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SOFTWARE COPYRIGHT PROTECTION IN THE NAFTA AND BERNE REGIMES: A COMPARATIVE ANALYSIS OF U.S. AND CANADIAN COPYRIGHT LAW

I. INTRODUCTION

Copyright law is continuously evolving. Particularly in the area of computer programs or software,¹ these changes are driven by advances in technology. This comment is an overview of the improvements and shortcomings of the North American Free Trade Agreement's (NAFTA) copyright protection of computer programs found in the chapter on intellectual property (chapter seventeen),² as compared to the Berne Convention for the Protection of Literary and Artistic Works.³ This comment also focuses on the application of the copyright laws of the United States and Canada to computer programs, and the tests used in both countries to determine copyright infringement. Additionally, this comment also examines how the provisions in the NAFTA may be applied in light of these domestic laws and interpretations.

II. BACKGROUND

A fundamental principle of copyright law is that the copyright does not protect the idea, only the expression of that idea.⁴ Economic philosophy protecting a free market system supports this principle, as copyright laws seek

1. The judicial and statutory lexicon of the computer industry is pixilated. "Computer program" is used as an alternative to "software," however, no exact standard has become the rule in this dynamic area of the law. "Computer program," "coding," and "software" will be used for the purposes of this paper to be the object of the copyright. Distinctions are included and developed where appropriate within this comment.

2. North American Free Trade Agreement, Dec. 17, 1992, U.S.-Can.-Mex., ch. 17, 32 I.L.M. 605 (1993) [hereinafter NAFTA].

3. Berne Convention for the Protection of Literary and Artistic Works, Oct. 31, 1988, TREATY DOC. No. 99-27 [hereinafter Convention].

4. Mazer v. Stein, 347 U.S. 201, 217 (1954). See also 17 U.S.C. § 102(b) (1988); Baker v. Selden, 101 U.S. 99 (1879).

to establish a delicate, if not fragile, equilibrium between benefit to the creator and benefit to society.⁵ While these laws provide incentives to create, they simultaneously limit the extent of protection in order to avoid the stagnant effects of monopolization.

The Berne Convention (hereinafter the Convention) is one of the most widely recognized international legal agreements governing the protection of intellectual property. The Convention actually consists of several different revisions,⁶ the latest being the Convention for the Protection of Literary and Artistic Works signed in Paris during 1971.⁷

III. BERNE CONVENTION FOR THE PROTECTION OF LITERARY AND ARTISTIC WORKS

Under the Convention, literary and artistic works are defined⁸ and protected.⁹ The extent of protection and mode of redress is governed by the laws of the country where the protection is claimed.¹⁰ If persons claiming protection are nationals of the country of origin,¹¹ protection is governed by

5. See *Mazer*, 347 U.S. at 219; *Computer Assocs. Int'l, Inc., v. Altai, Inc.*, 982 F.2d 693, 696 (2nd Cir. 1992). Financial gain or incentive to the author is clearly a secondary consideration, and the ultimate aim is to stimulate creativity for the public good. See *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975); *United States v. Paramount Pictures, Inc.* 334 U.S. 131, 158 (1948). Contracting states to the Universal Copyright Convention cite the facilitation of a wider dissemination of works and increased understanding as a persuasive foundation for the adoption of the UCC. Universal Copyright Convention, July 24, 1971, U.S.-Mex., pmbl., 25 U.S.T. 1341, 1344.

6. The first Berne Convention was held September 9, 1886 and completed in Paris on May 4, 1896. It was revised in Berlin on November 19, 1908 and completed at Berne on March 20, 1914. It was again revised in Rome on June, 2 1928, in Brussels on June 26, 1948, in Stockholm on July 14, 1967, and in Paris on July 27, 1971. The acts and protocols of the Paris Convention of 1971 as amended on October 2, 1979 is the latest version. See HARRY G. HENN, 1989 COPYRIGHT LAW: A PRACTITIONER'S GUIDE, SUMMARY OF THE BERNE CONVENTION IMPLEMENTATION ACT OF 1988 1 (Supp. 1989).

7. Although the Berne Convention was signed in Berne by many nations in 1971, the U.S. did not sign until 1988. *Id.*; Convention, *supra* note 3.

8. "The expression 'literary and artistic works' shall include every production in the literary, scientific and artistic domain, whatever may be the mode or form of expression, such as books, pamphlets and other writings; lectures, addresses, sermons and other works of the same nature; dramatic or dramatico-musical works; choreographic works and entertainments in dumb show; musical compositions with or without words; cinema-tographic works to which are assimilated works expressed by a process analogous to cinematography; works of drawing, painting, architecture, sculpture, engraving and lithography; photographic works to which are assimilated works expressed by a process analogous to photography; work of applied art; illustration, maps, plans, sketches and three-dimensional works relative to geography, topography, architecture or science." Convention, *supra* note 3, art. 2.

9. *Id.* art. 5.

10. *Id.* arts. 5(2), 6bis(3).

11. "Country of origin" is defined in article 5(4) and is generally considered to be the country in which the work was first published as long as that country was a signatory to the Convention. In cases where the work was simultaneously published in several countries, the country whose laws grant the shortest term of protection is the country of origin. For works which are published simultaneously within a country which has and within a country which has not signed the Convention the signatory country is the country of origin. The

domestic law. If those seeking protection are not nationals, the Convention requires countries to give them the same rights as those who are.¹²

The Convention also provides for various other rights including the term of protection,¹³ authorization of translation,¹⁴ performances, broadcasting and communication,¹⁵ and others.¹⁶ In terms of enforcement, however, the Convention relies heavily on the domestic laws of signatory countries; it does not specify particular remedies, enforcement procedures, or provisional measures as does the NAFTA.¹⁷

IV. NORTH AMERICAN FREE TRADE AGREEMENT CHAPTER 17 INTELLECTUAL PROPERTY

A. General Discussion

As might be expected from a trade agreement created by three capitalist societies, the NAFTA asserts the importance of protecting property rights while simultaneously maintaining that these protected rights should not "become barriers to free trade."¹⁸ The NAFTA emphasizes the importance of the Convention in several ways. It requires that signatories give the substantive provisions of the Convention full effect.¹⁹ Also, many of its provisions emulate provisions provided for by the Convention. Even though the Convention plays a role in the NAFTA, however, this role is no more than a supporting one. The NAFTA goes beyond the Convention in many areas, particularly the area of enforcement. Furthermore, the NAFTA specifically allows parties to provide protection beyond that offered by the Convention, so long as that protection is consistent with the terms and ideals embodied within the NAFTA.²⁰

Like the Convention, the NAFTA provides for equal treatment of parties, regardless of national origin.²¹ However, equal treatment can be misleading, and may not be the panacea for ill or unfair treatment. For example, complications can arise when a national of one country becomes a party to a suit in another, and the outside party has not complied with a formality of copyright registration in the other country. This is a foreseeable complication because both

only instances where the nationality of the author is the deciding factor, is when works are unpublished or are first published in a country that has not signed the Convention. *Id.* art. 5(4).

12. *Id.* art. 5(3).

13. *Id.* art. 7.

14. *Id.* art. 8.

15. *Id.* arts. 8, 9 and 11bis.

16. *Id.* arts. 8-14.

17. See discussions *infra* parts IV (B)-(D).

18. NAFTA, *supra* note 2, art. 1701, para. 1.

19. *Id.* art. 1701, para. 2(b).

20. *Id.* art. 1702.

21. *Id.* art. 1703, para. 1; Convention, *supra* note 3, art. 5.

countries' copyright laws are not identical. The NAFTA avoids these foreseeable complications by forbidding countries from requiring foreign parties to comply with formalities or conditions in order to acquire copyright and other related rights.²²

The NAFTA also goes beyond the Convention by providing for judicial discretion and enforcement.²³ In the area of judicial and administrative procedures for protection and/or enforcement of intellectual property rights, the NAFTA allows a judge or administrative body discretion to deviate and treat parties from other countries differently than those from their own country. This was done to allow the courts to provide for things such as service of process; it is justifiable as long as the departure is necessary and not applied to create a restriction on trade.²⁴

In addition to all works protected under the Convention²⁵ (article two), NAFTA specifically indicates that all types of computer programs are considered literary works and are protected as such.²⁶ Nowhere within the Convention are computer programs specifically protected, although they are probably included within the idea of literary works. Additionally, the NAFTA protects "compilations of data or other material, whether machine readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations."²⁷ However, in keeping with the notion that only the expression is copyrightable and not the idea, parties are forbidden from extending copyright privileges to the data or material itself.²⁸

As mentioned, the most notable difference between the Convention and the NAFTA is that the NAFTA includes general enforcement provisions, dealing with procedural and remedial aspects of civil procedures, administrative procedures, criminal procedures, and provisional measures.²⁹ Because these sections constitute the NAFTA's greatest advances over the Convention, the remaining portion of this section will be devoted to further discussion of those articles (1714 through 1718) which provide these additional rights and protections to copyright holders.

B. Article 1714 General Enforcement Provisions

The general provisions on enforcement ensure that each signatory government provides for proper enforcement procedures under its domestic law; this is similar to the general requirements in the Convention.³⁰ The NAFTA's

22. NAFTA, *supra* note 2, art. 1703, para. 2.

23. *Id.* arts. 1714, paras. 1 and 1715.

24. *Id.* art. 1703, para. 3.

25. Convention, *supra* note 3.

26. *Id.* art. 1705, paras. 1, 1(a).

27. *Id.* art. 1705, para. 1(b). Note the similarity between this paragraph and the corresponding paragraph in the United States Code, 17 U.S.C. § 101 (1989).

28. NAFTA, *supra* note 2, art. 1705, para. 1(b).

29. *Id.* arts. 1714-18.

30. Convention, *supra* note 3, art. 6bis, para. 3; NAFTA, *supra* note 2, art. 1714, para. 1.

departure lies in the specific safeguards it offers to intellectual property owners. These safeguards include requirements for procedures that are fair and equitable, but not unnecessarily time consuming, complicated, or costly.³¹ The NAFTA also offers general guidelines concerning judicial and administrative enforcement. Proceedings must be handled in a timely manner and decisions must be based only on the evidence, which facilitates the opportunity for parties to be heard. Moreover, decisions must be made in writing and must provide the rationale on which they are based.³² With the exception of acquittals in criminal cases, signatories are required to ensure the opportunity for judicial review (if the parties desire) on the legal aspects and merits of the case.³³

C. Article 1715 Civil and Administrative Procedures and Remedies.

The NAFTA also includes specific procedures and remedies for civil and administrative actions.³⁴ These rules mandate that the defendant in an action be supplied with timely written notice of the action (similar to a pleading in the U.S.) which includes "the basis of the claims."³⁵ Parties also have the right to be represented by independent legal counsel and may substantiate their claims through presentation of relevant evidence.³⁶ The NAFTA does not provide for appointment of legal counsel for indigent defendants, nor does it define relevant evidence or specify the burden of proof required of parties to substantiate their claims. The procedures are not to impose overly burdensome personal appearances upon the parties and must include a means to identify and protect confidential information.³⁷ The NAFTA does not specify how overly burdensome appearances are to be determined or avoided, nor does it give guidelines for the protection of confidential information. Although the NAFTA lists trade secrets and privileged information as examples of confidential information, it still leaves the ultimate decision concerning determination of whether an item is confidential information up to domestic laws.³⁸ Disposal of goods found to infringe upon a copyright has been a problem not previously addressed by treaty. The NAFTA gives judicial authorities the power to determine the most prudent manner of disposal.³⁹ They may order infringing goods to be disposed of outside channels of commerce in a manner that would avoid further injury to the copyright holder.⁴⁰ Such disposal is done without compensation for the goods.⁴¹ The judiciary may even order the infringing goods destroyed if it is

31. NAFTA, *supra* note 2, art. 1714, para 2. The NAFTA does not give meaning to the terms fair and equitable, nor does it give guidelines concerning reasonable costs or set time limits.

32. *Id.* art. 1714, para. 3.

33. *Id.* art. 1714, para. 4.

34. *Id.* art. 1715.

35. *Id.* art. 1715, para. 1(a).

36. *Id.* art. 1715, paras. 1(b), 1(d).

37. *Id.* art. 1715, paras. 1(c), 1(e).

38. *Id.* art. 1721.

39. *Id.* art. 1715, para. 5.

40. *Id.* art. 1715, para. 5(a).

41. *Id.*

not violative of the constitution in the deciding country.⁴² When disposing of counterfeit goods, it will not suffice in every case simply to remove the counterfeit labels or trademarks;⁴³ the authorities must weigh both the proportionality between the seriousness of the infringement, the remedies ordered, and the interests of other persons and enterprises.⁴⁴

The NAFTA provides for limited discovery procedures, and suggests possible avenues for enforcement of discovery.⁴⁵ Judicial authorities also have the ability to order the opposing party to produce evidence that has been properly requested.⁴⁶ If parties refuse to provide access to relevant evidence, these authorities have the power to make preliminary and final findings based on the evidence presented⁴⁷ by the party adversely affected by the denial of access, after the parties have received an opportunity to be heard.⁴⁸

Other remedies available include injunctions as well as the payment of damages, attorney fees, and expenses of the copyright holder.⁴⁹ These provisions apply not only when the infringing party knew or had reason to know that it was infringing, but also when the infringer had reason to know it was dealing in a matter that would entail the infringement of an intellectual property right.⁵⁰ Remedies available to a party sued as a result of its use of an intellectual property right or for its benefit, are limited to payment of damages to the right holder.⁵¹

D. Article 1716 Provisional Measures

The NAFTA requires signatories to ensure that their judicial authorities can order quick and effective provisional measures.⁵² The purpose of this measure is to prevent infringing goods from entering the stream of commerce and to preserve relevant evidence.⁵³ The treaty requires signatories to implement precautionary measures for the protection of the non-moving party.⁵⁴ Provi-

42. *Id.*

43. NAFTA, *supra* note 2, art. 1715, para. 5(b).

44. *Id.*

45. *Id.* art. 1715, para. 2.

46. The evidence must be reasonably available and the requesting party must show that the requested evidence is relevant. The discovery of information is subject to the domestic conditions protecting confidential information. NAFTA *supra* note 2, art. 1715, para. 2(a).

47. The presentation of the evidence may have been in the complaint, allegation, or otherwise. *Id.* art. 1715, para. 2(b).

48. *Id.* art. 1715, para. 2(b).

49. *Id.* art. 1715, paras. 2(d)-(f).

50. *Id.* art. 1715, para. 2(f).

51. *Id.* art. 1715, para. 7.

52. *Id.* art. 1716, para. 1.

53. *Id.* art. 1716, paras. 1(a), 1(b).

54. *Id.* art. 1716, paras. 2, 3, 5-7. These provisions consist of requiring an applicant for provisional measures to provide evidence necessary to "determine with a sufficient degree of certainty" that the applicant is the right holder, the applicant's rights are either being infringed upon or in imminent danger of such, and delay will cause irreparable harm to the right holder or there is a risk of destruction of evidence. *Id.* art. 1716, para. 2. Other precautions could also be considered deterrents against abuse of the system. Where the

sional measures include the ability to prevent the entry of imported goods (after they have been cleared by customs) into the stream of commerce.⁵⁵ Furthermore, these provisional measures may be ordered on an *ex parte* basis.⁵⁶

E. Article 1717 Criminal Procedures and Penalties

Finally, the last significant development in this area is the addition of criminal procedures and penalties.⁵⁷ These are intended to be applied when intent to infringe on a holder's copyright can be shown.⁵⁸ The element of intent is most easily demonstrated through willful trademark counterfeiting or copyright piracy on a commercial scale.⁵⁹ The NAFTA does not specify other circumstances under which criminal penalties can be imposed; however, it does indicate that the countries may expand the areas covered provided that "[countries] are committed willfully and on a commercial scale."⁶⁰ Penalties provided are imprisonment, monetary fines, or both.⁶¹ The treaty does not provide terms of imprisonment or minimum and maximum fines available to the ministers of justice under this article, however, it does provide that penalties be great enough to be a deterrent.⁶² Additionally, the judicial authorities have the power to order "the seizure, forfeiture, and destruction of infringing goods and of any materials and implements" which were predominantly used for the performance of the offense.⁶³

V. APPLICABLE U.S. AND CANADIAN PROVISIONS

Since many of the provisions in the Convention and the NAFTA rely on the domestic laws of the ratifiers, it is important to mention the applicable portions of U.S. and Canadian law.

Article I, section 8 of the United States Constitution authorizes Congress "to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."⁶⁴ Congress has embodied the Copyright Act in the United States

provisional measures have been revoked or the charges have been found to be without merit (there was no infringement nor pending infringement), the defendant can request and the court may order the plaintiff to pay reasonable compensation for injury resulting from the provisional measures. *Id.* art. 1716, para. 7.

55. *Id.* art. 1716, para. 1(a). *See also id.* art. 1718.

56. *Id.* art. 1716, para. 4.

57. NAFTA, *supra* note 2, art. 1717.

58. *Id.* art. 1717, para. 1.

59. *Id.* art. 1718.

60. *Id.* art. 1717, para. 3.

61. *Id.*

62. *Id.*

63. *Id.* art. 1717, para. 2.

64. U.S. CONST. art. I, § 8.

Code Title 17.⁶⁵ The Copyright Act provides protection to "original works of authorship fixed in any tangible medium of expression."⁶⁶ This broad category of protected "works" includes "literary works."⁶⁷ Literary works are defined as "works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, film tapes, disks, or cards, in which they are embodied."⁶⁸ Although computer programs are not specifically listed as literary works, legislative history substantiates that they were intended to be included in this category.⁶⁹ Furthermore, section 101 defines a computer program as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."⁷⁰ The inclusion of computer programs and other software in the definition section of the code implies that Congress intended them to be considered literary works. Therefore, software is protected by this Title and by the Convention as well.

Canadian copyright laws are found in R.S.C., ch. C-42 (1985) and its amendments. Within this act, literary works include tables, compilations, translations, and computer programs.⁷¹ Computer programs are defined as "a set of instructions or statements, expressed, fixed, embodied or stored in any manner, that is to be used directly or indirectly to bring about a specific result."⁷²

The similarities between U.S. and Canadian law provide a sturdy base for the NAFTA and could promote confidence among intellectual property right holders if the outcomes of infringement proceedings are consistent. The premise for protection of computer programs is the same for Canada and the United States. Both countries consider computer programs to be literary works,⁷³ and both define a computer program similarly.⁷⁴ Both are signatories to the Convention,⁷⁵ and provide copyright protection for non-literal, as well as literal aspects of their computer programs.⁷⁶

65. 17 U.S.C. §§ 101-914 (1988).

66. 17 U.S.C. § 102(a) (1988).

67. *Id.* § 102(a)(1).

68. *Id.* § 101.

69. *See Whelan Assoc., Inc. v. Jaslow Dental Lab., Inc.*, 797 F.2d 1222, 1234 (3rd Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987); *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1247 (3rd Cir. 1983), *cert. dismissed* 464 U.S. 1033 (1984); H.R. REP. NO. 1976, 94th Cong., 2d Sess. 54, *reprinted in* 1976 U.S.C.C.A.N. 5659, 7667.

70. 17 U.S.C. § 101 (1988).

71. R.S.C., ch. C-42 (1985).

72. R.S.C., ch. C-42 (1985).

73. U.S. CONST. art. I, § 8; 17 U.S.C. § 102(a)(1).

74. 17 U.S.C. § 102(a)(1).

75. The U.S. ratified and then implemented the Convention in 1989. Berne Convention Implementation Act of 1988, Pub. L. No. 100-586, 102 Stat. 2853 (1988) (effective March 1, 1989). The Canadian government ratified the Convention revised in Rome on June 2, 1929. For a list of major revisions *see supra* note 6.

76. *See Carolian Sys. v. Triolet Sys. Inc.*, No. 12515/86, 1993 Ont. C.J. LEXIS 219 at *52 (Feb. 12, 1993); United States copyright announcement/ruling January 1988; *Nichols v. Universal Pictures Co.*, 45 F.2d 119, 121 (2d Cir. 1930), *cert. denied*, 282 U.S. 912 (1931); *Broderbund Software, Inc. v. Unison World, Inc.*, 648 F. Supp. 1127 (N.D. Cal. 1986). DAVID NIMMER & MELVILL B. NIMMER, *NIMMER ON COPYRIGHT* VOL. 3, § 13.03[A][1] at 13-24 (1993).

VI. TESTS USED TO DETERMINE COPYRIGHT INFRINGEMENT

In addition to their statutory laws, the United States and Canada use similar tests in their courts to determine whether a copyright has been infringed upon. These five tests are reverse engineering, derivative works, substantial similarity, the *Whelan* rule, and the abstraction-filtration test.⁷⁷ Neither the United States nor Canada has designated any particular test as the preferred or official one to be used for all jurisdictions. Since the NAFTA does not specify a test, but leaves that determination to domestic law, it is necessary to examine all five tests.

A. Reverse Engineering

Reverse engineering is a process whereby one takes apart another product to find out how it works. In *Sega Enterprises Ltd. v. Accolade, Inc.*, the Ninth Circuit evaluated the legality of reverse engineering as applied in the area of computer software.⁷⁸ Sega and Accolade are video game manufacturers, which discussed a licensing and cooperation agreement. This cooperation would enable Accolade to create games compatible with Sega's Genesis console. Ultimately, Accolade opted to manufacture Genesis-compatible games without the cooperation of Sega, in order to avoid paying royalties.

Accolade used a two-step process to make a compatible video game cartridge. First, it reverse engineered Sega's video game programs to determine the requirements for compatibility. This involved the purchase of three Genesis-brand video games, the translation of the object code into source code, and the printing out of the source code.⁷⁹ Second, Accolade compared the source code printout for each Sega game to arrive at the areas of commonality. The requirements for compatibility were ultimately discovered through experimentation with these programs. Using the newly-discovered compatibility requirements, Accolade was able to manufacture and sell video games which were compatible with Genesis.

The district court found that Accolade had copied the expression of an idea by translating the object code into the source code and therefore had infringed Sega's computer code copyright.⁸⁰ Generally, reverse engineering is completely legal as long as the original work is not copied. However, the court found the

77. Although these tests are basically different, some are used in the application of other tests. For example, the substantial similarity test is actually the third step in the abstraction-filtration test. See discussion, *infra* part VI(E).

78. *Sega Enter. Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992).

79. Object code is a binary code that is read by computers. Very few individuals can read object code. Conversely, source code is the set of instructions written and read by individuals. It is this source code which is normally entered into the computer by the programmer. For a general discussion of coding, see *Whelan Assoc., Inc. v. Jaslow Dental Lab*, 797 F.2d 1222, 1230 (3rd Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987).

80. *Sega Enter. Ltd.*, 977 F.2d at 1520.

act of decoding the object code, translating it into source code and then printing it satisfied the definition of a derivative work.⁸¹ Thus, although the video games themselves did not infringe upon Sega's copyright, the translation of the object code did.

The Ninth Circuit reversed the district court's decision, finding that the translation was excusable and a "fair use" of copyrighted material.⁸² The court noted that the copyrighted computer code contained both copyrightable and noncopyrightable elements (for example, purely functional sections of the code are not copyrightable).⁸³ Therefore, since disassembly was the only way to access the unprotected portions of the program and because Accolade had a legitimate interest in accessing those portions (they wanted to determine how to make compatible cartridges), Accolade's use was "fair."⁸⁴

B. Derivative Work

To determine whether a work is derivative, the court must decide whether the newer work incorporates a portion of a copyrighted work in some concrete or permanent form. The derivative work test was applied in *Lewis Galoob Toys, Inc. v. Nintendo of America, Inc.*⁸⁵ Galoob toys created a device called Game Genie. Game Genie was used in conjunction with the Nintendo Entertainment System (NES) to enhance the Nintendo video games. Through this enhancement the user could extend the parameters of the game, that is give the players more "lives" or give the player "super powers."⁸⁶ Game Genie was incompatible with other consoles and had no alternate uses.

Nintendo sued, claiming that derivative games were created through use of Game Genie, and that these adaptations of the original games constituted infringement.⁸⁷ The court gave great weight to the fact that Game Genie could only be used with the Nintendo game cartridges and the NES. Furthermore, the Game Genie could replace neither the game cartridge nor the NES. The court recognized "that technology often advances by improvement rather than

81. A "derivative work" is one that has a basis in a preexisting work. Even a work which consists of "editorial revisions or other modifications" which appear to be an original work is a derivative work. 17 U.S.C. § 101. Derivative works are copyrightable if they represent original works of authorship and fall within the general scope of the copyright laws found in 17 U.S.C. § 102 (1988). However, the only portion of the derivative work that is copyrightable is that portion which is an original expression. See 17 U.S.C. §§ 102, 103, and H.R. REP. NO. 1476, 94th Cong., 2d Sess. (1976), reprinted in 17 U.S.C. § 103 (1988) historical and revision notes.

82. The section on fair use allows copyrighted work to be used or reproduced for educational purposes, criticism, research, news reporting and other areas that fit within the parameters listed in the statute. 17 U.S.C. § 107 (1988). See H.R. REP. NO. 1476, *supra* note 81, at p. 65, reprinted in 17 U.S.C. § 102 (1988) historical and revision notes.

83. 17 U.S.C. §§ 102(b), 113; H.R. REP. NO. 1476, *supra* note 81.

84. *Sega Enter. Ltd.*, 977 F.2d at 1520.

85. *Lewis Galoob Toys, Inc. v. Nintendo of America, Inc.*, 964 F.2d 965 (9th Cir. 1992).

86. *Id.* at 967.

87. For a discussion of derivative works see *supra* note 81.

replacement,” and noted the emerging prevalence of interoperable software.⁸⁸ Indeed, the court specifically cited the use of a spell-checking program used with another company’s word processing program, when it acknowledged that such software was already in extensive use.⁸⁹ Finally, it noted that “these applications . . . could not be produced or marketed if courts were to conclude that a word processor and spell-checker combination is a derivative work.”⁹⁰

C. Substantial Similarity

Substantial similarity is also known as the “look and feel” doctrine or the “total concept and feel doctrine.”⁹¹ It takes into account the look and feel of the work as a whole rather than examining the item and determining infringement through its individual parts, structure or makeup.⁹² This test allows the court to consider areas such as mood, style, and feeling, areas traditionally beyond the reach of copyright protection.

In *Roth Greeting Cards v. United Card Company*, the court found infringement where the defendant’s greeting cards were substantially similar to the original’s in mood, color, and scheme, though not in any protectable expression.⁹³

D. The Whelan Rule

In *Whelan Assoc., Inc., v. Jaslow Dental Lab., Inc.*, the defendant was accused of employing the non-literal structure of the plaintiff’s copyrighted dental lab management program to create its own competitive version.⁹⁴ In this case, the court attempted to distinguish between an idea and its expression. It found that the idea was the overriding purpose or function, and everything that was not essential to that purpose or function was the expression of the idea. Where several methods to arrive at the same purpose existed, then the particular means chosen was unnecessary to the purpose. Therefore, such a method was copyrightable as an expression, rather than an idea.

88. Interoperable software works only in conjunction with another company’s copyrighted software and is useless on its own. *Lewis Galoob Toys Inc.*, 964 F.2d at 969.

89. *Id.*

90. *Id.*

91. *Roth Greeting Cards v. United Card Co.*, 429 F.2d 1106 (9th Cir. 1970).

92. See *id.* (originally developed the “total concept and feel” doctrine); *Whelan Assoc., Inc. v. Jaslow Dental Lab, Inc.*, 797 F.2d 1222 (3rd Cir. 1986) (extended protection to include the structure, sequence and organization of the computer code); *Broderbund Software, Inc. v. Unison World, Inc.*, 648 F.Supp. 1127 (N.D. Cal. 1986) (broadened the doctrine to protect screen displays).

93. *Roth Greeting Cards*, 429 F.2d at 1110.

94. *Whelan Assoc.*, 797 F.2d at 1222.

E. Abstraction - Filtration Test

The final test, abstraction-filtration, consists of three steps: abstraction, filtration, and comparison.⁹⁵ For example, in *Computer Associates International v. Altai*, the Second Circuit applied the abstraction-filtration test to affirm the district court's opinion holding that Altai had infringed upon Computer Associate's computer program, SCHEDULAR, but had not infringed upon the program ADAPTER.⁹⁶

The abstraction step can be traced to an earlier test for copyright infringement called the abstraction test.⁹⁷ First enunciated by Judge Learned Hand, this test attempts to separate idea from expression⁹⁸ and implicitly recognizes that a work may consist of a mixture of numerous ideas and expressions, none of which may be copyrightable.⁹⁹ The court dissects the program's structure and isolates each level of abstraction contained within it. This step is similar to reverse engineering in that it is necessary to retrace the designer's steps in the opposite order from which they were taken during the program's creation.¹⁰⁰

The second step, filtration, defines the scope of the copyrighted software.¹⁰¹ After the levels of abstraction have been discerned, structural components at each level of the abstraction are examined to determine whether their inclusion at that level was "idea," or whether it was dictated by considerations of efficiency or necessity or whether it was taken from the public domain.¹⁰² Only the original "core of protectable expression" is eligible for a copyright.¹⁰³

The third and final step is comparison. This step is essentially the same as the substantial similarity test. The court focuses on whether the party copied any aspect of the protected expression. If protected expression was copied, the court then assesses the copied portion's relative importance with respect to the overall program.¹⁰⁴ If the similarities result from common ideas, items found within

95. *Computer Assocs. Int'l*, 982 F.2d 693; *Carolian Sys. v. Triolet Sys., Inc.*, No. 12515/86, 1993 Ont. C.J. LEXIS 219, at *50.

96. *Computer Assocs. Int'l*, 982 F.2d at 693.

97. *Nichols v. Universal Pictures Co.*, 45 F.2d 119, 121 (2d Cir. 1930), *cert. denied*, 282 U.S. 912 (1931).

98. "There is a point in the 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." *Id.* at 121.

99. NIMMER & NIMMER, *supra* note 76, § 13.03 at 13-62, 34-63 (1993). *But cf. Whelan rule infra* part VI (D).

100. *Computer Assocs. Int'l*, 982 F.2d at 706.

101. *Brown Bag Software v. Symatec Corp.*, 960 F.2d 1465, 1475 (9th Cir.) *cert. denied*, 121 L.Ed.2d 141 (1992).

102. *Computer Assocs. Int'l*, 982 F.2d at 706; *see also* NIMMER & NIMMER, *supra* note 76, § 13.03[F]. For information about elements which are dictated by efficiency *see* *Baker v. Seldon*, 101 U.S. 99 (1879); *Morrissey v. Procter & Gamble Co.*, 379 F.2d 675, 678-79 (1st Cir. 1967). For a discussion of the necessary elements *see* NIMMER & NIMMER, *supra* note 76, § 13.03[F][3] at 13-71. Expressions found to be within the public domain are regarded as noncopyrightable expressions. 17 U.S.C. § 101 (1988).

103. *Computer Assocs. Int'l*, 982 F.2d at 710; *Brown Bag Software*, 960 F.2d at 1475.

104. *Computer Assocs. Int'l*, 982 F.2d at 710; *see also* NIMMER & NIMMER, *supra* note 76; *Data East U.S.A. Inc. v. Epyx, Inc.*, 862 F.2d 204, 208 (9th Cir. 1988).

the public domain, or necessary expressions, then no substantial similarity can be found; without substantial similarity there is no copyright infringement.

This test was recently adopted by a Canadian court in deciding *Carolian Systems v. Triolet Systems, Inc.*¹⁰⁵ This case involved a Carolian employee who had been responsible for rewriting a source code and improving interoperative software that monitored the Hewlett Packard Computer HP3000. After leaving Carolian Systems, the employee created a software program for Triolet that performed similar functions to the one he had been in charge of at Carolian. Following the test set out in *Computer Associates*, the court held that the employee had not copied any substantial portion of the Carolian's software.¹⁰⁶ It found that the employee's memory experience, programming style and techniques together with limitations on the computer could account for all of the similarities between the software.¹⁰⁷

VII. CONTRAST AND COMPARISON OF THE TESTS

The results of the reverse engineering and derivative works tests have favored interoperability. Interoperability has the potential to benefit both the consumer and the manufacturer. The courts separately recognized that Accolade's video game cartridges increased the marketability and useability for Sega's console system, and that Nintendo's video games as well as NES sales increased with Galoob's introduction of Game Genie.¹⁰⁸ Indeed, the very concept of interoperability meshes with the underlying principle of copyright law — to advance the public welfare by striking a balance between protecting the author and limiting that protection to avoid monopoly.¹⁰⁹

Conversely, interoperability does not take into consideration that the principle interfered with the industry giants' market shares; it also does not take into consideration the time, effort and money that went into the development of the video games, and their console systems. In a free market system it is questionable whether the public welfare is advanced when business expenditures of time, effort, and money are devalued by court holdings which limit copyright protection. By allowing companies to directly profit from another's efforts, the courts have inadvertently required original authors to subsidize future enhancements to their own works without reimbursing the original authors for their efforts. This is paradoxical. The economic philosophy behind the copyright — to provide economic incentives to authors to enhance the public good — is defeated when we are forced to ask authors to provide incentives to others by foregoing profits.

105. *Carolian Sys.*, No. 12515/86, 1993 Ont. C.J. LEXIS 219 at *1, 24.

106. *Id.* at 2.

107. *Id.*

108. *Sega Inter. Ltd.*, 977 F.2d at 1523; *Lewis Galoob Toys, Inc.*, 964 F.2d at 971.

109. *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975); *Mazer v. Stein*, 347 U.S. 201, 219 (1954); *U.S. v. Paramount Pictures, Inc.*, 334 U.S. 131, 158 (1948); *Computer Assocs. Int'l*, 982 F.2d at 696.

The look and feel or substantial similarity doctrine has many critics; courts have been reluctant to apply or protect the look and feel of software interfaces, or the nonliteral elements of computer software. In *Autoskill Inc. v. Educational Support Sys., Inc.*, the court expressly rejected the "total concept and feel" test.¹¹⁰ The court in *Computer Associates* found *Whelan's* rationale suspect because it was tied too closely with an archaic understanding of computer science.¹¹¹

The *Whelan* rule has been criticized by both the courts and in the academic community. The *Whelan* court defined the "idea" of the program at issue before the court as "the efficient management of a dental laboratory."¹¹² Had the court defined the idea more narrowly the court could have come up with a completely different answer to the question of copyright infringement. In addition to being indeterminate, the idea is conceptually overbroad:¹¹³ "the crucial flaw in the reasoning is that it assumes that only one 'idea' in copyright law terms, underlies any computer program, and that once a separable idea can be identified, everything else must be expression."¹¹⁴ As has already been discussed, a computer program may have several designs within its set of parameters. Lastly, several courts, including a United States Federal Circuit Court, have completely rejected the *Whelan* rule.¹¹⁵

Drawing a line between expression and idea is problematic. Judge Learned Hand remarked that "nobody has ever been able to fix that boundary, and nobody ever can."¹¹⁶ He later concluded that no formula could be invented to determine when an imitator ventured beyond copying the idea to borrowing its expression; inevitably, decisions must be ad hoc.¹¹⁷

Provisions in the NAFTA have vastly extended the standardized laws of copyright between its signatory countries. However, because of the multiplicity of tests used to determine whether an infringement has occurred, and because of the wide variety of results these tests produce, NAFTA's protection still remains an area of great speculation for copyright holders, and will continue to do so until a single test or formula can be agreed or ruled upon.

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110. *Autoskill Inc. v. Educational Support Sys., Inc.*, 24 U.S.P.Q.2d 1107, 1118 (D.N.M. 1992).

111. *Computer Assocs. Int'l*, 982 F.2d at 737.

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

113. Steven R. Englund, Note, *Idea, Process, or Protected Expression?: Determining the Scope of Copyright Protection of the Structure of Computer Programs*, 88 MICH. L. REV. 866, 881 (1990); Peter S. Menell, *An Analysis of the Scope of Copyright Protection for Application Programs*, 41 STAN. L. REV. 1045, 1074, 1082 (1989); Mark T. Kretschmer, Note, *Copyright Protection For Software Architecture: Just Say No!*, 1988 COLUM. BUS. L. REV. 823, 837-39; Thomas M. Gage, Note, *Whelan Associates v. Jaslow Dental Laboratories: Copyright Protection for Computer Software Structure—What's the Purpose?*, 1987 WIS. L. REV. 859, 860-61 (1987).

114. NIMMER & NIMMER, *supra* note 76.

115. See *Plains Cotton Co-op v. Goodpasture Computer Serv., Inc.*, 807 F.2d 1256, 1262 (5th Cir.) *cert. denied*, 484 U.S. 821 (1987); *Synercom Technology, Inc. v. University Computing Co.*, 462 F. Supp. 1003, 1014 (N.D. Tex. 1978).

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

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