

**COPYRIGHTING "LOOK AND FEEL":  
MANUFACTURERS TECHNOLOGIES v. CAMS**

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**INTRODUCTION**

Some new technologies fit easily into the preexisting legal framework. Immediately upon development, attorneys and courts comfortably place the technology into a familiar category. Rights are certain, transactions efficient, and technological progress continues unhindered. Such has not been the case with computer software,<sup>1</sup> which, from the first, has resisted neat categorization.

A programmer creates software by writing source code, a series of steps, logically arranged, containing commands similar to English words and phrases. Program source code, while distantly resembling free-flowing verse, is devoid of literary—or functional—value. In most common applications, program source code is translated into object code by a program known as a compiler. It is the object code that a computer understands. The object code, an uninterrupted series of zeros and ones, is not only uninteresting to humans, but virtually unintelligible as well. Only in the confluence of unintelligible software (object code) and computer hardware is a program given life, making it usable, and therefore appreciable in the marketplace.<sup>2</sup> Nevertheless, both source code and object code are protected by copyright, the body of law traditionally reserved for the protection of literary, cinematic, musical, and other artistic compositions.

The marketability of a program depends in large part on its user interface.<sup>3</sup> In determining what software to purchase people rarely, if ever, consider the code the computer runs. Typical users are unsophisticated, and easy-to-use programs are in great demand.<sup>4</sup> Thus, although the development of a program requires a significant amount of time and

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1. "Software" and "computer program" are used synonymously.

2. A computer is essentially incapable of performing useful functions without software. As an electronic device, it is subject to patent protection. See 35 U.S.C. §§ 101 *et seq.* (1988).

3. See Note, *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), 63 WASH. L. REV. 195, 216 (1988).

4. *Id.* at 220.

effort and has a number of distinct phases,<sup>5</sup> the majority of the time is spent not in developing the code itself, but in defining the parameters of the program and the user interface.<sup>6</sup> Innovation in user interfaces, not in program code, has driven growth in the software industry, and competition is most intense in that area.

As the design of software featuring innovative user interfaces has become increasingly expensive,<sup>7</sup> the creation of look-alike software, mimicking the innovative features of established user interfaces, has become increasingly common and increasingly profitable. Success by an industry leader who invests in the development of a new interface quickly leads to copying by others. Since a copier has few of the development expenses of the original developer, "copycat" software can sell more cheaply. Additionally, the original developer incurs the marketing costs of introducing the user-interface to the market and convincing the market of the interface's worth. The copier in this regard is the classic "free rider." Thus, it is clear that computer programs require some protection from copying.

However, computer screens are significantly limited by their size, so protection of a screen design given to a developer could prevent others from producing a program which had the same or similar purpose.<sup>8</sup> Overly broad protection of user interfaces would severely hinder incremental improvements in software by preventing competitors from improving on one another's programs. Additionally, because a change would require significant retraining of personnel the costs to business of changing software is high if the interfaces are not similar. Therefore, unless an extremely significant improvement is made, businesses will be unwilling to change software. This, in turn, will destroy the incentive for the software developers. Thus, some degree of permissible cloning is necessary, to prevent software developers from obtaining a monopoly on a given application.

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5. One commentator concludes that there are four steps: (1) define the problem; (2) create a flow chart of overall structure; (3) write the program in source code; and (4) translate the program into object code. Note, *Copyright Protection for Computer Screen Displays*, 72 MINN. L. REV. 1123, 1131 (1988).

6. Experts claim that 50 to 70 percent of development time relates to defining program requirements and designing the user interface. *Id.*

7. See Beutel, *Trade Dress Protection For the "Look and Feel" of Software: A New Source of Proprietary Rights Protection for the Software Industry?*, COMPUTER LAW., Oct. 1988, at 1, 2.

8. The discussion of screen designs refers to programs and systems utilizing character or text based interfaces. An IBM Personal Computer screen, for example, in text mode, contains 25 lines of 80 characters each, or 2000 characters. In graphics mode, a program can control the color and intensity of each of 256,000 pixels. See also *infra* notes 69-70 and accompanying text.

Notwithstanding these concerns, most companies and commentators appear to agree that some type of protection is required for computer screens, but they fail to agree on what type of protection is optimal.<sup>9</sup> The major focus has been on copyright protection because the underlying program is protected by copyright and because the screens are best characterized as artistic or literary, or as compilations. However, there have been arguments that patent law<sup>10</sup> or trade dress<sup>11</sup> would apply better to the type of work involved in the creation of computer displays. One major concern with copyright law is the length of the monopoly.<sup>12</sup> Copyright protects a work for the author's life plus fifty years.<sup>13</sup> The arguments for protection do not require such a long period. Furthermore, in the computer industry, programs and screen displays are usually updated and improved within a few years.

Congress and the Copyright Office have done little to alleviate confusion as to even the most basic points of the law regarding computer programs. After years of debate,<sup>14</sup> the Congressionally-chartered Commission On New Technological Uses of Copyright Works ("CONTU") made recommendations leading to the adoption of the Computer Software Copyright Act of 1980, which amended Section 101 of Title 17 of the U.S. Code to include the definition of "computer program."<sup>15</sup> Until 1988, the Copyright Office accepted separate registrations of software

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9. See Note, *supra* note 5, at 1152.

10. See generally Lundberg, Michel & Smuner, *The Copyright/Patent Interface: Why Utilitarian "Look and Feel" is Uncopyrightable Subject Matter*, COMPUTER LAW., Jan. 1989, at 5 [hereinafter Lundberg]. Patent law applies to novel "machines, processes, and procedures." 35 U.S.C. § 101 (1988). Since programmed computers typically simulate existing structures, they are not novel. The elements of screen displays cannot be protected in any useful area which is already known, such as cost estimation, because the procedures and tools used by the estimator have been used by others.

11. See generally Beutel, *supra* note 7. Trade dress is governed by a little known part of the Lanham Act, 15 U.S.C. § 1125 (1988), which prevents misrepresentation of origin by similar "total concept and feel." Since the main issue in computer displays is the "look and feel" of the whole program, trade dress may apply. Trade dress problems can ordinarily be resolved by clearly identifying the manufacturer, a solution inapplicable to the problems of look and feel in the computer industry, however. A second concern is that the monopoly period under trade dress is indefinite.

12. Note, *Single Copyright Registration for Computer Programs: Outdated Perceptions Bite the Dust*, 54 BROOKLYN L. REV. 965, 970 (1988).

13. 17 U.S.C. § 302 (1988). Patent protection, on the other hand, lasts 17 years. 35 U.S.C. § 154 (1988).

14. While the debate continued, the Copyright Office began accepting the registration of computer programs as literary works in 1964.

15. 17 U.S.C. § 101 (1988) ("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."). See also 17 U.S.C. § 117 (1988). (A CONTU recommended replacement of former section 117 which deals with certain technical problems related to the copyright of computer programs.)

code and the visual displays created by the code.<sup>16</sup> In a recent decision, the Office announced that for a particular program it would only accept a single registration which would protect all copyrightable aspects of the program, including source code, object code, and visual displays.<sup>17</sup> The Office concluded that the "computer program code and screen displays are integrally related and ordinarily form a single work."<sup>18</sup> The Copyright Office stressed, however, that "the courts [must] determine the scope of copyright in appropriate cases."<sup>19</sup> *Manufacturers Technologies, Inc. v. CAMS, Inc.*<sup>20</sup> is the first case decided since the policy change to confront the problem of copyright protection for screen displays.

## I. MANUFACTURERS TECHNOLOGIES v. CAMS

### A. Background

During 1982-83, Manufacturers Technologies, Inc. ("MTI") developed Costimator, a program for estimating the cost of producing custom machine tools.<sup>21</sup> MTI obtained separate copyrights for Costimator and for several of Costimator's screen displays.<sup>22</sup> In December of 1983, MTI appointed defendants as non-exclusive marketing agents for Costimator. During the course of the business relationship, defendants became familiar with the Costimator program by viewing demonstration disks, promotional literature, and manuals. Defendants never had access to the Costimator source code.<sup>23</sup> In April 1984, defendants began developing Rapidcost and Quickcost (Rapid/Quickcost), programs

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16. The relationship between a program and the visual displays created by the program may be compared to the relationship between sheet music and audible music. A program guides a computer's machinery (as sheet music guides an orchestra) to create visual displays on the computer screen (analogous to audible music). However, unlike audible music, a single visual display may be generated by a virtually limitless number of entirely dissimilar programs. This has been a source of difficulty in applying existing copyright law to computer software.

17. Copyright Office, Notice of Registration Decision: Registration and Deposit of Computer Screen Displays, 53 Fed. Reg. 21,817 (1988).

18. *Id.* at 21,819.

19. *Id.*

20. 706 F. Supp. 984 (D. Conn. 1989).

21. *Id.* at 988.

22. Costimator featured a character or text based user interface (as opposed to the graphics based user interface characteristic of applications running under the Apple Macintosh or IBM OS/2 Presentation Manager interfaces). Costimator screens generally consisted of program status information across the top of the screen, a menu of user options in the center of the screen, and a command line at the bottom of the screen. MTI's separate registrations antedated the Copyright Office's single registration decision.

23. 706 F. Supp. at 1000.

extremely similar to Costimator in both function and appearance.<sup>24</sup> In May 1984, defendants formally terminated the business relationship and began marketing their competing programs. MTI sued for copyright infringement.<sup>25</sup> Because CAMS did not have access to the source code, a prerequisite to a finding of infringement, questions of copyright centered on Costimator's screen displays.<sup>26</sup>

### B. Copyright in Screen Displays

In the bench trial, Judge Daly rejected CAMS' contention that MTI's screen displays did not constitute copyrightable materials, but did not endorse the "broad protection" offered computer programs by *Broderbund Software, Inc. v. Unison World*.<sup>27</sup> *Broderbund* held that the copyright protection in a program extended to the structures of the program, including the screen displays.<sup>28</sup> *Broderbund* relied on *Whelan Associates v. Jaslow Dental Laboratories, Inc.*<sup>29</sup> as precedent for this proposition.<sup>30</sup> Judge Daly said the *Broderbund* court misinterpreted *Whelan*, which merely held that "screen outputs could be indirect and inferential evidence useful in establishing copying of the underlying computer program."<sup>31</sup>

Judge Daly also refused to adopt the narrow protection for programs found in *Digital Communications Associates, Inc. v. Softklone Distribut-*

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24. The court found there to be "striking overall stylistic and format similarity" between the programs, particularly in their use of uncommon terminology, consistent use of upper and lower case characters, similarities in the grouping of segments of screen displays, duplication in the way a user navigates from the various functions within the programs, and similar redundancies in screen displays that an experienced machinist might not have included in the design of a program. *Id.* at 1000-01.

25. MTI also alleged unfair competition, an issue beyond the scope of this Recent Development.

26. "[T]he Court rejects plaintiff's claim that its source code has been infringed as without adequate foundation," given the court's finding that CAMS had no access to the source code. 706 F. Supp. at 1002.

27. 648 F. Supp. 1127, 1133 (N.D. Cal. 1986).

28. *Id.*

29. 797 F.2d 1222 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987).

30. "*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." *Broderbund*, 648 F. Supp. at 1133.

31. 706 F. Supp. at 992. "It is true that screen outputs are considered audio-visual works under the copyright code, . . . and are thus covered by a different copyright than are programs, which are literary works." *Whelan*, 797 F.2d at 1244 (citations omitted). See also *Digital Communications Associates, Inc. v. Softklone Distributing Corp.*, 659 F. Supp. 449, 455 (N.D. Ga. 1987) (*Broderbund* is an "overexpansive and erroneous" reading of *Whelan*).

ing Corp.,<sup>32</sup> which held screen displays completely unprotected by the registration of the underlying program.<sup>33</sup> Instead, Judge Daly's solution permitted the single registration required by the Copyright Office while preserving protection for screen displays by creating "the legal fiction of two separate registrations."<sup>34</sup> As required by the Copyright Office, only the source code of a program is registered. Unlike *Softklone*, *Manufacturers Technologies* held that the registration of the program protects the screen displays by creating a subsumed separate registration for each of the screen displays generated by the program. Unlike *Broderbund*, the screen display copyrights are treated in *Manufacturers Technologies* as wholly separate from the program copyrights, allowing "the Court to build on *Softklone* by focusing on the copyrightable expression in each type of registration and avoiding the mistake of identifying a program's idea with the idea of a particular screen display or some element therein."<sup>35</sup>

### C. Idea/Expression Dichotomy

It is axiomatic—and statutorily explicit—that copyright law does not protect an idea, but only a particular expression of an idea.<sup>36</sup> Distinguishing between idea and expression in computer program screen display presents unique challenges. Generally, the courts have used two approaches.<sup>37</sup> First, the entire work is considered as a whole with a single underlying idea. This is the approach used in *Whelan*.<sup>38</sup> Second, particular elements can be identified as distinct and based on separate ideas.<sup>39</sup> For example, *Softklone* considered the status screen as a separate element of the program and isolated the specific idea behind the screen.<sup>40</sup> The court in *Manufacturers Technologies* followed a more middle of the

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32. 659 F. Supp. 449 (N.D. Ga. 1987).

33. "[T]his court concludes that copyright protection of a computer program does not extend to screen displays generated by the program." *Id.* Note that *Softklone* preceded the policy change in the Copyright Office. When decided, therefore, *Softklone* merely required separate registration of each screen display. A similar result in *Manufacturers Technologies* would have eviscerated computer screen display protection.

34. 706 F. Supp. at 993.

35. *Id.*

36. 17 U.S.C. § 102(b) (1988).

37. *Manufacturers Technologies*, 706 F. Supp. at 991 n.12.

38. "The purpose or function of a utilitarian work would be the work's idea, and everything that is not necessary to that purpose or function would be part of the expression of the idea." 797 F.2d at 1236.

39. See Note, *supra* note 3, at 205.

40. "[I]dea' is the process or manner by which the status screen . . . operates and the 'expression' is the method by which the idea is communicated to the user." *Softklone*, 659 F. Supp. at 458.

road approach. Like *Softklone*, it separated the program from the displays on the basis of differing purposes.<sup>41</sup> However, the court then considered the displays at varying levels of generality to determine the idea and expression. Specifically, the Court considered the formatting style of the display, the status section of the display, and the flow of the displays.<sup>42</sup> This breakdown into differing levels of generality allowed the court to protect certain aspects of the user interface without providing undue power to the copyright owner.

At the first level of generality, Judge Daly, in considering the sequence and flow of the displays, concluded that there was sufficient expression of the "proper" method for cost estimation to support copyright protection.<sup>43</sup> Relying on the testimony of experts that the process of "cost-estimating is part science and part art,"<sup>44</sup> he focused on the necessary creative element in the development of the user interface. Under Daly's analysis, the expression is the flow of displays, whereas the "idea" is the main purpose of the program. If there is any creativity in the procedure of implementing that purpose, the flow of the displays would be protected.

At the second level, the format of the computer displays was held to be uncopyrightable matter since there is a narrow range of possibilities for "a uniform format and the placement of common components of screen pages within that format."<sup>45</sup> Including the same items on the same location of the screen is the underlying idea of a uniform format. Unless the items are sufficiently expressive, the expression is restricted by space limitations of the display. With minimal flexibility in expression, merger<sup>46</sup> prevents the granting of a monopoly under copyright law.<sup>47</sup>

Finally, the court considered the inclusion and location of status information, such as operation, department, tooling used or required, and the type of tooling material.<sup>48</sup> As in *Softklone*, the choice of terms and their location and presentation are given copyright protection. Copyright law allows compilations, which are works "formed by the collection and assembling of preexisting materials or of data that are selected,

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41. "The computer program and any authorship contained therein is designed to organize and direct the computer to efficiently perform a particular task when properly directed by the user. While the user interface is designed to communicate with the user in a way to facilitate the understanding and use of the program itself." 706 F. Supp. at 993.

42. *Id.* at 994-96.

43. *Id.*

44. *Id.* at 994.

45. *Id.* at 995.

46. See *infra* note 69 and accompanying text.

47. *Baker v. Selden*, 101 U.S. 99 (1879).

48. 706 F. Supp. at 996.

coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship."<sup>49</sup>

#### *D. Infringement, Access and Substantial Similarity*

In order to prove infringement, plaintiff must show access and substantial similarity. The court found, based on the facts, that CAMS had sufficient access to Costimator programs, manuals, and promotional materials to meet the access requirement with regard to the screen displays.<sup>50</sup>

In considering whether or not Costimator and Rapid/Quickcost were substantially similar, the court noted the conflict between the Second Circuit standard, which inquired as to whether works appear similar from the "spontaneous response of the ordinary lay observer,"<sup>51</sup> and the *Whelan* approach, which abandoned the ordinary observer test in favor of a substantial similarity test including both expert and lay testimony.<sup>52</sup> The court adopted a standard not inconsistent with either approach, applying the two part test of *Arnstein v. Porter*.<sup>53</sup> Under *Arnstein*, the first question confronting the court is "whether the similarities are sufficient to prove copying."<sup>54</sup> Upon this question, the testimony of experts is admissible. "If copying is established, then only does there arise the second issue, that of illicit copying (unlawful appropriation). On that issue . . . the test is the response of the ordinary lay [observer]; accordingly, on that issue, . . . expert testimony [is] irrelevant."<sup>55</sup> The court found sufficient evidence to support inferences that copying had occurred where experts testified that: (1) "both program [sic] utilized

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49. 17 U.S.C. § 101 (1988).

50. 706 F. Supp. at 1000. Because the screens have separate copyright status, it is unnecessary to show access to the program source code.

51. *Id.* (quoting *Walker v. Time Life Films, Inc.* 784 F.2d 44, 51 (2d Cir. 1986)).

52. "The ordinary observer test, which was developed in cases involving novels, plays, and paintings, and which does not permit expert testimony, is of doubtful value in cases involving computer programs on account of the programs' complexity and unfamiliarity to most members of the public. . . . We therefore join the growing number of courts which do not apply the ordinary observer test in copyright cases involving exceptionally difficult materials, like computer programs, but instead adopt a single substantial similarity inquiry according to which both lay and expert testimony would be admissible." *Whelan*, 797 F.2d at 1232-33.

53. 154 F.2d 464 (2d Cir. 1946) (involving the question of copyright infringement of a musical composition).

54. *Id.* at 468.

55. *Id.* (footnote omitted).

terminology not common to the trade";<sup>56</sup> (2) the use of upper/lower case letters had "no functional justification for it and all it serves to do is to confuse and distract the user";<sup>57</sup> (3) the programs grouped terminology in alphabetical order, where "the usual convention for grouping various terms is based on frequency of selection of those terms";<sup>58</sup> and (4) there were "redundancies" common to both sets of screen displays that a machinist writing a cost estimating program might not replicate."<sup>59</sup>

In applying the second part of the test, Judge Daly found that CAMS had copied quite substantially from Costimator, noting: (1) similarities in the sequence and flow of screen displays; (2) similarities in the expression of user status in cost-estimating; and (3) that one Rapid/Quickcost screen containing seven elements exactly duplicates four of nine elements from a Costimator screen.<sup>60</sup> The court therefore found that the copying was illicit, that CAMS did infringe the Costimator copyrights, and that the copying was willful.<sup>61</sup>

## II. THE INADEQUACIES OF COPYRIGHT PROTECTION FOR COMPUTER PROGRAMS

In its decision requiring a single registration for computer programs and displays, the Copyright Office stressed that "the courts [would] determine the scope of copyright protection in appropriate cases."<sup>62</sup> As the first case decided since the decision, *Manufacturers Technologies* sets the standards for copyrightability and infringement of computer displays. It also provides a necessary clarification of what is protected.<sup>63</sup> The court considered the competing policy interests, and struck a balance developing an approach that fosters innovation, but does not grant excessive power to the innovators. Judge Daly recognized that adhering to the *Softklone* rule would have eliminated copyright protection of

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56. 706 F. Supp. at 1000.

57. *Id.* at 1001.

58. *Id.*

59. *Id.*

60. One screen was found not to infringe where only three of seven elements duplicated elements of the counterpart Costimator screen. "Simply put, the fact that three of the seven items listed on defendants' screen are almost identical to three of the seven items on plaintiff's screen is not sufficient to establish substantial similarity." *Id.* It is not apparent from the opinion why four of nine elements constitutes copying, while three of seven does not.

61. MTI was granted injunctive relief. Judge Daly later awarded MTI damages of \$353,144.50 for copyright infringement. *Manufacturers Technologies, Inc. v. CAMS, Inc.*, 728 F. Supp. 75 (1989).

62. Copyright Opinion, *supra* note 17, at 21,819.

63. See Note, *supra* note 5, at 1124.

screen displays, and he insured that copyright will continue to be a viable method of protecting screen displays by establishing the legal fiction of multiple registrations. This fiction allowed Judge Daly to articulate more clearly the idea-expression dichotomy for computer programs by considering the idea behind each screen and the idea behind screen flow separately. Finally, by adopting the *Arnstein* test and admitting expert testimony, Judge Daly attempted to resolve a current source of great debate in copyright litigation.

However, rather than providing lasting answers to questions of computer display protection, the decision has only postponed the need for an overhaul of the system. Although the court arrived at acceptable solutions in this case, the inadequacies of using copyright law to protect computer displays are now even more apparent.

#### A. Utilitarian Characteristics of Computers

The Copyright Act defines a "computer program" as a "set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."<sup>64</sup> The results are what distinguishes one program application from another. The results achieved by the program operation on a computer are not different from those obtained when utilitarian functions are performed by conventional, non-computer based electronic equipment.<sup>65</sup> Under copyright law, courts only provide limited protection to utilitarian works.<sup>66</sup> Thus, the program itself can be protected since it has no functional use,<sup>67</sup> but the results achieved are utilitarian and are therefore not protectable.

The real selling attribute of programs, the user interface, has little specific utility. How the screens function in a word processing program does not actually relate to the writing and editing utility of the program. Ostensibly then, the user interface appears to be proper subject matter for copyright. A closer look shows however that once the difficulties associated with separating the utilitarian from the non-utilitarian are overcome, other difficulties appear.

#### B. The Idea / Expression Controversy

Copyright law only permits protection of the expression of an idea, not the idea itself. However, determining the idea behind a work is often

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64. 17 U.S.C. § 101 (1988).

65. See Lundberg, *supra* note 10, at 7.

66. See Note, *supra* note 5, at 1129.

67. See Lundberg, *supra* note 10, at 5.

a matter of opinion. Judge Learned Hand described this issue as pertaining to "levels of abstraction":

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.<sup>68</sup>

A range of possible generality in determining the idea or ideas of a work creates a difficult task for a court. Judge Daly's consideration of various ideas underlying individual screens and groups of screens leaves software producers and future courts without guidance in determining what elements of user interfaces will be protected.

In some instances, the expression of an idea may be so closely related to the idea itself that there is no other possible mode of expression. The idea and its expression are merged. Therefore, to protect the expression would be to grant sole use of the idea to the first person to express it. Since a text computer display is restricted in size, the expression of ideas on such displays is also restricted. As a result, there are only three basic types of interface styles: menus, command languages, and interactive design.<sup>69</sup> Furthermore, considerations of efficiency, ease of use, and skills of the intended audience can greatly restrict the viable interface choices.<sup>70</sup> Judge Daly quite correctly found that certain elements of the Costimator user interface were not copyrightable for those reasons. But Judge Daly failed to appreciate the extent of the problem; even if other possible modes of expression exist, flexibility in screen displays will be minimal. Because of the limited flexibility, there is a chance that courts will find infringement where none exists. Considering the large number of cases in this area, a significant number of non-infringers will likely be

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

69. Note, *supra* note 3, at 213. A "Menu" is a list of items on the screen from which the user may choose one. "Command languages" accept input from the user in a specific format which the user must know. "Interactive Design" prompts the user for the necessary information based on prior entries. Many programs use some combination of styles. For example, the Lotus 1-2-3 screen normally uses a command language for entry of items, but it also has a menu-type command interface. See Note, *supra* note 12, at 981-82.

70. Note, *supra* note 3, at 214.

found to infringe, leading to overdeterrence in the software industry.

### C. Copying

Once the Court determined that a screen or set of screens contains copyrightable expression, plaintiff must show copying to prove infringement.<sup>71</sup> Copying requires access and substantial similarity. However, since entirely different programs, created independently, can produce similar screen displays,<sup>72</sup> making access and similarity determinations solely on the basis of the code would leave unprotected the major creative work of the program developer. In other words, since the actual writing of the code is the least creative part of the development of a program, it would be easy to appropriate the creative elements without using the same "expression," if expression is limited to the source or object code of the program. Moreover, one can easily accomplish the same result as a program without ever looking at or copying code.<sup>73</sup> In this regard, computer programs differ from other subject matter protected by copyright. For example, if one listens to a recording of a copyrighted song and transcribes the words and notes, one is infringing the song. However, if one observes the performance of a computer program and writes a program to produce identical results, one is not infringing the copyright of the program, at least so long as the new program is not executed. This is so because there is not a one-to-one correlation between program and result.

Further, computer programs are especially susceptible to reverse engineering because a clone will appear exactly the same as the original so long as they have matching outputs. Therefore, similarity in the user interface, as seen by the lay observer, could be the result of copying program code or of independent production. Nevertheless, *Whelan* had concluded that similarity of the screen displays could be evidence of copying of program code.<sup>74</sup>

The fiction of separate registrations, created by Judge Daly, causes similarity of the screen displays to serve as evidence of copying in all cases. In light of the relative development times of the screens and of

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71. Plaintiff must show ownership of a valid copyright and copying by the defendant. 706 F. Supp. at 990.

72. *Id.* at 991.

73. This is exactly what happened in *Manufacturers Technology*. In general, "reverse engineering" is the process of duplicating a product by determining how to make it from an examination of the product itself. A "clone" program is created by examining the results of the original, and creating code that produces identical results.

74. *Whelan*, 797 F.2d at 1222.

the program, this is a sensible result. However, it makes the analysis vastly more complicated. Now, with two or more separate copyrights, the screen or the code could be infringed. And since the idea-expression dichotomy for each copyright can be assessed at different levels of generality, trials may become very complicated. There will be a large number of issues bearing on each question of possible infringement.

Furthermore, the method of proving substantial similarity has become unintelligible. The standard for determining similarity is whether two things appear similar "from the 'spontaneous response of the ordinary lay observer.'"<sup>75</sup> However, since the determination of copyrightable elements in a screen display is a technical legal issue,<sup>76</sup> the lay observer may not be able to determine similarity based solely on those elements. The similarity of uncopyrightable elements might make the ordinary person perceive the interfaces as similar. Because of this added complexity, Judge Daly adopted the *Arnstein* test. Under that test, experts can be used to determine whether there is sufficient evidence of copying to bring the other questions before the Court. While adopting the *Arnstein* test simplified matters somewhat, it did not do so without cost.

In *Manufacturers Technologies*, the court considered four individual similarities between Costimator and Rapid/Quickcost. Each of these was found to be copying, based on expert testimony. An examination of the characteristics of those program elements that led experts to find copying shows a single common trait: experts found each program element to be inefficient.<sup>77</sup> One feature used uncommon terminology; another confused and distracted the user; a third violated general programming conventions; and a fourth contained redundancies obvious to an experienced machinist. If Costimator had been more efficient and conventional, then substantial similarity might not have been found. In fact, it is not clear from the opinion that copying could have been shown. Overall, the court's rule is unsound and its application is unfortunate precedent. The rule is breached only to the extent that it causes copiers to attempt to remove inefficiencies. However, copiers have an incentive to remove inefficiencies in any event. The harmful result of this rule is that it gives original software developers an incentive to make their programs imperfect. It transforms copyright law from a system for protecting original authorship to a system for rewarding quirkiness, if not inefficiency.

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75. *Manufacturers Technologies*, 706 F. Supp. at 1000 (quoting *Walker v. Times Life Films, Inc.*, 784 F.2d 44, 51 (2d Cir. 1986)).

76. See *supra* notes 43-44 and 65-68 and accompanying text.

77. 706 F. Supp. at 1000. See *supra* notes 56-59 and accompanying text.

## CONCLUSION

The creative energy expended in the production of user friendly computer interfaces deserves protection from subsequent infringers. The unique characteristic of computer software that enables its look and feel to be easily and inexpensively copied, demands a *sui generis* legal solution. As the courts have become more experienced with this area of intellectual property law, their decisions have become increasingly sophisticated. At the same time, their decisions have become increasingly contorted as they attempt to manipulate an existing statutory framework that is unsuited to the field. *Manufacturers Technologies* does an admirable job of providing needed protection for programs within present legal constraints. At some point, however, it will be impossible to bend the existing legal framework any further.

CONTU attempted to modernize the inadequate law. Its single contribution was the definition of a computer program. The recent explosion of litigation and uncertainty in the field dramatically demonstrates CONTU's mistake: placing the definition within copyright law. The application of standard copyright principles to the facts in *Manufacturers Technologies* show the inadequacies of copyright law in dealing with computer programs. Requiring substantial similarity and limiting expression to nonutilitarian expressions produces inadequate results and few guiding principles. Computers and software provide a mixture of traditional intellectual property areas and special problems relating to creation, copying, and reverse engineering not found elsewhere.

By devising a separate category of federal protection for computers and computer programs, much of the uncertainty which results from manipulation of the general principles could be eliminated. In this way, the progress of the useful art and science of computer programming would truly be promoted.