Intellectual Property Survey

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INTELLECTUAL PROPERTY SURVEY

INTRODUCTION

During 1993, the Tenth Circuit's attention in the intellectual property arena focused on copyright protection of computer software programs. In *Autoskill v. National Educational Support Systems*,[1] the court affirmed the New Mexico District Court's preliminary injunction against Autoskill, whose computer software program designed to teach reading skills copied the protectable elements of National Educational Support System's competing copyrighted program.[2] Most notably, the court held that a three-step analysis combining abstraction, filtration, and comparison was a permissible method for determining "substantial similarity" in computer software programs.[3] Although the court found it unnecessary to indicate what method of analysis it would employ upon review of a final copyright infringement judgment, the opportunity to clarify its position came in *Gates Rubber Co. v. Bando Chemical Industries, Ltd.*,[4] whereby the court expressly adopted the three-step approach articulated in *Autoskill*.[5] Additionally, the *Gates* court provided further guidance concerning the role of the abstractions step in substantial similarity analysis as well as suggesting district courts engage in a preliminary "holistic" comparison of the programs at issue prior to undertaking separation of the protectable expression from non-protectable elements of the allegedly infringed program.[6]

The Tenth Circuit Court of Appeals vacated the Colorado District Court's order in *Gates* that found copyright infringement of a computer program designed to determine the size of industrial machine belts.[7] The court concluded the district court failed to identify certain protectable elements of the program, and also extended copyright protection to certain unprotected elements.[8]

Although the Tenth Circuit's decision to adopt this three-step method of substantial similarity analysis will likely lead to narrower copyright protection for computer software programs, it does provide a long overdue framework for Tenth Circuit district courts struggling to determine copyright protection for computer software programs.

This Survey examines the *Autoskill* and *Gates* decisions in light of the adoption of yet another "substantial similarity" test, together with its likely impact in future copyright infringement actions.

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1. 994 F.2d 1476 (10th Cir.), *cert. denied*, 114 S. Ct. 307 (1993).
2. *Id.* at 1481.
3. *Id.* at 1490-91.
4. 9 F.3d 823 (10th Cir. 1993).
5. *Id.* at 834.
6. *Id.* at 841.
7. *Id.* at 849.
8. *Id.* at 830.

I. BACKGROUND

A. *Scope of Copyright Protection for Computer Programs*

Copyright law protects original, creative expression against copying, but does not protect ideas, processes, or methods of operation.[9] This is because the constitutional purpose of copyright law is to "promote the Progress of Science and the useful Arts" by granting protection to works of authorship, but not to any underlying idea.[10] Therefore, copyright encourages people to build freely on the ideas of others, while secondarily protecting the rights of authors in the original expression of their ideas.[11]

Congress, in passing the Copyright Act of 1976[12] ("Act"), suggested the applicability of copyright law to computer programs.[13] In 1980, Congress further amended the Act to more clearly cover computer programs in the general definition section.[14] Thus, while computer programs are generally the subject of copyright protection,[15] the ideas embodied in a computer program are no more protectable than the ideas embodied in any other copyrighted work.[16]

Recent cases addressing the scope of copyright protection for computer programs conclude that copyright protects not only the literal text of the program code (both human readable and machine readable), but, as in the case of any other "literary work," extends to its non-literal elements.[17] Non-literal elements of a program encompass its "look and feel" and include so much of its structure, sequence or organization, and visual

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9. 17 U.S.C. § 102(b) (1988) ("[I]n no case does copyright protection for an original work of authorship extend to any idea . . . ."); H.R. REP. No. 1476, 94th Cong., 2d Sess. at 57 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5670 (17 U.S.C. § 102(b) intended actual processes or methods embodied in the computer program not to be within the scope of copyright law); 17 U.S.C. § 102(a) (1988 & Supp. IV 1992) ("[C]opyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression, . . . from which they can be perceived, reproduced, or otherwise communicated . . . ."); Computer Assocs. Int'l v. Altai, 982 F.2d 693, 703 (2nd Cir. 1992). *See* Baker v. Selden, 101 U.S. 99, 102 (1879) (system of accounting described in book is not protected by copyright—only written expression used to describe the system is protected).

10. U.S. CONST. art. I, § 8, cl. 8.

11. Feist Publications v. Rural Tel. Serv. Co., 499 U.S. 340, 349-50 (1991).

12. 17 U.S.C. §§ 101-1010 (1988 & Supp. IV 1993).

13. *See, e.g.,* Lotus Dev. Corp. v. Paperback Software Int'l, 740 F. Supp. 37, 49 (D. Mass. 1990) (computer programs are copyrightable); H.R. REP. No. 1476, 94th Cong., 2d Sess. at 51 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5664 (17 U.S.C. § 102(b) applies to computer programs).

14. Act of Dec. 12, 1980, Pub. L. No. 96-517 § 10, 94 Stat. 3015, 3028.

15. Johnson Controls v. Phoenix Control Sys., 886 F.2d 1173, 1175 (9th Cir. 1989); Williams Elecs. v. Artic Int'l, 685 F.2d 870, 875 (3d Cir. 1982).

16. Apple Computer v. Franklin Computer Corp., 714 F.2d 1240, 1252-53 (3d Cir. 1983), *cert. dismissed,* 464 U.S. 1033 (1984).

17. Brown Bag Software v. Symantec Corp., 960 F.2d 1465 (9th Cir.), *cert. denied,* 113 S. Ct. 198 (1992) (copyright protection applies to the user interface, or overall structure and organization of a computer program, including its audiovisual displays, or screen "look and feel"); *see also Johnson Controls,* 886 F.2d at 1175 ("non-literal components of a program, including the structure, sequence, and organization and user interface" are copyrightable); *see generally,* Apple Computer v. Formula Int'l, 725 F.2d 521 (9th Cir. 1984) (computer programs subject to copyright protection whether in source or object code and regardless of the form of embodiment).

display as to effectively constitute expression.[18] Courts will not, however, protect non-literal elements that contain ideas or expression merged with ideas.[19]

Because of these limitations, "[t]he breadth of copyright protection a court extends to a computer program is directly related to where that court draws the line between idea and expression."[20] This distinction frustrates courts' efforts to compare or reconcile claims of substantial similarity, an issue that constitutes the cornerstone of copyright infringement actions.[21]

B. *Substantial Similarity*

As a practical matter, copyright infringement turns on whether the accused work is "substantially similar" to protected elements of the copyrighted work.[22] Although an infringement plaintiff must prove ownership of a valid copyright,[23] and establish access by the defendant to the copyrighted and allegedly infringed program,[24] validity may be presumptively shown by a certificate of copyright registration,[25] and access is often either conceded or easily proven.[26] Thus, substantial similarity is often disposi-

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18. *See, e.g.*, Whelan Assocs. v. Jaslow Dental Lab., 797 F.2d 1222 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987). Using a novel as an analogy, the written words would be the code and the organization of the chapters, characters, and story would be the non-literal elements. *Id.* at 1234.

19. *See also Brown Bag Software*, 960 F.2d at 1475-77 (recognizing unprotectable expression); Data East USA v. Epyx, Inc., 862 F.2d 204, 208 (9th Cir. 1988); *Lotus*, 740 F. Supp. at 58 (stating that expression is not copyrightable if it merely embodies elements of the idea).

20. Dennis M. McCarthy, *Copyright Infringement—Redefining the Scope of Protection Copyright Affords the Non-Literal Elements of a Computer Program*—Computer Associates International, Inc. v. Altai, Inc., 982 F.2d 693 (2d Cir. 1992), 66 TEMP. L. REV. 273 (1993).

21. *See, e.g.*, Soft Computer Consultants v. Lalehzarzadeh, 1989 Copyright L. Dec. (CCH) ¶ 22,403 at 22,538 (E.D.N.Y. 1988) (stating that the "general standard for establishing copying is the substantial similarity test"); *see also* 3 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT: A TREATISE ON THE LAW OF LITERARY, MUSICAL, AND ARTISTIC PROPERTY, AND THE PROTECTION OF IDEAS § 13.03[B][2][a] (1993) [hereinafter NIMMER] (discussing the idea-expression dichotomy as it relates to substantial similarity analysis); *see infra* text accompanying note 35.

22. *See* Brown Bag Software v. Symantec Corp., 960 F.2d 1465, 1472 (1992) (absent evidence of direct copying, unauthorized copying is proven by demonstrating substantial similarity).

23. Feist Publications v. Rural Tel. Serv. Co., 499 U.S. 340, 361 (1991) (copyright infringement is proven by: (1) ownership of a valid copyright, and (2) copying of constituent elements of the original work).

24. Access may be established by showing that the defendant had a "reasonable opportunity to view" or "opportunity to copy" the allegedly infringed work. NIMMER, *supra* note 21, § 13.02[A] at 13-17.

25. 17 U.S.C. § 410(c) (1988) (certificate of registration of a copyright shall constitute prima facie evidence of a valid copyright.) *See* Frybarger v. Int'l Business Machs., 812 F.2d 525, 529 (9th Cir. 1987).

26. *See* Whelan Assocs. v. Jaslow Dental Lab., 797 F.2d 1222, 1232 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987) (noting defendant's access was uncontested because the program was used in his laboratory, and he acted as a sales representative for plaintiff); Broderbund Software, Inc. v. Unison World, Inc., 648 F. Supp. 1127, 1136 (N.D. Cal. 1986) (noting that plaintiff gave defendant "several commercially-available copies" of the program); NIMMER, *supra* note 21, § 13.02.

tive.[27] However, even if substantial similarities are found, courts must determine whether the similarities relate to protected elements of expression or instead to unprotected expression or ideas for which no liability attaches.

Several approaches for determining what constitutes protected non-literal elements of computer programs for copyright infringement purposes have been explored by many courts. These multiple and fractured approaches have created the present chaotic status of substantial similarity analysis. With the *Autoskill* and *Gates* decisions, the Tenth Circuit begins participating in the difficult task of refining the analysis.

1. Whelan Associates - The Functional Approach

The Third Circuit Court of Appeals articulated the most expansive protection for non-literal elements of computer programs in *Whelan Associates v. Jaslow Dental Laboratory*,[28] whereby the court held 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.[29] Some courts have adopted this reasoning,[30] while others have rejected it.[31] The primary criticism of this approach is of its assumption that a computer program has only one idea.[32]

2. The "Total Concept and Feel" Approach

Another broad approach was recently taken in *Lotus Development Corp. v. Paperback Software International.*[33] The court rejected dissection of every element of the allegedly infringed work, opting instead for first determining whether its elements are copyrightable and then identifying whether those elements, considered as a whole, were impermissibly copied.[34] This test has also been criticized for its sweeping protection and lack of detailed analysis.[35]

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27. John W.L. Ogilvie, Note, *Defining Computer Program Parts Under Learned Hand's Abstractions Test in Software Copyright Infringement Cases*, 91 MICH. L. REV. 526, 527 (1992).

28. 797 F.2d 1222 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987).

29. *Id.* at 1238; Lotus Dev. Corp. v. Paperback Software Int'l, 740 F. Supp. 37, 65 (D. Mass. 1990).

30. *See, e.g., Broderbund Software*, 648 F. Supp. at 1133.

31. *See* Plains Cotton Co-op Ass'n v. Goodpasture Computer Serv., 807 F.2d 1256, 1262 (5th Cir.), *cert. denied*, 484 U.S. 821 (1987); Gates Rubber Co. v. Bando Am., Inc., 798 F. Supp. 1499, 1513 (D. Colo. 1992) (adopting two-prong analysis), *aff'd in part and vacated in part*, 9 F.3d 823 (1993); *cf.* Synercom Technology v. University Computing Co., 462 F. Supp. 1003, 1014 (N.D. Tex. 1978).

32. Richard A. Gollhofer, *Copyright Protection of Computer Software: What Is It and How Did We Get It?*, 5 SOFTWARE L.J. 695 (1992).

33. 740 F. Supp. 37 (D. Mass. 1990).

34. *Id.* at 67; *see* Sid & Marty Krofft Television Prod. v. McDonald's Corp., 562 F.2d 1157, 1167 (9th Cir. 1977); Roth Greeting Cards v. United Card Co., 429 F.2d 1106, 1109-10 (9th Cir. 1970). *See generally* NIMMER, *supra* note 21, § 13.03[A][1][c] (discussing the history of the total concept and feel test).

35. "[T]he addition of 'feel' to the judicial inquiry, being a wholly amorphous referent, merely invites an abdication of analysis." NIMMER, supra note 21, § 13.03[A] at 13-37.

3. Levels of Abstractions Approach

Judge Learned Hand's famous "patterns of abstractions" analysis articulated in *Nichols v. Universal Pictures Corp.*[36] was first applied to plays and screenplays. Under this analysis, a court must determine the patterns or components of the protected work on a continuum from the most general to the most specific and then identify which of these are no more than a formulation of the idea.[37] Although this method of analysis is both unpredictable and ad hoc,[38] courts appear to be prepared to adapt these principles[39] with some modifications for cases involving computer software.[40]

4. The Three-Step Approach

In response to the broad protection afforded to non-literal elements of computer programs under *Whelan*[41] and *Lotus*,[42] the Court of Appeals for the Second Circuit crafted a narrower three-part approach for establishing "substantial similarity" of computer software. In *Computer Associates International v. Altai*,[43] the court begins its analysis by borrowing from Learned Hand's abstractions formula, dissecting the allegedly infringed program's structure and isolating it into its various levels of abstraction.[44]

Once the program has been dissected into its various levels of abstraction, the court undertakes the second step, filtration.[45] In the filtration process, the court eliminates unprotectable elements consisting of ideas, elements subject to external factors,[46] and material in

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36. 45 F.2d 119, 121 (2d Cir. 1930), *cert. denied*, 282 U.S. 902 (1931).

37. "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." *Id.* at 121.

38. Judge Learned Hand wrote of the line between expression and idea that "[n]obody has ever been able to fix that boundary, and nobody ever can." *Id.* He echoed this view in a later opinion, stating that "[o]bviously, no principle can be stated as to when an imitator has gone beyond copying the 'idea,' and has borrowed its 'expression.' Decisions must therefore inevitably be *ad hoc.*" Peter Pan Fabrics v. Martin Weiner Corp., 274 F.2d 487, 489 (2d Cir. 1960).

39. Ogilvie, *supra* note 27, at 528-29 (arguing that although Judge Hand's test is not a panacea for all the current ills of software copyright law, it provides courts with a framework that should increase the consistency of decisions).

40. *See supra* text accompanying note 31.

41. 797 F.2d 1222 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987).

42. 740 F. Supp. 37 (D. Mass. 1990).

43. 982 F.2d 693 (2d Cir. 1992).

44. *Id.* at 707.

45. *Id.*

46. External factors include:

(1) the mechanical specifications of the computer on which a program is intended to run; (2) compatibility requirements of other programs with which a program is designed to operate in conjunction; (3) computer manufacturer's design standards; (4) demands of the industry being serviced; and (5) widely accepted programming practices within the computer industry.

Id. at 709-10 (citations omitted); *see also* Feist Publications v. Rural Tel. Serv. Co., 499 U.S. 340, 361-64 (1991) (if the only unauthorized copying is of those elements that are not protectable, then the resulting copy will not constitute an infringement); NIMMER, *supra* note 21, § 13.03 [8][2].

the public domain or subject to the doctrines of merger and *scènes à faire.*[47]

The final step involves an actual comparison of the remaining non-literal program elements.[48] Once all non-protectable elements are filtered out, courts will apply an "extrinsic" test to determine whether substantial similarity exists between the two programs.[49] This is accomplished primarily through the use of experts.[50] If similarity is found, some courts may also employ an "intrinsic" test that measures substantial similarity according to the response of the ordinary lay observer.[51] While some courts endorse the lay observer test[52] in computer program cases, others reject it due to the inherent technical expertise required.[53]

In *Autoskill,* the Tenth Circuit found this narrower three-step approach a permissible method for determining substantial similarity of computer software programs[54] and then formally adopted it in the *Gates* decision.[55]

II. THE *AUTOSKILL* DECISION

A. *Facts and Procedural History*

Autoskill, Inc. ("Autoskill"), a Canadian corporation, developed a computer software program for use in teaching reading skills to students with reading disabilities entitled "Autoskill: Component Reading and Subskills Testing and Training Program."[56] Autoskill obtained a United States Certificate of Registration of the copyright on the software program ("Autoskill Program").[57]

National Educational Support Systems, Inc. ("NESS"), is a New Mexico corporation. One of the principals in NESS, Ron Neil, was familiar with the Autoskill Program, and unsuccessfully attempted to obtain a license to market it.[58] Neil then entered into an agreement with a computer programming firm, Automation Consultants, Inc. (ACI), to develop

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47. *Computer Assocs.,* 982 F.2d at 710 (courts must filter out all unoriginal elements of a program, including those elements that are found in the public domain or subject to the doctrines of merger and *scènes à faire*); *see infra* notes 86-87.

48. *Computer Assocs.,* 982 F.2d at 710.

49. *See, e.g.,* Shaw v. Lindheim, 919 F.2d 1353, 1356 (9th Cir. 1990); *see also* Whelan Assocs. v. Jaslow Dental Lab., 797 F.2d 1222, 1232 (1986), *cert. denied,* 479 U.S. 1031 (1987).

50. *Sid & Marty Krofft Television Prod. v. McDonald's Corp.,* 562 F.2d 1159, 1164 (1977).

51. *See, e.g.,* Brown Bag Software v. Symantec Corp., 960 F.2d 1465, 1475, *cert. denied,* 113 S. Ct. 198 (1992); Arnstein v. Porter, 154 F.2d 464, 468-69 (2d Cir. 1946).

52. *Whelan,* 797 F.2d at 1233; *see also* Autoskill v. Nat'l Educ. Support Sys., 793 F. Supp. 1557, 1569 (1992), *aff'd,* 994 F.2d 1476 (10th Cir.), *and cert. denied,* 114 S. Ct. 307 (1993) (noting the appropriateness of examining lay evidence and exhibits presented by the parties to determine substantial similarities).

53. Dawson v. Hinshaw Music, 905 F.2d 731, 732-37 (4th Cir.), *cert. denied,* 498 U.S. 981 (1990) (holding that lay observer test not practical in the context of computer programs).

54. *Autoskill,* 994 F.2d at 1490-91.

55. *Gates,* 9 F.3d at 834.

56. *Autoskill,* 994 F.2d at 1481.

57. *Id.*

58. *Id.* at 1481-82 (Neil's familiarity and use of the Autoskill Program was sufficient to meet the access requirement). *Id.* at 1559.

software "to be like" the Autoskill Program.[59] ACI's program for NESS was called "Nessi: Reading and Language Development Program" (Nessi).[60] NESS's distributor received a letter from Autoskill's attorney shortly after it began marketing Nessi indicating it could be named in a copyright infringement action.[61]

NESS filed suit in the District of New Mexico seeking a declaratory judgment that it did not infringe the Autoskill copyright.[62] Autoskill responded by suing NESS for copyright infringement, and sought a preliminary inunction to prevent continued infringement.[63] Autoskill claimed NESS's program infringed upon the non-literal elements of Autoskill's Program.[64] The cases were consolidated.

B. *District Court Holding*

The district court granted Autoskill a preliminary injunction prohibiting NESS from impinging upon the "protectable elements" of the Autoskill Program.[65] It employed a three-step method of analysis, combining abstraction, filtration, and comparison to determine the "substantial similarity" of the programs.[66] The court rejected the functional approach espoused in *Whelan*[67] as a "temptingly simplistic bright line test"[68] that could not account for the reality that many ideas may exist in a given work, and also rejected the "total concept and feel" test, as being more appropriate when evaluating "simplistic works."[69] Rather, the court opted for an analysis similar to the one recently employed by the Second Circuit in *Computer Associates.*[70]

The court concluded that the identification and use of three subtypes of students with reading difficulties were not protectable, because these subtypes were identified and discussed in literature available to the public.[71] The "idea" of teaching reading, based on these subtypes, was also not protectable; however, Autoskill's "manner" of teaching and the way it communicates those ideas to students and teachers amounts to protectable "expression."[72] Thus, the court emphasized pedagogical similarity,

59. *Id.* at 1481.
60. *Id.* at 1482.
61. *Id.*
62. *Id.*
63. *Id.*
64. *Id.*
65. *Id.*
66. *Autoskill,* 793 F. Supp. at 1565.
67. See *supra* notes 28-32 and accompanying text discussing Whelan Assocs. v. Jaslow Dental Lab., 797 F.2d 1222 (3d Cir. 1986), *cert. denied,* 479 U.S. 1031 (1987).
68. *Autoskill,* 793 F. Supp. at 1566.
69. *Id.* at 1515-70.
70. See *supra* notes 43-47 discussing Computer Assocs. Int'l. v. Altai, 982 F.2d 693, 710 (2d Cir. 1992).
71. *Autoskill,* 793 F. Supp. at 1566. The program is designed to test or diagnose and train three distinct subtypes. Type O is the oral reading subtype, Type A is the intermodal-associative deficit subtype, and Type S is the sequential deficit subtype. *Id.* at 1559.
72. *Id.* at 1566.

rather than the logical flow of the program. NESS appealed, raising a number of procedural[73] and substantive issues.[74]

C. *The Tenth Circuit Opinion*

In *Autoskill,* the Tenth Circuit began its substantial similarity analysis by first examining the district court's factual findings concerning the overall similarities between the Autoskill and Nessi Programs.[75] In general, the Autoskill Program is designed to improve a student's rapid automatic response to training stimuli.[76] It tests students for oral reading, audiovisual matching, visual matching, and visual scanning according to thirteen categories of word-form types that are based on different combinations of vowels and consonants.[77] The tests use words and non-words while recording the student's accuracy and response speed.[78] Based on the testing results, the students are assigned a training program that corresponds to their subtypes.[79]

The district court determined that NESS's program had merely changed the names and sequence of the tests with minor format changes.[80] The three main sections of each program consisting of testing or diagnosis, profile analysis, and training utilized similar criteria and performed substantially similar functions.[81]

Satisfied with the district court's findings that both programs were substantially similar, the court undertook a review of the three-step approach used for identifying which non-literal elements of Autoskill's Program were protected from infringement.[82]

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73. The Tenth Circuit rejected Autoskill's arguments that NESS's notice of appeal was untimely pursuant to 11 U.S.C. § 362, which prevented NESS from appealing the preliminary injunction due to an automatic bankruptcy stay and, further, that NESS filed its notice of appeal outside the 30 days allowed by Rule (4)(a) of the Federal Rules of Appellate Procedure. *Autoskill,* 994 F.2d at 1483. The court held that the filing of a bankruptcy petition by NESS extended the time for filing a notice of appeal. *Id.* Additionally, the bankruptcy rules authorized NESS to prosecute its appeal from a grant of a preliminary injunction in a copyright infringement action without authorization from the bankruptcy court. *See id.* at 1486.

74. The Tenth Circuit rejected the trial court's reasoning concerning its refusal to retroactively apply the U.S. Supreme Court's 1989 holding in Community for Creative Non-Violence v. Reid, 490 U.S. 730 (1989), distinguishing "employees" from "independent contractors" for purposes of copyright ownership of "works made for hire." *Id.* at 1488.

75. *Id.* at 1490.

76. *Id.*

77. *Id.*

78. *Id.*

79. *Id.*

80. *Id.* See *supra* part II.B.2. discussing the district court's findings.

81. *Autoskill,* 994 F.2d at 1490.

82. "Infringement is shown by a substantial similarity of protectable expression, not just an overall similarity between the works." NIMMER & NIMMER, *supra* note 21, § 13.03[F] at 13-82.

1. The Levels of Abstraction Step

The court concluded that although the district court did not precisely use the abstractions analysis outlined in *Computer Associates*,[83] its ruling should not be reversed simply because of a lack of any particular detail.[84] Further, the court found an ample factual basis for the district judge's analysis on the levels of abstraction and his conclusions as to which were idea levels not entitled to protection, and those possibly eligible for protection after the filtration analysis which were in the expression area.[85]

2. The Filtration Step

The court again agreed with the district court's application of the filtration step whereby it filtered out portions of the Autoskill Program's expression not entitled to copyright protection, employing the copyright doctrines of merger[86] and *scènes à faire*.[87] Specifically, the thirteen categories of vowel and consonant combinations as well as the silent sentence and silent paragraph components were excluded from copyright protection.[88] However, the court upheld copyright protection of the "keying procedure," finding the procedure reflected at least a minimal degree of creativity and did not constitute a "method of operation" or "process" precluded from copyright protection.[89] The court reasoned that NESS failed to produce any evidence that the procedure was common practice and should therefore, be filtered out of the analysis.[90]

3. The Comparison Step

Substantial similarity analysis concludes with a comparison of portions of the alleged infringer's works with the portions of the complaining

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83. See *supra* notes 43-48 and accompanying text discussing Computer Assocs. Int'l v. Altai, 982 F.2d 693 (2d Cir. 1992).

84. NESS claimed the trial court erred when it examined the similarities in the functions performed as the highest level of abstraction, rather than from the code level up to the program's function. *Autoskill*, 994 F.2d at 1492.

85. *Id.*

86. *Id.* at 1494. *See* Feist Publications v. Rural Tel. Serv. Co., 499 U.S. 340, 349 (1991). Where a particular expression is common to the treatment of a specific idea, process, or discovery, it lacks the originality for copyright protection. *See, e.g.*, Toro Co. v. R & R Prods. Co., 787 F.2d 1208, 1211 (8th Cir. 1986) (under copyright merger doctrine, copyright protection will be denied even to some expressions of ideas if idea behind expression is such that it can be expressed only in very limited number of ways). The merger doctrine excludes expression from copyright protection if it is "merged" inseparably with an idea. NIMMER, *supra* note 21, § 13.03[B][3] at 13-74.

87. The *"scènes à faire"* doctrine generally excludes from copyright protection, material that is "standard," "stock," or "common" to a particular topic or that "necessarily follow from a common theme or setting." NIMMER, *supra* note 21, § 13.03[B][4] at 13-70.

88. *Autoskill*, 994 F.2d at 1494.

89. *Id.* at 1495 n.23. *See, e.g.*, Mazer v. Stein, 347 U.S. 201, 214 (1954) (originality denotes only enough definite expression so that one may distinguish authorship); *compare Toro Co.*, 787 F.2d at 1208 (lawn care matching part numbering system not original) *with* Hutchinson Tel. Co. v. Frontier Directory Co., 770 F.2d 128 (8th Cir. 1985) (telephone white pages directory original work).

90. *Autoskill*, 994 F.2d at 1495.

party's work determined to be legally protectable under the Act.[91] The court again agreed with the district court's assessment of substantial similarity based upon a comparison of the two programs' structure, sequence, and organization and rejected NESS's argument that no protectable elements of the Autoskill Program remained upon completion of the filtration step.[92] Additionally, the district court's use of expert testimony throughout its analysis was not erroneous.[93]

III. THE *GATES* DECISION

A. *Facts and Procedural History*

Gates Rubber Co. ("Gates") is a Colorado corporation manufacturing rubber belts for use in industrial machinery.[94] Gates developed a computer software program entitled Design Flex 4.0 ("Gates Program"), which calculates the proper Gates belt for a specified machine.[95] The program utilizes published formulas in conjunction with certain mathematical constants developed by Gates for determining belt size.[96] Gates obtained a Certificate of copyright registration on the Gates Program.[97]

Bando American (Bando) is a division of a Japanese corporation that competes with Gates in the manufacture and sale of industrial belts.[98] Numerous Bando employees were former Gates employees, including Steven Piderit, who had access to the components and the design of the Gates Program.[99] In 1990, Bando made available its "Chauffeur" Program, a program similar to the Gates Program.[100]

In 1992, Gates filed suit in the U.S. District Court for the District of Colorado alleging copyright infringement, unfair competition, misappropriation of trade secrets, as well as breach of contract.[101]

B. *District Court Holding*

The district court held that the Chauffeur Program infringed the Gates's copyright[102] and that Bando had misappropriated Gates's trade secrets.[103] Specifically, it found that Bando had misappropriated ten pro-

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91. *Id.* at 1496. *See Computer Assocs.*, 982 F.2d at 710 ("The analysis at this point poses essentially a value judgment, involving an assessment of the importance of the material that was copied."). *See* NIMMER, *supra* note 21, § 13.03[F] at 13-146.

92. *Autoskill*, 994 F.2d at 1496.

93. *Id.* at 1497-98 ("We are satisfied the judge's crediting of the Autoskill witness testimony over that of NESS's, was not clearly erroneous or an abuse of discretion.").

94. Gates Rubber Co. v. Bando American, 9 F.3d 823, 830 (10th Cir. 1993).

95. *Id.*

96. *Id.*

97. *Id.*

98. *Id.*

99. *Id.* (there was evidence Piderit pirated a copy of the Gates Program and brought it with him to Bando).

100. *Id.* at 831.

101. *Id.*

102. *Id.*

103. *Id.* The District court concluded that Bando had misappropriated trade secrets belonging to Gates, ordered their return, and enjoined Bando from any further use. *Id.* The Tenth Circuit affirmed. *Id.* at 830. It rejected Bando's argument that Gates's claims were

tected elements of the Gates Program, including its menus, constants, sorting criteria, control flow, data flow, the engineering calculation module, the design module, common errors, fundamental tasks, and install files.[104]

Bando appealed, claiming the district court erred when it extended copyright protection for what it characterized as facts and ideas in the Gates Program.[105] Bando further appealed the district court's granting of trade secret protection to Gates's program constants.[106]

C. *Tenth Circuit's Opinion*

The Tenth Circuit began by acknowledging that the proper test for determining substantial similarity had not been previously addressed in this circuit and, consequently, that its opinion was intended to bring clarity to district courts struggling with copyright protection of computer software programs.[107] The court adopted in substantial part the abstraction, filtration, and comparison test set forth in *Autoskill* and by the Second Circuit in *Computer Associates,* finding it an effective test formed from constitutional and statutory constraints and guided by existing case law.[108]

Specifically, the courts should first dissect the program according to its varying levels of generality as provided in the abstractions test.[109] Next, courts should examine each level of abstraction in order to filter out those elements of the programs that are unprotectable, eliminating from comparison the unprotectable elements of ideas, processes, facts, public domain information, merger material, *scènes à faire* material, and other unprotectable elements suggested by the particular facts of the program under examination.[110] Finally, courts should then compare the remaining protectable elements with the allegedly infringing program to determine whether there has been a misappropriation of substantial elements of the protected program.[111]

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preempted by federal law and specifically found that because Gates's trade secret misappropriation claim under the Colorado Uniform Trade Secrets Act requires proof of a breach of trust or confidence, an element not required under the Copyright Act, Gates' state claims were not preempted by federal law. *Id.* at 846-48. Further, the constants constituted trade secrets and although they were disclosed during the permanent injunction hearing, Gates' post-hearing measures to protect the confidentiality of the constants maintained their status as trade secrets. *Id.* at 848-49.

104. *Id.* at 842-46.

105. *Id.* at 830.

106. *Id.*

107. *Id.* The court was aided in its analysis of the copyright law concerning computer programs by briefs submitted by amicus curiae: the American Committee for Interoperable Systems; Computer and Business Equipment Manufacturers Association; the International Anticounterfeiting Coalition, Inc.; Adobe Systems, Inc.; Apple Computer, Inc.; Computer Associates International, Inc.; Digital Equipment Corporation, Inc.; International Business Machines Corporation; Lotus Development Corporation; Wordperfect Corporation; and Xerox Corporation. *Id.* at 831 n.3.

108. *Id.* at 834; *see also Computer Assocs.,* 982 F.2d at 701-14; *Lotus,* 740 F. Supp. at 37.

109. *Gates,* 9 F.3d at 834. See *supra* notes 41-44, 83-85, and accompanying text discussing the abstractions step.

110. *Gates,* 9 F.3d at 834. See *supra* notes 45-47, 86-90, and accompanying text discussing the filtering step.

111. *Gates,* 9 F.3d at 834. See *supra* notes 48-52, 91-93, and accompanying text discussing the comparison step.

The court suggested, however, that prior to undertaking these steps, it would be helpful for courts to make an initial determination of whether the defendant copied portions of the allegedly infringed program before determining whether the copying involved protectable elements.[112] Here, the court concluded that both programs were substantially similar, as a whole,[113] prior to proceeding with its analysis under the three-step approach.

1. Levels of Abstraction

The court was careful to note that application of the abstractions test will necessarily vary from case-to-case and program-to-program, due to the "complex and ever-changing nature" of computer technology.[114] Thus, it declined to establish any strict methodology for the abstraction of computer programs.[115]

In this instance, the court utilized a method whereby computer programs are parsed into six levels of generally declining levels of abstraction.[116] These levels of abstraction include: the main purpose of the program,[117] the program structure or architecture,[118] modules,[119] algorithms and data structures,[120] source code,[121] and object code.[122]

Under this analysis, the main purpose or function of a program will always be an unprotected idea.[123] Similarly, basic functions of a module will likely be unprotectable.[124] However, the program's literal elements,

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112. *Gates*, 9 F.3d at 833.
113. The district court found that Bando had access to the Gates Program and that the Bando Program was copied from the Gates Program. *Gates*, 798 F. Supp. at 1516. On appeal, Bando did not dispute those findings. *Gates*, 9 F.3d at 833 n.10.
114. *Gates*, 9 F.3d at 834.
115. *Id.* The court stated that it foresees, in most cases, the use of experts to provide substantial guidance to courts in applying an abstractions test. *Id.* at 834-35.
116. *Id.* at 835. Ogilvie, *supra* note 27, at 528.
117. *Gates*, 9 F.3d at 835. The main purpose of a program is a description of the program's function or what it is intended to do. Ogilvie, *supra* note 27, at 534.
118. *Gates*, 9 F.3d at 835. Program architecture or structure "is a description of how the program operates in terms of its various functions, which are performed by discrete modules, and how each of these modules interact with each other." *Id.*
119. *Id.* "A module typically consists of two components: operations and data types. An operation identifies a particular result or set of actions that may be performed. . . . A data type defines the type of item that an operator acts upon such as a student record or a daily balance." *Id.*; *see* Ogilvie, *supra* note 27, at 536.
120. *Gates*, 9 F.3d at 835.
  An algorithm is a specific series of steps that accomplish a particular operation.
  Data structure is a precise representation or specification of a data type that consists
  of: (i) basic data type groupings such as integers or characters, (ii) values, (iii)
  variables, (iv) arrays or groupings of the same data type, (v) records or groupings of
  different data types, and (vi) pointers or connections between records that set aside
  space to hold the record's values.
Ogilvie, *supra* note 27, at 536-40; *see Whelan*, 797 F.2d at 1230.
121. *Gates*, 9 F.3d at 835. Source code is the literal text of a computer program. *Whelan*, 797 F.2d at 1230.
122. *Gates*, 9 F.3d at 835. Object code is the literal text of a computer program written in binary language through which the computer directly receives its instructions. Computer Assocs. v. Altai, 982 F.2d 693, 698 (2nd Cir. 1992).
123. *Gates*, 9 F.3d at 836.
124. *Id.*

structure or architecture, and perhaps its algorithms and data structures may contain protectable expression.[125] The court did not dispute the district court's abstractions analysis, and conceded that these generalized levels of abstraction are not necessarily applicable to all computer codes, but may facilitate the critical second step of filtering out unprotectable elements of the program.[126]

2. Filtration

The filtration step requires that courts filter out those elements of the program that are not protected by copyright, requiring review of the idea-expression dichotomy,[127] process-expression dichotomy,[128] as well as application of the doctrines of merger[129] and *scènes à faire*.[130]

The court concluded that the district court failed to undertake a proper filtration analysis.[131] Specifically, the Gates Program constants (program results) constituted facts not subject to copyright protection.[132] Further, the district court failed to adequately analyze the Gates Program menus and sorting criteria,[133] control and data flow,[134] modules,[135] common errors,[136] fundamental tasks,[137] and install files.[138] Accordingly, the court remanded these issues for further determination of copyright protection.

3. Comparison

Due to the district court's inadequate analysis at the filtration stage, the court did not undertake a comparison of the protectable portions of the Gates Program with the Bando Program.

IV. ANALYSIS

After *Autoskill* and *Gates*, parties claiming copyright infringement of their computer software programs will likely be subject to a narrower three-step approach to substantial similarity, rather than a *Whelan* or *Lotus* type of approach. Although the *Autoskill* court failed to endorse any one

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125. *See id.*

126. *Id.* at 835-36 (the organization of a program into abstraction levels is a tool).

127. *See supra* text accompanying note 9.

128. *Gates,* 9 F.3d at 836.

129. *Id.; see supra* text accompanying note 86.

130. *Gates,* 9 F.3d at 836; *see supra* text accompanying note 87.

131. *Gates,* 9 F.3d at 830.

132. *Id.* at 842-43.

133. *Id.* at 843-44. "The district court failed to clarify whether it was referring to the visual screen displays or some other aspect of the program when it discussed the menus and sorting criteria . . . ." *Id.*

134. *Id.* at 844. "The district court failed to define exactly what it meant by control flow and data flow . . . ." *Id.*

135. *Id.* at 845 (district court erroneously suggested that algorithms constitute processes, protected only by patent law).

136. *Id.* (district court erroneously analyzed protection of program errors).

137. *Id.* at 846 (district court was unclear on what it meant by "fundamental tasks").

138. *Id.* (district court failed to make adequate findings concerning the install files).

approach over another,[139] the *Gates* court did so, and clarified the Tenth
Circuit's position on substantial similarity by adopting a substantial part of
the "Abstraction-Filtration-Comparison" method of analysis.[140]

Additionally, the *Gates* court suggested a preliminary indirect method
of proving copying by examining the similarities as a whole, regardless of
the fact that even if the programs are copied verbatim, this is not a basis
for liability.[141] As the court correctly noted, district courts may otherwise
be deprived of the "use of probative, and potentially essential, information
on the factual issue of copying" if it only extracts all protectable elements
prior to its comparison.[142] The court acknowledges factual similarity may
create an unfair inference of misappropriation; however, evidence of in-
dependent creation may rebut this inference.[143]

Finally, the court attempted to add guidance to the levels of abstrac-
tion test. Commentators have criticized the *Autoskill* district court for the
manner in which the abstractions step was employed.[144] In an obvious
attempt to respond to these criticisms, the *Gates* court identified six gener-
ally declining abstraction levels for guidance.[145] However, the court was
quick to qualify application of the abstraction test to a case-by-case and
program-by-program basis generally requiring the aid of expert testi-
mony.[146] Thus, the court left the door open for future discordant
applications.[147]

Expert testimony may also create problems for courts as evident in
the *Autoskill* decision. NESS challenged the district court's reliance on
Autoskill's substantial similarity expert.[148] The court rejected these argu-
ments after little inquiry.[149] Autoskill's expert, Dr. Olson, was admittedly
not a computer programmer.[150] His qualifications included a Ph.D. in
psychology[151] and a strong background in reading education and the use

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139. *Autoskill*, 994 F.2d at 1492. ("[W]e feel that the judge used a permissible method of
analysis and reached reasonable conclusions, although we are not deciding which precise
method of analysis should be followed in a final copyright decision.").

140. *Gates*, 9 F.3d at 834.

141. *Id.* at 832 n.7 ("[C]opying of even unprotected elements can have a probative value
in determining whether the defendant copied the plaintiff's work" because "it may be more
likely that protected elements were copied if there is evidence of copying among the unpro-
tected elements of the program.").

142. *Id.*

143. *Id.* at 833 n.8.

144. William T. Rintala, *Copyright Update—Cases*, Practicing Law Institute, PLI/Corp 725,
Jan. 1993 (unclear the Autoskill court applied these doctrines in any disciplined way). Ogil-
vie, *supra* note 27, at 530 (court apparently recognizes "skill levels" in educational software as
a "level of abstraction").

145. *See supra* notes 116-22 and accompanying text.

146. *Gates*, 9 F.3d at 834-35.

147. *Id.* at 834 n.12 ("[W]e note that the appropriate test to be applied and the order in
which its various components are to be applied in any particular case may vary depending on
the claims involved, the procedural posture of the suit, and the nature of the computer
programs at issue.").

148. *Autoskill*, 994 F.2d at 1493 n.19.

149. *Id.* at 1492-93.

150. *Id.* at 1493 n.19.

151. *Id.*

of software in reading education.[152] He had also reviewed cases and the Nimmer treatise on copyright infringement prior to trial.[153] On the one hand, the district court found this computer program "complex,"[154] yet a Ph.D. in psychology qualified Olson to dissect the program's constituent parts for purposes of a copyright infringement action.[155] Both the district and the Tenth Circuit courts' reliance on Dr. Olson's testimony appears misplaced in light of his apparent lack of training and background necessary in an area requiring very specialized expertise.

Finally, although not directly an issue in *Gates,* the court addressed concerns surrounding copyright protection extending "to the methodology or processes adopted by the computer programmer, rather than merely to the 'writing' expressing his ideas."[156] Processes or methods of operation themselves are not copyrightable; however, "an author's description of that process, so long as it incorporates some originality, may be protectable."[157]

The *Autoskill* court addressed this issue directly, but with little clarity. Specifically, the district court rejected NESS's argument that the keying procedure employed by the Autoskill Program's audio visual matching test was a "method" and therefore, not subject to copyright protection.[158] Autoskill's witnesses testified that the Autoskill Program did not simply involve touching key 1, 2, or 3, but required the student to look at the word on the screen and respond with his or her hands on the keyboard.[159] Further, this system took considerable investigation, research, statistician, and programming efforts.[160]

The Tenth Circuit concluded that this testimony reflected that the Autoskill Program was unique[161] and demonstrated at least a minimal degree of creativity for purposes of a preliminary injunction.[162] Moreover, NESS failed to produce evidence that this procedure was common practice[163] or that it was dictated by efficiency considerations requiring exclusion at the filtration stage.[164] Although the Tenth Circuit found that NESS failed to show the keying procedure was common practice, Autoskill's own witness, Dr. Olson, testified that though not a standard procedure, it is present in other programs.[165]

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152. *Id.*

153. *Id.* at 1561.

154. *Id.* at 1570.

155. *Id.* at 1561. Dr. Olson considered the programs as a whole to reach his conclusions regarding substantial similarity. *Id.*

156. *Gates,* 9 F.3d at 836.

157. *Id.* at 837.

158. *Autoskill,* 994 F.2d at 1495 n.23. Copyright protection does not extend to any "process" or "method of operation." 17 U.S.C. § 102(b).

159. *Autoskill,* 994 F.2d at 1495.

160. *Id.*

161. *Id.*

162. *Id.* at 1495 n.23.

163. *Id.* (Autoskill Program was not drawn from prior Doehring research).

164. *Autoskill,* 994 F.2d at 1495 n.23.

165. *Autoskill,* 793 F. Supp. at 1569.

The test for determining whether a work contains original copyright-able subject matter rests on whether it is an "original work of author-ship."[166] If so, the second requirement is that it "be fixed in any tangible medium of expression, now known or later developed, from which it can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device."[167] In this instance, the keying proce-dure appears to meet the fixation requirement as it employs read-commu-nication together with keyboard response. However, it is less clear that it satisfied the originality requirement. The court does not expressly state the keying procedure is original to Autoskill, but only that it was not cop-ied from a particular prior public domain study.[168] Perhaps this finding is intended to imply Autoskill's independent creation. However, the court finds only that it contained the requisite degree of creativity.[169] Moreover, the level or amount of an author's labor has no bearing on whether it constitutes an original work. Although the district court acknowledged the inapplicability of the "sweat of the brow" doctrine,[170] the Tenth Cir-cuit appeared to provide weight to Autoskill's labor and effort in develop-ing the program.[171] Even if the court viewed the keying procedure as a compilation[172] for purposes of copyright protection, compilations must meet the not-so-stringent original work of authorship test.[173] Thus, the Tenth Circuit failed to make clear whether the Autoskill Program's keying procedure was an original work of authorship entitled to copyright protection.

Despite the gaps remaining in the court's analysis in *Autoskill,* the *Gates* decision provides a clearer framework upon which to determine sub-stantial similarity.

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166. Original, for purposes of copyright, "means only that the work was independently created by the author (as opposed to copied from other works) and that it possesses at least some minimal degree of creativity." Feist Publications v. Rural Tel. Serv. Co., 499 U.S. 340, 345 (1991).

167. 17 U.S.C. § 102(a) (1988 & Supp. IV 1992).

168. *Autoskill,* 994 F.2d at 1496.

169. *Id.* at 1495 n.23.

170. *Autoskill,* 793 F. Supp. at 1571 ("An analysis of originality can only be based upon the protectable elements of the program[s]" and this opinion is not based in any way upon evi-dence of the time and effort it put into developing the Autoskill Program.).

171. *Autoskill,* 994 F.2d at 1495 & n.23.

   Autoskill system did not simply involve touching keys 1, 2, or 3, but involved looking
   at the word on the screen and responding with hands on the keyboard, a system
   that took considerable investigation and research staff work, and also that of statisti-
   cians and programmers. This testimony shows that the Autoskill program was
   unique and was not drawn directly from the Doehring research.

Id. at 1495 (citation omitted). This proof also disposes of a related argument regarding NESS's contention that this is a "method" not protected by copyright. *Id.* at 1495 n.23.

172. A "compilation" is the selection and arrangement of uncopyrightable facts into a format that is copyrightable. *See Feist,* 499 U.S. at 349.

173. *Id.* at 349 (even if the work contains absolutely no protectable expression, only facts, it meets the constitutional minimum for copyright protection if it features an original selec-tion and arrangement).

CONCLUSION

The need for coherent computer software copyright law is evidenced by the varied and inharmonious substantial similarity tests currently applied among the Circuits.[174] Although some of the resulting chaos is undoubtedly due to the youth of software copyright law, it is not known whether the Tenth Circuit's use of yet another method of analysis will serve to magnify this confusion, or reduce it. Certainly, the *Autoskill*[175] and *Gates*[176] decisions shed some light on the future direction the Tenth Circuit will take concerning substantial similarity analysis. District courts struggling to determine copyright infringement of computer software programs now have at least a framework for their analysis. Most notably, these opinions espouse a narrower three-step approach, combining abstraction, filtration, and comparison, together with a preliminary indirect comparison of the programs. This method constitutes the preferable method of analysis for Tenth Circuit district courts in determining substantial similarity of computer software programs.

Wendy J. Pifher

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174. "[C]ase law and commentators in the area of copyright protection seem woefully ill-equipped to provide a systematic means for analyzing copyright issues as they arise in the context of computer software." *Gates,* 798 F. Supp. at 1502.

175. 994 F.2d 1476 (10th Cir.), *cert. denied,* 114 S. Ct. 307 (1993).

176. 9 F.3d 823 (10th Cir. 1993).