, although the action relies entirely on federal trademark and state law causes of action, and no copyright claims were asserted. Ticketmaster is a ticket service for various events around the country, and maintains a Web site that allows users to purchase tickets online. Microsoft is the publisher of an on-line publication known as Seattle Sidewalk (found at “<http://seattle.sidewalk.com>”), a city guide to entertainment and restaurants in the Seattle, Washington area. Microsoft’s Seattle Sidewalk site includes a number of short columns that mention Ticketmaster and the availability of tickets through Ticketmaster, and includes links, some of which take the user directly to the page on Ticketmaster’s site at which a ticket purchase can be made. Once the jump is made to the Ticketmaster site via the “out-link” from Microsoft’s site, the user sees no frame or further trace of Microsoft’s site. Ticketmaster’s concern, however, is that users who employ the Microsoft link will skip Ticketmaster’s home page, where Ticketmaster has given MasterCard prominence pursuant to an agreement between Ticketmaster and MasterCard.

Caching and delay. Although Web site operators should be happy about technologies that make their material available more quickly and conveniently to additional end users, depending on how long cached versions are maintained, problems can arise.²⁸ For example:

- Many Web sites offer time sensitive information, such as stock quotes or sports events. If the information is obtained from a cache rather than the original site, and the cache has not been refreshed recently, the user may obtain out of date information or information that is no longer accurate. Since most caching is invisible to the user, in many instances the user will simply not know that the information is out of date or that up to date information is actually currently available at the original site. In some cases, end users might rely on the out of date information to their detriment. But even if that does not happen, the reputation of the original site as a reliable source of current information may be damaged.
- Caching can also interfere with timed information. For example, a Web site owner may have contracted with an advertiser to display an advertising banner during a certain window of time, say 7:00 to 8:00 p.m. If a page from the site is downloaded into a cache at 7:45 p.m. and is not refreshed for several hours, users will see the ad for far more than the one hour the advertiser paid for, and may not see the ad that the next advertiser paid to have displayed from 8:00 p.m. to 9:00 p.m.

²⁷ Complaint available on-line at: <www.callaw.com/ticket.html>.

²⁸ See discussion of these issues in Schlachter, “Caching on the Internet,” *Cyberspace Lawyer* (Oct. 1996).

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- Loss of version control can also result from caching, as Web site operators cannot control what version of information is delivered to the end user. A Web site may have been improved and updated, yet an old version of material from the site may reside on the proxy server of the end user's Internet service provider. Many end users may therefore not see the improved version the site owner desired to present to the public. Or a Web site owner is notified that its site contains infringing or defamatory material. He removes the material from the site promptly, yet it may continue to be displayed in old cached versions, giving rise to potential liability.
 - Many sites keep track of the number of page impressions or "hits" received as a measure of the level of end-user exposure to advertising. But when cached copies of the page are accessed, the original site will not reflect these hits, resulting in lower "circulation" numbers. Likewise, the original hits may provide valuable information on the identity and "Web behavior" of the users. This information would also be lost to the original site owner when cached versions are accessed.

"Inappropriate" credit or association—misappropriation and unsavory juxtapositions.

Irrespective of or in addition to any economic impact, many site owners may simply feel that the creative value of their site is being inappropriately used or its value misappropriated by Web services consisting of little more than "para-site-ic" offerings. In other cases, new sites may juxtapose links to destination sites that misleadingly suggest affiliation or association with the "sending" site or that suggest associations among the destination sites which they might consider distasteful. Whether such "appropriations" or upset feelings are remediable under copyright, trademark or other law depends on the circumstances and on legislative and case law developments.

These points are only illustrative of the concerns that can prompt the owners of copyrighted material to attack uses of their material on the Internet. We can expect a wave of litigation, in the coming years, to sharpen our awareness of the issues, to clarify additional issues and potential claims, and (eventually) to provide guidance to users of the Web on the scope of their rights.

IV. The WIPO Treaties

We have discussed above a number of the major implications of the WIPO Copyright Treaty for computer software and Internet use. These are not the only changes that could have an important impact. We briefly inventory some of the other significant provisions:

- Article 2 codifies the idea/expression distinction.
- Article 4 confirms that computer programs are protected under copyright as literary works.

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- Article 5 adopts the approach to compilations of data taken in *Feist Publications, Inc. v. Rural Telephone Serv.*, 499 U.S. 340 (1991), in which the Supreme Court held that only the selection or arrangement of a compilation of facts such as a database, and not the facts themselves, can be protected under copyright, no matter how much effort was reflected in the compilation.²⁹
 - Article 7(1) provides that authors of computer programs, cinematographic works, and works embodied in phonograms shall enjoy the exclusive right of authorizing commercial rental to the public of the originals or copies of their works.³⁰
 - Article 11 requires “adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with the exercise of their rights under this Treaty or the Berne Convention and that restrict acts, in respect of their works, which are not authorized by the authors concerned or permitted by law.”³¹This refers to current or anticipated technologies that can hinder the unauthorized or unlawful copying of works in digital form; the provision essentially prohibits the use of other technologies to defeat such copy-preventing technologies.³²
 - Article 12(1) requires adequate and effective legal remedies against any person knowingly removing or altering any “electronic rights management information” without authority, or distributing, importing for distribution, broadcasting or communicating to the public, without authority, works or copies of works knowing that electronic rights management information has been removed or altered without authority. “[R]ights management information” is “information which identifies the work, the author of the work, the owner of any right in the work, or information about the terms and conditions of use of the work, and any numbers or codes that

²⁹ Article 5 provides: “Compilations of data or other material, in any form, which by reason of the selection or arrangement of their contents constitute intellectual creations, are protected as such. This protection does not extend to the data or the material itself and is without prejudice to any copyright subsisting in the data or material contained in the compilation.” The proposed WIPO Treaty on Intellectual Property in Respect of Databases would have extended protection to the information itself in a database where such database was the fruit of substantial labor to compile. The treaty was not adopted, however.

³⁰ Under Article 7(2), this rental right does not apply “in the case of computer programs where the program itself is not the essential object of the rental” or “in the case of cinematographic works, unless such commercial rental has led to widespread copying of such works materially impairing the exclusive right of reproduction.” The Agreed Statement for Articles 6 and 7 notes that the expressions “copies” and “original and copies,” being subject to the right of rental, “refer exclusively to fixed copies that can be put into circulation as tangible copies”.

³¹ Assistant Secretary of Commerce and Commissioner of Patents and Trademarks Bruce Lehman, who headed the U.S. delegation at the Conference, noted that this provision is somewhat broader than the statutory language proposed on the subject in the last Congress. He noted that implementation of this treaty provision will therefore require new legislation. “WIPO Delegates Agree on Two Treaties,” BNA’s Electronic Information Policy & Law Report (Jan. 3, 1997) at 23.

³² Legislation has been introduced in Congress to implement this provision, though none has yet passed either house.

represent such information, when any of these items of information is attached to a copy of a work or appears in connection with the communication of a work to the public.” Article 12(2).³³

The WIPO Performances and Phonograms Treaty also contains a number of important provisions relevant to digital works and the Internet which are not discussed elsewhere in these materials. These provisions are especially relevant to audiovisual and multimedia works that may be transmitted on the Internet.³⁴

- Article 4 requires Treaty members (Contracting Parties) to afford national treatment to nationals of other Contracting Parties, meaning, to give them the same rights under the law of the signatory to the Treaty.
- Article 5(1) affords “moral rights” to performers: “Independently of a performer’s economic rights, and even after the transfer of those rights, the performer shall, as regards his live aural performances or performances fixed in phonograms, have the right to claim to be identified as the performer of his performances, except where omission is dictated by the manner of the use of the performance, and to object to any distortion, mutilation or other modification of his performances that would be prejudicial to his reputation.”
- Article 6 grants performers the exclusive right of authorizing the broadcasting and communication to the public of their unfixed performances (except where the performance is already a broadcast performance) and of authorizing the fixation of their unfixed performances.
- Article 7 gives performers the exclusive right of “authorizing the direct or indirect reproduction of their performances fixed in phonograms” (emphasis added).
- Articles 9 and 13 grant performers and producers of phonograms, respectively, the exclusive right of authorizing the commercial rental to the public of the original and copies of their performances fixed in phonograms and of their phonograms.
- Article 11 gives producers of phonograms the “exclusive right of authorizing the direct or indirect reproduction of their phonograms, in any manner or form.”

³³ Legislation has been introduced in Congress to implement this provision, as well, though none has yet passed either house.

³⁴ “Phonogram” is defined in Article 2(b) as any “fixation” of the sounds of a performance or of other sounds other than incorporated in a cinematographic or other audiovisual work. “Fixation” is defined broadly in Article 2(c) as “the embodiment of sounds or the representations thereof, from which they can be perceived, reproduced or communicated through a device.” Storage in RAM would seem to satisfy this definition of fixation.

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- Article 15 provides that “[p]erformers and producers of phonograms shall enjoy the right to a single equitable remuneration for the direct or indirect use of phonograms published for commercial purposes for broadcasting or for any communication to the public.”³⁵
 - Under Article 17(1), the term of protection to be granted to performers under the Treaty is at least 50 years from the end of the year in which the performance was fixed in a phonogram. Under Article 17(2), the term of protection to be granted to producers of phonograms under the Treaty is at least 50 years from the end of the year in which the phonogram was published, or failing such publication within 50 years from fixation of the phonogram, 50 years from the end of the year in which the fixation was made.
 - Articles 18 and 19 impose similar obligations on the Contracting Parties as Articles 11 and 12 of the WIPO Copyright Treaty to provide adequate legal protection and effective legal remedies against circumventing technological protection schemes and with respect to “electronic rights management information.”

Conclusion

Computers and computer software have become a pervasive presence in advanced industrial societies, and the Internet is fast becoming a potent means by which digitally formatted information (broadly understood) permeates an international community of authors and users of intellectual property. Copyright law will continue to play a major role in shaping these developments.

³⁵ The Agreed Statement for Article 15 provides: “It is understood that Article 15 does not represent a complete resolution of the level of rights of broadcasting and communication to the public that should be enjoyed by performers and phonogram producers in the digital age. Delegations were unable to achieve consensus on differing proposals for aspects of exclusivity to be provided in certain circumstances or for rights to be provided without the possibility of reservations, and have therefore left the issue to future resolution.”