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COPYRIGHT LAW—Tenth Circuit Application of the Abstraction-Filtration-Comparison Test to Determine the Scope of Copyright Protection for Computer Programs: *Autoskill v. National Educational Support Systems**

I. INTRODUCTION

Autoskill Inc. v. National Educational Support Systems, Inc.,¹ provides a method that allows federal courts to determine which elements within a computer software system are copyrightable. The *Autoskill* method may enable courts to better determine whether copyright protected elements of computer software have been infringed by other software.²

Since its commercial debut in 1959,³ the integrated circuit or “chip” has fostered an incredible array of new information technologies from personal computers to cellular phones. Over the years, the law regarding computer software has struggled to keep up with the developing technology. As a result of this rapid explosion, Congress decided to avoid grappling with each new legislative issue regarding information technology that required more study than the legislative process was willing to give.⁴ Accordingly, Congress enacted the 1976 Copyright Act, which froze the law on a variety of issues and left responsibility for exploring and formulating policy regarding the intersection of copyrights and computers to the National Commission on New Technological Uses of Copyrighted Works (CONTU).⁵ Four years later, Congress passed the Computer Software Act⁶ based on CONTU’s recommendations that the idea-expression dichotomy should be applied to computer programs. The idea-expression dichotomy is based on 17 U.S.C. § 102(b).⁷ Protection under section 102(b)

* Entry in the Nathan Burkan Memorial Competition.

1. 793 F. Supp. 1557 (D.N.M. 1992) [hereinafter *Autoskill I*], *aff’d*, 994 F.2d 1476 (10th Cir. 1993) [hereinafter *Autoskill II*], *cert. denied*, 114 S. Ct. 307 (1993).

2. *See, e.g.*, *Gates Rubber Co. v. Bando American, Inc.*, 798 F. Supp. 1499 (D. Colo. 1992) [hereinafter *Gates Rubber I*], *rev’d sub nom.*, *Gates Rubber Co. v. Bando Chemical Indus.*, 9 F.3d 823 (10th Cir. 1993) [hereinafter *Gates Rubber II*] (adopting the *Autoskill* court’s method for determining the scope of copyright infringement).

3. T.R. REID, *THE CHIP* 96 (1985).

4. Arthur R. Miller, *Copyright Protection For Computer Programs, Databases and Computer-Generated Works: Is Anything New Since CONTU?*, 106 HARV. L. REV. 977, 979 (1993).

5. *Id.*

6. Computer Software Act, § 10(b) Pub. L. No. 96-517, 94 Stat. 3028 (codified at 17 U.S.C. § 117 (1988)) (revising the scope of copyright protection for computer software to reflect CONTU’s recommendations).

7. “In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery regardless of the form in which it is described, explained, illustrated, or embodied in such work.” 17 U.S.C.A. § 102(b) (West Supp. 1994) (dichotomy affording copyright protection only to expression, not ideas). *See also* *Financial Control Assocs., Inc. v. Equity Builders, Inc.*, 799 F. Supp. 1103, 1116 (D. Kan. 1992) (stating copyright protection extends to expression but never to ideas).

is divided into two forms: (1) works of expression are granted protection by copyright law; and (2) ideas are potentially protected by patent law.⁸

Even before the introduction of copyright law to computer software, the courts struggled with the difficult task of distinguishing ideas from the expression of ideas. The courts have often decided the idea-expression distinction on an ad hoc basis.⁹ Nevertheless, in the field of computer software, various tests have been developed to aid the courts in applying the idea-expression dichotomy as a test for substantial similarity in copyright infringement actions.¹⁰ This Note addresses the holding of the district court in *Autoskill I*, the holding of the United States Court of Appeals in *Autoskill II*, and the various tests used by other courts to determine substantial similarity of computer software. Finally, this Note analyzes the *Autoskill* cases with respect to their impact on existing case law and policy.

II. STATEMENT OF THE CASE

In 1986, Autoskill Inc. (Autoskill), a Canadian corporation with its principal place of business in Ottawa, Canada, obtained a registration certificate of United States copyright for a computer program designed to teach students with reading disabilities.¹¹ Four years later, National

8. See *Baker v. Selden*, 101 U.S. 99, 102 (1879) ("Novelty of the art or thing described or explained has nothing to do with the validity of copyright . . . [t]hat is the province of [patent law,] not of copyright.").

9. *Peter Pan Fabrics, Inc. v. Martin Weiner Corp.*, 274 F.2d 487, 489 (2d Cir. 1960).

10. "To prove copyright infringement a plaintiff is required to show: (1) ownership of a valid copyright, and (2) copying of constituent elements of the work that are original." *Autoskill II*, 994 F.2d at 1487 (quoting *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 111 S. Ct. 1282, 1296 (1991)). See, e.g., *Gates Rubber II*, 9 F.3d 823, 831 (10th Cir. 1993); *Allied Materials and Equip. Co. v. Pappa Geppetto's Toys Victoria, Ltd.*, 28 U.S.P.Q.2d (BNA) 1862, 1864 (D. Kan. 1993).

In order to prove copying, the second element of infringement, the plaintiff may use either direct evidence or circumstantial evidence by demonstrating that defendant had access to the protected work and by demonstrating a substantial similarity between the two works. *Autoskill II*, 994 F.2d at 1489; see also *Gates Rubber II*, 9 F.3d 823, 832 (10th Cir. 1993); *Atari Games Corp. v. Nintendo of America, Inc.*, 975 F.2d 832, 837-38 (D.C. Cir. 1992); *Financial Control Assocs. v. Equity Builders, Inc.*, 799 F. Supp. 1103, 1115 (D. Kan. 1992).

11. *Autoskill I*, 793 F. Supp. at 1559. Copyright ownership is vested initially in the author of the work, the party who creates the work by translating an idea into a fixed tangible expression. 17 U.S.C. § 201(a). The owner of copyright has exclusive rights to authorize the following: 1) reproduce the copyrighted work in copies; 2) produce derivative works based upon the copyrighted work; 3) distribute copies of the copyrighted work to the public by sale or transfer of ownership, or by rental, lease, or lending. 17 U.S.C.A. § 106 (West 1977 & Supp. 1993).

The *Autoskill II* court held that National Education Support Systems (NESS) did not present sufficient evidence to rebut the statutory presumption that Autoskill owned the copyright. *Autoskill II*, 994 F.2d at 1487-88 (citing 17 U.S.C. § 410(c), which provides that a certificate of registration establishes the validity of copyright and shifts the burden to dispute the validity to the party challenging it). The document bearing Autoskill's assignment of the program's ownership rights from the programming firm was presented to the court in the interim between the end of trial and before the trial court's decision. Brief for Appellee at 48 n.40, *Autoskill, Inc. v. National Educ. Support Sys., Inc.*, 944 F.2d 1476 (10th Cir. 1993) (No. 92-2118). Prior to locating the assignment document, the President of Autoskill, Dr. Trites, testified at a hearing to the existence of a document assigning ownership rights of the program to Autoskill. *Id.* at A54. Thus, Dr. Trites' testimony was admitted into evidence as proof of Autoskill's ownership. *Id.* On the other hand, NESS sought to prove that Autoskill could not have claimed ownership under the common law of agency test for copyright law regardless of a document of ownership. *Autoskill II*, 994 F.2d at 1488-89.

Educational Support Systems (NESS), a New Mexico corporation with its principal place of business in Albuquerque, New Mexico, began marketing a program similar to that of Autoskill.¹² Autoskill sued NESS for copyright infringement in the New Mexico District Court and moved for a preliminary injunction against NESS.¹³

The district court in *Autoskill I* granted Autoskill a preliminary injunction covering those portions of Autoskill's program that the court deemed protectable by copyright.¹⁴ The court divided the allegedly copied Autoskill program into various elements as related to their function within the program.¹⁵ The court then employed a method of analysis to determine which of the copyright protected elements of the Autoskill program were infringed upon by NESS.¹⁶ In general, the method employed by the district court filtered out idea and non-protectable expression from those elements of expression worthy of copyright protection, similar to the process of separating gravel from sand by filtering it through a series of sieves. The critical issue addressed by the *Autoskill I* court was whether this method of analysis sufficiently distinguished idea from expression such that the substantial similarity requirement of an infringement action was met.¹⁷ Based on its method of analysis, the *Autoskill I* court held that there was a substantial likelihood that NESS's program infringed on the Autoskill program.¹⁸ As a result of the *Autoskill I* holding, NESS appealed more than thirty days after the relief of preliminary injunction was ordered, relying on 11 U.S.C. § 108(b)(2) of the Bankruptcy Code.¹⁹

12. *Autoskill I*, 793 F. Supp. at 1559. Lynn Beckwith, the head of the firm that wrote NESS's software, testified that NESS instructed him that the software was "to be like Autoskill" and was to be an "Autoskill replacement." *Id.*

13. For copyright infringement, the 10th Circuit allows a district judge to grant a preliminary injunction if the moving party demonstrates:

- (1) Substantial likelihood that the movant will eventually prevail on the merits [in Autoskill's case, a reasonable probability that Autoskill will ultimately be entitled to the relief sought. See also *Financial Control Assocs., Inc. v. Equity Builders, Inc.*, 799 F. Supp. 1103, 1113 (D. Kan, 1992)];
- (2) a showing that the movant will suffer irreparable injury unless the injunction issues;
- (3) proof that the threatened injury to the movant outweighs whatever damage the proposed injunction may cause the opposing party; and
- (4) a showing that the injunction, if issued, would not be adverse to the public interest.

Autoskill II, 994 F.2d at 1487.

14. *Autoskill I*, 793 F. Supp. at 1573.

15. *Id.* at 1566.

16. *Id.* at 1566-70.

17. See *Autoskill I*, 793 F. Supp. at 1565-66 (test for substantial similarity as applied to computer programs was without precedent in the Tenth Circuit).

18. *Id.* at 1569.

19. *Autoskill II*, 994 F.2d at 1484-85. Procedurally, NESS failed to file notice of appeal within the 30-day period after the order of relief was entered as required for all civil cases in federal court under the Federal Rules of Appellate Procedure. *Id.* at 1483-8; see also FED. R. APP. P. 4(a). NESS, however, filed a Chapter 11 bankruptcy petition six days after the district court entered the preliminary injunction. *Autoskill II*, 994 F.2d at 1482. Subsequently, NESS's appeal was upheld because it was filed within the 60-day period beginning from the day of commencement of Chapter 11 bankruptcy as provided in 11 U.S.C. § 108(b)(2) of the *Bankruptcy Code*. *Id.* at 1482-83. NESS was allowed standing under § 108(b)(2) because it filed a Chapter 11 bankruptcy petition six days after the district court in *Autoskill I* entered an order for a preliminary injunction. *Id.* Specifically, the United States Court of Appeals in *Autoskill II* held "that under § 108(b) NESS was required to file notice of appeal 'before the later of either': (1) the period provided by the applicable nonbankruptcy law or (2) '60 days after the order for relief [under bankruptcy law].'" *Id.* at 1484.

In *Autoskill II*, the United States Court of Appeals for the Tenth Circuit affirmed the district court's order for the preliminary injunction against NESS.²⁰ The *Autoskill II* court concluded that NESS had not demonstrated any reversible error in the district court's copyright infringement analysis in *Autoskill I*.²¹ The *Autoskill II* court addressed three issues of critical importance to the outcome of the dispute: First, whether NESS's activities were within the scope of section 108(b)(2) of the Bankruptcy Code setting out the allowance for filing notice of appeal;²² second, whether Autoskill's independently contracted programmers were employees of Autoskill under the relevant factors of the common law agency meaning of ownership;²³ and third, whether the district court judge in *Autoskill I* properly concluded that Autoskill satisfied its burden on the substantial similarity requirement²⁴ for a preliminary injunction.

III. SURVEY OF COPYRIGHT PROTECTION FOR COMPUTER SOFTWARE

The *Autoskill II* court affirmed the district court's holding that Autoskill, as a copyright holder, satisfied its burden of showing substantial similarity and thus the issuance of a preliminary injunction was correct.²⁵ Moreover, the district court had "used a permissible method of analysis and reached a reasonable conclusion."²⁶ The discussion below outlines the *Autoskill* method for determining substantial similarity. This discussion begins with a survey of three common methods of determining substantial similarity: the Ninth Circuit test from *Sid & Marty Krofft Television v. McDonald's Corp.*,²⁷ the Third Circuit test from *Whelan Associates v.*

20. *Autoskill II*, 994 F.2d at 1499.

21. *Id.* at 1493.

22. Only two other courts have addressed the issue of whether § 108(b)(2) extends the time for filing a notice of appeal for 60 days after the order of relief is entered. *Autoskill II*, 994 F.2d at 1483 n.3 (citing *Production Credit Ass'n v. Burk*, 427 N.W.2d 108, 110-11 (N.D. 1988); *DiMaggio v. Blanche*, 466 So. 2d 489, 490-91 (La. Ct. App. 1985)). Without any precedent in the Tenth Circuit regarding the application of § 108(b), the *Autoskill II* court permitted NESS to file appeal because it was within the 60-day period beginning from the day Chapter 11 was filed as provided in § 108(b). *Autoskill II*, 994 F.2d at 1482. *Autoskill I*'s rationale for applying § 108(b) was based on the legislative intent to afford better time to protect the interests of the bankruptcy estate during the litigation process. *Id.* at 1485.

23. NESS had argued that Autoskill could not claim ownership of the disputed program because it was written by independent contractors who were not technically "work made for hire" employees of Autoskill under the agency test outlined in *Community for a Creative Non-violence v. Reid*. *Autoskill II*, 994 F.2d at 1488 (quoting *Community for a Creative Non-violence v. Reid*, 490 U.S. 730, 731 (1989)). Moreover, NESS argued that the *Reid* agency test adopted in 1989 should be applied retroactively to the Autoskill program created in 1986. *Autoskill II*, 994 F.2d at 1488 (quoting *James B. Beam Distilling Co. v. Georgia*, 111 S. Ct. 2439, 2447-48 (1991)). See, e.g., *Independence One Mortgage v. Wicks*, 5 F.3d 1372, 1373 (10th Cir. 1993). The *Autoskill II* court agreed that the *Reid* test should have applied retroactively to Autoskill; however, the evidence was not sufficient enough to rebut *Autoskill*'s presumption of ownership to reverse the preliminary injunction. *Autoskill II*, 994 F.2d at 1488-89.

24. See *supra* note 10.

25. *Autoskill II*, 994 F.2d at 1499.

26. *Id.* at 1492.

27. 562 F.2d 1157 (9th Cir. 1977).

Jaslow Dental Laboratory, Inc.,²⁸ and the Second Circuit test from *Computer Associates International, Inc. v. Altai, Inc.*²⁹ *Krofft* is the traditional test for substantial similarity, but has never wholly been applied to computer software;³⁰ *Altai* and *Whelan* are the two leading tests on the subject of computer software copyright. Finally, after addressing these cases, this Note discusses the *Autoskill* potential impact on copyright law in terms of developing a workable methods test for substantial similarity.

A. *The Sid & Marty Krofft Television v. McDonald's Corp. Test*

The traditional test for substantial similarity in copyright law is the "total concept and feel" test from *Sid & Marty Krofft Television v. McDonald's Corp.*³¹ The test consists of an "extrinsic test" and an "intrinsic test."³² The extrinsic test simply allows the trier of fact to determine substantial similarity by analyzing a list of specific criteria, such as comparing subject matter, artwork and setting.³³ The intrinsic test asks whether an ordinary reasonable person can determine if an allegedly infringing work has captured the "total look and feel" of a copyright protected work.³⁴ In general, the "total concept and feel test" is ideal for visual forms of expression, such as greeting cards and the audiovisual work of arcade games, but is discouraged in the complex literal works environment of computer programming.³⁵

B. *The Whelan Associates v. Jaslow Dental Laboratory Test*

Whelan was one of the first copyright cases to fully address the scope of substantial similarity in computer software. In *Whelan*, the plaintiff

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

29. 982 F.2d 693 (2d Cir. 1992).

30. See *infra* note 35 and accompanying text.

31. *Sid & Marty Krofft Television*, 562 F.2d at 1167. In *Krofft*, plaintiffs brought a copyright infringement action of the children's television show "H.R. Pufnstuf" against defendant upon production of defendant's "McDonaldland" commercials. *Id.* at 1160-62. The Ninth Circuit in *Krofft* compared several characterizing aspects of both parties, such as the physical appearances of McDonaldland's "Mayor McCheese" character with Krofft's "Pufnstuf" character. *Id.* at 1166-67. *Krofft* held that "duplication or near identity is not necessary to establish infringement" but such that the McDonaldland commercials "have captured the 'total concept and feel' of the Pufnstuf show." *Id.* at 1167.

32. *Id.* at 1164.

33. *Id.*

34. *Id.*

35. 3 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 13.03[A] (1992). See also *Atari, Inc. v. North Am. Philips Consumer Elec. Corp.*, 672 F.2d 607, 619-20 (7th Cir. 1982), cert. denied, 459 U.S. 880 (1982) ("total concept and feel" test strictly applied to the audiovisual display of a video arcade game); *Gates Rubber I*, 798 F. Supp. at 1510-20 (where the court partly incorporated the "total concept and feel" test in its analysis of computer software); *Digital Communications Assocs., Inc. v. Softklone Distrib. Corp.*, 659 F. Supp. 449, 455-65 (N.D. Ga. 1987) (test as applied to computer screen displays generated by a computer program); *E.F. Johnson Co. v. Uniden Corp. of America*, 623 F. Supp. 1485, 1501 n.16 (D. Minn. 1985) (discussing the difficulties influenced in applying the "total concept and feel" test to complicated computer programs that are "well hidden from public view"). In *Autoskill I*, the court rejected the *Krofft* test because it would only be helpful if the fact finder actually operated the programs rather than relying on expert testimony and because *Autoskill*'s reading program appeared to the court to be far too complex for the simplistic "look and feel" analysis. *Autoskill I*, 793 F. Supp. at 1571.

retained a copyright to an office management program for a dental laboratory and, subsequently, the defendant was allowed to use the program.³⁶ The plaintiff sued for copyright infringement when the defendant began selling a program with functional and structural parts (non-literal elements) similar to the plaintiff's program but written in a different computer language (literal elements).³⁷ The *Whelan* court held that copyright protection may extend beyond literal elements of a program to include non-literal elements such as "structure, sequence and organization."³⁸ To determine whether the two computer programs were substantially similar, the *Whelan* court applied the idea-expression dichotomy based on the opinion of *Baker v. Selden*.³⁹

In *Baker*, the Supreme Court held that some types of expression along with ideas were not suitable for copyright protection.⁴⁰ From the holding of *Baker*, the *Whelan* court formulated a general rule to better distinguish expression from idea: "the purpose or function of a utilitarian work would be the work's idea [thus not copyrightable] and everything that is not necessary to that purpose or function would be part of the expression of the idea [and copyrightable]."⁴¹ In addition to the general rule, the *Whelan* court also introduced two corollary factors to be used in distinguishing expression from idea: (1) the *scènes à faire* doctrine; and (2) the merger doctrine.⁴² The *scènes à faire* doctrine excludes copyright protection for those elements that are unoriginal or are standard or common to a particular topic,⁴³ such as ordinary phrases.⁴⁴ When determining whether an element lacks originality with respect to *scènes à faire*, however, it is also important to recognize the very low threshold of originality accorded by the courts.⁴⁵ The merger doctrine, on the other hand, excludes an element of expression from copyright protection if

36. *Whelan*, 797 F.2d at 1226-27.

37. *Id.* Non-literal elements may, for example, refer to functional elements of a program, like the audiovisual displays on the computer screen, or may refer to the way a program is analyzed to accomplish a certain sequence of events, such as when to ask a computer user for information. On the other hand, literal elements refer to the language used to program a computer, such as Fortran, Pascal and Basic. See *Digital Communications Assocs., Int'l v. Softklone Distrib. Corp.*, 659 F. Supp. 449, 454-56 (N.D. Ga. 1987).

38. *Whelan*, 797 F.2d at 1248.

39. *Id.* at 1235-36 (discussing *Baker v. Selden*, 101 U.S. 99 (1879)).

40. 101 U.S. 99, 101-03 (1879). In addition to ideas, the Supreme Court in *Baker* held that certain types of expression were not copyrightable. *Id.* From this holding, the *Whelan* court concluded that copyright protection should be denied to anything that is necessary to the idea ("purpose or function") of the computer program. *Whelan*, 797 F.2d at 1236.

41. *Whelan*, 797 F.2d at 1236.

42. *Id.* at 1236-37.

43. See *Autoskill II*, 994 F.2d at 1494; 3 NIMMER, *supra* note 35, § 13.03[B].

44. See, e.g., *Narell v. Freeman*, 872 F.2d 907, 911 (9th Cir. 1989) (Ordinary phrases such as "rekindle old memories" cannot be protected by copyright.).

45. See *Toro Co. v. R. & R. Prods. Co.*, 787 F.2d 1208, 1213 (8th Cir. 1986). In copyright law, originality requires that the work is independently created by the author and that the work possesses a minimal degree of creativity. *Autoskill II*, 994 F.2d at 1495 n.23. For example, the *Autoskill II* court held that entering data in the *Autoskill* program with the 1, 2 and 3 keys on the computer keyboard sufficiently satisfied a minimal degree of creativity. *Id.*

that element has merged inseparably with an idea.⁴⁶ In sum, *Whelan* provided a test that recognizes infringement of both non-literal and literal forms of expression for computer programs and introduced the doctrines of *scènes à faire* and merger to the field of computer software. Thus, under the *Whelan* test, structural aspects of a computer program may be infringed without any copying of the program's literal code.⁴⁷

C. *The Computer Associates v. Altai Test*

The *Altai* court discovered a critical flaw in the *Whelan* test in that once the single ultimate idea within a computer program can be identified and separated, everything left over must be expression. This approach erroneously ignores the many levels of idea within a given program.⁴⁸ On the other hand, *Altai* suggested that infringement analysis must address several levels of idea and expression within a single computer program. *Altai* recognized that a copyright does not protect every element in a work.⁴⁹ The *Altai* court, consequently, created a three-step test to separate non-protectable expression and idea from protectable expression by dissecting constituent elements of the allegedly copied program.

1. Step 1: Abstraction—Separating Idea from Expression

The first level of analysis used in *Altai* was the "abstractions" test.⁵⁰ The abstractions test consists of breaking an allegedly copied program into its functional parts and then identifying "levels of abstraction" in increasing order of generality from the lowest level, such as the internal details of the program or code, to the highest level, such as the ultimate

46. See, e.g., *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 742 (9th Cir. 1971) ("When the idea and its expression are . . . inseparable, copying the expression in such circumstances would confer a monopoly of the idea upon the copyright owner free of the conditions and limitations imposed by patent law."); see also *Autoskill II*, 994 F.2d at 1494 (discussing merger doctrine).

47. *Whelan*, 797 F.2d at 1233-34.

48. *Computer Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693, 705 (2d Cir. 1992) (quoting 3 NIMMER, *supra* note 35, § 13.03[F] [sic] wrongly cited in case; should be at 13.48.33). The *Whelan* court found the one ultimate idea underlying the computer program and designated everything else a copyrightable expression. *Id.*

49. *Altai*, 982 F.2d at 721. Where the *Whelan* court made one division of idea from expression, *Altai* suggests there are many opportunities or "levels" within a single program allowing for separation of idea from expression. *Id.*; see also *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 49 U.S. 340, 349 (1991).

50. *Altai*, 982 F.2d at 706-07 (quoting *Nichols v. Universal Pictures Corp.*, 45 F.2d 119 (2d Cir. 1930)). In *Nichols*, Judge Learned Hand stated:

Upon any work . . . 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 [work] 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 [author] could prevent the use of his "ideas," to which, apart from their expression, his property is never extended.

Nichols, 45 F.2d at 121.

function or idea of the program.⁵¹ The abstractions test is merely a tool for determining the protectable elements of a program but does not identify the elements *per se*.⁵²

2. Step 2: Filtration—Separating Protectable from Non-Protectable Expression.

The second level of analysis seeks to define the scope of plaintiff's copyright by subjecting the levels of abstraction to a filtering method which separates the protectable expression from the non-protectable elements.⁵³ One could consider each factor, such as the *scènes à faire* doctrine or material from the public domain, to be like an individual filter within a series of filters through which expression flows. With each filtering factor introduced, non-protectable expression is filtered out leaving protectable expression as an end product. Filtration should at least eliminate unprotectable elements of ideas, *scènes à faire* material, public domain material, merger material, process, facts, and other unprotectable expression dictated by the facts of the program in question.⁵⁴

3. Step 3: Comparison

After being subjected to the process of elimination by the filtration test, a court in this final step compares the core of creative expression of the allegedly infringing program with the core of creative expression of the copyright protected program to determine whether they are substantially similar.⁵⁵ Thus, "to impose liability for copyright infringement, the court must find that the defendant copied protectable elements of the plaintiff's program and that the protectable elements comprise a substantial part of the plaintiff's program when it is considered as a whole."⁵⁶ During this phase of the substantial similarity analysis, the

51. *Altai*, 982 F.2d at 705 (quoting 3 NIMMER, *supra* note 35, § 13.03[F] [sic] (cited wrong in case; should be at 13-78.34); see also *Lotus Dev. Corp. v. Paperback Software Int'l*, 740 F. Supp. 37, 60-62 (D. Mass. 1990) (In general, those elements at a higher level of abstraction constitute ideas and those at the lower level constitute expression. The abstractions test calls for casting out the "higher levels of abstraction" or ideas and leaving only the expression of the program).

52. Application of the abstractions test varies with the particular facts of each case. In general, however, the computer program may be divided into six levels of decreasing abstraction: 1) the program's main purpose; 2) the program's structure or architecture; 3) various abstract data types (a list of associated operations, such as entering, deleting, finding or sorting a check number from a list of checks); 4) algorithms and data structures (sequence of events necessary to accomplish an operation, such as the operation of entering check numbers into the list of checks may include creating a computer screen asking for data or storing it); 5) source code (program set in a programming language, e.g. Fortran); 6) object code (actual machine instructions, e.g. binary). See John W. L. Ogilvie, Note, *Defining Computer Program Parts Under Learned Hand's Abstractions Test in Software Copyright Cases*, 91 MICH. L. REV. 526, 533 (1992).

53. *Altai*, 982 F.2d at 705.

54. *Gates Rubber II*, 9 F.3d 823, 833 (10th Cir. 1993).

55. *Altai*, 982 F.2d at 710-11 (the judge will take the copyrightable end product of the copyright-protected program and compare it with the similar elements found within the allegedly infringing program).

56. *Gates Rubber II*, 9 F.3d 823, 833 (10th Cir. 1993) (citing *Autoskill II*, 994 F.2d 1476, 1496-98 (10th Cir. 1993)).

Altai court recognized some need for expert opinion to ascertain substantial similarity of computer software, "an often highly complicated and technical subject matter."⁵⁷ The court, however, left the extent of expert testimony allowed in a given case to the discretion of the trial court.⁵⁸

In short, the three-part *Altai* test allows individual program elements, that may have been excluded from protection at one level of abstraction, the possibility of copyright protection when in combination with other elements at another level of abstraction.⁵⁹ The *Altai* court also cautioned that the test should not be mechanically applied.⁶⁰ Thus, the court recommended considering the congressional intent of promoting science and the useful arts by allowing for broad copyright protection before applying any overly narrowing set of factors into the abstraction-filtration-comparison analysis.⁶¹

Krofft, *Whelan* and *Altai* characterize the prevailing case law before *Autoskill*. Over the years, the *Whelan* test has been criticized by courts and commentators alike.⁶² On the other hand, the *Altai* three-part test provides the courts with the necessary flexibility for the complex substantial similarity analysis of computer software.⁶³ Although the *Krofft* test has been successfully applied in many other fields of copyright law, the courts have been reluctant to fully apply *Krofft* to computer software.⁶⁴ Hence, one can see that the application of copyright law to the field of computer software has not yet matured, and new cases such as *Autoskill* contribute significantly to this developing field of jurisprudence.⁶⁵

IV. ANALYSIS OF *AUTOSKILL* v. *NATIONAL EDUCATIONAL SUPPORT SYSTEMS*

Autoskill provides a new method of applying the idea-expression dichotomy to the area of computer software. Moreover, *Autoskill*'s method

57. *Altai*, 982 F.2d at 713.

58. *Id.* The *Altai* court recognized the need for the trier of fact to make a well-informed judgment at the comparison step with expert opinion regarding the degree of substantial similarity between the copyrightable end product of the allegedly infringing program and the similar elements found within the copyright-protected program.

59. See Miller, *supra* note 4 at 1001-03 (comparing the *Whelan* test where only one idea-expression distinction is made with *Altai* where several idea-expression distinctions are made).

60. *Altai*, 982 F.2d at 712. The *Altai* court was concerned with the tendency of subjecting a program to too many levels of filtration and, in effect, narrowing the level of copyright protection. *Id.*

61. It should be noted that the Second Circuit three-step analysis of *Altai* (December 17, 1992) was not yet reported at the time of the *Autoskill I* opinion (April 21, 1992). Therefore, the three-step analysis of *Autoskill I* was derived independently from the Second Circuit *Altai* analysis. However, the *Altai* analysis was reported such that it was a primary reference in the *Autoskill II* opinion (May 19, 1993). See *Autoskill II*, 994 F.2d at 1490 n.17.

62. *Computer Assocs. Int'l v. Altai*, 982 F.2d 693, 705 (2d Cir. 1992). See generally *supra* text accompanying note 48.

63. See *Autoskill II*, 994 F.2d 1476, 1494 (10th Cir. 1993).

64. 3 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT §13.03 (1992). See generally *supra* text accompanying note 35.

65. See *Autoskill II*, 994 F.2d at 1494.

of determining substantial similarity satisfies the policy considerations of copyright law set forth by Congress.

In *Autoskill I*, the court incorporated portions of the *Whelan* analysis and even more of the *Altai* analysis. The courts in *Autoskill*, like *Altai*, rejected *Whelan*'s simplistic general rule that a computer program consists of one major idea rather than of many different levels of ideas.⁶⁶ Nevertheless, *Autoskill* employed some aspects of the *Whelan* analysis, particularly the corollary doctrines of *scènes à faire* and merger,⁶⁷ as well as the use of exhibits and lay evidence in the determination of substantial similarity.⁶⁸

Using *scènes à faire* doctrine, the court in *Autoskill I* filtered out some common non-protectable techniques used in reading programs, such as "silent sentence and paragraph" components found within the *Autoskill* program.⁶⁹ In discussing the merger doctrine, the court introduced two fundamental concepts of copyright law to its analysis.⁷⁰ First, an expression cannot be protected if the underlying idea can be expressed in a limited number of ways.⁷¹ Second, an expression is not protected if it is found to be dictated by the nature of the idea.⁷² Thus, the court found that thirteen categories of vowel and consonant combinations used in the *Autoskill* program must be filtered out of the analysis because the categories are merged to the idea of testing and training students in letter and sound relationships in the English language and therefore can only be expressed in a limited number of ways.⁷³ In sum, although *Autoskill I* did not follow the *Whelan* test in its entirety, the court did adopt some important aspects of the *Whelan* analysis.

Although the *Autoskill I* court was influenced by some aspects of *Whelan*, *Autoskill I*'s analysis primarily resembles the later three-step

66. *Autoskill I*, 793 F. Supp. 1557, 1566 (D.N.M. 1992). In *Altai*, an expert witness described the major pitfalls of the *Whelan* test's failure to recognize that the computer science terms of "structure", "sequence" and "organization" of a computer program are not synonymous. *Computer Assocs. Int'l, Inc. v. Altai, Inc.*, 775 F. Supp. 544, 560 (E.D.N.Y. 1991). Thus, the *Whelan* test failed to recognize the many complex levels of idea and expression rather than just one idea that may be found within a program. *Id.* at 559.

67. *Autoskill I*, 793 F. Supp. at 1567-68.

68. *Id.* at 1569 (considering graphs and visual scanning tests used to evaluate a student's reading program).

69. *Id.* at 1568.

70. *Id.* at 1567.

71. *Id.*; see also *Digital Communications v. Softklone Distrib.*, 659 F. Supp. 449, 459-60 (N.D. Ga. 1987) (The stylistic appearance of data cards inserted into computers was not copyrightable because there was essentially only one way to enter data into a computer. Thus, an idea for entering data into a computer could only be expressed in a limited number of ways.).

72. *Autoskill I*, 793 F. Supp. at 1567-6; see also *Sega Enterprises, Ltd. v. Accolade, Inc.*, 977 F.2d 1510, 1525-27 (9th Cir. 1993) (computer manufacturing design standards can only be expressed in a limited number of ways); *Plains Cotton Coop. v. Goodpasture Computer Serv.*, 807 F.2d 1256, 1262 (5th Cir. 1987) (the fundamental activities of the cotton market dictated the various features of a computer program); *Manufacturer's Technologies, Inc. v. Cams, Inc.*, 706 F. Supp. 984, 995 (D. Conn. 1989) (hardware standards and mechanical specifications can only be expressed in a limited number of ways).

73. *Autoskill I*, 793 F. Supp. at 1568.

Altai analysis for substantial similarity.⁷⁴ Ultimately, the similarity of analysis between *Autoskill* and *Altai* indicates judicial acceptance of a fundamental approach toward determining the scope of copyright protection for computer software. Indeed, one commentator noted that the *Altai* analysis was simply a formalization of an "analytical refinement already employed by a number of courts."⁷⁵ In fact, the *Altai* and *Autoskill* tests seem to have been an adoption of Professor Nimmer's suggestions to substitute *Whelan* analysis for the abstractions test of *Nichols v. Universal Pictures Corp.*;⁷⁶ to successively filter out unprotected elements;⁷⁷ and finally to compare the remaining core material to determine substantial similarity.⁷⁸

In the *Autoskill I* analysis, the court first applied a variation of the *Nichols* abstractions test for the purpose of extracting idea from expression.⁷⁹ First, the court separated the allegedly copied program to its constituent parts, and then it identified the "levels of abstraction" in increasing order of generality.⁸⁰ After analyzing the program in terms of the abstractions test, the court held that "the manner in which [the] *Autoskill* [program] utilizes ideas and communicates them to students and teachers in the context of its reading program amounts to expression."⁸¹ Second, the court applied the filtration test to separate the non-protectable expression from the protectable expression. The court also used the doctrines of merger and *scènes à faire* as "filters" to assist in the task of extracting the non-protectable expression.⁸² Finally, the court used the comparison test to determine if the remaining copyrightable core

74. *Autoskill II*, 994 F.2d 1476, 1492 (10th Cir. 1993). Recall that the three-step analysis of *Autoskill I* was derived independently from the *Altai* analysis. See *supra* text accompanying note 61.

75. Miller, *supra* note 4, at 1003.

76. *Nichols v. Universal Pictures Corp.*, 45 F.2d 119 (2d Cir. 1930; see also *Altai*, 775 F. Supp. at 560 (discussing Professor Nimmer's rejection of the *Whelan* test for the *Nichols* abstractions test); *Autoskill I*, 793 F. Supp. at 1565 ("A basic approach for analyzing the substantial similarity question regarding computer software has been proposed by Professor Nimmer. 3 NIMMER § 13.13[F]."); *Autoskill II*, 994 F.2d at 1490 (stating that a variation of the three-step method of analysis recommended in *Nimmer* was recently adopted by the Second Circuit in *Altai*, 982 F.2d 693, 706 (2d Cir. 1992)).

77. Other recent courts have also adopted this filtering approach. See *Brown Bag Software v. Symantec Corp.*, 960 F.2d 1465, 1475 (9th Cir. 1992); *Apple Computer, Inc. v. Microsoft Corp.*, 779 F. Supp. 133, 135 (N.D. Cal. 1991; see also 3 NIMMER, *supra* note 35, § 13.03[F] n.284 ("The fact that *Autoskill* reached a ruling in favor of plaintiff whereas *Altai* reached a defense judgment indicated that the successive filtering analysis is designed as a neutral test, favoring neither copyright owners nor alleged infringers.")).

78. 3 NIMMER, *supra* note 35, § 13.03[F].

79. The district court found the abstractions test ideal for dissection computer programs because the test breaks down a computer program in a way that mirrors the typical development of a program. See *Autoskill II*, 994 F.2d at 1491-92.

80. See also *Lotus Dev. Corp. v. Paperback Software Int'l.*, 740 F. Supp. 37, 60 (D. Mass. 1990) (discussing Judge Learned Hand's analysis in *Nichols v. Universal Pictures Corp.*, 45 F.2d at 121).

81. *Autoskill I*, 793 F. Supp. at 156; see also *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240 (3d Cir. 1983) (discussing manner of separating idea from expression by drawing lines of abstraction); *Herbert Rosenthal Jewelry Corp. v. Kalpakian*, 446 F.2d 738, 742 (9th Cir. 1971) (analysis by drawing lines of abstraction).

82. See *supra* notes 69-73 and accompanying text.

expression from the Autoskill program was substantially similar to the NESS program.⁸³ Based on this comparison, the court concluded that there was a "substantial likelihood" that the NESS program infringed on the Autoskill program.⁸⁴ The comparison phase included lay and expert testimony and exhibits to determine substantial similarity.⁸⁵ The court gave greater weight to testimony comparing the overall function or pedagogical significance of the reading program, such as the manner in which the program executes certain concepts, than to testimony comparing the specific logic flow of the two programs.⁸⁶ Thus, by favoring testimony outlining the significance of a program over the specific details of the program's execution, *Autoskill I* provided the courts with an approach to assess expert testimony in the light the *Altai* holding.

The opinion of the Tenth Circuit in *Autoskill II* furthers the notion of a three-part abstraction-filtration-comparison approach as a test for substantial similarity. On appeal, the Tenth Circuit rejected NESS's argument that the district court erred in its execution of the abstractions test from *Altai*:

[I]t is true that the trial judge's analysis and conclusions here do not reveal precisely the abstraction analysis outlined in *Altai* cited by both NESS and Autoskill. However, we focus on the court's findings and conclusions, and [the] resulting ruling on protectable areas of expression, rather than the precise method of analysis the judge used [T]he judge's rulings should not be reversed simply because of a lack of any particular detail in his analysis.⁸⁷

The court of appeals analyzed the district court's use of the three-step test for substantial similarity by using the abstraction-filtration-comparison framework of *Altai*.⁸⁸ The court held that the lower court's findings were not erroneous, thus affirming the preliminary injunction.⁸⁹

Autoskill reflects the recent trend by the courts in developing a test to address the varying levels of complexity of computer programs and to promote CONTU's mission of *sui generis* protection; that is, of applying existing copyright law to new technology.⁹⁰ The tests developed in *Autoskill*, *Altai* and *Whelan* exemplify the attempts to develop a flexible approach to substantial similarity analysis for computer programs.⁹¹

Another recent case contributing to the substantial similarity test for computer software is *Gates Rubber Co. v. Bando American, Inc.* (*Gates*

83. *Autoskill II*, 994 F.2d at 1496-97.

84. *Autoskill I*, 793 F. Supp. at 1573.

85. *Autoskill I*, 793 F. Supp. at 1569. Recall that the *Altai* court left the extent of expert testimony in a given case to the discretion of the trial court. See *supra* note 58 and accompanying text.

86. *Autoskill II*, 994 F.2d at 1497-98.

87. *Id.* at 1494.

88. *Id.* at 1490-98.

89. *Id.* at 1499.

90. See *supra* notes 4-6 and accompanying text.

91. See Miller, *supra* note 4, at 1013 (noting the evolving doctrinal tools applying the idea-expression dichotomy to computers as a test for substantial similarity).

Rubber I).⁹² The opinions of the district court in *Gates Rubber I* and the Tenth Circuit in *Gates Rubber Co. v. Bando Chemical Industries, Ltd. (Gates Rubber II)*⁹³ demonstrate the evolutionary nature and similar progression of case law towards a workable test for substantial similarity.⁹⁴ The court in *Gates Rubber I* encountered a factual situation similar to *Autoskill* and used the *Whelan* and *Altai* tests without reference to the *Autoskill* decision.⁹⁵ *Gates Rubber I*, however, used the *Whelan* and *Altai* tests only after it applied the traditional two-pronged similarity analysis of the "total concept and feel" test.⁹⁶ The independent analyses of the *Autoskill* and *Gates Rubber I* courts demonstrate the continuing development in copyright jurisprudence towards one test for substantial similarity of computer software.

This notion of a continuing progression culminated in *Gates Rubber II*. Due to the chronology of the Tenth Circuit docket, the court in *Gates Rubber II* was able to incorporate the reasoning of *Autoskill* in its analysis.⁹⁷ As a result of *Autoskill*, *Gates Rubber II* vacated and remanded the holding of *Gates Rubber I* and adopted the abstraction-filtration-comparison test of *Autoskill*.⁹⁸ The court in *Gates Rubber II* stated:

Determining which elements of a program are protectable is a difficult task . . . [A]n effective test can be formulated from constitutional and statutory constraints and guided by existing case law to determine the scope of copyright infringement. In substantial part, we adopt the "Abstraction-Filtration-Comparison" test which we previously approved for use in the context of a preliminary injunction ruling in *Autoskill*.⁹⁹

Thus, *Autoskill* has provided a viable method of analysis that enables courts to better determine whether copyright protected elements of computer software have been infringed.

V. CONCLUSION

Copyright policy is meant to balance the interest of protection, characterized by the ensurance of a fair return to authors and inventors to

92. 798 F. Supp. 1499 (D. Colo. 1992).

93. 9 F.3d 823 (10th Cir. 1993).

94. See *Autoskill II*, 994 F.2d at 1490 n.17 (comparing *Autoskill I*'s use of the three-step method analysis of NIMMER with the different approach of *Gates Rubber I*, 798 F. Supp. at 1513, which used the *Whelan* analysis in conjunction with the abstractions test).

95. *Gates Rubber I*, 798 F. Supp. at 1512-19 (Copyright owner of a computer program used to aid in the selection of replacement industrial belts brought an infringement action seeking permanent injunction against the use of a competing program. The district court applied the "*Altai/Nimmer*" approach, in part, in its analysis.).

96. *Id.* The district court used the "total concept and feel" test to first compare the computer software works in their entirety to avoid any underprotection by the narrowing discretion of the *Altai* test. *Id.*

97. The *Autoskill II* opinion (May 19, 1993) was issued exactly six months prior to the holding of *Gates Rubber II* (October 19, 1993). Unfortunately, the district court in *Gates Rubber I* (August 12, 1992) did not have the opportunity to use this *Autoskill* opinion.

98. *Gates Rubber II*, 9 F.3d at 849 (The *Gates Rubber II* court rejected the district court's application of the "total concept and feel" test and remanded to comply with the method outlined in *Autoskill* opinion.).

99. *Gates Rubber II*, 9 F.3d at 834 (citing *Autoskill II*, 994 F.2d at 1487-98).

thereby establish incentives for development, with the interest of dissemination, to foster learning, progress and development.¹⁰⁰ To secure these interests, Congress enacted the Copyright Act allowing for the protection of computer programs as literary works.¹⁰¹ *Autoskill* shows the recent progress among the federal courts in developing a method of analysis that allows for copyright protection of computer software. *Autoskill's* abstraction-filtration-comparison test provides computer programs with the flexibility that assures authors the right to their original expression based on existing copyright law, but also encourages others to build freely upon the ideas and information conveyed by a work.¹⁰²

Computer programs are better suited for copyright protection rather than any other form of intellectual property protection because program development depends on the successive building on the ideas of others. For example, with the aid of copyright protection, a computer programmer may design a new program by incorporating existing ideas from word processing, graphic and spreadsheet software. However, if computer software was afforded patent protection, that same program designer would not receive any protection because patent law requires the ideas in the program to be useful, novel and non-obvious.¹⁰³ Moreover, patent law, with its long, elaborate and expensive process of examination, would stifle the explosive growth of the computer software industry by restricting any incentive for a programmer to design a novel and non-obvious program. As envisioned by CONTU, computer software is well-suited for the flexible protection afforded by copyright law. *Autoskill's* method of analysis for determining substantial similarity furthers CONTU's vision that a highly technical field such as computer software can be addressed by the civil courts using various elements of existing copyright law as opposed to creating an entirely new branch of law with each emerging technology.

Autoskill's abstraction-filtration-comparison analysis illustrates the recent development among the federal courts of a general approach for analysis of substantial similarity for computer software. Thus, *Autoskill* furthers CONTU's vision that a rapidly changing and highly complex technology such as computer software can be addressed by existing statutory copyright law.

RAFAEL V. BACA

100. *Gates Rubber II*, 9 F.3d at 839.

101. See 17 U.S.C. § 101 (1977 & Supp. 1993).

102. See *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991).

103. See 35 U.S.C. §§ 102-03 (1991 Supp.).