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Notes

Copyright Protection for Computer Screen Displays

A corporation, C1, develops and copyrights a computer program, Orchestra, which performs various accounting tasks. C1 commits considerable creative resources to developing screen displays for Orchestra that make the program visually pleasing and easy to learn and use. Desiring to insure that the screen display will be copyright protected, C1 applies for independent copyright registration¹ of Orchestra's screens. The Copyright Office denies the application, maintaining that the copyright in the underlying program also protects the screens. A competitor, C2, subsequently develops and markets an accounting program significantly less expensive than Orchestra, which it names Band. Although the underlying programs are entirely different, C2 has designed the screen display of Band to be sufficiently similar to Orchestra's that a user familiar with Orchestra would find it easy to use Band. Because the introduction of Band threatens Orchestra's market share, C1 sues C2 for copyright infringement of its screen displays. In defense, C2 challenges C1's copyright in its screens.

Computer program developers have great incentive to protect their own programs' screen displays as well as to adopt and modify the screens of other successful programs. Yet current copyright law and Copyright Office policies give developers such as C1 and C2 little guidance by which to assess the merits

1. Although "[c]opyright in a work . . . subsists from its creation" (Copyright Act of 1976, 17 U.S.C. § 302(a) (1982)), three formalities are necessary to insure copyright protection: notice, registration, and deposit. A copyrighted work that is publicly distributed by its owner must contain a "reasonable notice of the claim." *Id.* at § 401. Regulations governing notice for specific types of works are detailed in 37 C.F.R. § 202.2 (1987). Registration provides prima facie evidence of the validity of a copyright claim (17 U.S.C. § 410(c)) and is a prerequisite to any action for infringement (17 U.S.C. § 411(a)). An author registers a work by filing with the Copyright Office a Form TX for literary works or a Form PA for audiovisual works. 37 C.F.R. § 202.3(b). An application fee (\$10) and deposit of the work must accompany the form. 17 U.S.C. §§ 408, 708(a)(1). For a discussion of the deposit requirements for screen displays, see *infra* note 134.

of their respective claims. The Copyright Office² and one federal district court³ maintain that an underlying program's copyright protects the screen displays that the program generates. The only other and most recent court to explicitly address this question, however, held that a program's copyright does not protect its screens.⁴ Furthermore, the few courts that have addressed copyright protection for a program's screen displays have given conflicting guidance as to the degree of similarity between screens necessary for a court to find infringement. Until the uncertainty is resolved, software firms cannot be confident of their ability either to protect the screens they develop or to borrow, adapt, and improve upon screen formats introduced by others.

This Note examines copyright protection for nongame computer screen displays. Part I outlines the legal principles governing copyright protection and reviews the cases that have addressed copyright protection of computer software. Part II analyzes the current judicial conflict as to whether a computer program's copyright protects the screen displays generated by it and considers the appropriate scope of that protection. Part III proposes a framework for resolving copyrightability problems of computer screen displays. This Note concludes that screen displays should be protected by their own copyright rather than a copyright in their underlying program to ensure adequate protection of the valuable creative work in screens. The Note further concludes that such protection should be very limited in scope to avoid detrimental restrictions on the options available to screen designers.

I. COPYRIGHT LAW AND ITS APPLICATION TO COMPUTER SOFTWARE

A. COPYRIGHT PRINCIPLES RELEVANT TO THE PROTECTION OF COMPUTER SCREEN DISPLAYS

The scope of copyright protection for computer screen displays depends on the application of the goals and principles underlying copyright law. The goal of copyright protection is to enrich society by encouraging authors to develop and dissemi-

2. See discussion *infra* note 94 and accompanying text.

3. *Broderbund Software v. Unison World*, 648 F. Supp. 1127, 1133 (N.D. Cal. 1986). See *infra* note 71 and accompanying text.

4. *Digital Communications Assocs. v. Softklone Distrib. Corp.*, 659 F. Supp. 449, 455 (N.D. Ga. 1987). See *infra* note 81 and accompanying text.

nate new works.⁵ In a technological context, copyright must give sufficient protection to encourage innovation and development without stifling competition or chilling incremental development by granting overly broad protection.⁶

Three foundational principles that govern copyright protection address the distinction between copyrightable and uncopyrightable material. First, protection extends only to "original works of authorship."⁷ Unoriginal creations are not

5. Congress legislates in this area according to its constitutional mandate "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST. art. I, § 8. The Court in *Mazer v. Stein* succinctly summarized the purpose of copyright legislation:

"The copyright law, like the patent statutes, makes reward to the owner a secondary consideration." However, it is "intended definitely to grant valuable, enforceable rights to authors, publishers, etc., without burdensome requirements; 'to afford greater encouragement to the production of literary [or artistic] works of lasting benefit to the world.'"

347 U.S. 201, 219 (1954) (quoting *United States v. Paramount Pictures*, 334 U.S. 131, 158 (1948); *Washingtonian Co. v. Pearson*, 306 U.S. 30, 36 (1939)).

6. See *Nimmer & Krauthaus, Copyright and Software Technology Infringement: Defining Third Party Development Rights*, 62 IND. L.J. 13, 13-14 (1987).

7. 17 U.S.C. § 102 (1982). The Copyright Act lists seven categories of works which qualify as works of authorship: literary works; musical works; dramatic works; pantomimes and choreographic works; pictorial, graphic, and sculptural works; motion pictures and other audiovisual works; and sound recordings. *Id.* Two of the categories important to computer software copyright are literary works and audiovisual works. See *id.* The statute defines literary works as:

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 (1982). Audiovisual works are defined as:

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

Id.

Courts have classified computer programs as literary works. *E.g.*, *Apple Computer v. Franklin Computer Corp.*, 714 F.2d 1240, 1249 (3d Cir. 1983) ("[A] computer program, whether in object code or source code, is a 'literary work' . . ."), *cert. dismissed*, 464 U.S. 1033 (1984).

Video game screen displays are regarded as audiovisual works. See *infra* note 59. Nongame screens have been classified both as audiovisual works, see *Broderbund Software v. Unison World*, 648 F. Supp. 1127, 1129 (N.D. Cal. 1986) and *infra* note 97, and literary works, see *Digital Communications Assocs. v. Softklone Distrib. Corp.*, 659 F. Supp. 449, 462 (N.D. Ga. 1987) and *infra* note 84.

copyrightable. Originality, however, does not require that a work be novel or unique, only that it reflect independent effort.⁸ The degree of originality or creativity a work must evidence to bring it within the ambit of protection is quite minimal,⁹ although certain forms of expression are so lacking in creativity that they do not merit protection.¹⁰

Second, copyrightability only extends to works that are "fixed in any tangible medium of expression."¹¹ A work qualifies as fixed as long as it is embodied in some physical medium such as a book, record, tape, or computer disk.¹² That a tape player, computer, or other piece of technology is necessary to perceive the work has no bearing on its copyrightability.¹³

8. Even a new work of authorship that is identical to an existing work would be a proper subject for copyright protection if the second work was created independently of the first. See, e.g., *Mazer*, 347 U.S. at 218; *Sheldon v. Metro-Goldwyn Pictures*, 81 F.2d 49, 54 (2d Cir. 1936) ("[I]f by some magic a man who had never known it were to compose anew Keats's Ode on a Grecian Urn, he would be an 'author,' and, if he copyrighted it, others might not copy that poem, though they might of course copy Keats's."); *Fred Fisher, Inc. v. Dillingham*, 298 F. 145, 150-51 (S.D.N.Y. 1924) (L. Hand, J.); H.R. REP. NO. 1476, 94th Cong., 2d Sess. 51, reprinted in 1976 U.S. CODE CONG. & ADMIN. NEWS 5659, 5664 [hereinafter HOUSE REPORT].

9. The standard generally adopted is that the author's contribution be more than "merely trivial." 1 M. NIMMER, NIMMER ON COPYRIGHT, § 2.01[B] at 2-11 (1987).

10. Some examples include short phrases or sentence fragments, charts, forms, simple sequences of musical notes, and numbering systems. *Id.* at 2-14 to -14.1. See also *United States v. Hamilton*, 583 F.2d 448 (9th Cir. 1978). The court in *Hamilton* commented:

Trivial elements of compilation and arrangement, of course, are not copyrightable since they fall below the threshold of originality. For example, it is well-settled that copyright of a map does not give the author an exclusive right to the coloring, symbols, and key used in delineating boundaries of and locations within the territory depicted.

Id. at 451. Lack of requisite creativity is one rationale for refusing to extend copyright protection to blank forms, but they may also be denied protection as utilitarian works. See *infra* notes 22-29 and accompanying text.

11. 17 U.S.C. § 102 (1982). The fixation requirement is perhaps best understood by reference to what does not qualify as fixed. "[T]he definition of 'fixation' would exclude from the concept purely evanescent or transient reproductions such as those projected briefly on a screen, shown electronically on a television or other cathode ray tube, or captured momentarily in the 'memory' of a computer." HOUSE REPORT, *supra* note 8, at 53, reprinted in 1976 U.S. CODE CONG. & ADMIN. NEWS at 5666.

12. 17 U.S.C. § 101 (1982); HOUSE REPORT, *supra* note 8, at 52, reprinted in 1976 U.S. CODE CONG. & ADMIN. NEWS at 5666.

13. 17 U.S.C. § 102 (1982). This statutory provision was added to revise the Act of March 4, 1909, ch. 320, 35 Stat. 1076, which had incorporated the holding of *White-Smith Music Publ. v. Apollo Co.*, 209 U.S. 1, 18 (1908) (holding that piano roll embodying musical composition did not infringe author's copyright because coded punches were not humanly perceptible without the

Third, copyright protection extends only to the expression of ideas and does not include the ideas themselves.¹⁴ Courts have struggled to distinguish protected expression from unprotected idea.¹⁵ Because decisions are necessarily specific to the work involved, a general rule for distinguishing idea from expression is usually not practicable.¹⁶ Depending upon the level of abstraction at which courts choose to define the idea of a

aid of mechanical device). HOUSE REPORT, *supra* note 8, at 52, reprinted in 1976 U.S. CODE CONG. & ADMIN. NEWS at 5665; 1 NIMMER, *supra* note 9, § 2.03[B], at 2-29.

14. 17 U.S.C. § 102 (1982); see also *Mazer v. Stein*, 347 U.S. 201, 217 (1954) (“[A] copyright gives no exclusive right to the art disclosed; protection is given only to the expression of the idea—not the idea itself.”). The court in *Sid & Marty Krofft Television Prods. v. McDonald’s Corp.*, 562 F.2d 1157 (9th Cir. 1977), states:

It is an axiom of copyright law that the protection granted to a copyrighted work extends only to the particular expression of the idea and never to the idea itself. This principle attempts to reconcile two competing social interests: rewarding an individual’s creativity and effort while at the same time permitting the nation to enjoy the benefits and progress from use of the same subject matter.

Id. at 1163 (citations omitted).

An example from a video game case illustrates the distinction between idea and expression. In *Atari v. North Am. Philips Consumer Elecs. Corp.*, the court defined the unprotected idea of the video game PAC-MAN as “a maze-chase game in which the player scores points by guiding a central figure through various passageways of a maze and at the same time avoiding collision with certain opponents or pursuit figures which move independently about the maze.” 672 F.2d 607, 617 (7th Cir.), *cert. denied*, 459 U.S. 880 (1982). The court labeled the depiction of the central figure as a “gobbler” and the pursuit figures as “ghost monsters” protected expression. *Id.*

Courts generally determine which aspects of a work constitute unprotected idea and which constitute protected expression when they consider whether the alleged infringing work is “substantially similar” to the copyrighted work. 1 NIMMER, *supra* note 9, § 2.03[D], at 2-34; § 13.03, at 13-20. To the extent any similarity is due to shared *idea*, there is no infringement. *Id.* § 2.18, at 2-219.

In an action for copyright infringement, the plaintiff must prove two elements: ownership of the copyright and copying by the defendant. *Sid & Marty Krofft Television*, 562 F.2d at 1162. Substantial similarity arises in connection with the latter element, copying. Copying is established by showing that the defendant had access to the copyrighted work and that the defendant’s work is substantially similar to it. *Id.*

15. See *Franklin Mint Corp. v. National Wildlife Art Exch.*, 575 F.2d 62, 65 (3d Cir.) (stating that identifying what is copyrightable expression and what is unprotected idea in any given work is necessarily very subjective process in which precision is “rarely possible”), *cert. denied*, 439 U.S. 880 (1978).

16. *Peter Pan Fabrics v. Martin Weiner Corp.*, 274 F.2d 487, 489 (2d Cir. 1960) (“The test for infringement of a copyright is of necessity vague. . . . Obviously, no principle can be stated as to when an imitator has gone beyond copying the ‘idea,’ and has borrowed its ‘expression.’ Decisions must therefore inevitably be *ad hoc*.”).

work, the work receives very broad or very limited copyright protection.¹⁷ Courts' perceptions of how broad copyright protection ought to be, as a matter of social policy, in a given type of work often dictate where they finally draw the line between idea and expression.¹⁸

Courts severely limit the scope of copyright protection when they conclude that a work's idea has merged into the expression of that idea.¹⁹ Merger problems arise when a creator seeks to copyright a work that embodies ideas capable of only a very limited range of expression. For example, a recent court severely limited protection of synthetic heads of elephants, zebras, and other wild animals, reasoning that any similarity of expression shared by the heads was indispensable to their common idea—realistic depiction of the animal.²⁰ Courts are reluctant to grant copyright protection when the idea and expression are so closely identified, because protection risks giving the

17. Judge Hand, in an oft-quoted comment, explains the fluidity inherent in the idea-expression dichotomy due to the various levels of abstraction at which the idea might be defined:

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. Nobody has ever been able to fix that boundary, and nobody ever can.

Nichols v. Universal Pictures Corp., 45 F.2d 119, 121 (2d Cir. 1930) (citing Holmes v. Hurst, 174 U.S. 82, 86 (1899); Guthrie v. Curlett, 36 F.2d 694 (2d Cir. 1929)).

18. See, e.g., Apple Computer v. Franklin Computer Corp., 714 F.2d 1240, 1253 (3d Cir. 1983) ("We believe that in the context before us, a program for an operating system, the line must be a pragmatic one, which also keeps in consideration 'the preservation of the balance between competition and protection reflected in the patent and copyright laws.'") (quoting Herbert Rosenthal Jewelry Corp. v. Kalpakian, 446 F.2d 738, 742 (9th Cir. 1971)), cert. dismissed, 464 U.S. 1033 (1984).

19. Toro Co. v. R & R Prods., 787 F.2d 1208, 1212 (8th Cir. 1986).

20. Rachel v. Banana Republic, 831 F.2d 1503, 1507 (9th Cir. 1987). The court branded expression that is inseparable from the work's idea as "indispensable expression" and articulated a "virtual identity" standard for infringement for such cases rather than the usual standard of substantial similarity. *Id.* (citing Frybarger v. IBM Corp., 812 F.2d 525, 530 (9th Cir. 1987)).

Related to the merger doctrine is the concept of *scenes a faire*. *Scenes a faire* are "incidents, characters or settings which are as a practical matter indispensable, or at least standard, in the treatment of a given topic." Hoehling v. Universal City Studios, 618 F.2d 972, 979 (2d Cir.), cert. denied, 449 U.S. 841 (1980). See, e.g., Atari v. North Am. Philips Consumer Elecs. Corp., 672 F.2d 607, 617 (7th Cir.) (treating maze, scoring table, tunnel exits, and scoring of

owner exclusive rights in the idea.²¹

Courts also give only limited protection to utilitarian works, whose value lies in their usefulness rather than in the information they convey.²² Courts, for example, have found time planners,²³ forms used by repairers,²⁴ and graphs for charting temperature²⁵ uncopyrightable as utilitarian works.²⁶ Blank forms are usually denied protection as utilitarian

points by consuming dots used by PAC-MAN game's video screen as *scenes a faire*, *cert. denied*, 459 U.S. 880 (1982).

Scenes a faire may be held uncopyrightable as a matter of law, *Hoehling*, 618 F.2d at 979, or may be protected only from virtually identical copying, *Atari*, 672 F.2d at 617.

21. The court in *Morrissey v. Proctor & Gamble Co.*, 379 F.2d 675 (1st Cir. 1967), explained the rationale behind the merger doctrine:

When the uncopyrightable subject matter is very narrow, so that "the topic necessarily requires," if not only one form of expression, at best only a limited number, to permit copyrighting would mean that a party or parties, by copyrighting a mere handful of forms, could exhaust all possibilities of future use of the substance. . . . [T]he subject matter would be appropriated by permitting the copyrighting of its expression.

Id. at 678-79 (citations omitted); *see also* *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 742 (9th Cir. 1971) (refusing to find copyright infringement of jewel-encrusted bee-shaped pin because idea of bee pin is inseparable from its expression). The *Kalpakian* court explained, "When the 'idea' and its 'expression' are thus inseparable, copying the 'expression' will not be barred, since protecting the 'expression' in such circumstances would confer a monopoly of the 'idea' upon the copyright owner free of the conditions and limitations imposed by the patent law." *Id.*; *cf. Toro*, 787 F.2d at 1212 (willing to preclude copyright protection for works capable of only limited forms of expression, but concluding that idea of parts numbering system was capable of sufficient quantity of varying expressions so as to allow plaintiff's system to be copyrightable).

22. 1 NIMMER, *supra* note 9, § 2.18[A], at 2-195 to -196.

23. *Januz Mktg. Communications v. Doubleday & Co.*, 569 F. Supp. 76, 80 (S.D.N.Y. 1982) (daily planning and time organizer chart not copyrightable).

24. *M.M. Business Forms v. Uarco, Inc.*, 472 F.2d 1137, 1140 (6th Cir. 1973) (forms used by television repairers not copyrightable).

25. *Taylor Instrument Cos. v. Fawley-Brost Co.*, 139 F.2d 98, 100 (7th Cir. 1943) (graphs for charting temperature not copyrightable), *cert. denied*, 321 U.S. 785 (1944); *Brown Instrument Co. v. Warner*, 161 F.2d 910, 911 (D.C. Cir.) (graphs for charting temperature and atmospheric pressure not copyrightable), *cert. denied*, 332 U.S. 801 (1947).

26. *But see* *Continental Casualty v. Beardsley*, 253 F.2d 702, 704 (2d Cir.) (forms for blanket bond copyrightable because they convey some information), *cert. denied*, 358 U.S. 816 (1958); *Edwin K. Williams & Co. v. Edwin K. Williams & Co.—East*, 377 F. Supp. 418, 428 (C.D. Cal. 1974) (record-keeping book copyrightable because text material used to instruct reader in use of forms conveyed information), *aff'd*, 542 F.2d 1053 (9th Cir. 1976), *cert. denied*, 433 U.S. 908 (1977); *Harcourt Brace & World v. Graphic Controls Corp.*, 329 F. Supp. 517, 524 (S.D.N.Y. 1971) (answer sheets designed for SAT tests copyrightable).

works,²⁷ but they might also lack the requisite creativity to survive the threshold requirement of originality.²⁸ Copyright protection of utilitarian works is limited because broad protection would risk granting the owner a monopoly over the idea, process, or system described or embodied in the work.²⁹

In sum, courts determine the boundaries of copyright protection by distinguishing original from unoriginal works and expression from idea.³⁰ Moreover, courts severely limit the

27. Copyright protection is not extended to "[w]ords 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." *Cash Dividend Check Corp. v. Davis*, 247 F.2d 458, 460 (9th Cir. 1957) (quoting 37 C.F.R. § 202.1(c) (1959)) (emphasis in original).

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

29. The seminal case on the treatment of utilitarian works is *Baker v. Selden*, 101 U.S. 99 (1879). In that case the Court refused to recognize copyright protection in specially designed bookkeeping forms which were embodied in a copyrighted book describing the system. The Court reasoned:

The very object of publishing a book on science or the useful arts is to communicate to the world the useful knowledge which it contains. But this object would be frustrated if the knowledge could not be used without incurring the guilt of piracy of the book. And where the art it teaches cannot be used without employing the methods and diagrams used to illustrate the book, or such as are similar to them, such methods and diagrams are to be considered as necessary incidents to the art, and given therewith to the public

Id. at 103.

Professor Nimmer restates the "original doctrine" of *Baker* as follows: [W]here the use of the "art," *i.e.*, the idea, which a copyrighted work explains (or embodies) necessarily requires a copying of the work itself, then such copying will not constitute an infringement of copyright. However, if such copying occurs not in using the art but rather in explaining it, then such copying will constitute an infringement.

1 NIMMER, *supra* note 9, § 2.18[B], at 2-199.

30. One class of works, useful articles, are given a statutory analysis independent of idea-expression considerations. A useful article is "an article having an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information." 17 U.S.C. § 101 (1982). Although a useful article is not itself copyrightable, the design or aesthetic features of a useful article, such as a piece of sculpture used as a lamp base, may be copyrightable as a pictorial, graphic, or sculptural work, but only to the extent that such features have artistic significance independent of and separable from their utility. See *Mazer v. Stein*, 347 U.S. 201, 218 (1954) (holding copyright protects statuettes embodied in lamp but not utilitarian aspects of lamp).

The statute defines a pictorial, graphic, and sculptural works as follows:

"Pictorial, graphic, and sculptural works" include 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. Such works shall include works of artistic craftsmanship insofar as their form but not their mechanical or utilitarian aspects are concerned; *the design of a useful*

scope of the work's protection when the expression and idea of the work are closely related or its value is principally utilitarian rather than communicative.

B. TECHNICAL INTRODUCTION TO COMPUTER PROGRAMS AND SCREENS

Application of copyright law principles to the challenging issues presented by computer screen displays requires some basic understanding of computer programs and screens. A computer program is a set of coded instructions that directs the computer to perform specified operations.³¹ Developing a computer program involves a four-step process. The programmer first must define the problem, that is, determine the precise task the program is to perform.³² Then the programmer creates a flow chart that diagrams the overall structure and logic of the program.³³ The programmer next writes the program in linear fashion in one of the computer languages employed by programmers such as BASIC, FORTRAN, or COBOL.³⁴ A program written in one of these programming languages is termed *source code*.³⁵ Finally, because a computer cannot "read" source code, a source code program must be translated into *ob-*

article, as defined in this section, shall be considered a pictorial, graphic, or sculptural work only if, and only to the extent that, such design incorporates pictorial, graphic, or sculptural features that can be identified separately from, and are capable of existing independently of, the utilitarian aspects of the article.

17 U.S.C. § 101 (1982) (emphasis added). The emphasized language incorporates the holding of *Mazer*, 347 U.S. at 218 (extending copyright protection to sculpted figures incorporated into lamp base). The statute intends to "draw as clear a line as possible between copyrightable works of applied art and uncopyrighted works of industrial design." HOUSE REPORT, *supra* note 8, at 55, reprinted in 1976 U.S. CODE CONG. & ADMIN. NEWS at 5668; see also *Gay Toys v. Buddy L Corp.*, 703 F.2d 970, 973 (6th Cir. 1983) (toy airplane has no "intrinsic utilitarian function" and therefore is not subject to copyright limitations imposed by useful articles analysis); *Fabrica, Inc. v. El Dorado Corp.*, 697 F.2d 890, 893 (9th Cir. 1983) (denying copyright protection to carpet display folder and commenting, "[I]f an article has *any* intrinsic utilitarian function, it can be denied copyright protection except to the extent that its artistic features can be identified separately and are capable of existing independently as a work of art."); *Kieselstein-Cord v. Accessories by Pearl*, 632 F.2d 989, 993 (2d Cir. 1980) (design on belt buckle copyrightable under useful article doctrine).

31. Note, *Copyright Protection of Computer Program Object Code*, 96 HARV. L. REV. 1723, 1724-25 (1983).

32. 1 D. BENDER, *COMPUTER LAW: SOFTWARE PROTECTION* § 2.06[3], at 2-118.3 to -118.4 (1987).

33. *Id.* § 2.06[3], at 2-119 to -124.

34. *Id.* § 2.06[3], at 2-130 to -141; Note, *supra* note 31, at 1724-25.

35. Note, *supra* note 31, at 1724-25.

ject code, the binary (machine) language that is capable of directing the computer.³⁶

Programs are classified either as operating system programs or application programs.³⁷ An operating system program manages the internal operations of the computer (such as routing information and allocating memory) and enables it to function.³⁸ Application programs organize the computer's raw capabilities to interact with a user and perform specific tasks such as word processing, accounting, or playing a game.³⁹

The manner in which the application program and its user communicate is commonly called the user interface. A program typically communicates to the user through its screen displays. Because a typical user's only contact with an application program is through the screens it generates, efficient, easy to use, and visually pleasing screen displays are essential to a program's success in the marketplace.⁴⁰ As a result, developers invest considerable creative energy in the design of the screens generated by their programs, often using teams of engineers, artists, psychologists, and ergonomists to produce the designs.⁴¹ Thus, the screen design may be authored independently of the actual program code. Programmers often author only the program code that generates on the screen the design created by the screen engineers. Because there are many ways to write a program that will produce the same screen display, developers are just as interested in protecting the screens themselves from imitation as they are in protecting the underlying program.⁴²

C. COPYRIGHT PROTECTION FOR COMPUTER PROGRAMS

The Copyright Office first allowed copyright registration for computer programs in 1964, but because it had serious doubts as to the copyrightability of programs, the Office imposed strict limits on their registration.⁴³ Congress explicitly

36. *Id.*; 1 D. BENDER, *supra* note 32, § 2.06[3], at 2-125. This translation is normally accomplished via an "assembler" or "compiler" program. *Id.* app. at 4A-196.

37. *Apple Computer v. Franklin Computer Corp.*, 714 F.2d 1240, 1243 (3d Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984); 1 D. BENDER, *supra* note 32, § 2.06[3], at 2-117.

38. 1 D. BENDER, *supra* note 32, § 2.06[3], at 2-117 to -118.2.

39. *Id.* § 2.06[3], at 2-118.2 to -118.3.

40. Reback & Hayes, *A Modest Proposal for the Registration of Computer Screen Displays*, *COMPUTER LAW.*, Aug. 1987, at 2.

41. *Id.* at 8. *See infra* note 128.

42. Reback & Hayes, *supra* note 40, at 2, 5.

43. The reservations of the Copyright Office about computer programs

extended copyright protection to computer programs with passage of the 1980 Computer Service Copyright Act.⁴⁴ Although

were reflected in three strict prerequisites to copyrightability: the program had to contain a significant amount of original authorship, the registrant had to publish the program with proper notice of copyright, and the registrant must have deposited copies of the program in humanly readable form with the office. Copyright Office Circular 31 D (Jan. 1965), *reprinted in* Davidson, *Protecting Computer Software: A Comprehensive Analysis*, 1983 ARIZ. ST. L.J. 611, 652 n.72 (final report of Committee on Proprietary Protection of Software, ABA Section on Science and Technology). The Copyright Office was especially concerned about whether a computer program qualified as a "writing of an author" as required by the Copyright Act of March 4, 1909, ch. 320, 35 Stat. 1076. Address by R. Oman, Register of Copyrights (Jan. 1987), *reprinted in* 28 IDEA 29, 29 (1987).

The Copyright Office registered only three programs in 1964, 16 in 1965, and a total of 2000 programs by the end of 1977. NATIONAL COMM'N ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, FINAL REPORT 15 (1978) [hereinafter CONTU FINAL REPORT]; *see also* Davidson, *supra*, at 652 n.72 (most of those 2000 programs were registered by two companies, IBM and Burroughs).

The Copyright Act of 1976 liberalized the requirements of copyright protection generally, but the Act explicitly provided that it intended no change in the law of software copyright. Copyright Act of 1976, Pub. L. No. 94-553, 90 Stat. 2541, 2565 (codified as amended at 17 U.S.C. § 117). Congress intended to freeze the status of computer program copyrightability until it received the report of the National Commission on New Technological Uses of Copyrighted Works (CONTU). HOUSE REPORT, *supra* note 8, at 116, *reprinted in* 1976 U.S. CODE CONG. & ADMIN. NEWS at 5731. Congress established CONTU in 1974 to study intellectual property issues posed by new technology, including computer programs. Act of Dec. 31, 1974, Pub. L. No. 93-573, 88 Stat. 1873. CONTU's recommendations concerning the copyrightability of software were incorporated into the 1980 Computer Service Copyright Act. *See infra* note 44.

44. Pub. L. No. 96-517, § 10, 94 Stat. 3028 (codified at 17 U.S.C. §§ 101, 117 (1982)). The Act specifically brought programs within the embrace of copyright protection by adding the definition of program which was recommended by CONTU to 17 U.S.C. § 101: "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." *Id.*

CONTU drafted this definition of a computer program and recommended that it be added to the definitional section of the Copyright Act as a means of bringing computer programs explicitly within the ambit of the Copyright Act of 1976. CONTU FINAL REPORT, *supra* note 43, at 1, 12.

CONTU based its recommendation that computer programs be granted copyright protection on three findings. First, the expansion of copyright protection to computer programs is consistent with the continually expanding scope of copyright as illustrated by its statutory history. *Id.* at 15. Second, copyrightability of programs is consistent with the expansive wording of the 1976 Act and the Congressional history accompanying that Act. *Id.* at 16. Third, copyright is the best of available methods to protect the work while not inhibiting development and dissemination. *Id.* at 12, 16-19.

The CONTU report has been sharply criticized for recommending copyright protection for all forms of computer programs. Critics argue that copyright traditionally has protected and should continue to protect only works of authorship that communicate to human beings. To extend copyright, as

the courts have reached a consensus that the 1980 Act evidenced the clear intention of Congress to extend copyright protection to all forms of computer programs,⁴⁵ courts have not agreed on what aspects of the program represent uncopyright-

CONTU suggests, to programs in machine-readable computer code (object code) has therefore been criticized as ignoring the proper limits of copyright law. *Id.* at 28-30 (Comm'r Hersey, dissenting).

It has also been suggested that because software is designed to run a computer, not communicate to the operator, CONTU should have given more consideration to whether programs may be utilitarian works that are not a proper subject of copyright. *Id.* at 26-27 (Comm'r Nimmer, concurring); Samuelson, *CONTU Revisited: The Case Against Copyright Protection for Computer Programs in Machine-Readable Form*, 63 DUKE L.J. 663, 704 (1984). Hersey commented, "It is not said that the programs describe or give instructions for the functions of the computer. They control them. This is the mechanical fact." CONTU FINAL REPORT, *supra* note 43, at 28 (emphasis in original). For the contrasting approach, which argues that current copyright law is appropriate for the protection of software and is effectively being applied by the courts in computer program cases, see Raskind, *The Uncertain Case for Special Legislation Protecting Computer Software*, 47 U. PITT. L. REV. 1131 (1986).

45. In *Apple Computer v. Franklin Computer Corp.*, the Third Circuit gave the most comprehensive treatment to this question and established the generally accepted legal standard. 714 F.2d 1240 (3d Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984). *Franklin* held that the 1980 Act extended copyright protection to the computer's operating system existing in object code and embodied in ROM (Read Only Memory). *Id.* at 1249-52. In other words, the court extended protection to a program in binary code readable only by the computer, designed to run the computer rather than communicate in any fashion to the user, and preserved in the form of a miniature printed circuit embedded in a microchip.

The district court in *Franklin* had expressed strong reservations concerning the copyrightability of operating systems expressed in object code. *Apple Computer v. Franklin Computer Corp.*, 545 F. Supp. 812, 821 (E.D. Penn. 1982), *rev'd*, 714 F.2d 1240 (3d Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984). It reasoned that the ROM chip was a utilitarian article whose purpose was not to convey information but to perform a function, and thus it was excluded from protection by the *Baker v. Selden* doctrine. *Id.* at 821. The district court also was concerned that the operating system was outside the ambit of traditional copyright protection because its expression communicated solely to the machine rather than to any person. *Id.* at 824. The district court attempted to distinguish *Midway Mfg. Co. v. Artic Int'l*, 704 F.2d 1009 (7th Cir.), *cert. denied*, 464 U.S. 823 (1983), which recognized the copyrightability of object code, on the grounds that the object code in that case had a communicative purpose because it ran the video game display. 545 F. Supp. at 824-25.

The Court of Appeals in *Franklin* disagreed. It construed the 1976 Act as eliminating any need for a copyrightable work to be communicative to human beings. 714 F.2d at 1248. It also rejected the lower court's interpretation of the *Baker v. Selden* doctrine limiting copyright to that which is nonfunctional. The court found support for narrowly reading *Baker* in the CONTU report and in the definition of computer program added to 17 U.S.C. § 101 in 1980. *Id.* at 1252. That definition is a functional one and is therefore an obstacle to the "utilitarian purpose" objection to program copyrightability. It reads, "A 'computer program' is a set of statements or instructions to be used *directly* or indi-

able idea and what aspects represent copyrightable expression. Courts readily find infringement when the defendant has copied the plaintiff's literal computer code.⁴⁶ Sharp disagreement remains, however, over whether the manner in which computer instructions are organized, sequenced, and structured in a program is uncopyrightable idea or protected expression.

The seminal case addressing the copyrightability of the sequence in which computer instructions are presented is *Synercom Technology v. University Computing Co.*⁴⁷ The plaintiff had designed a sequence for entering information into a computer which was intended to make a complex engineering program easier to use.⁴⁸ This sequence was contained on a series of copyrighted cards that were to be followed in a specific order.⁴⁹ The defendant designed a computer program structured around these same input formats.⁵⁰ The court in *Synercom* refused to find copyright infringement, holding that the sequence of input formats was an uncopyrightable idea.⁵¹

In a recent and influential opinion, the Third Circuit in *Whelan Associates v. Jaslow Dental Laboratory*⁵² declined to follow *Synercom* and granted broad copyright protection to computer programs by extending protection to a program's "structure, sequence, and organization."⁵³ The court reached this expansive holding by defining the idea of a program as its function and its expression as those features of a program nonessential to that function.⁵⁴ The plaintiff in *Whelan* had designed a program called Dentalab to manage the record-

rectly in a computer in order to bring about a certain result." 17 U.S.C. § 101 (1982) (emphasis added).

46. See, e.g., *Franklin*, 714 F.2d at 1251 (literal coded instructions are copyright protected but not methods or processes).

47. 462 F. Supp. 1003 (N.D. Tex. 1978).

48. *Id.* at 1005.

49. *Id.*

50. *Id.* at 1006.

51. *Id.* at 1013. The *Synercom* court reasoned,

As noted "in cases of literary or artistic works, and works of similar character, in which the form, arrangement, or combination of ideas represents the product of labor and skilled effort *separate and apart from that entailed in the development of the intellectual conception involved*," copyright protection is available. Here if order and sequence is the expression, the skilled effort is not separable for the form, arrangement, and combination is itself the intellectual conception involved.

Id. at 1014 (citation omitted) (emphasis in original).

52. 797 F.2d. 1222 (3d Cir. 1986), *cert. denied*, 107 S. Ct. 877 (1987).

53. *Id.* at 1248.

54. *Id.* at 1236. The court reasoned: "[T]he purpose or function of a utili-

keeping functions of a dental laboratory.⁵⁵ The court identified the function of the plaintiff's program—its uncopyrightable idea—as “the efficient organization of a dental laboratory.”⁵⁶ The plaintiff's copyrightable expression of this idea, the court found, was the particular manner in which the plaintiff structured the logic of the program. Because more than one means of structuring a program to manage a dental laboratory exists, the court reasoned, Dentalab's structure was not essential to that function and therefore met the court's definition of expression.⁵⁷ Although not followed uniformly,⁵⁸ the *Whelan* court's function test, with its broad grant of protection to structure, sequence, and organization, has influenced later decisions concerning computer screen copyright.

D. COPYRIGHT PROTECTION FOR COMPUTER SCREENS

1. Video Games

Courts first explored the copyright relationship between a

tarian work would be the work's idea, and everything that is not necessary to that purpose or function would be part of the expression of the idea.” *Id.*

55. *Id.* at 1225.

56. *Id.* at 1240.

57. The court concluded, “Because there are a variety of program structures through which that idea can be expressed, the structure is not a necessary incident to that idea.” *Id.*

58. The Fifth Circuit declined to wholly embrace *Whelan's* extension of copyright protection to a program's structure, sequence, and organization. In *Plains Cotton Coop. v. Goodpasture Computer Serv.*, 807 F.2d 1256 (5th Cir.), *cert. denied*, 108 S. Ct. 80 (1987), the court, choosing to follow *Synercom's* restrictive rule rather than *Whelan's* expansive one, held that the structure, sequence, and organization of a cotton marketing program likely constituted an uncopyrightable idea. *Id.* at 1262. The court in *Plains Cotton* concluded:

We decline to embrace *Whelan* for two reasons. First, the issue is presented to us on review of a denial of a motion for preliminary injunction. Thus, the record is only partially developed, and our review is one step removed from the actual merits of the case. Second, appellees presented evidence that many of the similarities between the GEMS and Telcot programs are dictated by the externalities of the cotton market. . . . The record supports the inference that market factors play a significant role in determining the sequence and organization of cotton marketing software, and we decline to hold that those patterns cannot constitute “ideas” in a computer context.

Id. (footnote omitted).

Note that this analysis assumes that the sequence and organization of the manner in which the program interacts with the user determines the sequence and organization of the structure of the *program*. The courts have been less than precise in distinguishing the manner in which a program is structured by its designer from the structure of that program as encountered by the user. See the discussion of *Broderbund Software v. Unison World*, 648 F. Supp. 1127 (N.D. Cal. 1986), *infra* notes 101-02 and accompanying text.

program and its screen displays in cases raising the issue of video game display copyright. Consistently holding that a game screen and the computer program that generates it are separately copyrightable,⁵⁹ these courts have found that displays have original authorship independent of the program⁶⁰ as well as the requisite fixation for copyrightability.⁶¹ Moreover, one court has held that a copyright only in a screen display also protects the underlying program which generates it.⁶² That court reasoned that the program was a protected "copy" of the video game display.⁶³

59. *Stern Elecs. v. Kaufman*, 669 F.2d 852, 856 (2d Cir. 1982); *Midway Mfg. v. Strohon*, 564 F. Supp. 741, 749 (N.D. Ill. 1983).

Courts are in unanimous agreement that the video displays are copyrightable as audiovisual works. *M. Kramer Mfg. Co. v. Andrews*, 783 F.2d 421, 436 (4th Cir. 1986); *Atari v. North Am. Philips Consumer Elecs. Corp.*, 672 F.2d 607, 615 (7th Cir.), *cert. denied*, 459 U.S. 880 (1982); *Stern Elecs. v. Kaufman*, 669 F.2d at 856; *Atari v. Amusement World*, 547 F. Supp. 222, 226 (D. Md. 1981); *Midway Mfg. Co. v. Dirkschneider*, 543 F. Supp. 466, 479 (D. Neb. 1981).

60. Originality of video game screen displays has been challenged on two grounds: the original content is contained in the program, not the display, and the game screens are too much the product of the individual player's interactive input to be original to the copyright holder. Courts have consistently rejected these arguments, finding sufficient independent authorship in both program and screen to copyright each as an original work and finding copyrightable display constants in video game screens that do not vary from user to user. *See, e.g., Stern Elecs.*, 669 F.2d at 856.

61. Because screen displays are contained in the program code and can be generated from the program with the aid of the computer, screens meet the statutory requirements for fixation. *Kramer*, 783 F.2d at 441-42; *see supra* notes 11-13 and accompanying text.

62. *Kramer*, 783 F.2d at 442.

63. The *Kramer* court concluded,

[W]e hold that a copyright in the audiovisual display, which display is created by a computer program, protects not only the audiovisual from copying, but also the underlying computer program to the extent the program embodies the game's expression. The program, as we have noted, is, by definition a "copy" under the Act, and the Act grants to the copyright holder the exclusive right to reproduce copies or derivatives of the copyrighted work. 17 U.S.C. § 106(1).

Id. at 442.

The reasoning in *Kramer* is based on the Copyright Act's definition of copy:

"Copies" are material objects, other than phonorecords, in which a work is fixed by any method now known or later developed, and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. The term "copies" includes the material object, other than a phonorecord, in which the work is first fixed.

17 U.S.C. § 101 (1982). Because the display is "fixed" in the program and can be reproduced from it, the program may be considered a copy of the display. *Kramer*, 783 F.2d at 441.

The video game cases have generally given broad copyright protection to the video displays of game programs. Even when a defendant's game varied significantly in detail from the plaintiff's, courts have found infringement if the games taken as a whole shared a similar "total concept and feel."⁶⁴ This kind of broad standard of protection is appropriate to works that are highly creative visually and in which a broad range of expression is possible.⁶⁵

2. Nongame Screen Displays

Nongame program screens have traditionally been less visually spectacular than their video game counterparts. Designers invest much creative energy toward making the user interface of even the most complex programs simple and unobtrusive.⁶⁶ As a result the copyright issue is more difficult. The two courts that have considered the copyrightability of nongame screen displays have disagreed sharply over the method of copyright analysis and the extent of copyright protection.

The first court granted screen displays very broad protection. In *Broderbund Software v. Unison World*,⁶⁷ Broderbund had copyrighted a program⁶⁸ compatible with Apple computers called Print Shop, designed to create greeting cards, signs, posters, and banners.⁶⁹ When Unison World marketed an IBM-compatible program called Printmaster, which had screen dis-

64. See, e.g., *Atari v. North Am. Philips Consumer Elecs. Corp.*, 672 F.2d 607, 614, 618 (7th Cir.) (finding many aspects of PAC-MAN to be unprotected *scenes a faire*, see *supra* note 20, but holding that defendant's portrayal of central figure as "gobbler" and pursuing figures as "ghost monsters" was violation of plaintiff's copyrighted expression), *cert. denied*, 459 U.S. 880 (1982); cf. *Atari v. Amusement World*, 547 F. Supp. 222, 229-30 (D. Md. 1981) ("Meteors" game did not violate plaintiff's copyright in "Asteroids" because similarity between games was due to shared idea of combating cascading space rocks and hostile space ships).

65. See *Sid & Marty Krofft Television Prods. v. McDonald's Corp.*, 562 F.2d 1157, 1167 (9th Cir. 1977) (McDonaldland commercials captured "total concept and feel" of H.R. Pufnstuf show); *Roth Greeting Cards v. United Card Co.*, 429 F.2d 1106, 1110 (9th Cir. 1970) (greeting cards showed "total concept and feel" similarity in that they had similar characters portraying similar moods, with similar messages, with similar arrangement of text and graphics).

66. See B. SHNEIDERMAN, *DESIGNING THE USER INTERFACE: STRATEGIES FOR EFFECTIVE HUMAN-COMPUTER INTERACTION* 3, 8-9 (1987).

67. 648 F. Supp. 1127 (N.D. Cal. 1986).

68. Broderbund also obtained a separate copyright on the screen display of Print Shop as an audiovisual work. See *infra* note 97.

69. 648 F. Supp. at 1130. The company sold 500,000 copies between introduction of the program in 1984 and commencement of the suit. *Id.*

plays similar to Broderbund's, Broderbund sued for copyright infringement.⁷⁰ Because the federal district court in *Broderbund* discussed the screens and the underlying program as a unit, the court's opinion has generally been construed as holding that a copyright of a program also protects the screen displays generated by it.⁷¹

The court rejected Unison World's contention that the screens contained insufficient expression to qualify for copyright protection.⁷² Like the *Whelan* court,⁷³ the *Broderbund* court identified the unprotected idea in terms of the function of the program—the creation of greeting cards, banners, posters, and signs.⁷⁴ The *Broderbund* court reasoned that because the particular structure, sequence, and arrangement of screens chosen by Broderbund was not the only means by which to structure the screens of a printing program, that structure was not necessary to the program's function and was therefore copy-rightable expression.⁷⁵

In a subsequent case, however, another district court de-

70. The facts of *Broderbund* can be sketched as follows. Unsuccessful in its own attempts to create an IBM-compatible version of Print Shop, Broderbund entered into discussions with the defendant Unison World about creating such a version. *Id.* After Unison World had spent more than a month working on the project, the venture was terminated when Unison World protested that Broderbund's advances against royalties were insufficient. *Id.* at 1130-31. Unison World then abandoned its plan to create a facsimile of Print Shop for IBM computers and set out to create its own enhanced version. The menu screens and 10 other screens, finished under the project to duplicate Print Shop, were retained in the new version. *Id.* at 1131. Unison World redesigned other screens, added a calendar function, streamlined the method by which the user could select designs, and added a feature enabling designs to be retained in memory. *Id.* Unison World began marketing its Printmaster in March 1985, and Broderbund sued for copyright infringement. *Id.*

71. The court concluded, "*Whelan* thus stands for the proposition that copyright protection is not limited to the literal aspects of a computer program, but rather that it extends to the overall structure of a program, including its audiovisual displays." *Id.* at 1133 (discussing *Whelan Assocs. v. Jaslow Dental Laboratory*, 797 F.2d 1222 (3d Cir. 1986), *cert. denied*, 107 S. Ct. 877 (1987)). The uncertainty as to what *Broderbund* actually holds is discussed *infra* notes 95-97 and accompanying text.

72. 648 F. Supp. at 1132. Specific doctrines to which Unison World appealed were that the idea and expression were so intertwined as to constitute merger; the screen was a useful article beyond the ambit of protection; and the screens were analogous to rules and instructions which are given very limited protection. *Id.* at 1133-34.

73. See *supra* note 54 and accompanying text.

74. 648 F. Supp. at 1133.

75. *Id.* at 1132-33. In finding infringement of the structure, sequence, and arrangement of Broderbund's screens, the court applied the "total concept and feel" standard. *Id.* at 1137. This standard is discussed *supra* notes 64-65.

parted considerably from *Broderbund's* analysis. The plaintiff in *Digital Communications Associates v. Softklone Distributing Corp.*⁷⁶ had created a status screen for a communications program known as Crosstalk XVI.⁷⁷ The status screen enabled the user to select among numerous listed commands by typing the first two letters of the desired command. The initial letters of each command on the screen were highlighted and capitalized.⁷⁸ Pursuant to Copyright Office procedure at that time,⁷⁹ the plaintiff registered two copyrights, one in the program that generated the status screen and one in the status screen itself. The plaintiff alleged its copyright in Crosstalk was infringed by a communications program called Mirror which utilized a similar status screen.⁸⁰

Considering first the copyright registration of the program, the *Softklone* court refused to find that Softklone's screen infringed Digital's copyright in the underlying computer program. In doing so, the *Softklone* court sharply rejected *Broderbund's* holding—as the *Softklone* court interpreted that case—that a program's copyright protects its screens.⁸¹ The *Softklone* court reasoned that a screen display cannot be considered a copy of the underlying program because various programs could produce the same screen display.⁸² Thus, according to the court, the replication of a screen cannot infringe the copyright in the program.⁸³

76. 659 F. Supp. 449 (N.D. Ga. 1987).

77. *Id.* at 452.

78. The screens at issue are reproduced in the opinion. *See id.* at 465-66.

79. *See infra* notes 90-94 and accompanying text.

80. *Softklone*, 659 F. Supp. at 453. The defendant had developed Mirror with advice from counsel that the Crosstalk program was copyright protected but not its screens. *Id.*

81. The court concluded, "[A] computer program's copyright protection does not extend to the program's screen displays and the copying of a program's screen displays, without evidence of copying of the program's source code, object code, sequence, organization or structure, does not state a claim of infringement." *Id.* at 456.

82. *Id.*

83. Acknowledging the reasoning of the video game cases that held that a program was a protected copy of a copyrighted screen display, the *Softklone* court rejected the converse implication that screens are a protected copy of their underlying programs:

The distinction between programs and screen displays lies in the fact that if one has a fixed computer program, one can, with the aid of a computer, repeatedly produce the same screen display. Thus, a computer program is a copy of a screen display. The converse, however, is not true. If one has a fixed screen display, one cannot, even with the aid of a machine, repeatedly create the same program (source or object code) as many different programs can create the same screen dis-

Although the copyright in the underlying program failed to protect the screen, the *Softklone* court nevertheless upheld Digital's infringement claim on the strength of Digital's separate copyright registration of the status screen itself.⁸⁴ Even while granting protection for the screen, however, the *Softklone* court differed with *Broderbund's* analysis and scope of protection. Like the *Broderbund* court, the court in *Softklone* rejected the defendant's argument that the screen contained insufficient expression to warrant protection.⁸⁵ The court determined that the status screen was sufficiently creative and informative to avoid classification as an uncopyrightable blank form.⁸⁶ Unlike the *Broderbund* court, however, the *Softklone* court defined the unprotected idea as the *manner* in which the status screen operates rather than as the function of the program or screen.⁸⁷ The court therefore regarded as ideas the concept of a status screen, a command driven program, and the typing of two symbols to activate a command.⁸⁸ The expression of these ideas, in the court's view, was the means chosen to communicate the screen's manner of operation, including the arrangement of command terms on the screen and the highlighting and capitalization of the initial two letters of each command. As copyrightable expression, these could not be

play. Thus, a computer screen display is not a "copy" of any particular computer program and copyright protection of the computer program will not extend to a screen display such as the plaintiff's status screen.

Id.

84. *Id.* The status screen was registered as a derivative work of the underlying source code and as a compilation of program terms. The court rejected the plaintiff's contention that the program merited copyright protection as a derivative work but did extend protection to it as a compilation. *Id.* at 463. The copyright statute defines a compilation as follows:

A "compilation" is a work formed by the collection and assembling of preexisting materials or of data that are selected, coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship. The term "compilation" includes collective works.

17 U.S.C. § 101 (1982). The court also classified the screen as a literary work. *Softklone*, 659 F. Supp. at 462. The court reasoned that the status screen cannot be an audiovisual work because no sequence of images or screens is involved. Although it expressed some uncertainty, the court concluded that a work that would be a literary work if written on paper does not change its character simply because it is displayed on a screen. *Id.* See *supra* note 7 for the statutory definitions of literary and audiovisual works.

85. *Softklone*, 659 F. Supp. at 457, 460.

86. *Id.* at 460-62.

87. *Id.* at 458.

88. *Id.* at 458-59.

appropriated by Softklone.⁸⁹

3. Copyright Office Procedure Concerning Screen Display Copyright

The already confusing case law is aggravated by the present position of the Copyright Office on registering screen displays. The general policy of the Copyright Office is to allow only one registration for any one work.⁹⁰ Under this policy a registration of a computer program would be deemed to cover all copyrightable subject matter contained in that program, including the screens generated by it. Prior to the *Broderbund* decision, however, the Copyright Office allowed applicants to subdivide some programs into separately registrable units so long as each unit contained separately copyrightable subject matter.⁹¹ With video games, for example, the Office had allowed registrants to secure one copyright in the computer program and another separate audiovisual copyright in the game displays.⁹² The Office had also allowed separate registration of programs and screens for nongame application programs. For example, the plaintiffs in both *Broderbund* and *Softklone* had obtained separate copyright registrations for the programs and screens.⁹³ After the *Broderbund* decision, however, the Office reversed its policy of accepting separate registrations of screens and programs for screens consisting primarily of text rather than graphics, insisting that textual screens are protected by the program's registration.⁹⁴ This most recent Copyright Office

89. *Id.*

90. 37 C.F.R. § 202.3(b)(6) (1987).

91. Peters, *Current Developments Concerning the Registration of Computer Programs and Data Bases*, 1986 COMPUTER LAW INST. 945, 957.

92. *Id.*; Reback & Hayes, *supra* note 40, at 1, 2.

93. *See infra* note 97; *supra* note 84.

94. *See* Letter from the Copyright Office (Jan. 20, 1987), *reprinted in* 33 Pat. Trademark & Copyright J. (BNA) No. 825, at 613-14 (April 9, 1987) [hereinafter Letter]. Recently Lotus Development Corp., cognizant of the holding in *Softklone* that a program's copyright does not extend to its screen displays, attempted to register its Lotus 1-2-3 displays separately. This was apparently in preparation for its pending infringement suit against Paperback Software International and Mosaic Software. 33 Pat. Trademark & Copyright J. (BNA) No. 825, at 613 (April 9, 1987). The Copyright Office refused the application on the grounds that Lotus's registration of its program protected its screen displays, putting Lotus in a catch-22 situation. The Copyright Office responded:

It is the position of the Copyright Office that textual screen displays embodied within the computer program that generates them are covered by the registration for the programs, without either the need or justification for separate registration for the displays. Because the displays are considered to be an integral part of the program, the au-

position contradicts the holding of *Softklone* that a program's copyright does not protect its screen display. By disallowing registration of screen displays, the Copyright Office places developers desiring to protect their screens at the mercy of courts that might follow the *Softklone* precedent.

II. EXAMINING *BRODERBUND* AND *SOFTKLONE*: CONFLICTING APPROACHES AND TOO MUCH PROTECTION

Copyright protection of computer display screens initially presents the issue of whether a copyright in the computer program also protects the display screens generated by it. In addition, courts must decide how broad the scope of copyright protection of screens should be, regardless of whether the screens are independently copyrighted or protected by the underlying program. The following analysis assesses how successfully the *Broderbund* and *Softklone* courts have resolved these issues.

A. THE COPYRIGHT PROTECTION OF SCREEN DISPLAYS THROUGH THE COPYRIGHT OF THE UNDERLYING PROGRAM

The *Broderbund* court did not directly address the relationship between a copyright in a computer program and protection of its screen display. The opinion treated the program and its screens as an inseparable unit, looking to the function of the program and computer program case precedent to define the scope of copyright protection for the screen display before the court.⁹⁵ This unified approach to program and screens led the

thorship in the displays appears to be the same as that contained in the program. Moreover, the Copyright Office would not register a claim in the format or layout.

Letter, *supra*.

On account of the confusion over the protection of screen displays, the Copyright Office scheduled hearings to review its position on the issue. The hearings were held on September 9, 1987. A summary of the testimony given at the hearing can be found in 34 Pat. Trademark & Copyright J. (BNA) No. 847, at 507-09 (Sept. 17, 1987).

95. The court structured the plaintiff's claim in terms of *program* copyright infringement. For example, the court opened its statement of facts as follows: "Plaintiffs . . . are the exclusive licensee and the copyright holder, respectively, of a computer software printing program called 'The Print Shop' Plaintiffs claim that the overall appearance, structure, and sequence of the audiovisual displays in 'Printmaster' infringe plaintiffs' copyright on 'Print Shop.'" *Broderbund*, 648 F. Supp. at 1129-30. The court's

Softklone court, the sole judicial interpretation of the *Broderbund* opinion to date, to understand *Broderbund* to hold that a computer program's copyright also protects the screen display it generates.⁹⁶ It is not clear, however, that this issue was before the *Broderbund* court because that court was considering an infringement claim arising under a separate copyright in the screen display as an audiovisual work rather than a copyright in the program.⁹⁷ It is not surprising, then, that *Broderbund* has been read to stand for quite differing propositions.⁹⁸

To the extent the *Broderbund* opinion implied that a program's copyright extends protection to its screen display, it did so through a misplaced reliance on *Whelan Associates v. Jaslow*

idea-expression analysis focused on the entire program, not just the screen displays. *Id.* at 1132. Furthermore, the cases the court looked to for controlling precedent are program infringement cases, not audiovisual infringement cases. *Id.* at 1132-33. Finally, it is clear from its discussion of whether the plaintiff provided adequate notice of its copyright claim in its screens that the court regarded the screens as a part of the program. The court stated:

The only copyright notice in "Print Shop" appears on the initial, or "boot up," screen. That notice generally states that Pixellite Software claims copyright protection over "Print Shop"; it does not specify the particular aspects of the program over which protection is claimed.

The Court finds that plaintiffs' display of the copyright notice provided defendant with reasonable warning that the audiovisual displays in "Print Shop" were copyrighted.

Id. at 1135.

96. *See infra* note 98.

97. Although the opinion makes no explicit mention of this fact, the plaintiff had apparently secured a separate copyright in the screen displays as an audiovisual work. Plaintiffs' Pre-Trial Statement, reprinted in 1986 Computer Indus. Litig. Rep. (Andrews Publ.) 4046, 4049. Further, the opening language of the opinion defined the action as one for audiovisual copyright infringement. *Broderbund*, 648 F. Supp. at 1129. In addition, although it cites no audiovisual copyright cases, the court at least purports to be applying audiovisual copyright law. The court, for example, concludes its summary of facts with the transition, "It is to these facts that the Court now applies the law applicable to audiovisual copyrights." *Id.* at 1131.

98. *Softklone* clearly understood *Broderbund* to hold that a program's copyright protects its screens. The court commented that *Broderbund* concluded a computer program's copyright protection "extends to . . . its audiovisual displays." 659 F. Supp. 449, 455 (N.D. Ga. 1987); *see also* Pearson, *The Last Days of the Clones? Protecting the "Look and Feel" of Software*, SOFTWARE PROTECTION, June 1987, at 2, 3 (reading *Broderbund* as holding that program's copyright protection extends to screens). Other commentators have read *Broderbund* as a screen infringement case that has no bearing on the issue of whether a program's copyright protects its screens. *See* Davidson, *Common Law, Uncommon Software*, 47 U. PITT. L. REV. 1037, 1101 n.157 (1986); Comment, *Broderbund Software, Inc. v. Unison World, Inc.: "Look and Feel" Copyright Protection for the Display Screens of an Application Microcomputer Program*, 13 RUTGERS COMPUTER & TECH. L.J. 105, 105 (1987).

Dental Laboratory.⁹⁹ In *Whelan* the court extended the scope of copyright protection in a computer program to its structure, sequence, and organization.¹⁰⁰ The *Broderbund* court drew from *Whelan* the conclusion that screens are within this protected structure, sequence, and organization of the program,¹⁰¹ but it did so by apparently misreading the context in which the *Whelan* court discussed screen displays. Although the *Whelan* court briefly discussed the similarity of screen displays as possibly relevant evidence of similarity of the underlying program code, it dismissed the screens as only minimally relevant to the program infringement claim because entirely different program codes can produce similar screens.¹⁰² The court in *Whelan* never suggested the program's copyright extended beyond the program code to embrace its screen display. Despite the *Broderbund* court's professed reliance on *Whelan*, therefore, its extension of a program's copyright to the structure, sequence, and organization of its screens is without precedent.

In contrast, the *Softklone* court directly addressed the relationship between program copyright and screen protection and held that a copyright only in a program does not protect the screens generated by that program.¹⁰³ The *Softklone* court reasoned that because different programs can produce the same display, screens cannot be considered copies of the underlying program and therefore are not protected by that program's copyright.¹⁰⁴ Although this reasoning has force, it does not address the working assumption of *Broderbund* and the Copyright Office that screens are protected by the program's copyright, not because they are a copy of the program, but sim-

99. 797 F.2d 1222 (3d Cir. 1986), *cert. denied*, 107 S. Ct. 877 (1987).

100. See *supra* text accompanying note 53.

101. 648 F. Supp. at 1133. For the *Broderbund* court's interpretation of *Whelan*, see *supra* note 71.

102. The *Whelan* court commented:

Insofar as everything that a computer does, including its screen outputs, is related to the program that operates it, there is necessarily a causal relationship between the program and the screen outputs. The screen outputs must bear *some* relation to the underlying programs, and therefore they have some probative value. The evidence about the screen outputs therefore passes the low admissibility threshold of Fed. R. Evid. 401.

Whelan, 797 F.2d at 1244.

The author of the unanimous opinion, Judge Becker, explained that another member of the panel, Judge Rosenn, believed that screens had no probative value as evidence of copying of the underlying program. *Id.* at 1244 n.45.

103. See *supra* note 81.

104. See *supra* note 83.

ply because they are contained within the program's code and are therefore a part of the program.¹⁰⁵ The *Softklone* court overlooked compelling arguments for rejecting the unitary treatment of screens and programs that derive from the independent authorship and distinct purposes of screens and programs.¹⁰⁶

B. THE SCOPE OF COPYRIGHT PROTECTION FOR SCREENS

Although both the *Broderbund* and *Softklone* courts granted screen displays some protection, they differed markedly in the method by which they defined the proper scope of that protection.

The *Broderbund* opinion contains several significant methodological flaws which render it poor precedent. Initially, the court incorrectly identified the object of its idea-expression inquiry. The court looked to the function of the program to define what constitutes idea in the screens.¹⁰⁷ Because screens are a different genre of communication than programs, addressing the user rather than directing the operations of the computer,¹⁰⁸ screens and programs are unlikely to share the same idea. Unless courts confine their idea-expression analysis in screen infringement cases to the screens alone, they will be unable to develop a consistent scope of protection that addresses the special requirements of screens.¹⁰⁹

Moreover, the *Broderbund* court's function test for distinguishing idea from expression is overly broad. In granting protection to everything unnecessary to a program's function, the test allows an initial developer to copyright a particular approach to a task and monopolize that approach. The function test therefore threatens the availability of standardized approaches to similar tasks¹¹⁰ and provides no check against extending protection to simple formats and conventions.¹¹¹

105. See *supra* notes 71, 94.

106. See *infra* note 128; text accompanying notes 128-29.

107. See *supra* text accompanying note 74.

108. See *infra* text accompanying notes 128-29.

109. *Id.*

110. See *infra* note 141 and accompanying text.

111. For example, the *Broderbund* court, apparently applying a useful articles analysis to screens it had classified as an audiovisual work, extended copyright protection to simple phrases such as "choose a font." The court reasoned:

In the present case, it is clear that the structure, sequence, and layout of the audiovisual displays in "Print Shop" were dictated primarily by artistic and aesthetic considerations, and not by utilitarian

Not only is the function test too broad, it is also unworkably vague. The test informs developers only that the function of a program or screen is unprotected idea. In leaving every aspect of a work except its function as potential expression, the test gives developers no guidance as to how similar two works that share the same function may be without risking copyright infringement. This uncertainty as to what degree of similarity might be actionable forces a prudent developer of a program that performs the same tasks as existing programs to create a work totally dissimilar to its predecessors. Moreover, the term *function* is too nondescript to give developers meaningful guidance. Like idea, function can be defined at various levels of abstraction.¹¹² Therefore, describing a screen display's idea as its function is no more helpful to defining the parameters of a screen's unprotected material than is the truism that a screen's idea is its idea.

In addition, in ruling that the sequence, structure, and organization of Print Shop's screens was copyrightable expression,¹¹³ the *Broderbund* court both ignored precedent contrary to its holding, such as *Synercom*,¹¹⁴ and never explained why the particular sequence, structure, and organization of Print

or mechanical ones. Repeatedly, the testimony of David Balsam showed that, in creating the screens of "Print Shop," he based textual and graphic decisions on the basis of aesthetic and artistic preferences. On the "Now Type Your Message" screen of "Print Shop," for instance, no mechanical or practical constraint forced Balsam to make the "Stencil" typeface smaller on the display than the "Alexia" typeface. The choice was purely arbitrary. On the "Choose a Font" screen, no mechanical or practical factor compelled Balsam to use those exact words ("Choose a Font"). He could have written, "Select a Font," or "Indicate a Typeface Preference," or "Which Type Style Do You Prefer," or any combination of these terms.

648 F. Supp. at 1134. See *supra* note 30 for a description of the statutory useful articles analysis, which is limited to aesthetic features of pictorial, sculptural, or graphic works.

112. For example, the function (unprotected idea) of a word processing program's screen could be described at the following levels of abstraction, each yielding a different range of copyrightable expression: (1) a screen which enables the user to view and select commands, (2) a screen which enables the user to view and select word processing commands, (3) a screen which enables the user to view and select spacing, tabulation, margin, page length, and type font commands, (4) a screen which enables the user to view and select spacing, tabulation, margin, page length, and type font commands by typing the first two letters of the displayed command.

113. *Broderbund*, 648 F. Supp. at 1133.

114. For discussion of *Synercom*, see *supra* note 51 and accompanying text. Other contrary precedent ignored by *Broderbund* includes *Plains Cotton Coop. v. Goodpasture Computer Serv.*, 807 F.2d 1256 (5th Cir.), *cert. denied*, 108 S. Ct. 80 (1987), discussed *supra* note 58.

Shop's screens should be considered expression rather than idea.¹¹⁵ The court failed to consider whether the structure and sequencing of screens for a printing program might be dictated substantially by the program's purpose and therefore be part of its idea.¹¹⁶

The *Softklone* court's method of analysis greatly improved on that of *Broderbund*. Unlike *Broderbund*, the court limited the scope of its idea-expression inquiry to the screen itself.¹¹⁷ Furthermore, the court in *Softklone* refused to adopt the expansive and vague function of the work standard used in *Broderbund*¹¹⁸ and *Whelan*¹¹⁹ for distinguishing idea from expression. Instead, the court distinguished the manner of operation (idea) from the communication of that operation (expression).¹²⁰ Thus, the aspects of the status screen that communicate the manner in which the screen operates constitute copyrightable expression.¹²¹ For example, under the *Softklone* approach, the typing of two letters to effectuate a displayed command is an unprotected idea because it relates to the screen's operation. In contrast, the capitalization of the initial two letters of each command on the status screen is protected expression because it communicates the screen's operation to the user.

The *Softklone* manner-communication distinction gives a more circumscribed scope of protection than does the *Broderbund* function test because it narrows the realm of copyrightable expression. Under the function test, the unprotected idea of the screen in *Softklone* would have been its

115. The court reasoned that the existence of a children's program called "Stickybear Printer," which also created signs, posters, and banners, proved that the idea was capable of more than one expression and thus plaintiff's expression was copyrightable. *Broderbund*, 648 F. Supp. at 1133. The analogy to Stickybear Printer further demonstrates that *Broderbund's* definition of idea is overly broad, *see supra* text accompanying notes 110-12. Stickybear Printer is a *children's* program and can therefore share the same idea as the sophisticated Print Shop only if idea is defined in remarkably broad functional terms. *See* Comment, *supra* note 98, at 127.

116. *See* the discussion of *Plains Cotton*, *supra* note 58 and accompanying text.

117. The court commented, "Since the work at issue is the status screen, the court must determine what is the 'idea' behind the status screen and then determine whether the expression of the status screen is 'necessary' to that idea." *Softklone*, 659 F. Supp. at 458.

118. *See supra* text accompanying note 74.

119. *See supra* note 54.

120. *See supra* text accompanying notes 88-89.

121. *Softklone*, 659 F. Supp. at 459.

function: enabling the user to select among various communication program commands. The screen's protectable expression would have been any feature of the screen not essential to this function.¹²² As a result, under the function test, the technique of typing the first two letters to initiate the displayed command would be protectable expression, contrary to *Softklone's* holding, because the two-letter method is not the only means of selecting commands and is therefore not essential to the program's function. The *Softklone* court's definition of idea allows competing programs to use similar techniques, such as the two-letter method of selecting an operation, as long as the screen displays do not communicate these operations to the user in exactly the same language or style. This approach denies one developer an extended monopoly on the most efficient methods of operation for a given task while protecting its choice of symbols and style of presentation.

The *Softklone* court, however, improperly rejected defendant's claim that the idea and the expression had merged in the status screen.¹²³ If typing the first two letters of a command to effect that command is an idea, and if capitalizing those two letters is expression, merger problems arise because relatively few means exist whereby those first two letters can be emphasized. They may be capitalized, highlighted, bracketed, or underlined, but the range of viable options is limited.¹²⁴ Granting copyright in those particular expressions will allow the idea to be monopolized once those few variations are appropriated. The *Softklone* court was prepared to apply the merger doctrine only when the idea is capable of one form of expression.¹²⁵ A refusal by courts to apply the merger doctrine in situations involving more than one, but still limited means of expression,¹²⁶ however, will force the development of new methods of interfacing for every competing program, resulting in needless complexity for designers and users alike.¹²⁷

Thus, the obtuse analysis of the *Broderbund* court occa-

122. *Whelan Assocs. v. Jaslow Dental Laboratory*, 797 F.2d 1222, 1236 (3d Cir. 1986), *cert. denied*, 107 S. Ct. 877 (1987), discussed *supra* text accompanying note 54; see also *Broderbund*, 648 F. Supp. at 1132-33, discussed *supra* text accompanying note 75.

123. See *supra* notes 19-21 and accompanying text (discussing merger doctrine).

124. *Softklone*, 659 F. Supp. at 460.

125. *Id.* at 457-58.

126. See *supra* note 20.

127. See *infra* note 141.

sioned by its failure to distinguish screen and program, coupled with *Softklone's* weak rationale for requiring independent copyright protection for screens, leaves the copyright relationship between program and screen unresolved. At the same time, although the *Softklone* court provided an analysis which greatly improved on that of the *Broderbund* court, both decisions overprotect screens.

III. CORRECTING *BRODERBUND* AND *SOFTKLONE*: THE APPROPRIATE PROTECTION FOR COMPUTER SCREENS

Software developers who seek to ensure copyright protection for screen displays in which they have invested considerable time and creative energy will only be confused by the current legal climate. Maintaining that a registration of the computer program alone is sufficient to protect textual screens, the Copyright Office refuses to register screen displays of most nongame programs. Conflicting with this position, the most recent computer screen copyright case, *Digital Communications Associates v. Softklone Distributing Corp.*,¹²⁸ held that a copyright in a program alone does not protect the screens generated by it. In a jurisdiction following the *Softklone* precedent, therefore, a developer who is unable to register its screens separately has no legal recourse against a competitor who appropriates the developer's screen display but uses a different computer program to produce it. Furthermore, there is as yet too little judicial guidance as to the proper scope of copyright protection for screen displays. Without clear guidance as to what constitutes unprotected idea as opposed to protected expression, developers will not be able to predict the risks of their program development decisions. The following proposals delineate how these issues should be resolved.

A. SCREENS AND PROGRAMS SHOULD BE TREATED INDEPENDENTLY FOR COPYRIGHT PURPOSES

For copyright purposes, the courts and the Copyright Office should consider separately screens and the programs that generate them. Developers with a substantial investment in the creation of their screen displays should be allowed to register separate copyright claims on those screens, and courts

128. 659 F. Supp. 999 (N.D. Ga. 1987), discussed *supra* notes 76-89, 103-06, 117-27 and accompanying text.

should require plaintiffs seeking to enforce copyright claims pertaining to screens to obtain such registration.

Separate copyright treatment of screens and programs acknowledges that they are independently authored. Because designing screens that are attractive, efficient, and easy to use and that minimize visual fatigue involves multiple disciplines, screens of sophisticated programs are often designed by teams of professionals that may include engineers, psychologists, graphic artists, and ergonomists.¹²⁹ The particular program code, in contrast, is authored by a programmer who implements the visual package authored by the designers of the screen display. Independent copyright treatment of screens respects their independent authorship and the substantial creative investment that goes into their design.

Moreover, screens and programs deserve independent treatment because they are functionally distinct. A program is designed to direct a computer to accomplish a particular task as efficiently as possible. A screen, however, is designed to communicate with the user. Because of this functional difference, programs and screens communicate in entirely different languages: programs are written in computer code which instructs the machine, whereas screens are written in language and symbols that communicate with the user. Separate registration will also encourage courts, when faced with a screen infringement case, to focus on the scope of copyright protection appropriate to screens when undertaking their idea-expression analysis. Otherwise, a court is likely to confuse the screen's idea with the substantially different idea of the underlying program, as did the *Broderbund* court.¹³⁰

Finally, separate copyright registration insures protection for screens under the Copyright Act. A registration of a com-

129. Two commentators have observed:

The creative authorship in a program's audiovisual components is altogether separate from the creative authorship in a program's code. The most fanciful and widely recognized personal computer screen displays were designed by teams of graphic artists, psychologists, and ergonomic engineers. Programmers then implemented these screen designs in computer code. The programmers exhibited creative expression and original authorship in their choice of code, but that originality and creativity was separate and distinct from the artistic creativity in the design of the visual display itself.

Reback & Hayes, *supra* note 40, at 8; see also B. SHNEIDERMAN, *supra* note 66, at 391 (screen design will come to involve collaboration among specialists in specific aspects of screen design and consultation with artists, writers, sociologists, and psychologists).

130. See *supra* text accompanying notes 107-09.

puter program alone arguably protects only the computer code that generates the screens because a program is defined in the Copyright Act as a set of instructions which is used by a computer.¹³¹ A copyright in a program alone, therefore, offers no statutory protection against appropriation of screens as long as the competing program used a different code to generate them.

Requiring separate registration for screens and programs would not unduly burden developers or the Copyright Office.¹³² The Office has always accepted separate registration of computer programs and screen displays for video games without administrative difficulty.¹³³ Furthermore, until recently, the Office accepted separate registration of programs and screens for nongame application programs. It did not cite administrative concerns as the reason for its change in policy.¹³⁴ Developers seeking protection for screen displays could deposit individual reproductions of the screens that have copyrightable content, or in the case of nonstatic screens such as video game screens, developers could follow the video game precedent and deposit a video tape of the entire screen display sequence.¹³⁵

B. COURTS SHOULD GRANT DISPLAY SCREENS ONLY LIMITED COPYRIGHT PROTECTION

Screens generated by application programs need some measure of copyright protection. The user interface is a valuable asset of a program because ease of use and efficiency of operation are major concerns of potential purchasers.¹³⁶ As a result, the design of screens is typically the subject of substantial investment of creative energy and resources. Some protection is

131. See *supra* note 44.

132. One commentator has argued for single-unit registration covering both program and screen display, citing administrative difficulties of dual registration. Note, *Defining the Scope of Copyright Protection for Computer Software*, 38 STAN L. REV. 497, 530-32 (1986). The small administrative burden of dual registration, however, is not nearly as problematic as the commingling of programs and screens for the purposes of copyright analysis.

133. Reback & Hayes, *supra* note 40, at 1.

134. See *supra* note 94.

135. Existing copyright regulations provide for the deposit of works fixed or published only in machine-readable form by depositing "identifying material" that "best represents the copyrightable content of the work." 37 C.F.R. § 202.20(c)(2)(viii) (1987). Machine-readable audiovisual works can be deposited in the form of a videotape or a series of photographs depicting the work. *Id.* § 202.20(c)(2)(viii)(B). Similar provisions provide for a workable deposit of machine-readable literary and pictorial or graphic works. *Id.* § 202.20(c)(2)(viii)(A).

136. See B. SHNEIDERMAN, *supra* note 66, at v, 16-18.

necessary to encourage innovation and development of efficient, aesthetically appealing, and "user-friendly" screen displays.¹³⁷

Equally persuasive considerations require, however, that such protection be very limited in scope. Technological advancement in areas such as computer program development is an incremental process of building on existing technology.¹³⁸ Granting expansive copyright protection to a technology such as screen design risks giving the developer a virtual monopoly over a process or system for performing a given task.¹³⁹ Such a monopoly would prevent another developer from improving the versatility or efficiency of a user interface or adapting that interface for use on other computer systems for which it is not currently available. Furthermore, the duration of copyright protection—potentially up to seventy-five years¹⁴⁰—creates a disincentive for the owner to speed innovation and adaptation. Broad copyright protection for screens, therefore, has a tremendous potential for chilling innovative activity, especially given the severe remedies available against an infringing developer.¹⁴¹

A restricted scope of copyright protection for screens is

137. Reback & Hayes, *supra* note 40, at 10.

138. Professors Krauthaus and Nimmer comment:

Protection of a copyright claim should be structured to reduce its potential to distort future work on the same subject. Elements of a work may be construed as idea content of the program or unprotectable, generic methods if protecting them would significantly distort future work. In this regard, limiting copyright protection so as to permit unknowing, independent development alone is inadequate. Absent patent protection, subsequent technology developers have a right to use aspects of new techniques and ideas central to their science. Especially in a technical field, the risk of copyright liability creates a chilling effect, inducing developers to avoid examining earlier work. Subsequent workers need not operate in ignorance of the work of others, and copyright should be structured not to induce them to do so. New technology develops with knowledge of prior work.

Nimmer & Krauthaus, *supra* note 6, at 37-38; see also Note, *Copyright Infringement of Computer Programs: A Modification of the Substantial Similarity Test*, 68 MINN. L. REV. 1264, 1291-92 (1984) (advocating very limited "iterative" protection for computer programs because progress in the industry is typically a step-by-step process which builds upon the work of others).

139. See Davidson, *supra* note 98, at 1100-04.

140. 17 U.S.C. § 302(c) (1982) (copyright duration of a work for hire).

141. See Pearson, *supra* note 98, at 4. Dan Bricklin, developer of VisiCalc, commented that he may have been "scared off" from developing VisiCalc had the current copyright climate existed then. Churbuck & Kanzler, *Last Year's Litigation Sets Scene for Round Two in Software Law Battle*, PC WEEK, Jan. 20, 1987, at 130.

also necessary to insure adequate standardization of user interfaces.¹⁴² Should each developer have to design a unique user interface, use of computers will become needlessly complex, seriously impairing the very productivity that computers are designed to enhance. By imagining an auto industry in which each manufacturer had to design unique instrumentation, unique placement of pedals, turn signals, and shift levers, and unique gear shift patterns, one can appreciate the potential consequences to the computer user should overly broad copyright protection frustrate standardization of user interfaces. Courts should give software developers sufficient latitude to develop standard customs and conventions such as common command terms, common methods of effecting commands, and basic layout of screens. Broad protection militates against such standardization.

One method by which courts can narrowly circumscribe copyright protection for screen displays is to heighten the low threshold of originality or creativity required for copyright protection.¹⁴³ Traditionally, the requisite originality for copyright protection has been minimal, requiring only that a work be the product of the author's independent labors and demanding little creative content.¹⁴⁴ A heightened originality standard would grant protection only to screens that represent an identifiable advancement in the art or technology of screen design. As a point of departure, courts could look to the originality standard written into the Semiconductor Chip Protection Act of 1984.¹⁴⁵ The Act's exclusion of "staple, commonplace, or fa-

142. See Brief of Amici Curiae at 10-11, *Digital Communications Assocs. v. Softklone Distrib. Corp.*, 659 F. Supp. 449 (N.D. Ga. 1987) (No. C86-128A), reprinted in 1987 *Computer Indus. Litig. Rep.* (Andrews Publ.) 5344, 5349-50; Churbuck & Freedman, *Suits Against 1-2-3 Imitators May Have Wide User Impact*, PC WEEK, Jan. 20, 1987, at 1, 6. One concern expressed is the tremendous cost of training personnel in any changeover from one system to another if user interfaces are not somewhat standard. This changeover cost may lock a company into a particular program. The potential impact of forced non-standardization on businesses can be appreciated by comparing the problems that might be generated if a typewriter company secured a copyright on the arrangement of keys on the standard keyboard. The cost of retraining personnel for different systems would be enormous, and employee mobility would be substantially impaired.

143. See Amici Curiae Brief, *Broderbund Software v. Unison World*, 648 F. Supp. 1127 (N.D. Cal. 1986) (No. C85-3457 WHO), reprinted in Davis, *Special Problems in "Look and Feel" Copyright Cases*, 1986 *COMPUTER L. INST.* 741, 775-76.

144. See *supra* notes 9-10 and accompanying text.

145. Act of Nov. 8, 1984, Pub. L. No. 98-620, § 301, 98 Stat. 3347 (codified at 17 U.S.C. §§ 901-914 (Supp. 1987)).

miliar"¹⁴⁶ designs represents a small movement away from the minimal copyright originality standard toward the more demanding novelty standard of patent law.¹⁴⁷

The unique history of software development justifies this unconventional raising of the standard of originality. Software engineering developed at a very rapid pace in a relatively unregulated entrepreneurial market in which developers sought competitive advantage through rapid innovation rather than through copyright protection of past developments.¹⁴⁸ Developers customarily adapted and improved on the work of others.¹⁴⁹ Court incorporation of a heightened originality requirement would simply recognize the industry's shared development and use of basic screen designs. Absent a heightened originality requirement, however, a developer could copyright a screen display that adopts formats, techniques, or designs commonly used in the industry and, should some court deem them expression, secure a long-lasting monopoly thereon.

The second, and most fundamental, method by which the courts can limit the scope of copyright protection for screen displays is through carefully defining what constitutes idea and expression in screens.¹⁵⁰ The demarcation of uncopyrightable

146. The Act denies protection to a work that "(1) is not original; or (2) consists of designs that are staple, commonplace, or familiar in the semiconductor industry, or variations of such designs, combined in a way that, considered as a whole, is not original." 17 U.S.C. § 902(b) (Supp. 1987) (emphasis added).

147. See R. STERN, SEMICONDUCTOR CHIP PROTECTION § 5.3, at 169-70 (1986).

148. Pearson, *supra* note 98, at 2.

149. For example, Lotus Development Corp., which is suing two small software firms for copyright infringement of Lotus 1-2-3, *see supra* note 94, has subsequently been sued by the creator of VisiCalc who claims that Lotus 1-2-3 copied VisiCalc. *Recent Cases and Developments*, 3 COPYRIGHT L.J. 89, 90 (1987).

150. One commentator advocates that a useful articles analysis be applied to screens of application programs as a substitute for idea-expression analysis. *See Comment, supra* note 98, at 134. A useful articles approach has at least two problems. First, unlike a useful article which is purely functional, a display screen is not only functional, but also communicates to the user how the program functions. Thus a screen does not fit within the traditional parameters of a useful article. *See supra* note 30. Second, a useful articles analysis is no improvement on the traditional idea-expression analysis because it is too limited. The useful articles doctrine would only protect design or aesthetic aspects of a screen, and it is limited to pictorial, graphic, or sculptural works. The doctrine would not be workable with displays whose primary expression is textual. Furthermore, although the useful articles analysis is perhaps less ambiguous and easier to apply than an idea-expression analysis, it lacks the flexibility to define the scope of protection in terms of the policies that inhere

idea from copyrightable expression, as noted earlier,¹⁵¹ is a subjective, policy-guided process. The idea-expression distinction is, in essence, a metaphor for how much protection society should extend to any particular type of work. Because the demarcation between expression and idea is policy based, it is an ideal tool for restriction of copyright protection in situations in which broad protection is unwarranted, as it is with computer screens.

Furthermore, because the policy concerns previously discussed dictate limited protection for screens, courts should shun broad, vague generalizations of a screen's idea such as *Broderbund's* function test. Instead, courts should construe the idea of a given screen display concretely and precisely to yield only a limited range of copyrightable expression.¹⁵²

Assume, for example, that a developer copyrights a screen designed for a program that provides general desktop functions such as a weekly schedule, a telephone and address directory, a note pad, and a calculator. The user directs the program to perform a specific function by moving the cursor to the desired function, which is depicted graphically on the screen. Should a court adopt the *Broderbund* court's approach and define the idea of this screen abstractly at the level of the screen's function as "a screen which directs the user to various desktop functions," choosing these functions by moving a cursor to a picture of the desired operation could be protected expression because it is not an essential means of carrying out the screen's idea. Another developer would be hesitant to market a desktop program that depicted its functions graphically and selected them by moving a cursor to their picture. The function of the work test is therefore too broad and too vague. A court could, however, define the idea of this screen more concretely as "a method of choosing desktop operations by moving a cursor to a picture of the desired operation." This would yield a narrower scope of protected expression, encompassing the aesthetic aspects of the screen's design, such as the particular graphic representations of the functions.

Because the idea-expression inquiry is necessarily work specific, however, no single test for distinguishing idea from expression can be appropriate for all screen display cases. For ex-

in idea-expression formulations. See *supra* notes 15-18 and accompanying text.

151. See *supra* notes 15-18 and accompanying text.

152. See *supra* note 17 and accompanying text.

ample, the *Softklone* court's test is not amenable to all situations. Although *Softklone*'s test, which distinguished manner of operation from the communication of that operation, works well for a screen designed to display and implement commands, it would prove a poor test for screens that do not perform operations. Thus, courts should distinguish idea from expression in a manner appropriate to the individual characteristics of the screens before them.

In addition to using a work-specific and concrete definition of the idea of a program, a court should liberally apply the merger doctrine to prevent developers from monopolizing limited ways of communicating with the user.¹⁵³ Techniques such as the highlighting of letters used in *Softklone* do not merit copyright protection because the few methods of highlighting letters would rapidly be appropriated by a few developers.¹⁵⁴ Courts should find that the idea and expression have merged in these situations to avoid unnecessary restrictions on screen development.

CONCLUSION

Simple, efficient, and attractive screen displays are a major asset of any software package, representing a substantial investment of creative resources. Current decisions of courts and the Copyright Office, however, give developers inadequate and sometimes conflicting guidance on copyright issues pertaining to screens.

To alleviate this situation, courts and the Copyright Office should treat screens and programs independently for registration and infringement analysis purposes, thus recognizing the independent authorship and function of each. The scope of

153. See *supra* notes 20-21 for an overview of the merger and *scenes a faire* doctrines. The *scenes a faire* doctrine can effectively exempt standard conventions such as common command terms, common methods of effecting commands, and basic screen format and layout from copyright protection. See *supra* note 20. Some courts have applied the doctrine to the scope of copyright protection for computer programs and screens. See *Frybarger v. IBM Corp.*, 812 F.2d 525, 530 (9th Cir. 1987) (screen display of audiovisual game); *Whelan Assocs. v. Jaslow Dental Laboratory*, 797 F.2d 1222, 1237 (3d Cir. 1986) (programs), *cert. denied*, 107 S. Ct. 877 (1987); *Atari v. North Am. Philips Consumer Elecs. Corp.*, 672 F.2d 607, 616-17 (7th Cir.) (screen display of audiovisual game), *cert. denied*, 459 U.S. 880 (1982). The *scenes a faire* doctrine also provides a useful tool for limiting the copyright protection of screens that contain desktop metaphors such as note pads and desk calendars, or screens, like Broderbund's *Print Shop*, that use common pictorial symbols.

154. See *supra* text accompanying notes 124-27.

copyright protection given to screens, however, should be limited through the use of a heightened originality standard, a concrete, work-specific definition of the screen's idea, and less grudging application of the merger doctrine. By granting circumscribed protection, courts will protect substantial aesthetic developments while fostering vigorous competition in the computer software industry and the standardization of basic user interfaces.

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