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A Thousand Clones: The Scope of Copyright Protection in the "Look and Feel" of Computer Programs—*Digital Communications Associates, Inc. v. Softklone Distributing Corp.*, 659 F. Supp. 449 (N.D. Ga. 1987)

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A THOUSAND CLONES: THE SCOPE OF COPYRIGHT PROTECTION IN THE "LOOK AND FEEL" OF COMPUTER PROGRAMS—*Digital Communications Associates, Inc. v. Softklone Distributing Corp.*, 659 F. Supp. 449 (N.D. Ga. 1987).

Personal computers are a part of daily life. Once entrusted to specialists, computers are now used by persons with little or no computer training and little time to learn. Easy-to-use computer programs are in demand.[1] In fact, the "user interface" (or "look and feel")[2] is the single most important factor in the marketability of a computer program.[3]

The software industry is in conflict over copyright protection of the user interface.[4] On one hand, developers of popular programs favor copyright protection because a well- designed interface assures market success.[5] On the other hand, competitors deny that the user interface should receive copyright protection because of the public interest in

1. B. SHNEIDERMAN, DESIGNING THE USER INTERFACE: STRATEGIES FOR EFFECTIVE HUMAN-COMPUTER INTERACTION at v, 17–18, 28–29 (1987); *'Look and Feel' Discussed As Major Copyright Issue,* INFOWORLD, Nov. 11, 1985, at 13; Dean, *Simplify, Simplify, Simplify,* BYTE, Dec. 1983, at 161; *cf. The Difficult Path to the Easy-to-Use Computer,* BUS. WK., Feb. 27, 1984, at 93.

2. "User interface" is "[a] term used to describe any way in which a user accesses a computer system, for example, through a visual display unit, a personal computer or a videotex terminal." A. CHANDOR, PENGUIN DICTIONARY OF COMPUTERS 472 (3d ed. 1985) (emphasis omitted).

The "user interface" is often called the "look and feel" of a program. *See, e.g.,* Smith & Elgison, *DCA v. Softklone: The Continuing Saga of Copyright, Computers, and Clones,* COMPUTER LAW., Apr. 1987, at 13. The term "look and feel" has also been used to denote copyright protection which extends beyond verbatim copying. *See, e.g.,* Note, *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 (1987); *cf. infra* note 66 ("total concept and feel" discussed as standard of infringement). To avoid confusion, this Note will avoid the term.

3. *The Difficult Path to the Easy-to-Use Computer, supra* note 1, at 93.

4. In January 1987, Lotus Development Corporation began an infringement action against two manufacturers of spreadsheet programs which duplicated the screen displays and command codes of the *Lotus 1-2-3* program. Warner, *Lotus Says It May File for Injunction To Halt Sales of 1-2-3 Work-Alikes: Company Sues for Copyright Infringement,* INFOWORLD, Jan. 19, 1987, at 1. The suit divided the industry. The Association of Data Processing Service Organizations ("ADAPSO"), an industry trade association, refused to take a position on the suit because of the conflict between two goals sought by the association: protection of property rights and standardization. *Adapso Split Over the Lotus Copyright Suit,* INFOWORLD, Apr. 6, 1987, at 9. The Copyright Office refused to issue a separate registration for *Lotus 1-2-3's* screen displays. *Infra* notes 60–61 and accompanying text.

5. *See Lotus Believes That Innovation, Not Imitation, Deserves Reward,* INFOWORLD, Mar. 30, 1987, at 8 (statement of J. Manzi, president and CEO, Lotus Development Corp.).

"standardization."[6] The developers of "clones," programs which emulate the user interface of popular programs, argue that computer users are best served if they can purchase competing programs without having to learn different interfaces.[7]

In *Digital Communications Associates, Inc. v. Softklone Distributing Corp.*,[8] the United States District Court for the Northern District of Georgia rejected "standardization" as a reason to deny copyright protection to user interface design. The court also rejected the proposition, advanced six months earlier in *Broderbund Software, Inc. v. Unison World, Inc.*,[9] that copyright protection of the underlying computer program extends to the screen displays generated by that program. Once it found the screen displays to be separately copyrightable, the *Softklone* court evaluated each feature of the display individually, and extended copyright protection to some elements of the user interface. Although the court erroneously refused to protect the program's command language, it properly affirmed broad protection for the user interface of computer programs.

I. BACKGROUND

A. Computer Programs and the User Interface

1. Computer Programs

The Copyright Act[10] defines a computer program as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."[11] There are two types of programs: system programs and application programs. System programs together constitute an operating system. The operating system controls the interaction between hardware elements and establishes the environment in which an application program functions.[12] Application programs, which this Note principally addresses, perform a spe-

6. Standardization implies the free use of established user interfaces by competing programs to allow easy transfer of skills from one program to another. *See infra* notes 153–56 and accompanying text.

7. *See You Cannot Copyright Ideas, Paperback Asserts,* INFOWORLD, Mar. 30, 1987, at 8 (statement of A. Osborne, president and CEO, Paperback Software International).

8. 659 F. Supp. 449 (N.D. Ga. 1987).

9. 648 F. Supp. 1127 (N.D. Cal. 1986).

10. 17 U.S.C. §§ 101–810 (1982).

11. 17 U.S.C. § 101 (1982). This definition was added by the Computer Software Copyright Act of 1980, Pub. L. No. 96-517, § 10(a), 94 Stat. 3028.

12. A. CHANDOR, *supra* note 2, at 331–33; *see* Apple Computer v. Franklin Computer Corp., 714 F.2d 1240, 1243 (3d Cir. 1983) (operating system programs "generally manage the internal functions of the computer or facilitate use of application programs"), *cert. dismissed,* 464 U.S. 1033 (1984).

cific task for the user.[13] For example, application programs include data base management, spreadsheet, and word processing programs.

2. *The User Interface*

The user interface[14] is the means by which a computer and a user communicate with each other. The application software controls this dialogue.[15] Although inextricably linked, the program and user interface are also conceptually distinct because the same interface can be generated by different programs.[16]

A common medium of computer-to-user communication is the video display unit.[17] This unit displays information in either graphic or textual form. The user typically communicates to the computer by use of a typewriter-like keyboard or by use of a "mouse."[18]

Basic interface styles include menus, command languages, and direct manipulation techniques.[19] Menus[20] display choices available to the user on the video screen. The program solicits and acts on the user's response. An elaborate type of menu is the "form fill-in."[21] Used for data entry, the program displays a blank form on screen, frequently accompanied by instructions explaining what each field[22] should contain. The user then fills in individual fields.

Command languages[23] are sets of instructions which permit the user to instruct the program to behave in a certain way. The program must

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13. 1 D. BENDER, COMPUTER LAW § 2.06[2], at 2-114, 2-117 (1986); *see Franklin Computer,* 714 F.2d at 1243 ("Application programs usually perform a specific task for the computer user, such as word processing, checkbook balancing, or playing a game.").

14. *See supra* note 2.

15. Software plays an indispensable role. The program instructs the computer what to display on the video display unit. 1 D. BENDER, *supra* note 13, § 2.05[2], at 2-65 to -66. "It is the program, and only the program, which controls the computer's activities. The program specifies uniquely the sequence of operations which the computer will perform. The computer has no 'mind of its own'; rather, the program serves as its mind, telling it what to do." *Id.* § 2.03[1], at 2-10 (footnote omitted).

16. *Cf. infra* notes 43–51 and accompanying text.

17. A display unit contains a cathode ray tube (much like a television) which displays text or graphics generated from data stored in the main memory of a computer. *See* A. CHANDOR, *supra* note 2, at 480 (emphasis omitted).

18. A "mouse" is "[a] device whose movements on a flat surface are reflected by *cursor* movements on a *visual display unit,* thus obviating the need for a keyboard." A. CHANDOR, *supra* note 2, at 308 (emphasis in original).

19. *See generally* B. SHNEIDERMAN, *supra* note 1, at 57–60.

20. *See generally id.* at 59, 86–128.

21. *See generally id.* at 59, 122–28.

22. A field is "[a] subdivision of a *record* containing a unit of information. For example, a payroll record might have the following fields: clock number, gross pay, deductions, net pay." A. CHANDOR, *supra* note 2, at 184 (emphasis in original).

23. *See generally* B. SHNEIDERMAN, *supra* note 1, at 59–60, 136–72.

recognize commands, accept properly formatted commands, and act upon them. The commands do not necessarily appear on the screen.

Direct manipulation[24] of the screen display is a third major user interface style. Perhaps the best illustration of direct manipulation is the arcade videogame. In a videogame, the screen's images change immediately in reaction to the user's movement of a joystick or push of a button. In a word processing program, a user edits by moving a cursor through the displayed text. The displayed text changes immediately in response to a correction. By contrast, older line editors required the use of a command language. The user specified a line number and typed a command which instructed the computer to make the requested change.

B. Computers and Copyright

Copyright law seeks to achieve progress in the arts and sciences[25] by balancing two interests: protection and competition.[26] In pursuing this goal, the author's rights must be sufficiently protected to encourage the development of new works.[27] However, the protection afforded must not be so broad that competition is stifled.[28] With the

24. *See generally id.* at 60, 180–219.

25. The Constitution authorizes Congress "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST. art. I, § 8, cl. 8.

26. Whelan Assocs. v. Jaslow Dental Laboratory, 797 F.2d 1222, 1235, 1237 (3d Cir.), *cert. denied*, 107 S. Ct. 877 (1986); *see* Mazer v. Stein, 347 U.S. 201, 219 (1954); United States v. Paramount Pictures, 334 U.S. 131, 158 (1947).

27. *Mazer*, 347 U.S. at 219.

28. Analysis of these factors may lead to the conclusion that copyright protection should not be afforded at all. The right vested in the copyright owner is not absolute. Rewarding the author has been called a "secondary consideration." *Paramount Pictures*, 334 U.S. at 158 (1947). The monopoly granted by copyright may be so strong that competition will be suppressed and prices kept artificially high.

However, when considering the propriety of extending copyright protection to computer programs, the National Commission on New Technological Uses of Copyrighted Works ("CONTU") found that the copyright monopoly would not significantly impair competition within the computer software industry. NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS (CONTU) FINAL REPORT 23–25 (1978) [hereinafter CONTU FINAL REPORT]. And, even if this were not the case, CONTU concluded:

> On the whole, the direct approach against alleged monopolists seems far superior to fighting perceived economic evils on copyright grounds. The enforcement and, where necessary, emendation of the present antitrust laws is more appropriate to the problem, if any, than the invention of a class of works which are generally copyrightable but not when their authors are disfavored, for whatever well-intentioned reasons.

Id. at 25.

Furthermore, even where copyright protection is extended, competition may be preserved by recognizing only verbatim or near-verbatim copying as infringement. *See infra* note 79 and accompanying text.

exception of text-based screen displays, the basic question of copyrightability of computer programs and output has generally been resolved in favor of protection. The courts now seek to determine what scope of protection is most conducive to maintaining competition.

1. Establishing Protection: Computer Programs and Output as Copyrightable Works

The 1976 Copyright Act[29] is purposefully broad in its definition of copyrightable matter. The Act protects "original works of authorship."[30] Among the classes of protected works[31] are literary works,[32] audiovisual works,[33] and compilations.[34] Computer programs are protected as literary works.[35] In a series of videogame cases, screen displays generated by the underlying computer program were held separately copyrightable as audiovisual works.[36]

29. 17 U.S.C. §§ 101–810 (1982).

30. *Id.* § 102(a). The term "original works of authorship" was intentionally left undefined. H.R. REP. NO. 1476, 94th Cong., 2d Sess. 51, *reprinted in* 1976 U.S. CODE CONG. & ADMIN. NEWS 5664.

A copied work is not original. A work must originate with the author. Alfred Bell & Co. v. Catalda Fine Arts, 191 F.2d 99, 102 (2d Cir. 1951). Some courts have construed authorship to require a modicum of creativity. *See, e.g.,* Original Appalachian Artworks v. Toy Loft, 684 F.2d 821, 824–25 (11th Cir. 1982); *see also* 1 M. NIMMER, NIMMER ON COPYRIGHT 2.02[A], at 2-14 to -15 (1987); A. LATMAN, LATMAN'S THE COPYRIGHT LAW 23–24 nn.29–32 (6th ed. 1986). While the threshold quantum of creative effort required for copyrightability is generally low, 684 F.2d at 824, copyright has been denied to simple words and phrases, *see, e.g.,* O'Brien v. Chappel & Co., 159 F. Supp. 58, 59 (S.D.N.Y. 1958) (words "night and noon" in lyrics of a song), and to blank forms, *see, e.g.,* Baker v. Selden, 101 U.S. 99, 107 (1880) (accounting forms). In no sense, however, do originality and creativity connote novelty in the patent law sense, 1 M. NIMMER, *supra,* 2.02[A], at 2-6 to -8, 2-10; H.R. REP. NO. 1476, *supra,* at 51; nor are ingenuity or aesthetic merit required, *id.*

31. 17 U.S.C. § 102(a) (1982).

32. "Literary works" are works expressed in words, numbers, or other verbal or numerical symbols or indicia. *Id.* § 101.

33. "Audiovisual works" are works that consist of a "series of related images" intended to be shown by the use of machines or devices, together with accompanying sounds. *Id.* The term "images" is not defined by the Act.

34. *Id.* § 103. 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. *Id.* § 101. Compilations are protected only to the extent of the author's contribution to the work. *Id.* § 103.

35. *Infra* notes 37–40 and accompanying text.

36. *See infra* notes 53–55 and accompanying text.

a. Computer Programs

Computer programs are protected by copyright as literary works.[37] While the utilitarian nature of programs caused great difficulty for copyright theorists[38] and the first courts to consider program copyrightability,[39] courts now regard the issue of copyrightability as foreclosed by passage of the Computer Software Copyright Act of 1980.[40] Current litigation focuses on how far beyond literal copying of the program code infringement will be found.[41] While recent decisions have afforded expansive protection to programs, courts have generally agreed that a program copyright does not protect the screens generated by the program.[42]

The text of the Act appears to limit the protection afforded by a program copyright registration solely to infringement of the program code. The Act defines "computer program" as a "set of statements or instructions to be used . . . in a computer in order to bring about a certain result."[43] The protectable work is this set of instructions. The result which these instructions bring about, whether a screen display or printout, is a separate issue. The Final Report of the Commission on New Technological Uses of Copyrighted Works ("CONTU")[44] supports this conclusion. CONTU stressed that copyright protection of programs would not prevent another developer from creating a pro-

37. H.R. REP. No. 1476, *supra* note 30, at 54. Computer programs are protected whether they are application programs or system programs. *See, e.g.*, Apple Computer v. Franklin Computer Corp., 714 F.2d 1240 (3d Cir. 1983) (systems program), *cert. dismissed*, 464 U.S. 1033 (1984); SAS Inst. v. S & H Computer Sys., 605 F. Supp. 816 (M.D. Tenn. 1985) (application program).

38. *See, e.g.*, CONTU FINAL REPORT, *supra* note 28, at 26–27, 36–37 (concurring opinion of Comm'r Nimmer and dissenting opinion of Comm'r Hersey); Samuelson, *CONTU Revisited: The Case Against Copyright Protection for Computer Programs in Machine- Readable Form*, 1984 DUKE L.J. 663. Utilitarian works have traditionally been protected by patent, not copyright, law. CONTU FINAL REPORT, *supra*, at 26–27 (concurring opinion of Comm'r Nimmer).

39. *See, e.g.*, Apple Computer v. Franklin Computer Corp., 545 F. Supp. 812, 813–25 (E.D. Pa. 1982), *rev'd*, 714 F.2d 1240 (3d 49 Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984); Data Cash Sys. v. JS&A Group, 480 F. Supp. 1063, 1065–69 (N.D. Ill. 1979), *aff'd on other grounds*, 628 F.2d 1038 (7th Cir. 1980).

40. Pub. L. No. 96-517, 94 Stat. 3028 (codified at 17 U.S.C. § 101 (1982)); *see, e.g.*, Apple Computer v. Formula Int'l, 725 F.2d 521, 524–25 (9th Cir. 1984); *Franklin Computer*, 714 F.2d at 1247–48.

41. *See, e.g.*, Whelan Assocs. v. Jaslow Dental Laboratory, 797 F.2d 1222 (3d Cir.) (infringement found in substantial similarity of structure and sequence of dental office records program; discussed *infra* notes 69–72, 81–87 and accompanying text), *cert. denied*, 107 S. Ct. 877 (1986).

42. *See infra* note 52.

43. 17 U.S.C. § 101 (1982).

44. CONTU was established to study, inter alia, whether copyright was an appropriate means to protect computer programs. CONTU FINAL REPORT, *supra* note 28, at 3, 6.

gram which accomplished the same result if the developer did not copy the first program's code.[45] One task a program instructs the computer to do is create the screen display.[46]

The videogame cases[47] support the conclusion that screen displays generated by a program are not protected by the underlying program copyright. In *Stern Electronics, Inc. v. Kaufman,*[48] the Second Circuit found that the program copyright would not protect the screen displays.[49] A program copyright could not prevent a competitor from developing a non-infringing "knock-off" which precisely replicated the sights and sounds of the videogame.[50] "Such replication is possible because many different computer programs can produce the same 'results,' whether those results are an analysis of financial records or a sequence of images and sounds. A program is simply 'a set of statements . . . or instructions . . .'."[51] The work protected by the program copyright is the set of instructions, not the resulting displays.

The cases decided since *Stern* have generally concurred that the program copyright does not protect against duplication of screen displays.[52] Therefore, the protection of screen displays depends upon whether the displays independently qualify as copyrightable "works" under the Act.

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45. *Id.* at 21.

46. *See supra* note 15.

47. *See, e.g.,* Frybarger v. International Business Machs. Corp., 812 F.2d 525 (9th Cir. 1987); Midway Mfg. Co. v. Artic Int'l, 704 F.2d 1009 (7th Cir. 1983), *aff'g* 547 F. Supp. 999 (N.D. Ill. 1982); Williams Elecs. v. Artic Int'l, 685 F.2d 870 (3d Cir. 1982); Atari, Inc. v. North Am. Philips Consumer Elecs. Corp., 672 F.2d 607 (7th Cir.), *cert. denied,* 459 U.S. 880 (1982); Stern Elecs. v. Kaufman, 669 F.2d 852 (2d Cir. 1982), *aff'g* 523 F. Supp. 635 (E.D.N.Y. 1981); Midway Mfg. Co. v. Strohon, 564 F. Supp. 741 (N.D. Ill. 1983); Nintendo of Am. v. Elcon Indus., 564 F. Supp. 937 (1982); Midway Mfg. Co. v. Bandai- Am., 546 F. Supp. 125 (D.N.J. 1982); Atari, Inc. v. Amusement World, 547 F. Supp. 222 (D. Md. 1981); Midway Mfg. Co. v. Dirkschneider, 543 F. Supp. 466 (D. Neb. 1981).

48. 669 F.2d 852 (2d Cir. 1982).

49. *Id.* at 855. In several of the early videogame cases, the plaintiffs had not registered the underlying computer program for copyright, perhaps because of the uncertain status of copyright protection for programs. The defendants argued that the actions for audiovisual copyright infringement in fact sought indirectly to protect the unregistered program. *See, e.g., id.; Amusement World,* 547 F. Supp. at 226; *Dirkschneider,* 543 F. Supp. at 481.

50. 669 F.2d at 855.

51. *Id.*

52. *See, e.g.,* Whelan Assocs. v. Jaslow Dental Laboratory, 797 F.2d 1222, 1244 (3d Cir.) (recognizing that screens and program are distinct works, protectable under different copyrights), *cert. denied,* 107 S. Ct. 877 (1986); *Dirkschneider,* 543 F. Supp. at 481.

In Broderbund Software v. Unison World, 648 F. Supp. 1127, 1133 (N.D. Cal. 1986), the court cited *Whelan* for the proposition that a program copyright extended protection to screen displays. *Whelan,* however, recognized the reverse: the program and displays are separate works. *Whelan,* 797 F.2d at 1244.

b. Output

The videogame cases established that the computer-generated screen displays of videogames are separately copyrightable as audiovisual works.[53] In *Stern,* for example, the court found that the repeating images displayed in the course of the videogame *Scrambler* met the Act's definition of an audiovisual work (a "series of related images"[54]) and were eligible for separate copyright protection.[55]

Although the graphics-laden screens generated by videogames are separately copyrightable as audiovisual works, text-based screens are not. The Copyright Office interprets the statutory definition of an audiovisual work to include only "related images that are *pictorial or graphic.*"[56] Works consisting wholly of text are expressly excluded.[57] Alternatively, text-only screens might be separately copyrightable as literary works. At one time, the Copyright Office issued separate registrations for text-based screens as "compilations of program terms."[58] However, it has now suspended that practice.[59]

The Copyright Office recently threw into doubt the separate copyrightability of text-based screen displays under any classification. In early 1987, it denied an application for a separate audiovisual copyright registration for the screen displays generated by Lotus Development Corporation's spreadsheet program, *Lotus 1-2-3.*[60] The Copyright Office stated in its denial 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."[61] While Lotus had sought an audiovisual copyright registration, the reasons given for denial appear equally applicable to separate registration of text-based screen displays under any other classification, including compilations or literary works. The Copyright Office has now undertaken a review of its registration practices, including separate registration of both

53. *See, e.g., supra* note 47.

54. *Supra* note 33.

55. 669 F.2d at 855.

56. COPYRIGHT OFFICE CIRCULAR R49 at 2 (1986) (emphasis added).

57. *Id.*

58. *See, e.g.,* Digital Communications Assocs. v. Softklone Distrib., 659 F. Supp. 449, 453 (N.D. Ga. 1987).

59. 33 PAT. TRADEMARK & COPYRIGHT J. (BNA) 613 (1987).

60. *Id.*

61. *Id.* at 613–14. "Under present practices . . . the Office does not register separately textual screen displays, reasoning that there is no authorship in ideas, or the format or arrangement of text, and that any literary authorship in the screen display would presumably be covered by the underlying computer program—itself a literary work." Notice of Public Hearing, Registration and Deposit of Computer Screen Displays, 52 Fed. Reg. 28311, 28312 (1987).

text-based and graphic screens.[62]

2. *Preserving Competition: Defining the Scope of Protection*

If a work is copyrightable, suit may be brought for infringement of the rights secured by copyright,[63] including the right to reproduce the work.[64] In order to prove infringement of this right, a plaintiff must show that the defendant copied from the work, and that the copying resulted in improper appropriation.[65] Generally, improper appropriation is found if the works are substantially similar in the eyes of the ordinary observer.[66]

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62. Notice of Public Hearing, Registration and Deposit of Computer Screen Displays, 52 Fed. Reg. 28311, 28312 (1987) (affecting 37 C.F.R. pt. 202) (to be held September 9, 1987). The questions to be addressed included "first, whether or not the Office should register any screen displays separately from the underlying computer programs that generate them; and, second, what the Office should require as the deposit if any registration is made for screen displays either separately or as part of a computer program." *Id.* As this Note was being prepared for publication, public comment and testimony had been taken, but a decision seemed unlikely prior to 1988. Telephone interview with Elliot Alderman, attorney, Copyright Office (Nov. 2, 1987).

63. 17 U.S.C. § 501(b) (1982). As a prerequisite to suit, a plaintiff must obtain a certificate of registration of copyright. *Id.* § 411. Once obtained, a certificate of registration is prima facie evidence of copyrightability, originality, and conformance with statutory prerequisites, including notice. *Id.* § 410(c). If the Copyright Office refuses the application, an author may nonetheless file suit if notice is served upon the Register, who may become a party to the action. *Id.* § 411.

64. *Id.* § 106(1).

65. Arnstein v. Porter, 154 F.2d 464, 468–69 (2d Cir. 1946), *cert. denied,* 330 U.S. 851 (1947). Copying is usually shown by proof of access and similarity between the works. A. LATMAN, *supra* note 30, at 192–96. Access is seldom disputed, so infringement litigation usually focuses on the similarity between the works.

66. Peter Pan Fabrics v. Martin Weiner Corp., 274 F.2d 487, 489 (2d Cir. 1960) (L. Hand, J.). Infringement exists if "an average lay observer would recognize the alleged copy as having been appropriated from the copyrighted work." Ideal Toy Corp. v. Fab-Lu Ltd., 360 F.2d 1021, 1022 (2d Cir. 1966).

Analysis or dissection of the work is permissible and expert testimony admissible on the question of copying. *Arnstein,* 154 F.2d at 468. However, dissection and expert analysis have generally not been permitted to prove improper appropriation. *Id.;* Sid & Marty Krofft Television Prods. v. McDonald's Corp., 562 F.2d 1157, 1164 (9th Cir. 1977). Shunning detailed lists of similarities and dissimilarities, courts have asked whether the alleged infringer has captured the "total concept and feel" of the pirated work. Roth Greeting Cards v. United Card Co., 429 F.2d 1106, 1110 (9th Cir. 1970).

In *Roth,* the defendant was found to have copied plaintiff's greeting cards. The inscribed phrase of each card was in the public domain and hence noncopyrightable. Considering the artwork of each card apart from the inscription, the court did not find sufficient similarity for infringement. The Ninth Circuit held, however, that "proper analysis of the problem requires that all elements of each card, including text, arrangement of text, art work, and association between art work and text, be considered as a whole." 429 F.2d at 1109.

One interpretation of *Roth* is that nonprotectable matter need not be factored out before application of the ordinary observer test. A subsequent Ninth Circuit decision, however, rejected this perception of *Roth.* It held that, in the context of a compilation of otherwise nonprotectable elements, "[w]hat is important is not whether there is substantial similarity in the total concept and feel of the works, . . . but whether the very small amount of protectible expression in Cooling

Substantial similarity depends upon the quantity and quality of the material copied;[67] copying need not be verbatim.[68] For example, in *Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc.*,[69] the evidence showed similarity of screen displays, data file structures, and five major subroutines.[70] The defendant argued that the proof was insufficient, characterizing the five subroutines as " 'a small fraction of the two works.' "[71] The court found it unnecessary to consider the entirety of the two works before finding infringement. Instead, the court made a qualitative, not quantitative, judgment about the character of the work as a whole and the importance of the substantially similar portions of the work.[72]

The substantial similarity required to show infringement must be of protectable matter.[73] Copyright protects only the expression of ideas, not the ideas themselves.[74] Other authors may use ideas embodied in a copyrighted work if they express those ideas in a sufficiently different manner.[75] Therefore, if two works are similar solely because the ideas

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Systems' catalog is substantially similar to the equivalent portions of Stuart's catalog." Cooling Sys. & Flexibles v. Stuart Radiator, 777 F.2d 485, 493 (9th Cir. 1985).

Roth has also been cited to support the proposition that copyright protection extends beyond literal copying. *See, e.g., Kroffi,* 562 F.2d at 1167. In this, *Roth* is unexceptional. Copyright has long protected against nonliteral copying. *See infra* note 68.

Several courts have rejected the ordinary observer test in computer program infringement actions to the extent that it forbids dissection and expert testimony because program code analysis is complex. Whelan Assocs. v. Jaslow Dental Laboratory, 797 F.2d 1222, 1233–35 (3d Cir.), *cert. denied,* 107 S. Ct. 877 (1986).

67. 3 M. NIMMER, *supra* note 30, 13.03[A], at 13-36 to -38.1. A borrowed sentence or paragraph may be of so little import that the copying will be held de minimis and no infringement found. *See, e.g.,* Jackson v. Washington Monthly Co., 481 F. Supp. 647, 650 (D.D.C. 1979) (two sentences), *aff'd,* 675 F.12d 1340 (D.C. Cir.), *cert. denied,* 459 U.S. 909 (1982). On the other hand, in an exceptional case appropriating a single phrase or sentence may constitute infringement if the effect is to diminish or injure the original work. 3 M. NIMMER, *supra,* 13.03[A], at 13-40.

68. Copyright protects against more than verbatim copying. If this were not so, "a plagiarist would escape by immaterial variations." Nichols v. Universal Pictures Corp., 45 F.2d 119, 121 (2d Cir. 1930). However, as one departs further from the literal text, the competing principle that copyright does not protect ideas comes into play. *See infra* notes 73–87 and accompanying text.

69. 797 F.2d 1222 (3d Cir.), *cert. denied,* 107 S. Ct. 877 (1986).

70. *Id.* at 1242–46.

71. *Id.* at 1245.

72. *Id.* (citing Harper & Row Publishers v. Nation Enters., 471 U.S. 539 (1985)).

73. *See* Durham Indus. v. Tomy Corp., 630 F.2d 905, 912 (2d Cir. 1980); Hoehling v. Universal City Studios, 618 F.2d 972, 977 (2d Cir.), *cert. denied,* 449 U.S. 841 (1980); A. LATMAN, *supra* note 30, at 197.

74. 17 U.S.C. § 102(b) (1982); Mazer v. Stein, 347 U.S. 201, 217–18 (1954); Baker v. Selden, 101 U.S. 99, 102–03 (1880).

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

they express are similar, infringement will not be found.[76]

The "merger" doctrine is a corollary of this restriction. Where an idea may only be expressed in one way, idea and expression are said to "merge," and no infringement will be found.[77] Otherwise, copyright would permit monopolization of the underlying idea.[78] Even if an idea may be expressed in more than one way, the range of expression available may be so limited that a court may require verbatim copying before it finds infringement.[79]

Identifying the idea or ideas expressed in a work is a difficult task.[80] Generally, courts use two approaches. First, a single idea may be found to underlie the entire work. Second, particular elements of a work may be identified as distinct, nonprotected ideas. If the similarity between works is due solely to the commonality of the idea or ideas embodied in the work, no infringement will be found.

The court applied the first approach in *Whelan,* and found substantial similarity in the structure and sequence of the programs.[81] The

76. *See supra* note 73.

77. *See, e.g.,* Herbert Rosenthal Jewelry Corp. v. Kalpakian, 446 F.2d 738, 742 (9th Cir. 1971) (jeweled bee pin).

78. *Id.; cf.* Morrissey v. Proctor & Gamble Co., 379 F.2d 675, 678–79 (1st Cir. 1967) (protection denied altogether where means of expression was limited).

79. Fact-based and scientific works, for example, are frequently afforded only narrow copyright protection:

> One consequence of the policy in favor of free use of ideas is that the degree of substantial similarity required to show infringement varies according to the type of work and the ideas expressed in it. . . . Some ideas can be expressed in myriad ways, while others allow only a narrow range of expression. Fictional works generally fall into the first category. . . .
>
> Factual works are different. Subsequent authors wishing to express the ideas contained in a factual work often can choose from only a narrow range of expression. . . .

Landsberg v. Scrabble Crossword Game Players, 736 F.2d 485, 488 (9th Cir.), *cert. denied,* 469 U.S. 1037 (1984); *see also* Franklin Mint Corp. v. National Wildlife Art Exch., 575 F.2d 62, 65 (3d Cir. 1978) (ornithological convention found to limit manner in which two cardinals could be represented in painting), *cert. denied,* 439 U.S. 880 (1982); Kepner-Tregoe, Inc. v. Carabio, 203 U.S.P.Q. (BNA) 124, 132 (E.D. Mich. 1979) (instructional materials; "in teaching, a noticeable style is a hindrance. Two simple and straightforward explanations of an economic law or principle must bear a close resemblance, so greater similarity must be allowed."); Gorman, *Copyright Protection for the Collection and Representation of Facts,* 76 HARV. L. REV. 1569 (1963).

The range of expression also may be limited by the function a work is to serve. *See, e.g.,* Plains Cotton Coop. Ass'n v. Goodpasture Computer Serv., 807 F.2d 1256, 1262 (5th Cir.) (computer program's structure may be dictated by externalities of cotton commodities market; discussed *infra* note 87), *cert. denied,* 108 S. Ct. 80 (1987); *see also* Decorative Aides Corp. v. Staple Sewing Aides Corp., 497 F. Supp. 154, 157–58 (S.D.N.Y. 1980), *aff'd mem.,* 657 F.2d 262 (2d Cir. 1981) (instructions for cutting and hanging draperies found largely dictated by function).

80. Judge Learned Hand recognized that the distinction between idea and expression is largely ad hoc. Peter Pan Fabrics v. Martin Weiner Corp., 274 F.2d 487, 489 (2d Cir. 1960).

81. Whelan Assocs. v. Jaslow Dental Laboratory, 797 F.2d 1222, 1232–42, 1248 (3d Cir.), *cert. denied,* 107 S. Ct. 877 (1986). The programs were in different languages, making literal similarity of program code impossible. *Id.* at 1226.

defendant argued that the structure of a program is by definition its idea and hence not protectable.[82] The court rejected this argument.[83] It held that the *purpose or function* of a utilitarian work is the work's idea.[84] The evidence showed that the function performed by the program in question[85] could be implemented through a variety of different structures.[86] Therefore, the court held the structure to be protectable expression.[87]

The court applied the second technique in *Frybarger v. International Business Machines Corp.*[88] Rather than attempting to define a single abstract idea underlying the videogames in question, the court found that various features constituted distinct, nonprotectable ideas.[89] The court refused to protect the entire game because whatever expression remained after these ideas were eliminated was as a practical matter indispensable to the ideas expressed.[90]

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82. *Id.* at 1235.

83. *Id.* at 1235–42.

84. *Id.* at 1236. The sense in which the *Whelan* court uses the term "utilitarian" is unclear. The court did not define the term, but used the term to distinguish the program from a work of fiction. *Id.* at 1238.

85. In *Whelan,* the "idea" underlying the program was to "aid in the business operations of a dental laboratory." 797 F.2d at 1238.

86. *Id.*

87. *Id.* at 1239. The court in Plains Cotton Coop. Ass'n v. Goodpasture Computer Serv., 807 F.2d 1256, 1262 (5th Cir.), *cert. denied,* 108 S. Ct. 80 (1987), rejected *Whelan's* holding that copyright necessarily protected against copying of a program's structure. The defendants in *Plains Cotton* presented evidence that "many of the similarities between the . . . programs are dictated by the externalities of the cotton market." *Id.,* 807 F.2d at 1262. Therefore, the court upheld denial of a preliminary injunction. The *Whelan* court also cautioned that structure and sequence might not be protected where the idea underlying the program was to perform a function *in a certain way.* 797 F.2d at 1238 n.34. It gave no guidance, however, as to when this would be the case.

The *Whelan* court's approach is similar to the abstractions test developed by Judge Learned Hand for use in determining when nonverbatim copying of a work of fiction would amount to infringement:

> 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.

Nichols v. Universal Pictures Corp., 45 F.2d 119, 121 (2d Cir. 1930).

88. 812 F.2d 525 (9th Cir. 1987).

89. *Id.* at 530. These "ideas" included the display of straight rows of pivot points on a solid colored background; solid lines connecting two pivot points; a single protagonist with legs and a face. *Id.* at 529–30 n.2. Eight more ideas were identified. *Id.*

90. *Id.* at 530. The court characterized this expression as unprotectable *scènes à faire.*

In fiction works, copyright protection has been denied to so-called *scènes à faire,* that is, "incidents, characters or settings which are as a practical matter indispensable, or at least standard, in the treatment of a given topic." Atari, Inc. v. North Am. Philips Consumer Elecs.

C. *Copyright Protection of the User Interface*

Copyright protection for the user interface is complicated because the interface does not itself constitute a "work." Under current registration practices and case law, each element of the interface can be protected only as a part of another work. The underlying program is one work;[91] screen displays with sufficient graphic content are separately copyrightable as audiovisual works;[92] text-based screens may not be separately copyrightable at all.[93] Whether such basic interface styles as menus and interaction can be protected depends upon the separate copyrightability of the screen display. Command languages not displayed on screen depend upon the program copyright for protection.

Copyrightability and scope of protection for the screen displays generated by a non-videogame application program were first considered in *Broderbund Software, Inc. v. Unison World, Inc.*[94] *Broderbund* was an action for infringement of the screen displays of a menu-driven printing program called *Print Shop.*[95] Although principally text-based, the Copyright Office issued a separate registration for the displays as an audiovisual work.[96] While holding the screens to be protectable, the *Broderbund* court did not clearly base its decision on the program or the audiovisual registration. The court cited *Whelan* 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

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Corp., 672 F.2d 607, 616 (7th Cir.) (quoting Alexander v. Haley, 460 F. Supp. 40, 45 (S.D.N.Y. 1978)), *cert. denied,* 459 U.S. 880 (1982). Thus, in a novel about the antebellum South, incidents concerning the ill-treatment of slaves would be considered *scènes à faire. See, e.g., Alexander,* 460 F. Supp. at 45. Professor Nimmer has criticized this statement of the doctrine to the extent that it excludes expression merely because it is "standard" to a given topic. Original but hackneyed prose, he contends, is still protectable. 3 M. NIMMER, *supra* note 30, 13.03[A] at 13-32 to -33 n.43. The doctrine has also been criticized as permitting the subjective opinions of judges as to what is "standard" or "indispensable" to limit the scope of protection. Tamura, *Copyright Infringement: An Argument for the Elimination of the Scènes à Faire Doctrine,* 5 COMM/ENT L.J. 147 (1982).

Despite criticism, the doctrine was used in several videogame cases to define which elements of screen displays were copyrightable expression and which were nonprotectable ideas, or *scnes faire. See, e.g.,* Frybarger v. International Business Machines Corp., 812 F.2d 525, 530 n.3 (9th Cir. 1987); *North Am. Philips,* 672 F.2d at 616–17. To the extent that screen displays of other application programs include a fictive element, the doctrine may have application. The doctrine might even be applied to entirely utilitarian works.

91. *Supra* notes 43–52 and accompanying text.

92. *Supra* notes 53–55 and accompanying text.

93. *Supra* notes 56–62 and accompanying text.

94. 648 F. Supp. 1127 (N.D. Cal. 1986).

95. *Id.* at 1129–30.

96. Siegel & Derwin, *Copyright Infringement of the "Look and Feel" of an Operating System by Its Own Applications Programs,* COMPUTER LAW., Jan. 1987, at 5.

of a program, *including its audiovisual displays.*"[97] However, the court also identified the action to be for "audiovisual copyright infringement."[98] Since the court's analysis focused not on the program code but on a visual comparison of the screens, the court apparently based its decision on infringement of the audiovisual copyright, not the program copyright. The decision may thus be read to mean that menu-driven screen displays containing sufficient graphic content are protectable as audiovisual works.

The defendants in *Broderbund* argued that the menu screens, input formats, and sequencing of screens were nonprotectable because of merger.[99] They claimed that any menu-driven program which allowed the user to print greeting cards, banners, and posters would have menu screens, input formats, and sequencing substantially similar to those in *Print Shop*.[100] The court disagreed. It pointed to another menu-driven printing program which differed substantially from *Print Shop*.[101] Because at least one alternative means of expressing the idea underlying *Print Shop* was available, the court concluded that merger was inapplicable.[102]

The *Broderbund* court opened the door to sweeping protection of screen displays generated by an application program outside the realm of videogames. However, the decision left many issues unresolved. First, it did not clearly base this protection on the audiovisual copyright or the program copyright. Furthermore, because the *Print Shop* interface was menu-driven, the court did not consider whether either audiovisual or program copyright would protect a command-driven interface. A recent case, *Digital Communications Associates, Inc. v. Softklone Distributing Corp.*,[103] helped clarify these questions.

II. SOFTKLONE

A. The Facts

Digital Communications Associates, Inc. v. Softklone Distributing Corp.[104] involved the infringement of the status screen of a communi-

97. 648 F. Supp. at 1133 (emphasis added).
98. *Id.* at 1129.
99. *Id.* at 1132.
100. *Id.*
101. *Id.* The court did not specify precisely how the alternative program differed from *Print Shop*. The court stated only that "[t]he menu screens and sequence of screens in the two programs are different. The entire structure and organization of the user interfaces are different." *Id.*
102. *Id.*
103. 659 F. Supp. 449 (N.D. Ga. 1987).
104. *Id.*

cations program known as *Crosstalk.* The upper portion of the screen reflected the current status of *Crosstalk's* operating parameters.[105] The lower portion of the screen contained a "window." On request, this window displayed a partial list of the *Crosstalk* command terms, which were used to change the settings displayed in the upper portion of the screen.[106] The screen also contained a "command line" by which the user could change the operating parameters.[107]

Digital Communication's predecessor had obtained a copyright registration for the *Crosstalk* computer program.[108] The Copyright Office also issued a separate registration for the *Crosstalk* status screen as a "compilation of program terms."[109]

Softklone produced a competing communications program which it dubbed *Mirror.*[110] *Mirror* duplicated the *Crosstalk* status screen in all material respects.[111] Softklone also used a command language with terms nearly identical to those used by *Crosstalk.*[112] Suit was brought for infringement of both the program and compilation copyrights.[113]

B. The Decision

The *Softklone* court held that the screen displays of *Crosstalk* were separately copyrightable as a compilation. Although declaring certain elements of the *Crosstalk* screen to be nonprotectable, the court found that the arrangement and highlighting of certain characters were expression, and therefore *Mirror* infringed.

First, the *Softklone* court rejected the argument that the *Mirror* status screen could infringe the *Crosstalk* program copyright.[114] The court concluded that *Broderbund* had erroneously interpreted the appellate decision in *Whelan,* and that its holding was contrary to case authority.[115]

The court then determined what elements of the *Crosstalk* screen, if any, were protected by copyright. The defendants argued that the sta-

105. *Id.* at 452.
106. *Id.* at 452–53.
107. *Id.* "For example, if the user wishes to change the byte or baud rate (speed) of the program to 1200, he can type and enter the two letter symbol for the byte or baud rate command along with the rate he desires, e.g. 'SP 1200,' . . . ." *Id.* at 453.
108. *Id.* Digital Communications purchased Microstuff, Inc., the original developer of *Print Shop. Id.*
109. *Id.*
110. *Id.*
111. *Id.* at 465.
112. *See id.* at 465–66.
113. *Id.* at 454.
114. *Id.* at 455–56.
115. *Id.*

tus screen was a necessary expression of the idea underlying the screen, and therefore unprotectable under the doctrine of merger.[116] The court adopted the approach taken by the Third Circuit in *Whelan,* and concluded that the purpose or function of a utilitarian work would be the work's idea.[117] Where there are various means of achieving the desired purpose, the particular means chosen is not necessary to the purpose. Merger does not occur, and the expression remains protectable.[118] The court held that the idea underlying the screen was the process or manner in which the screen operates.[119]

Applying this analysis to the *Crosstalk* screen, the court found that certain features were nonprotectable ideas. These included the use of a screen to reflect the status of the program, the use of a command driven program, and the typing of two symbols to activate a specific command.[120] All of these features related to "how the computer program receives commands or instructions from the user and how operationally the computer program reflects the results of those commands."[121] The court concluded, however, that the manner in which the command terms were presented, i.e. the arrangement and highlighting of two characters, were unrelated to how the program operated, and were thus protectable expression.[122] Others were not precluded from using the same set of commands if this arrangement and highlighting were not duplicated.[123]

Finally, the court declared that "standardization" did not require a different result.[124] The court concluded that the proper balance of protection and communication (or competition) supported the copyrightability of the arrangement and design of the status screen.[125]

III. ANALYSIS

The *Softklone* decision is important because it supports protection of interface design and illustrates the advantages of separate

116. *Id.* at 459–60. The defendants also argued that the screen was not copyrightable because it was a blank form, relying on Baker v. Selden, 101 U.S. 99 (1880). Because the screen conveyed information beyond indicating where to record data, the court rejected defendant's claim that the screen was a blank form, and upheld copyrightability. 659 F. Supp. at 460–62.

117. 659 F. Supp. at 458–59.

118. *Id.* at 458.

119. *Id.* at 459.

120. *Id.*

121. *Id.*

122. *Id.*

123. *Id.* at 462.

124. *Id.*

125. *Id.*

copyrightability of screen displays. First, although it excluded certain elements of the screen display as nonprotectable ideas, the court held that the *Crosstalk* status screen was protected by copyright. By specifically identifying nonprotectable features, the *Softklone* court's approach helps to preserve competition in interface design.[126] Second, the *Softklone* court properly rejected standardization as a reason to deny copyrightability to interface design.[127] Third, by illustrating how easily infringement of screen-oriented interface design may be determined when the screen displays are separately copyrightable, the *Softklone* decision supports separate copyrightability of text-based screen displays.[128]

The major drawback in the *Softklone* decision is its failure to fully protect the individual commands of *Crosstalk's* command language.[129] The command terms are the most important aspect of the command language. The *Softklone* decision would permit competitors to freely use an identical set of command terms.

A. Scope of Protection for the User Interface

A proper balance between protection and competition is fundamental to copyright protection of computer programs and interface design.[130] Once a work is found to be copyrightable, the principal means of preserving competition is the exclusion of ideas from copyright protection.[131] Appropriately defining the "idea" underlying interface design is the most important step in achieving the balance between protection and competition. The *Softklone* and *Broderbund* decisions agree that the screen displays of application programs are copyrightable. They differ, however, in the manner in which they define the idea or ideas underlying screen displays.

The *Broderbund* decision equated the idea underlying a program's screen displays with the idea underlying the program itself. In the case of *Print Shop,* that idea was a greeting card printing program.[132] Each interface design choice was not necessary to the expression of a greeting card printing program as an idea, and the court found that that idea could be expressed in an unlimited number of ways. There-

126. *See infra* notes 130–49 and accompanying text.
127. *See infra* notes 151–59 and accompanying text.
128. *See infra* notes 160–72 and accompanying text.
129. *See infra* notes 173–83 and accompanying text.
130. *See supra* notes 25–28 and accompanying text.
131. *See supra* notes 74–90 and accompanying text.
132. Broderbund Software v. Unison World, 648 F. Supp. 1127, 1132 (N.D. Cal. 1986); *see infra* note 134.

fore, no merger occurred, and the interface was protected.[133] Although the *Broderbund* court would apparently permit a competing program to utilize menus,[134] the court's very general definition of the idea underlying the interface would compel a finding of infringement by any greeting card printing program duplicating any of the other interface design choices embodied in *Print Shop.*

By contrast, the *Softklone* court focused on the interface, not the program. The court considered how the elements on screen related to the communication between user and computer. Rather than identifying a single abstract idea underlying the work, the court found that several distinct interface elements were unprotected ideas.[135] Thus, the use of a screen to reflect the status of the program, the use of a command-driven program, and the typing of two symbols to activate a specific command were all ideas.[136] The court then determined whether the remaining expression was infringed.[137]

The *Softklone* court's approach is preferable to that employed in *Broderbund* for two reasons. First, the *Softklone* court properly focused its inquiry on the screen display, the work alleged to have been infringed. Second, the court's approach provides a more certain basis for preserving competition in interface design while still maintaining protection.

Copyright protects only identifiable "works" of authorship.[138] The screen displays and the underlying program constitute separate works,[139] and each should be judged on its own merits. The idea underlying the displays is undeniably linked to that underlying the program. However, the screen performs a unique function. It communicates with the user. In determining what idea or ideas underlie the screen displays, one must consider how this communication is accomplished. The nature of interface design suggests that, at a basic

133. *Id.*

134. In *Broderbund,* the defendant argued that idea and expression had merged because "[a]ny menu-driven computer program that allows its users to print greeting cards . . . will have a user interface substantially similar" to that in plaintiff's program. *Id.* It may be inferred that the *Broderbund* court acceded to defendant's definition as including the choice of basic interface style, i.e. the use of menus, because, in rejecting the merger argument, the court pointed to another, presumably non-infringing, menu-driven greeting card program. *Id.* This illustrates the elasticity—and therefore unpredictability—of the *Broderbund* approach. *See infra* note 142 and accompanying text.

135. Digital Communications Assocs. v. Softklone Distrib., 659 F. Supp. 449, 459 (N.D. Ga. 1987).

136. *Id.*

137. *Id.* at 459–60.

138. *See supra* notes 30–31 and accompanying text.

139. *See supra* notes 42–62 and accompanying text.

level, the means of establishing this communication are strictly limited. For example, there are only three basic interface styles: menus, command languages, and interactive design.[140] Furthermore, even within a given interface style, design choices may be very limited. For example, if developers choose to use menus, they have limited means of prompting the user for a response (e.g. a command line, or input of a number or mnemonic combination of letters).[141] If the "idea" underlying a screen display is so general that these various choices are considered expression, the effect is to materially constrict the interface designs available to competitors. The *Softklone* court maintains competition by refusing copyright protection to basic design choices.

The *Softklone* approach also has the virtue of certainty. Under *Broderbund,* competitors could not predict with certainty whether a court would choose to include various design choices within the "idea" underlying a program. By defining specific design choices as nonprotectable, the *Softklone* decision and courts adopting its approach will resolve this problem and provide competitors with "safe havens" against infringement.[142]

Having determined which interface design choices constitute ideas and which constitute expression, the question of the scope of protection to be afforded to the expression remains unanswered. Copyright has consistently recognized that the scope of protection afforded depends upon the range of expression available.[143] If the means of expression is limited, a court will require near verbatim copying before finding infringement.[144] Because the infringing works at issue in *Broderbund* and *Softklone* were nearly identical to the infringed works, neither court had to determine how far beyond literal copying protection of screen displays extends.

Studies conducted in the last decade indicate that interface design

140. *Cf.* B. SHNEIDERMAN, *supra* note 1, at 57–60. Form fill-in, listed as a separate interaction style by Shneiderman, is treated as a special kind of menu. *Id.* at 122–28.

141. *Cf. id.* at 117–20.

142. If a court identifies only one idea underlying a program, it is impossible to predict whether any given interface technique is included, and hence nonprotected. Ideally, the line between idea and expression should be drawn at the point which best maintains a balance between protection and competition. However, as the videogame cases illustrate, courts have not been consistent in drawing this line even with comparable subject matter. *Compare* Atari, Inc. v. North Am. Philips Consumer Elecs. Corp., 672 F.2d 607 (7th Cir.), *cert. denied,* 459 U.S. 880 (1982) *with* Atari, Inc. v. Amusement World, 547 F. Supp. 222 (D. Md. 1981). Raymond Nimmer attributes the difference in result reached by the *North Am. Philips* and *Amusement World* courts to the different level of abstraction used by each court in defining the idea underlying the game. R. NIMMER, LAW OF COMPUTER TECHNOLOGY 1.07, at 1-48 (1985).

143. *See supra* notes 77–79 and accompanying text.

144. *Id.*

choices may be limited in many respects.[145] For example, such factors as the expected frequency of use and expertise of the intended user group will have an impact on interface design.[146] At a basic level, an experienced user may become frustrated with the inflexibility and slowness of a menu-driven program and prefer the speed of a command language. Similarly, an infrequent novice user may not remember commands from one session to the next, and may require prompting.[147] Human engineering considerations may also limit choice of wording, menu structure, and screen presentation of information.[148]

Considerations of efficiency, ease of understanding, and skill retention may all act to limit the viable interface choices available.[149] To preserve competition, only viable design choices should be considered in determining the range of expression available.[150] If a defendant can show that the range of expression is limited, infringement should be found only where copying is verbatim.

B. Standardization

The defense in *Softklone* argued that the need for "standardization" in the software industry justified denial of copyright protection to interface design, as opposed to the program code. The court's discussion of the standardization issue is brief, and the rationale advanced in favor of standardization is by no means clear.[151] However, the court's

145. *See, e.g.*, B. SHNEIDERMAN, *supra* note 1; FUNDAMENTALS OF HUMAN-COMPUTER INTERACTION (A. Monk ed. 1985).

146. B. SHNEIDERMAN, *supra* note 1, at 53–55.

147. The Library of Congress's experience with its computerized catalog illustrates this problem. The program was first designed for use by professional staff members. Three- to six-hour training sessions were given to staff members. In 1981, the Library stopped updating its manual card catalog, requiring the general public to use the computerized version. The system, using a command language, proved too difficult for the ordinary public to use. The lesson was apparent: "The SCORPIO system that worked so well for one community of users was inappropriate for this new community." *Id.* at 13–14. Consequently, the system was revised to provide feedback and on-line tutorial help. *Id.* at 14.

148. *See generally* B. SHNEIDERMAN, *supra* note 1, *passim* (gathering and reporting results of studies of human engineering considerations in interface design).

149. *Id.*

150. *Cf.* R. NIMMER, *supra* note 142, 1.03[2] at 1-14 (arguing that efficiency limitations on programming choices should limit scope of protection afforded programs).

151. Without identifying the rationale advanced by defendants, the *Softklone* court noted that the argument was "similar to the one rejected in *Whalen* [sic], 797 F.2d at 1238 ('we are not convinced that progress in computer technology or technique is qualitatively different from progress in other areas of science or the arts') . . . ." Digital Communications Assocs. v. Softklone Distrib., 659 F. Supp. 449, 462 (N.D. Ga. 1987). In the quoted statement, the *Whelan* court responded to the argument that copyright protection should not extend beyond a prohibition against verbatim copying. Whelan Assocs. v. Jaslow Dental Laboratory, 797 F.2d

conclusion that standardization has no bearing on the scope of copyright protection afforded interface design is valid.

In essence, the argument for standardization is one for permitting the development of "clones." A "clone" is a program which duplicates the user interface of another program, typically a market leader. The user interfaces are identical. To the user, the programs are interchangeable. However, the program code is entirely distinct to avoid infringing any copyright in the market leader's code. Both *Broderbund* and *Softklone* illustrate this phenomenon.[152]

Clone manufacturers argue that leaving the interface unprotected encourages the development of underlying programs and serves the public interest by allowing the development of arguably better[153] and frequently less expensive[154] competing programs with common interfaces.[155] Because the skills learned on one program are transferable to another, a user does not need to waste time learning the new program. The user's choice of program will then be dictated by the program's functionality, not by the user's familiarity with the interface. Of course, clone manufacturers also receive a generous market benefit. Copying an existing interface permits developers to avoid the expense of developing their own interfaces, and provides them with a ready market of users already trained to use the new product.[156]

1222, 1237–38 (3d Cir.), *cert. denied,* 107 S. Ct. 877 (1986). The defendants' argument was not, as it was in *Softklone,* that copyright protection ought to be denied to a work altogether. The argument to which the *Whelan* court's comment appears to be directed was that overbroad protection would retard development of new computer programs. 797 F.2d at 1238.

152. Both *Crosstalk* and *Print Shop* were very successful programs. Broderbund Software v. Unison World, 648 F. Supp. 1127, 1130 (N.D. Cal. 1986) (*Print Shop* sold 500,000 copies prior to trial); *Softklone,* 659 F. Supp. at 452. In *Broderbund,* the defendants had begun development of an IBM version of *Print Shop* during licensing negotiations with Broderbund. They instructed their programmer to duplicate *Print Shop* as nearly as possible. When negotiations failed, the defendants retained the copied screen displays. *Broderbund,* 648 F. Supp. at 1130–31. In *Softklone,* the defendant duplicated the *Crosstalk* screen on advice of counsel that the status screen was nonprotectable. 659 F. Supp. at 453.

153. The competing program may be faster. It may also offer more functions. For example, a competitor may add a spelling checker or automatic hyphenation to a word processing program.

154. In a recent advertisement, for example, Softklone offered *Mirror* for $69.95; by comparison, the list price for *Crosstalk* was $195. PC CLONES, Premier Edition 1987, at 8.

155. *See, e.g., supra* note 7.

156. A similar debate has taken place between manufacturers of computers. New entrants have striven to attain compatibility with the operating systems of well-established competitors to gain access to the wide variety of applications software written specifically for established systems. *See, e.g.,* Apple Computer v. Formula Int'l, 725 F.2d 521 (9th Cir. 1984) (defendant alleged copying of systems programs was required to permit its computers to run third-party applications programs written for plaintiff's computers), *aff'g,* 562 F. Supp. 775 (C.D. Cal. 1983); Apple Computer v. Franklin Computer Corp., 714 F.2d 1240 (3d Cir. 1983) (same), *cert. dismissed,* 464 U.S. 1033 (1984); *cf.* E.F. Johnson Co. v. Uniden Corp. of Am., 623 F. Supp. 1485 (D. Minn. 1985) (alleging identity of "barker code," "H-matrix" was necessary to make

The proponents of standardization do not argue that other, noninfringing interface designs cannot accomplish the same functional result. If this were the case, traditional copyright doctrine would support an argument that any such interface design ought not be protected because of merger, or should be protected at most from verbatim copying.[157]

The standardization argument fundamentally conflicts with the policies underlying copyright, and was properly rejected by the *Softklone* court. Copyright seeks to provide authors sufficient protection to encourage them to develop new works. Although refusing protection to interface design arguably encourages competition in program design, it also discourages development of new interface designs. Interface design requires a substantial investment in time and money.[158] Without protection, developers will not expend the extraordinary effort required to create a new interface design. Furthermore, because the user interface is the determinative factor in the marketability of a program,[159] standardization endangers a developer's ability to recoup expenses incurred in development of the program as well.

C. Text-Based Screen Displays

Screen displays incorporating graphic material are presently separately copyrightable as audiovisual works.[160] Separate copyrightability of text-based screens was upheld in *Softklone* as a "compilation of program terms."[161] *Softklone* illustrates the ease with which infringement is determined when the screen displays are separately

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defendant's radios compatible with plaintiff's repeaters); SAS Inst. v. S & H Computer Sys., 605 F. Supp. 816 (M.D. Tenn. 1985) (defendant alleged similarity was necessary to make its program upwardly compatible with plaintiff's).

The courts uniformly rejected the contention that compatibility *per se* excused copying; the question was whether other programs could accomplish the same function. The *Franklin Computer* court observed that "total compatibility with independently developed application programs written for the Apple II" was "a commercial and competitive objective which does not enter into the somewhat metaphysical issue of whether particular ideas and expressions have merged." 714 F.2d at 1253.

157. *See supra* note 79 and accompanying text.

158. For example, Xerox employees "devoted about thirty work- years to the design of the Star user interface. It was designed *before* the functionality of the system was fully decided. It was even designed *before* the computer hardware was built. We worked for two years *before* we wrote a single line of actual product software." Smith, Irby, Kimball, Verplank & Harslen, *Designing the Star User Interface*, BYTE, Apr. 1982, at 242, 246 (emphasis in original).

159. *See supra* note 3.

160. *See supra* notes 53–55 and accompanying text.

161. Digital Communications Assocs. v. Softklone Distrib., 659 F. Supp. 449, 462–63 (N.D. Ga. 1987).

copyrightable. However, the separate copyrightability of text-based screen displays is now in doubt because of the Copyright Office's declaration that it will no longer separately register text-based screens on the theory that text-based screens are already protected by the program registration.[162] That policy is now under review.[163] Given the importance of the interface, both text-based and graphic screens should be separately copyrightable.

The Copyright Office's position that the program copyright protects text-based screen displays poses problems for interface protection. First, its position is inconsistent with the 1980 computer software amendments to the Copyright Act and prior case law.[164] Second, the denial of separate registration materially affects the ability of developers to prove infringement of text- based displays. Presumably, infringement will require substantial similarity in program code rather than visual similarity of the screens in question, since program infringement actions focus on analysis of the program code.[165] A plaintiff seeking to prove infringement of a text-based screen will have to show not only similarity of code, but also that the similarities are sufficiently important, quantitatively or qualitatively, to constitute improper appropriation.[166] Furthermore, program infringement cases are complex, requiring the admission of expert testimony and dissec-

162. *See supra* note 61 and accompanying text. This rationale would seem to apply equally to graphic displays, since the program contains the instructions required to generate a graphic display. The Copyright Office, however, has not refused to separately register graphic displays as audiovisual works.

In noncomputer contexts, works wholly encompassed within other works have been found separately copyrightable. For example, an illustration may be copyrighted although within a book. *See* Walt Disney Prods. v. Air Pirates, 581 F.2d 751, 757 (9th Cir. 1978).

163. *See supra* note 62 and accompanying text.

164. *See supra* notes 42–52 and accompanying text.

165. The Copyright Office notice to Lotus Development Corp. is unclear on this point. One possible interpretation of the policy is that separate registration is merely redundant in an administrative sense; that is, the single registration extends protection to two separate works, which are then considered independently in an infringement action. However, program infringement actions have always focused on similarity of program code. *See, e.g.*, Whelan Assocs. v. Jaslow Dental Laboratory, 797 F.2d 1222 (3d Cir.), *cert. denied*, 107 S. Ct. 877 (1986); E.F. Johnson Co. v. Uniden Corp. of Am., 623 F. Supp. 1485 (D. Minn. 1985); SAS Inst. v. S & H Computer Sys., 605 F. Supp. 816 (M.D. Tenn. 1985).

The Copyright Office is undertaking a review of its registration policies. *Supra* note 62. Denial of separate registrability appears to assume that on-screen text is a part of the underlying program, *see supra* note 61, so that actions for infringement of text-based screens would be dominated by program code analysis.

However, the Copyright Office's review also encompasses the issue of appropriate deposit requirements. *Supra* note 62. If separate deposit of screen displays is permitted, the issue of separate registrability may be of little consequence if the courts then permit infringement actions to proceed on the basis of visual comparison rather than program code analysis.

166. *See supra* notes 67–72 and accompanying text.

tion of the program, thereby increasing the cost of bringing suit.[167]

The importance of user interface design justifies separate registration of both text-based and graphic screens as audiovisual works because separate registration simplifies infringement analysis. The classifications established by the Act were intended to be illustrative, not exclusive.[168] The range of copyrightable works was intended to be broad.[169] The "images" required for an audiovisual work[170] could be interpreted to include text. One court has held that an audiovisual copyright of a work otherwise consisting of graphic images will also protect any accompanying text.[171] Properly designed text-based screens are of great value in interface design.[172] Permitting separate registration of graphic screens and text-based screens incorporating sufficient graphic material while denying separate registration to wholly text-based screens is unjustified. Denying separate registration to all screens would seriously impair a developer's efforts to prove infringement.

D. Copyright Protection of Command Languages

Softklone involved infringement of a "compilation of program terms." The court found infringement based upon the manner in which the command language terms were presented on screen, e.g. placement and highlighting of the first two characters of each command term. The court refused to bar others from using identical command terms if their on-screen presentation was sufficiently distinct.[173]

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167. Dissection and expert testimony were prominently featured in Whelan Assocs. v. Jaslow Dental Laboratory, 797 F.2d 1222 (3d Cir.), *cert. denied,* 107 S. Ct. 877 (1986); E.F. Johnson Co. v. Uniden Corp. of Am., 623 F. Supp. 1485 (D. Minn. 1985); SAS Inst. v. S & H Computer Sys., 605 F. Supp. 816 (M.D. Tenn. 1985).

168. H.R. REP. NO. 1476, *supra* note 30, at 53.

169. *Id.* at 51.

170. *Supra* note 33.

171. WGN Continental Broadcasting Co. v. United Video, 693 F.2d 622 (7th Cir. 1982). This was true even though the text and graphics did not appear on screen simultaneously. *Id.* at 628- 29.

172. *See generally* B. SHNEIDERMAN, *supra* note 1, at 69–72, 110–16, 162–65, 326–36, 342–50 (noting factors in effective screen design); *see also id.* at 199–201 (noting disadvantages of graphic displays vis-à-vis textual displays).

173. Digital Communications Assocs. v. Softklone Distrib., 659 F. Supp. 449, 460–62 (N.D. Ga. 1987). Because the terms in *Softklone* were displayed on screen, the court was not faced with the task of deciding whether a program which accepted an identical command language, but did not display the command terms on screen, could be found to infringe another program's command language. The court nonetheless stated that no infringement would be found. *Id.* at 460. In doing so, the court relied upon Synercom Technology, Inc. v. University Computing Co., 462 F. Supp. 1003 (N.D. Tex. 1978).

In *Synercom,* the defendant wrote a preprocessing program designed to accept data punchcards formatted identically to those accepted by Synercom's program. *Id.* at 1012.

The court erred by not extending protection to the command terms themselves. Individually, command terms are likely not copyrightable because they do not meet the threshold quantum of creativity required of copyrightable works.[174] However, copyright protects compilations,[175] even where the individual components of the compilation are not copyrightable.[176] The protection afforded extends not only to presentation but also to selection of the items included in a compilation.[177]

The idea of a command language and the particular set of command terms used to implement this idea are conceptually distinct.[178] While a command language represents one of only a limited number of basic interface styles,[179] the number of possible combinations of command terms is practically limitless.[180] Permitting one developer to monopolize one command set would not endanger the opportunity of other developers to create other command sets.[181] Furthermore, the devel-

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Synercom claimed that the preprocessor infringed its copyright in a manual which contained an illustration of a format card. *Id.* The *Synercom* court denied infringement because it found the sequence of data entry was nonprotectable either because it was an idea or because of merger. *Id.* at 1012–14.

In *Softklone,* the court stated that no infringement would have occurred had the defendant's program simply accepted all of the same commands utilized by the plaintiff without displaying them on screen. 659 F. Supp. at 460. It reasoned that the defendants would have only appropriated *Crosstalk's* idea (the command terms), not its expression (the on-screen presentation). *Id.*

The *Softklone* court's reliance on *Synercom* is unfounded. The *Synercom* decision is grounded on its finding that the appropriated matter (the sequence of data entry) is nonprotectable. Assuming that the *Softklone* court is wrong in holding command terms to be nonprotectable, *see infra* notes 176–83 and accompanying text, *Synercom* is inapposite. If the terms are protectable, a court should proceed to determine whether the program codes are substantially similar and hence infringing.

174. Simple words and phrases have been denied copyright for lack of sufficient creativity or originality. *See supra* note 30.

175. *Supra* note 34.

176. *See, e.g.,* Reiss v. National Quotation Bureau, 276 F. 717 (S.D.N.Y. 1921) (L. Hand, J.); *see also* Southern Bell Tel. & Tel. Co. v. Associated Tel. Directory Publishers, 756 F.2d 801, 809 (11th Cir. 1985) (Atlanta yellow pages); Baldwin Cooke Co. v. Keith Clark, Inc., 383 F. Supp. 650, 654–55 (N.D. Ill. 1974) (calendar and appointment book; composite copyrightable although constituent parts in public domain), *aff'd,* 505 F.2d 1250 (7th Cir. 1975).

177. *See, e.g.,* Schroeder v. William Morrow & Co., 566 F.2d 3, 5–6 (5th Cir. 1977) (gardening directory); Leon v. Pacific Tel. & Tel. Co., 91 F.2d 484 (9th Cir. 1937). Protection will depend upon the amount of effort or judgment that went into the compilation. *Cf.* Toro Co. v. R & R Prods. Co., 787 F.2d 1208, 1213 (8th Cir. 1986).

178. *Cf. Toro Co.,* 787 F.2d at 1212 (distinguishing idea of "parts numbering system" from its embodiment in particular set of numbers).

179. *Supra* note 140.

180. The number of variations will depend upon the number of functions to be performed and the viable alternative terms available for each function.

181. *Cf. Toro Co.,* 787 F.2d at 1212.

opment of a particular command language involves considerable creativity.[182]

In *Softklone,* the command terms should have been protected. The defendant did not show that the compilation was not original as a whole.[183] Furthermore, Softklone did not show that another set of command terms could not perform the same function equally well, so merger did not apply.

IV. CONCLUSION

User interface design is critical to the market success of computer programs. Protection ought to be afforded in such a way that proof of infringement is easy and predictable. By identifying specific nonprotectable elements, the *Softklone* decision extended copyright protection to the screen displays generated by the program in a manner which assures that such protection will not unduly hamper competition. The court properly rejected the argument that standardization should independently act as a limitation on the scope of protection afforded. Standardization would destroy the incentive to invest in interface design. The court erred, however, in failing to fully protect the infringed program's command language.

Softklone also illustrates the importance of separate registration in proving infringement. Given the significance of interface design, separate registration of both text-based and graphic screens ought to be encouraged. The Copyright Office should reconsider its refusal to separately register text-based screens.

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182. The choice of individual command terms is not haphazard. Efficiency and ease of user recall will substantially affect a well-designed command set. B. SHNEIDERMAN, *supra* note 1, at 136–72.

183. There was evidence that some of the individual command terms had been in use prior to *Crosstalk's* creation. Digital Communications Assocs. v. Softklone Distrib., 659 F. Supp. 449, 463 (N.D. Ga. 1987). Since copyright only protects original works from copying, it was of course open to Softklone to argue either that the compilation was not original (i.e., that it was not copyrightable) or that it did not copy *Crosstalk* but instead copied the command terms from a common source (i.e., did not infringe one of the rights secured by copyright).