Determining the Scope of Copyright Protection for Computer/User Interfaces, 9 Computer L.J. 37 (1989)

Janice M. Mueller

Recommended Citation

DETERMINING THE SCOPE OF COPYRIGHT PROTECTION FOR COMPUTER/USER INTERFACES

By JANICE M. MUELLER*

TABLE OF CONTENTS

* Intellectual Property Law Clerk at Merchant, Gould, Smith, Edell, Welter, & Schmidt, P.A., Minneapolis, Minneosta. This article was written when the author was a 3rd year student at William Mitchell College of Law, St. Paul, Minnesota.

I. INTRODUCTION

Computer programs became part of the "original works of author-ship"[1] protected by United States copyright law under the 1976 Copyright Act.[2] The 1980 revisions to the Act further defined the term "computer program"[3] and set forth limitations on exclusive rights in computer programs.[4] However, the extent to which copyright law should be applied to confer protection to computer/user interfaces,[5] the means by which computer users interact with computer programs, has not yet been conclusively determined.[6] The main stumbling block for

---

1. 17 U.S.C. § 102(a) (BNA 1987).

2. *See* Dunn, "Defining the Scope of Copyright Protection for Computer Software," 38 STAN. L. REV. 497 (1986) (citing H.R. REP. NO. 1476, 94th Cong., 2d Sess. 51, *reprinted in* 1976 U.S. CODE CONG. & AD. NEWS 5659, 5664; S. REP. NO. 473, 94th Cong., 1st Sess. 50-51 (1975)).

3. 17 U.S.C. § 101 (1982) (added December 12, 1980, Pub. L. No. 96-517, § 10(a), 94 Stat. 3028) ("A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result").

4. 17 U.S.C. § 117 (1987). Section 117 states:
    Notwithstanding the provisions of section 106, it is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:
    (1)   that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or
    (2)   that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful. . . .

5. For further definition of the term "computer/user interface," *see supra* text pages 10-14 and notes 22-31.

6. Computer/user interfaces are not statutorily defined under the copyright law. *See* Katchman, *Copyright Registration of Computer Screen Displays from the Perspective of the Copyright Office*, 4 COMPUTER LAW. 16, 16 (1987). However, various elements of computer/user interfaces have been characterized under the following statutory subdivisions of copyrightable works:
    1)   "literary works" under 17 U.S.C. § 102(a) subd. 1, which are "works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects such as books, periodicals, manuscripts, phonorecords, film, tapes, disks or cards, in which they are embodied." 17 U.S.C. § 101 (1987);
    2)   pictorial, graphic, and sculptural works under 17 U.S.C. § 102(a) subd. 5, are de-

the courts that have attempted to make this determination appears to be in dealing with the "idea/expression dichotomy".[7] It is a long-standing copyright axiom that copyright does not protect ideas, but only the expression of ideas.[8] As applied to computer/user interfaces, the dichotomy problem is that of distinguishing between those features or components of the interface which constitute copyrightable expression, and those which represent noncopyrightable ideas.[9]

The issues involved in determining the scope of copyright protection for computer/user interfaces have recently received considerable attention by the software industry due to the pending copyright infringement litigation involving Apple Computer, Inc., Microsoft Corporation, and Hewlett-Packard Company. The economic implications for the software industry based upon the potential outcomes of such litigation are significant, regardless of the decision reached by the courts. Apple's claim of copyright protection for "the distinctive expression represented by the visual displays and graphic images"[10] of its Macintosh computer interface, and the response of Microsoft and Hewlett-Packard alleging that copyright law does not protect these features, highlights the difficulties implicit in the determination of the proper scope of copyright protection for computer/user interfaces.

This Article will examine the issue of how far, if at all, copyright

---

fined as two-dimensional and three-dimensional works of fine, graphic and applied art, photographs, prints and art reproductions, maps, globes, charts, technical drawings, diagrams and models. Works of artistic craftsmanship are included insofar as their form, but not their mechanical or utilitarian aspects, are concerned. The design of a useful article is considered a pictorial, graphic or sculptural work only to the extent that the design incorporates pictorial, graphic or sculptural features that *can be identified separately, and can exist independently, from the utilitarian aspects* of the article. 17 U.S.C. § 101 (1987) (emphasis added); and

3) "audiovisual works" under 17 U.S.C. § 102(a)(6), are works consisting of a series of related images that are intrinsically intended to be shown by the use of machines or devices, such as projectors, viewers or electronic equipment, together with accompanying sounds, if any, regardless of the nature of the material objects, such as films or tapes, in which the works are embodied. 17 U.S.C. § 101 (1987).

7. The idea/expression dichotomy was accorded express statutory recognition in the 1976 Copyright Act. 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.

17 U.S.C. § 102(b) (1987).

8. *See* Mazer v. Stein, 347 U.S. 201, 217 (1954). *See also* 17 U.S.C. § 102(b) (1987).

9. *See generally*, 1 NIMMER, NIMMER ON COPYRIGHT § 2.03[D] (1978) for a discussion of the distinction between idea and expression.

10. Complaint for Plaintiff, Apple Computer v. Microsoft Corp. & Hewlett-Packard, No. 88-20149 (N.D. Cal. Mar. 17, 1988).

law should extend to confer protection upon certain features of computer/user interfaces. It is the author's belief that copyright law affords minimal, if any, protection to most components or features of computer/user interfaces, and that Congress never intended to extend the scope of copyright law to protect these features. The legislative history of copyright protection for computer programs and an analysis of its application to computer/user interfaces are discussed in Section II.

Furthermore, based upon misconceptions about the nature of the interfaces themselves, as well as uncertainty regarding the appropriate scope of their protection by copyright, courts are improperly making judgments in copyright infringement cases based upon comparisons of non-copyrightable similarities between interface features.[11] Section III of this Article proposes a two-step test for the analysis of copyright infringement of computer/user interfaces, with the critical first step of the test constituting a determination of the copyrightability of each aspect of the computer/user interface allegedly being infringed. This determination is facilitated by the application of the analysis factors proposed in Section III.

Section IV of this Article presents a discussion of other existing and envisioned forms of intellectual property protection which may provide alternative means of protecting non-copyrightable features of computer/user interfaces.

In addition to the current developments in the litigation arena, a recent Copyright Office ruling setting forth copyright registration procedures for computer display screens has further highlighted the complexity of the determination of copyright protection for computer/user interfaces.

A. THE COPYRIGHT OFFICE'S SINGLE REGISTRATION RULING

Arguably the most significant ruling to date on the question of copyright protection for computer/user interfaces was issued by the United States Copyright Office on June 3, 1988.[12] By its ruling the Office confirmed the common practice of most copyright claimants who apply for a single copyright registration, assuming that the single registration covers the copyrightable authorship in both their computer software code and the screen display or computer/user interface generated by the software program:[13]

The Office has decided generally to require that all copyrightable ex-

---

11. Address by Michael D. Schumann, Meeting of the Hennepin County Minnesota Bar Ass'n, Computer Law Section (June 23, 1988).

12. *See Copyright Office Notice on Computer Screen Registration*, 36 PAT., TRADE-MARK & COPYRIGHT J. 152-55 (1988) (hereinafter referred to as *Copyright Office Notice*).

13. *See id.* at 152.

pression embodied in a computer program, including computer screen
displays, and owned by the same claimant, be registered on a single ap-
plication form. . . . The Office finds that in the interest of a clear, con-
sistent public record, our registration practices should discourage
piecemeal registration of parts of works.[14]

While correctly recognizing that "[j]udicial decisions do not yet lend
clear guidance on the copyrightability of screen displays (other than
videogame displays)[15] apart from the computer program,"[16] the Office
expressed the view that its single registration ruling "should facilitate
judicial consideration of the relationship between computer program
code authorship and screen displays."[17] Conceding that "the Copyright
Office benefits by having a simplified administrative process,"[18] the Of-
fice acknowledged that it "is sympathetic to users who may have diffi-
culty in determining the scope of copyright in computer software," but
stated that "the registration practices of the Copyright Office cannot
precisely determine the scope of protection in any work."[19]

Although the Office's single registration ruling could arguably be
read as signaling that computer/user interfaces are inherently copy-
rightable when they are registered in conjunction with copyrightable
computer software programs, such a view should not be hastily adopted.
By referring to the "elaborate" features of certain interfaces which *were*
found deserving of copyright protection, the single registration ruling
may instead reenforce the position that copyright properly extends to
the aesthetic, expressive features of computer/user interfaces, but does
not cover functional features. The fact that the Office ruling still allows
audiovisual copyright (Class PA)[20] for works in which "the audiovisual
authorship predominates"[21] emphasizes the distinction between audiovi-
sual aspects and functional aspects of computer/user interfaces, and fur-
ther supports the view that computer/user interfaces potentially
contain many functional, non-copyrightable elements.

---

14. *Id.* at 153.

15. *See* Pilarski, *User Interfaces and the Idea-Expression Dichotomy*, or, *Are the Copy-
right Laws User Friendly?*, 15 AIPLA Q. J. 325, 329 n.22 (1987) (citing the following cases
in which video games were held to be copyrightable as audiovisual works: Midway Mfg. v.
Artic Int'l, 704 F.2d 1009, 1012 (7th Cir. 1983), *cert. denied*, 464 U.S 823 (1983); Williams
Electronics, Inc. v. Artic Int'l, Inc., 685 F.2d 870, 874-75 (3d Cir. 1982); Atari, Inc. v. N.Am.
Philips Consumer Elec. Corp., 672 F.2d 607, 615 (7th Cir. 1982), *cert. denied*, 459 U.S. 880
(1982); Stern Elec., Inc. v. Kaufman, 669 F.2d 852, 857 (2d Cir. 1982)).

16. *Copyright Office Notice, supra* note 12, at 152.

17. *Id.* at 154.

18. *Id.*

19. *Id.*

20. 37 C.F.R. § 202.3 (1987).

21. *Copyright Office Notice, supra* note 12, at 153.

Unfortunately, the single registration ruling does not lessen the current uncertainty surrounding the scope of copyright protection for computer/user interfaces. The ruling gives no meaningful aid to courts who must distinguish which features of these interfaces are proper copyrightable subject matter and which are not. Accordingly, the following discussion of the nature of computer/user interfaces is presented to aid the reader in distinguishing functional features of computer/user interfaces from audiovisual features. This distiction will in turn facilitate the reader in distinguishing the non-copyrightable elements of these interfaces from those features which *are* appropriate copyrightable subject matter.

B. How Should a Computer/User Interface Be Characterized?

Initially, a working definition of a computer/user interface is in order. The user interface is "the 'look and feel' of a computer program; it is the means by which the user 'communicates' with the computer."[22] It may also be defined as the "aggregate of all forms of communication between a computer program and its user."[23] The computer/user interface, thus defined, may be thought of as containing both functional and audiovisual components.[24]

1. *Functional Components*

Functional components of computer/user interfaces have been characterized as those components or features which perform "a particular function in response to the user pressing a particular key on the keyboard."[25] This is a rather limited definition, for keyboard entries are by no means the only way a user can cause a computer program to perform a function. Examples of other functional interface components include, but are not limited to:

      (a) icons or graphical images depicting functions[26] to which the user can point and click (borrowing the popular Macintosh vernacular) in order to open or close files, rearrange file directories, delete files, and so forth;

---

22. Pilarski, *supra* note 15, at 326.

23. *Id.* (citing Siegel and Derwin, *Copyright Infringement Of the 'Look and Feel' Of an Operating System By its Own Applications Programs*, 4 COMPUTER LAW. 1, 2 (January 1987)).

24. *See* Siegel and Derwin, *supra* note 23, at 2-3.

25. *Id.* at 3.

26. *See* Katchman, *supra* note 6, at 20 n.19 (quoting Written Submission of Apple Computer to U.S. Copyright Office Public Hearing on the Registration and Deposit of Computer Screen Displays (September 9-10, 1987) at 2 ("An icon is a graphic symbol that constitutes a visual depiction of a function. For example, the function of deleting a file might be depicted as a trash can")).

(b) pull-down menus that give the user a rapid, visually-oriented means of performing specific keyboard commands;

(c) displays typically present on the screens of many word processing programs which convey the user's current document title, page, line, and character position; and

(d) options in a word processing program for depressing a key to execute a command which adjusts the margins of a word processed document, while not altering the audiovisual output to the user.[27]

The functional aspects of computer/user interfaces are analogizable to functions provided by a hardware control panel. For example, software developers in the 1970's did most of their software code development, testing, and debugging via the control panel on the front face of their main-frame computers.[28] The user interfaces of today's computer programs can be thought of as on-screen versions of these hardware control panels, providing at least equivalent and typically much greater functionality. Fortunately, the present user doesn't have to manually set registers or push buttons; he or she simply communicates with the computer hardware via an electronic screen display or computer/user interface. The interface in turn activates the computer program to perform desired functions.

Thus, a key identifier of a functional feature of a computer/user interface is whether the feature in question is needed for the human computer user to interact with the computer program itself, i.e., to control the operation of the computer. It is important to understand the difference between this functional or utilitarian purpose of an interface feature and the non-functional purpose of an audiovisual interface feature, as described below.

2. Audiovisual Components

The audiovisual components of a computer/user interface are those features displayed on a video screen[29] over which the user exerts very little, if any, control. One example of this type of feature is the display of a videogame:

> The user does interact with these programs through interpretation and manipulation of screen images, but user discretion is limited to the very narrow range of choices made available by the program for the purpose of playing the game. If the user tries to do anything else, either the game will not work or she will immediately lose an uninteresting

---

27. *See* Pilarski, *supra* note 15, at 329.

28. Conversation with Michael D. Schumann, attorney (June 24, 1988).

29. *See* Pilarski, *supra* note 15, at 328 ("The audiovisuals created on the video screen result from instructions in the program that cause certain dots or 'pixels' to light up").

contest.[30]

Audiovisual components may be stationary or moving.[31] An example of a stationary audiovisual component of a computer/user interface is the border design around the screen of a software program such as Apple's MACPAINT™. Such borders serve no function; the computer user does not need or use them to interact with the computer program. The decorative borders exist only as aesthetically pleasing features of the screen display.

Thus, audiovisual components of computer/user interfaces may be characterized as those components which the human computer user does not use in order to interact with the computer program, and which primarily provide an aesthetically pleasing appearance to the interface.

3. *Overlapping Functional and Audiovisual Characteristics*

Some components of computer/user interfaces such as the margin-change option noted above do not result in any audiovisual output to the user, and are straightforwardly categorized as functional features. Likewise, other computer/user interface components such as screen borders are only present to provide a pleasing appearance or to fulfill some other non-utilitarian purpose. However, the distinction drawn above between functional and audiovisual components of computer/user interfaces is not always so clear-cut, and therein lies the heart of the controversy regarding the scope of protection for computer/user interfaces: how does one distinguish or separate the functional features from the audiovisual features of a computer/user interface when they seem to overlap within a single component of the interface?

For example, consider an on-screen icon of elaborate, fanciful design (perhaps an exotic trash compactor) that could be selected by the computer user of a word processing program in order to delete or "trash" a software file. The creative, original expression embodied in the screen representation of the trash compactor icon would seem to be copyrightable, yet the intimate connection between the on-screen representation of the icon and its utilitarian purpose as a means for file deletion would appear to prohibit copyrightability. This example assumes that the trash compactor icon would not be present or desired in the word processing program's display if there were no need to provide a means of deleting files; thus it would not be present on the display simply to provide aesthetic pleasure.

Deciding whether or not the hypothetical icon described above could be properly protected by copyright law requires the application of

---

30. Karjala, *Copyright, Computer Software, and the New Protectionism*, 28 JURIMETRICS J. 33, 70 (1987).

31. *See* Pilarski, *supra* note 15, at 328.

the analysis factors proposed in Section III of this Article. Additionally, a thorough determination of copyrightability must take into account the legislative history dealing with copyright protection for computer programs. The next section presents a synopsis of this legislative history and sets forth the argument that Congress never intended to extend copyright law to protect most features of computer/user interfaces.

II. LEGISLATIVE HISTORY OF COMPUTER PROGRAM COPYRIGHT PROTECTION

The National Commission on New Technological Uses of Copyrighted Works (CONTU) was created by Congress in the 1970's as part of an effort to comprehensively revise the copyright laws of the United States.[32] The result of the revision was PL-94-553 (1976), now codified as 17 U.S.C. § 101 *et seq*[33] (hereinafter the 1976 Act).

Although computer software programs were given copyright protection under the 1976 Act, Congress made explicitly clear that it did *not* intend to protect the functional or utilitarian aspects of computer programs by stating in 17 U.S.C. § 102(b), "[i]n 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."[34]

The House Report on the 1976 Act elaborated on the nature of copyright in computer programs and the distinction between expression and idea as follows:

> Some concern has been expressed lest copyright in computer programs should extend protection to the methodology or processes adopted by the programmer, rather than merely to the "writing" expressing his ideas. Section 102(b) is intended, among other things, to make clear that *the expression adopted by the programmer is the copyrightable element in a computer program, and that the actual processes or methods embodied in the program are not within the scope of the copyright law.*
>
> Section 102(b) in no way enlarges or contracts the scope of copyright protection under the present law. Its purpose is to restate, in the context of the new single Federal system of copyright, that *the basic*

---

32. U.S. NAT'L COMM'N ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, FINAL REPORT OF THE NAT'L COMM'N ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS 1 (1978) [hereinafter CONTU REPORT).

33. *Id.* at 1, n.1. The legislative history of the 1976 Act is contained in H.R. REP. NO. 1773, 94th Cong., 2nd Sess., 69-82 (1976); S. REP. NO. 473, 94th Cong., 1st Sess. (1975).

34. 17 U.S.C. § 102(b) (1987).

dichotomy between expression and idea remains unchanged.[35]

While the 1976 Act granted copyright protection for computer programs, i.e. for the written expression in software code, it said nothing explicitly as to copyright protection for computer/user interfaces. Given the legislative history noted above, however, there is no basis for a belief that Congress intended to extend any copyright protection to functional features of computer/user interfaces. The legislative history of the 1976 Act makes very clear that Congress did *not* intend copyright to extend to functional or utilitarian features of computer programs, but only to the expression of computer programs. Correspondingly, functional or utilitarian features of computer/user interfaces do not deserve copyright protection.

The lack of express mention of computer/user interfaces by Congress in its consideration of the copyrightability of computer programs may be due to the increased difficulty of separating idea from expression in these interfaces. While the most easily identified form of copyrightable expression of a computer program is simply a listing of the software source code itself, no correspondingly simple representation exists for many computer/user interface features. In many cases, the expression of computer/user interface features may not be conceptually separable from their underlying idea.

For example, the trash compactor icon described above has inherent functionality in that the computer user would utilize it in order to communicate with the computer program, i.e. to delete files. This functionality may not be separable from the expression of the icon. The general nature of computer/user interfaces also implies that many computer/user interface features may not be copyrightable because of industry standardization, use in the public domain, the existence of only a limited number of ways to express an underlying idea, and other factors discussed in the following section.

III. A PROPOSED TEST FOR COPYRIGHT INFRINGEMENT DETERMINATIONS INVOLVING COMPUTER/USER INTERFACES

The test of copyright infringement is two-pronged: the plaintiff copyright holder must prove his ownership of the copyright, as well as a violation of an exclusive right such as copying by the defendant.[36] Copying may be proved inferentially by showing: 1) proof of access by

---

35. H.R. REP. No. 1476, 94th Cong., 2nd Sess., 57 (1976); S. REP. No. 473, 94th Cong., 2nd Sess., 54 (1976) (emphasis added).

36. *See* Grammas, *The Test for Proving Copyright Infringement of Computer Software: "Structure, Sequence, and Organization" and "Look and Feel" Cases,* 14 WM. MITCHELL L. REV. 105, 117 (1988).

the defendant, and 2) substantial similarity of the allegedly infringing work to the copyrighted work.[37] However, a critical yet often over-looked underlying issue in any infringement case is the validity of the copyright previously granted to the plaintiff copyright holder. In the context of infringement of computer/user interfaces, some courts have ignored this issue and made determinations based upon non-copyrightable similarities.

For example, in *Broderbund Software, Inc. v. Unison World,*[38] the district court found copyrightable certain features of the user interface of a PRINT SHOP computer program used to create banners and greeting cards. These features included the program's menu screens, input formats, and sequencing of screens.[39] The *Broderbund* court looked to another software program, STICKYBEAR PRINTER, whose functionality was similar to that of PRINT SHOP, and reasoned that since "the ideas underlying STICKYBEAR PRINTER and PRINT SHOP [were] the same," but "the expressions of those ideas [were] very different," the idea and expression of PRINT SHOP were separable and thus copyrightable.[40] In so deciding, the *Broderbund* court's analysis inappropriately focused on the similarities or lack thereof between the interface of PRINT SHOP and that of another software program, instead of focusing on the underlying issue of whether interface features as basic as menu screens, input formats, and sequencing deserve copyright protection at all.

In order to provide a more meaningful framework for analysis of this vitally important underlying issue, the author proposes a two-step test for infringement analysis in a computer/user interface copyright infringement case. First, before a court makes any judgment as to the substantial similarity of the computer/user interfaces in question, it needs to answer the question of which particular features of the plaintiff's interface are indeed copyrightable subject matter. Secondly, following such a determination, only that subset of features which are appropriately protected by copyright law should be considered when analyzing the extent of similarity. The non-copyrightable features of the allegedly infringed computer/user interface should *not* be considered by a court in a determination of substantial similarity. By making this distinction, the court will, in effect, be concluding that the copyright held by the plaintiff which allegedly protected these non-copyrightable features is invalid.

The determination of substantial similarity performed as the sec-

---

37. *Id.* at 117-18.

38. 648 F.Supp. 1127 (N.D. Cal. 1986).

39. *Id.* at 1132.

40. *Id.*

ond step of this proposed test has been discussed by numerous commentators.[41] In order to facilitate the first step of the above test, however, that of initially identifying which features are appropriately protected by copyright, courts should analyze the copyrightability of each interface component in light of the factors proposed below. The application of two or more of these factors may sometimes result in conflicting outcomes. However, an analysis of underlying copyrightability which takes into consideration all of the following factors will by necessity be a more well-reasoned, thorough approach than that of simply focusing on similarities between interface features which may not be copyrightable at all.

A. ANALYSIS FACTORS

1. *Conceptual Separability*

The term "conceptual separability" refers to the problem discussed above, that of separating idea from expression, or functionality from aesthetic quality, when the two seem, at least on a physical level, inseparable within a given work.

In *Brandir International v. Cascade Pacific Lumber*,[42] the United States Court of Appeals for the Second Circuit adopted the following test of conceptual separability set forth by Professor Denicola:[43]

> If design elements reflect a merger of aesthetic and functional considerations, the artistic aspects of a work cannot be said to be conceptually separable from the utilitarian elements. Conversely, where design elements can be identified as reflecting the designer's artistic judgment exercised independently of functional influences, conceptual separability exists.[44]

Applying this test, the *Brandir* court found that the Ribbon Rack, a bicycle rack made of bent tubing said to have originated from a wire sculpture, was not copyrightable. The court stated, "the form of the rack is influenced in significant measure by utilitarian concerns and thus any aesthetic elements cannot be said to be conceptually separable from the utilitarian elements." [45]

Although a reasonable observer might have thought of the rack's aesthetic qualities separately from its purpose as a bicycle rack, this was not sufficient in the court's opinion to confer copyrightability. "Form

---

41. *See generally* Dunn, *supra* note 2; Grammas, *supra* note 36; and Karjala, *supra* note 30.

42. 834 F.2d 1142 (2d Cir. 1987).

43. *See generally* Denicola, *Applied Art and Industrial Design: A Suggested Approach to Copyright in Useful Articles*, 67 MINN. L. REV. 707 (1983).

44. *Brandir*, 834 F.2d at 1145.

45. *Id.* at 1147.

and function are inextricably intertwined in the rack, its ultimate design being as much the result of utilitarian pressures as aesthetic choices."[46] "[T]here remains no artistic element of the Ribbon Rack that can be identified as separate and 'capable of existing independently, of, the utilitarian aspects of the article.' "[47]

The *Brandir* test of conceptual separability can be appropriately applied to determine the copyrightability of computer/user interface features. Just as the *Brandir* bike rack's function could not be conceptually separated from the expression of the rack itself, functional features of a computer/user interface may well be inseparable from the expression of those features, and thus uncopyrightable.

Granted, this determination is not often easily made. For example, consider the copyright infringement issues of *Apple Computer v. Microsoft Corp. & Hewlett-Packard* .[48] Count I of Plaintiff Apple Computer's Complaint alleges copyright infringement by the Defendants of "the distinctive expression represented by the visual displays and graphic images generated by the Macintosh computer programs . . . ."[49] Apple further alleges that the displays and images are "protected audiovisual works under the Copyright Act."[50] However, as an affirmative defense to Apple's allegations, Defendant Microsoft Corporation alleges the failure of Apple's copyright claim because the "[f]eatures in which Apple has claimed copyright protection are functional display methods and techniques which are barred from copyright protection under 17 U.S.C."[51]

In summary, when applying the *Brandir* test of conceptual separability to computer/user interfaces, if the "form" of an interface feature or component is influenced in "significant measure by utilitarian concerns," then that computer/user interface feature is not appropriately protected by copyright law, and thus, should not be considered in a determination of substantial similarity.

2. *Expression Driven by Functionality or Purpose*

The second factor a court must consider is whether creative expression is driven by functionality or purpose. In order to apply this second factor, closely related to the first, a court must identify features of

---

46. *Id.*

47. *Id.*

48. *See* Complaint of Plaintiff, Apple Computer, Inc. v. Microsoft Corp. & Hewlett-Packard Co., No. 88-20149 (N.D. Cal. Mar. 17, 1988).

49. *Id.* at 3.

50. *Id.* at 3-4.

51. Answer of Defendant Microsoft, Apple Computer, Inc. v. Microsoft Corp. & Hewlett-Packard Co., No. 88-20149 (N.D. Cal. Mar. 17, 1988).

a computer/user interface which are driven by efficiency and logic, wherein certain approaches to performing a function may be more efficient than others and thus the preferred choice for performing that function. For example, scrolling of computer display screens is an efficient way to view more than one page of text, but menu-driven systems are more efficient for novices.[52]

The *Brandir* case discussed above provides another example of a work driven by functionality. Regarding the district court's inquiry into whether specific portions of Brandir's Ribbon Rack merely performed the function of a bicycle rack, the court stated, "the true test of functionality is not whether the feature in question performs a function, but whether the feature 'is dictated by the functions to be performed.' "[53] Thus, when an underlying idea or desired functionality drives or dictates the expression of a computer/user interface feature, that feature is not copyrightable subject matter.

3. *Level of Abstraction*

At a certain level of mental abstraction, the computer/user interface comprises abstract, unprotectible ideas and not copyrightable expression. The "levels of abstraction" doctrine was introduced by Judge Learned Hand in *Nichols v. Universal Pictures*,[54] in which the United States Court of Appeals for the Second Circuit held that the copyright of the play "Abbie's Irish Rose" had *not* been infringed:

> Upon any work, and especially upon a play, a great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out. The last may perhaps be no more than the most general statement of what the play is about, and at times might consist only of its title; but there is a point in this series of abstractions where they are no longer protected, since otherwise the playwright could prevent the use of his 'ideas,' to which, apart from their expression, his property is never extended.[55]

Extrapolating Judge Hand's analysis to computer/user interfaces, examples of interface features that are at a level of abstraction that should be "no longer protected" are overlaying screen presentations or "windows," and the use of icons to represent functions or commands.[56] These features are at the level of unprotectible ideas. Allowing copyright protection for these features would, in effect, confer a monopoly

---

52. *See* Schumann, *supra* note 11.
53. *Brandir v. Int'l Cascade Pac. Lumber*, 834 F.2d at 1142, 1148 (quoting Warner Bros. Inc. v. Gay Toys, Inc., 724 F.2d 327, 331 (2d Cir. 1983)).
54. 45 F.2d 119 (2d Cir. 1930).
55. *Id.* at 121 (citing Holmes v. Hurst, 174 U.S. 82, 86 (1898); Guthrie v. Curlett, 36 F.2d 694 (2d Cir. 1929)).
56. *See* Schumann, *supra* note 11.

over underlying ideas, something that the copyright laws were not intended to provide.[57]

4. *Scenes a Faire*

"Scenes a faire" refers to non-copyrightable features of a work that are dictated by external factors. For example, industry, interface, hardware, and software standards may dictate the design of a computer/user interface.[58] Such scenes a faire features may be thought of as "indispensable, or at least standard,"[59] to all similar interface designs.

The United States Court of Appeals for the Seventh Circuit determined that some video game features constituted scenes a faire in *Atari, Inc. v. North American Philips Consumer Electronics Corp.*[60] The court found the following features to be unprotectible scenes a faire:

> The maze and scoring table are standard game devices, and the tunnel exits are nothing more than the commonly used 'wrap around' concept adapted to a maze-chess game. Similarly, the use of dots provides a means by which a player's performance can be gauged and rewarded with the appropriate number of points, any by which to inform the player of his or her progress.[61]

The Seventh Circuit found that these features should be treated as scenes a faire and should "receive protection only from virtually identical copying."[62]

Additional examples of non-protectible scenes a faire elements of computer/user interfaces might include a grain exchange program that would be required to show certain types of information about grain prices and quantities, or a word processing program that typically displays page and line number.[63] Without these features, the performance of the programs is degraded in the eyes of the typical user who expects

---

57. *See* 17 U.S.C. § 102(b) (1982) ("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.").

58. *See* Schumann, *supra* note 11.

59. Atari, Inc. v. North American Philips Consumer Elec. Corp., 672 F.2d 607, 616 (7th Cir. 1982) ("In the context of literary works . . . [s]cenes a faire refers to 'incidents, characters, or settings which are as a practical matter indispensible, or at least standard, in the treatment of a given topic.'" (*quoting* Alexander v. Haley, 460 F.Supp. 40, 45 (S.D.N.Y. 1978))), *cert. denied*, 459 U.S. 880 (1982).

60. *Atari*, 672 F.2d at 616-17. *See also* Atari, Inc. v. Amusement World, Inc., 547 F.Supp. 222, 229 (D. Md. 1981) (no infringement because similarities were copyrightable scenes a faire).

61. *Atari*, 672 F.2d at 617.

62. *Id.*

63. *See* Schumann, *supra* note 11.

the features to be present. Thus, "necessary" features of computer/user interfaces are not appropriate copyrightable subject matter.

5. *Public Domain*

Some aspects of computer/user interfaces may be taken from the public domain so as to involve no creativity whatsoever.[64] One example of a "public domain" feature is the use of the now-familiar "trash can" icon to designate a means of deleting a software file. An exception to the public domain rule which deserves copyright protection would be the creative, original modification of a standard symbol found in the public domain. For example, an elaborately designed trash can symbol appearing in a video game but not used by the game player to interact with the computer program would presumably constitute copyrightable subject matter. The symbol's elaborate nature and lack of functionality identify it as an appropriately copyrightable audiovisual component of a computer/user interface.

6. *Limited Available Choices for Expression*

Features of a computer/user interface for which limited options are available as to where and how to display something are not appropriate copyrightable subject matter.[65] "If there is only one way to express the idea, 'idea' and 'expression' merge and there is not copyrightable material."[66]

This analysis has been previously applied to computer program code which, although perhaps copyrighted,

> may be copied without infringing when there is but a limited number
> of ways to express a given idea . . . . In the computer context this
> means that when specific instructions, even though previously copy-
> righted, are the only and essential means of accomplishing a given task,
> their later use by another will not amount to an infringement.[67]

---

64. *Id.*

65. *See id.*

66. Kramer Mfg. Co. v. Andrews, 783 F.2d 421, 436 (4th Cir. 1986). *See also* Herbert Rosenthal Jewelry Corp. v. Kalpakian, 446 F.2d 738, 741-42 (9th Cir. 1971). The court in *Rosenthal* held that there were only a limited number of ways to design a jewel-encrusted bee pin. "[T]o give one manufacturer a copyright on its bee pin would be to give that manufacturer a monopoly on the jewel-encrusted-bee-pin market because no other manufacturer could possibly conceive of a substantially different jewel-encrusted pin." Broderbund Software, Inc. v. Unison World, Inc., 648 F.Supp. 1127, 1132 (N.D. Cal. 1986).

67. CONTU REPORT, *supra* note 32, at 20. As support for the "limited available choices" doctrine, the CONTU report quotes *Continental Casualty Co. v. Beardsley*:

> [T]he use of specific language . . . may be so essential to accomplish a desired re-
> sult and so integrated with the use of a . . . conception that the proper standard of
> infringement is one which will protect as far as possible the copyrighted language
> and yet allow the free use of the thought beneath the language.

Id. (quoting Continental Cable Co. v. Beardsley, 253 F.2d 702, 706 (2d Cir. 1958)).

7. *Insufficient Intellectual Labor*

The first developer of a computer/user interface may have placed status information where there was available space on the screen for presentation of the information. No real originality or creativity was involved in this type of choice.[68] Thus, copyright should not protect these features because, in order to be copyrightable, a work must be the product of at least a "modicum of creativity,"[69] and must be "more than merely trivial."[70]

As pointed out in the CONTU report, in order to qualify for copyright protection, works must be "the fruits of intellectual labor."[71] For example, very simple instructions such as "apply hook to wall"[72] are examples of works not deserving copyright protection because of the lack of intellectual labor required to create them. Likewise, this consideration means that a computer program "consisting of a very few obvious steps could not be a subject of copyright."[73]

In determining the copyrightability of a computer/user interface, courts should consider whether the creation of the computer/user interface feature under consideration required any intellectual labor. If a feature or component is devoid of originality and creativity, then just as an underlying computer program would not be copyrightable, the interface feature is not deserving of protection under the copyright law.

8. *Forms for Implementing a Method of Doing Business*

The Supreme Court held in *Baker v. Selden*[74] that blank forms are not the subject of copyright. In construing a work entitled "Selden's Condensed Ledger, or Bookkeeping Simplified,"[75] the *Baker* Court reasoned that "where the art [taught] . . . cannot be used without employing the methods and diagrams used to illustrate the book, . . . such methods and diagrams are to be considered as necessary incidents to the

---

68. *See* Schumann, *supra* note 11.

69. 1 NIMMER, *supra* note 9, at § 2.01[B] (citing Universal Athletic Sales Co. v. Salkeld, 511 F.2d 904 (3d Cir. 1975) ("[a] modicum of creativity may suffice for a work to be protected")).

70. *See* 1 NIMMER, *supra* note 9, at § 2.01[B] ("Any 'distinguishable variation' of a prior work will constitute sufficient originality to support a copyright if such variation is the product of the author's independent efforts, and is more than merely trivial").

71. *See* CONTU REPORT, *supra* note 32, at 20 (quoting Trade-Mark Cases, 100 U.S. 82 (1879)).

72. *See id. (quoting* E. H. Tate Co. v. Jiffy Enterprises, Inc., 16 F.R.D. 571 (E.D. Pa. 1954)).

73. *Id.*

74. 101 U.S. 99 (1879).

75. 1 NIMMER, *supra* note 9, at § 2.18[B].

art, and given therewith to the public. . . ."[76] The Court reasoned that unless copyright protection were denied to methods and diagrams, the result would be to grant a monopoly on the underlying "art" itself,[77] and would constitute "a surprise and a fraud upon the public."[78]

The Copyright Office has adopted the rule of *Baker* by designating as non-copyrightable works those "designed for recording information which do not in themselves convey information," . . . "such as time cards, graph paper, account books, diaries, bank checks, score cards, address books, report forms, order forms and the like."[79]

Similarly, the spreadsheet-style screen displays of software programs such as Lotus-123® or Visicalc are simply forms for implementing business methods.[80] These spreadsheet displays, absent numerical inputs, are blank forms which function as computerized versions of accounting worksheets.[81] Following the rule of *Baker v. Selden*, such displays are not copyrightable. However, those features of a spreadsheet display which convey information, and meet the statutory requirements of "original works of authorship,"[82] may be copyrightable.[83]

9. *Industry Standardization*

When analyzing the copyrightability of computer/user interfaces, courts must keep in mind that functional compatibility and standards are very important to both the computer industry and to the end-user.[84] Extending copyright protection too broadly to cover functional computer/user interface features may inhibit standardization in the software industry. One commentator highlights this concern as follows:

> The determination of whether a work constitutes an "idea" or an "expression" must continue to take into account the effect on the market. Even though a work may have innumerable creative expressions, it may have only a limited number of economically practical expressions.

---

76. 101 U.S. at 103.

77. *See* 1 NIMMER, *supra* note 9, at § 2.18[B].

78. *Baker*, 101 U.S. at 102.

79. 37 C.F.R. § 202.1(c) (1987).

80. *See* Schumann, *supra* note 11.

81. *See* HARRIS, THE LEGAL GUIDE TO COMPUTER SOFTWARE PROTECTION 73 (1985).

82. 17 U.S.C. § 102 (1987).

83. *See* Synercom Tech., Inc. v. University Computing Co., 462 F.Supp. 1003, 1014 (N.D. Texas 1978). The court in *Synercom* held that the plaintiff's input formats were not infringed, because the " 'idea or principle' behind the forms in question, and the 'method or system' involved in them . . .," were not more nor less than the formats themselves; thus, the input formats were not copyrightable. The order and sequence of the forms constituted "expressed ideas, not expressions. . . ." See *id.* The court carefully noted, however, that " 'forms' which communicate information can be the subject of copyright." *Id.* at 1011 (*citing* Harcourt, Brace & World, Inc. v. Graphic Controls Corp., 329 F.Supp. 517 (S.D.N.Y. 1971)).

84. *See* Schumann, *supra* note 11.

This limit to the number of expressions may either be because it is an optimal result, or because it has become a standard by reason of compatibility with other products or because of user familiarity.[85]

Granting copyright protection to features of computer/user interfaces which constitute "standards" may inhibit innovations in user interface development. As one commentator points out, "[o]nce a particular program became established, competitors would have little incentive to make innovative improvements, because the potential market could be greatly reduced by the large number of users locked into the original system. And absent this competition, there would be reduced incentive even for the original programmer to make improvements."[86]

10. *Social Desirability*

Courts should also consider the social desirability of a computer/user interface feature when determining copyrightability.[87] Granting copyright protection to a computer program that simply represents "reworking the lock" to a computer system is socially undesirable, because it raises prices and forces users to learn a new system.[88] Correspondingly, it is not socially desirable to grant copyright protection to features of a computer/user interface which force users to retrain themselves on new software programs, or risk being left with old, noncompatible software.

IV. ARE THERE OTHER OPTIONS FOR PROTECTING NON-COPYRIGHTABLE ASPECTS OF COMPUTER/USER INTERFACES?

Many aspects of computer/user interfaces are not copyrightable subject matter. However, copyright is not the only means of intellectual property protection available in the United States. Other existing or proposed forms of protection include design patents, utility patents, and "industrial copyright." The potential for obtaining intellectual property protection for non-copyrightable computer/user interface features under each of these forms of protection is analyzed below.

---

85. Pilarski, *supra* note 15, at 351 (emphasis added).

86. Karjala, *supra* note 30, at 70-71 (citation omitted).

87. *See Synercom*, 462 F.Supp. at 1013. An example of social desirability provided by the features of a contested work is the "figure-H" gear shift pattern of an automobile stick. "Use of the same pattern might be socially desirable, as it would reduce the retraining of drivers." *Id.*

88. Conversation with Steven W. Lundberg, attorney (June 29, 1988).

A. DESIGN PATENTS

An inventor may obtain a design patent in the United States upon a new, original, and ornamental design for a manufactured article.[89] In order to be ornamental, a design must present a pleasing aesthetic appearance and must not be dictated solely by functional considerations.[90]

The utility patent[91] statutory requirements of novelty and nonobviousness also apply to design patents.[92] Applying the nonobviousness requirement to design patents is more difficult than to utility patents.[93] The courts have admitted that any assessment of the obviousness of a design is necessarily subjective.[94] Thus, the design patent law may be an uncertain form of protection for non-copyrightable features of computer/user interfaces. For example, 68% of design patents challenged in federal courts during the period from 1973 to 1977 were held invalid.[95] Such statistics suggest a reason for one commentator's characterization of the design patent law as one of "ill repute."[96]

At least one U.S. corporation, however, obtained design patent protection on seemingly functional features of a computer/user interface. U.S. Patents Des. 295,632 and Des. 295,633, assigned to Xerox Corporation, were issued in May, 1988. These patents claim the ornamental designs of a wastebasket icon and of a PC emulation icon.[97]

B. "INDUSTRIAL COPYRIGHT"

Some members of the U.S. intellectual property community have long felt a need for the creation of a body of "industrial copyright" law.[98] They argue that such a system should be provided in order to

---

89. 1 CHISUM, PATENTS § 1.04 at 1-1805 (1987).

90. *See id.*

91. *See supra* text pages 36-38 and notes 102-107 for further discussion of utility patents and the statutory requirements of utility patent protection.

92. *See* 1 CHISUM, *supra* note 89, at § 1.04.

93. *See id.* § 1.04[2] at 1-199 (citation omitted).

94. *See id* at 1-200. (*citing* In re Bartlett, 300 F.2d 942, 944 (C.C.P.A. 1962)).

95. Denicola, *supra* note 43, at 714 n.30 (*citing* Patent and Trademark Office, STUDY OF COURT DETERMINATIONS OF PATENT VALIDITY/INVALIDITY, 1973-77, *reprinted in* 455 PAT. TRADEMARK & COPYRIGHT J. D-1 - D-3 (1979)).

96. *Id.*

97. In the view of the pricipal Patent and Trademark Office Examiner for most of the Xerox design patents granted thus far, however, the designs were patentable to the extent that they were *not* dictated by functional features. *See* Kluth and Lundberg, *Design Patents: A New Form of Intellectual Property Protection for Computer Software*, 5 COMPUTER LAW. 1, 4 (1988).

98. *See generally* Denicola, *supra* note 43; Dulin, *Design Protection: Walking the Pirate Plank?*, 12 BULL. COPYRIGHT SOC'Y 321 (1965); and Reichman, *Design Protection in Domestic and Foreign Copyright Law: From the Berne Revision of 1948 to the Copyright Act of 1976*, 1983 DUKE L.J. 1143 (1983).

confer protection similar in scope to that of copyright but for utilitarian articles.

While this proposed form of protection may seem at first glance ideally suited to protect functional features of computer/user interfaces, in practice "industrial copyright" has had a highly detrimental economic effect. Great Britain has had an industrial copyright law for many years. Under the law, British automobile manufacturers were able to obtain industrial copyrights on the cars they made and sold. Third parties who provided replacement parts for the copyrighted cars were charged with copyright infringement. Thus, Great Britain's industrial copyright law brought about a very negative effect on supply and demand for automobile parts.[99]

Another major drawback of an industrial copyright form of protection is that the previous attempts to obtain passage of such a law in the U.S. have failed miserably. In fact, counting unsuccessful design protection bills has become a popular pastime.[100] A 1965 *Bulletin of the Copyright Society* article reported that some 55 design protection bills had been introduced in Congress since 1914.[101]

One commentator suggests that the "failure to win more specialized protection has encouraged efforts to assimilate design protection [i.e., "industrial copyright] into the law of copyright."[102] Indeed, the industrial copyright movement may be no more than an attempt to shoehorn works that should not be protected because of economic or social considerations into traditional copyright law.

C. UTILITY PATENTS

The requirements for protection of intellectual property under utility patent law are much more rigorous than those of copyright law, making utility patent protection for computer/user interfaces difficult to obtain. As a threshold test, a computer/user interface feature would have to fall within one of the four statutory subject matter classifications to be patentable — process, machine, manufacture, or composition of matter.[103] In addition, the computer/user interface feature would have to be novel,[104] nonobvious,[105] and possess utility.[106]

The rigorous requirements for obtaining utility patent protection

---

99. Conversation with Michael D. Schumann, attorney (June 24, 1988).
100. *See* Denicola, *supra* note 43, at 708 n.6.
101. *See id.* (citing Dulin, *supra* note 98, at 325).
102. *Id.* at 708.
103. 35 USC § 101 (1987).
104. *Id.* § 102.
105. *Id.* § 103.
106. *Id.* § 101.

must be weighed against the fact that software utility patents offer a much stronger, broader form of protection than does copyright law.[107] The advantages of utility patent protection for computer software can more than compensate for the additional time and cost typically required to obtain a patent:

> The scope of the rights in the patent is relatively certain, providing a basis for negotiation in advance of litigation to enforce the patent. In a copyright, on the other hand, there is no similar opportunity for such advance planning, regarding the scope of copyright protection. Instead, the scope of protection is based upon an after-the-fact analysis of the similarity between copyrighted software and allegedly infringing software. The comparative certainty regarding the scope of protection provided by a patent covering the structure and organization of software can more than pay for the up-front costs of obtaining a patent.[108]

There is no reason why functional features of computer/user interfaces, just as computer software code, should not be granted utility patent protection *if* they can meet the rigorous statutory requirements. As an additional option, certain functional components of a user interface might be protectible by patent, while other audiovisual features might be properly copyrightable. It is well established that different aspects of a single work may be protected by different forms of intellectual property law.[109]

The above analysis of the existing and proposed forms of intellectual property protection for noncopyrightable features of computer/user interfaces indicates that such alternatives would be neither appropriate nor practical. Thus, the only viable existing means of protecting functional features of a computer/user interface is by utility patent, entailing the rigorous statutory requirements of novelty and nonobviousness. It is doubtful that many computer/user interface features, particularly those falling into the noncopyrightable public domain or "insufficient intellectual labor" categories described in Section III, possess the required novelty and nonobviousness.

V. CONCLUSION

The scope of copyright protection for computer/user interfaces has not yet been conclusively determined. Recent developments including the Apple/Microsoft/Hewlett-Packard litigation and the Copyright Office's single registration ruling highlight the difficulty of the issues in-

---

107. *See* Haynes and Durant, *Patents and Copyrights in Computer Software Based Technology: Why Bother with Patents?*, 4 COMPUTER LAW. 1 (1987).

108. *Id.* at 6.

109. *See* Lundberg and Sumner, *Software Is Patentable: The Emerging Importance of Software Patents*, The Bench & Bar of Minnesota 13, 15 (December 1986).

volved. Regardless of the final determination of the scope of copyright protection for computer/user interfaces, courts that consider these issues in the future should take into consideration the factors gathered together in Section III of this Article. By so doing, the courts will be less likely to make comparisons between non-copyrightable similarities. Additionally, consideration of the legislative intent behind the revisions to the Copyright Act of 1976 should guide the courts away from overly broad extensions of copyright protection to functional features of computer/user interfaces. Finally, the lack of viable alternative forms of intellectual property protection for these features further indicates that many components of computer/user interfaces are simply not protectible by *any* means.