

THE GLOBAL API COPYRIGHT CONFLICT

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I. INTRODUCTION

Professor Menell in his article *Rise of the Copyright Dead?*¹ describes two API copyright wars: the first fought in U.S. courts from the early 1980s to the mid-1990s, and the second starting with the filing of Oracle’s complaint against Google in 2010. These two API copyright wars exist within a larger global conflict concerning copyright and interoperability that has been waged over the past 30 years. This article provides a brief overview of this larger conflict.²

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1. Peter S. Menell, *Rise of the API Copyright Dead?: An Updated Epitaph for Copyright Protection of Network and Functional Features of Computer Software*, 31 HARV. J.L. & TECH. (SPECIAL ISSUE) 305 (2018).

2. This conflict is discussed in much greater detail in two books I co-authored: JONATHAN BAND & MASANOBU KATOH, *INTERFACES ON TRIAL: INTELLECTUAL PROPERTY AND INTEROPERABILITY IN THE GLOBAL SOFTWARE INDUSTRY* (1995) [hereinafter *INTERFACES 1.0*]; and JONATHAN BAND & MASANOBU KATOH, *INTERFACES ON TRIAL 2.0* (2011), [hereinafter *INTERFACES 2.0*]. I have represented interoperable developers throughout this conflict.

Unlike the U.S. API copyright wars, which occurred largely in the courts, the global conflict has been waged primarily in legislatures. But, as in the United States, the global conflict has also centered on two related questions. First, does the information necessary for software interoperability (“interface specifications”) fall within the scope of copyright protection? Second, does copyright prohibit the reproduction performed in the course of reverse engineering essential for achieving interoperability?³ Professor Menell explains that in 1998, after the end of the first API copyright war, the answer to both those questions under U.S. law was “no.”⁴ As this article shows, legislatures around the world have generally reached the same conclusions. Thus, the U.S. Court of Appeals for the Federal Circuit’s decision in *Oracle v. Google*⁵ extending copyright protection to Java declaring code is an aberration to global consensus.

The same parties have fought in both the global conflict and the U.S. API copyright wars. Professor Menell notes that “a new generation of technology companies” led by Sun Microsystems “formed the American Committee for Interoperable Systems (“ACIS”) in the early 1990s to advocate for less protectionist intellectual property policies for computer software.”⁶ ACIS and another organization with overlapping membership, the Computer & Communications Industry Association (“CCIA”), filed amicus briefs in at least sixteen U.S. cases relating to interoperability.⁷ Both ACIS and CCIA also participated in the global conflict. Joining them were the European Committee for Interoperable Systems (“ECIS”), the Canadian Association for Interoperable Systems (“CAIS”), and the Supporters of Interoperable Systems in Australia (“SISA”), all of which subscribed to the position

3. Because a program’s interface specifications usually are not readily apparent, and may not be available, developers seeking to interoperate often must research the original program’s interface specifications. This research, known as reverse engineering, is a basic tool of software development. Copyright law, however, has the potential of raising obstacles to software reverse engineering, because computer technology typically requires the making of a reproduction or derivative work during the course of reverse engineering.

4. Menell, *supra* note 1, at 342. See also Pamela Samuelson, *Functionality and Expression in Computer Programs: Refining the Tests for Software Copyright Infringement*, 31 *BERKELEY TECH. L.J.* 1215 (2017).

5. 750 F.3d 1339 (Fed. Cir. 2014).

6. Menell, *supra* note 1, at 321. Sun’s leadership in this pro-interoperability advocacy is ironic given that Sun created Java and the Java APIs at issue in the Oracle-Google litigation. Oracle purchased Sun in 2010 and proceeded to sue Google for infringing the copyright in the Java APIs that Sun created. In other words, Sun (and Oracle) switched sides in the API copyright war.

7. See, e.g., *Computer Assocs. Int’l v. Altai, Inc.*, 982 F.2d 693 (2d Cir. 1992); *Lotus Dev. Corp. v. Borland Int’l*, 516 U.S. 233 (1996).

that copyright should not extend to interface specifications or restrict reverse engineering.⁸

Opposing these pro-interoperability groups in both the United States and overseas were organizations like the Computer and Business Equipment Manufacturers Association (“CBEMA”) and the Business Software Alliance (“BSA”), which included dominant firms such as IBM and Microsoft.⁹ CBEMA filed amicus briefs — on the opposite side from ACIS and CCIA — in many U.S. cases.¹⁰ Additionally, both groups lobbied against provisions favorable to interoperability in foreign legislatures.¹¹ They often enlisted the support of the U.S. government in these lobbying efforts.¹²

The international phase of the global conflict began in earnest in the late 1980s, several years after commencement of the first U.S. API copyright war, as the European Union considered the adoption of a Software Directive. After the adoption of the Directive in 1991,¹³ the conflict spread to the Pacific Rim, where countries interested in promoting interoperability debated whether to follow the U.S. approach based on the *Sega v. Accolade*¹⁴ fair use decision, or to enact a specific statutory exception modeled on the Software Directive. The most contentious period of the global conflict lasted through the end of the 1990s, although some battles were still fought in the new millennium, most notably the *SAS v. World Programming* litigation¹⁵ in the EU.

II. EUROPEAN UNION

A. *The Software Directive*

In 1988, the EU began deliberating a Software Directive, which would establish principles for copyright protection of computer programs that EU member states would have to implement in their do-

8. See INTERFACES 1.0, *supra* note 2, at 229, 277. In addition to Sun, core members of these organizations included Oracle, NCR, Storage Technology Corporation, Amdahl, Fujitsu, and Bull HN.

9. The Software Action Group for Europe also represented dominant firms in these policy struggles. Just as Sun and Oracle switched sides in the API copyright war, so too did IBM and Microsoft. IBM actually joined ECIS, and Microsoft filed an amicus brief in the Oracle-Google litigation arguing urging affirmance of the jury’s fair use determination.

10. See, e.g., *Lotus v. Borland*, 516 U.S. 233 (1996).

11. See *infra* Sections III.A–C, F.

12. *Id.*

13. Council of Ministers Directive 91/250/EEC of 14 May 1991 on the Legal Protection of Computer Programs, 1991 O.J. (L 122).

14. *Sega Enters. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992).

15. *SAS Inst. Inc. v. World Programming Ltd.*, (C-406/10) [2012] 3 CMLR 4 (Eng.), available at <http://curia.europa.eu/juris/liste.jsf?num=C-406/10> [https://perma.cc/P4LV-WEU2].

mestic copyright laws.¹⁶ The starting point was a Green Paper issued by the European Commission outlining the options available for the protection of software.¹⁷ After considering comments submitted by stakeholders, the Commission issued a proposed Directive in 1989.¹⁸ The proposed Directive implied that only a program's developer could use the program's interface specifications.¹⁹ Additionally, it incorporated an expansive prohibition on reproduction with no exception for reverse engineering.²⁰ Publication of the proposed Directive galvanized interoperable developers into action. A group of companies including Groupe Bull, Olivetti, NCR, Unisys, and Fujitsu Espana formed ECIS to lobby for a pro-competitive approach to interface specifications and reverse engineering. In response, IBM, DEC, Apple, Microsoft, and Lotus formed a counter-lobby: the Software Action Group for Europe ("SAGE").

Over the next two years, these two groups vigorously lobbied the Commission, the European Parliament, and the Council of Ministers. ECIS argued that permitting reverse engineering and excluding interface specifications from protection were necessary to foster competition in the software industry, particularly against dominant U.S. firms. SAGE, on the other hand, asserted that a prohibition on reverse engineering was necessary to encourage innovation and prevent disguised piracy. SAGE enlisted the support of U.S. Trade Representative Carla Hills, who wrote to the Commission in 1990 in opposition to a reverse-engineering exception. She stated that a specific reverse-engineering exception was unnecessary to advance the objective of interoperability because the trend towards open systems was proceeding satisfactorily throughout the world in response to consumer demand.²¹

Ultimately, ECIS largely prevailed. The Directive that emerged from this political process reflects a policy judgment that copyright should not interfere with interoperability.²² Article 5(3) of the Directive provides a broad exception from liability for "black box reverse engineering" — activities such as observing the behavior of a program as it runs, running input/output tests and line traces.²³ Article 6

16. This legislative battle leading up to adoption of the Directive is discussed in detail in INTERFACES 1.0, *supra* note 2, at 227–41.

17. *Green Paper on Copyright and the Challenge of Technology: Copyright Issues Requiring Immediate Action*, COM (88) 172 final (June 1988).

18. Proposal for a Council Directive on the Legal Protection of Computer Programs, 1989 O.J. (C91).

19. *See id.* at art. 1–3.

20. *Id.* at art. 2(5).

21. Letter from Carla Hills, U.S. Trade Representative, to Martin Bangemann, Vice President of the European Commission 1 (Feb. 29, 1990).

22. *Cf.* Council of Ministers Directive 91/250/EEC of 14 May 1991 on the Legal Protection of Computer Programs, 1991 O.J. (L 122).

23. *Id.* at art. 5(3).

provides a narrower exception for decompilation²⁴ — what *Sega*, *Atari* and other U.S. judicial opinions have called “disassembly.” Decompilation or disassembly involves translating machine-readable object code into a higher-level, human-readable form. Article 6 permits decompilation for purposes of achieving interoperability when the information has not previously been made available; permissible decompilation is limited to those parts of the program necessary for interoperability; and the final, reverse-engineered product must not infringe on the copyright of the original product.²⁵ Article 9(1) voids any contractual restrictions on the reverse-engineering exceptions in Article 5 and 6.²⁶ Similarly, Article 7 contains a reverse-engineering exception to the Directive’s prohibition on the circumvention of technological protection measures.²⁷

The Software Directive does not directly address the protectability of interface specifications. Rather, Article 1(2) provides that “[i]deas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected by copyright”²⁸ Commentators interpreted this provision to mean interface information necessary to achieve interoperability must fall on the idea side of the idea/expression dichotomy; otherwise, the detailed decompilation provision in Article 6 would have little utility.²⁹

The Software Directive has been implemented by all twenty-eight member states of the EU, as well as Norway, Russia, Switzerland, and Turkey.³⁰ Additionally, as discussed below, the Directive’s reverse-engineering provisions provided a template for countries in other regions.

B. SAS Institute Inc. v. World Programming Ltd.

As noted above, the Directive did not directly address the issue of the protectability of interface specifications. For twenty years after the Directive’s adoption, this issue received scant attention from European courts. However, in May 2012, the European Union’s highest

24. *Id.* at art. 6.

25. The Directive’s recitals explain that “the parts of the programs which provide for . . . interconnection and interactions between elements of software and hardware are generally known as interfaces.” *Id.* at Recital 11. The recitals further state that “this functional interconnection and interaction is generally known as ‘interoperability’” and that “interoperability can be defined as the ability to exchange information and mutually to use the information which has been exchanged.” *Id.* at Recital 12.

26. *Id.* at art. 9(1).

27. *Id.* at art. 7.

28. *Id.* at art. 1(2).

29. See Pamela Samuelson, *The Past, Present, and Future of Software Copyright*, 34(3) EUR. INTEL. PROP. REV. 229 (2010).

30. INTERFACES 2.0, *supra* note 2, at 6.

court, the Court of Justice of the European Union (“CJEU”), ruled in *SAS Institute v. World Programming Limited*³¹ that program functionality, programming languages, and data format — elements necessary for interoperability — were not protectable under the Software Directive.³²

World Programming Limited (“WPL”), a company based in the United Kingdom, sought to compete with SAS by creating “middle-ware” software that could run users’ scripts written in the SAS Language. To do so, WPL reverse engineered an SAS program and then created its own program that emulated the SAS platform. SAS sued WPL in the UK, claiming that even though WPL did not copy SAS’s source code, WPL’s program nonetheless infringed on SAS’s copyrights by replicating the SAS programming language, the SAS data and programming interfaces, and the functionality offered by the SAS System.³³ Finding the scope of copyright protection for these elements unclear under the Software Directive, the High Court for England and Wales referred the case to the CJEU.

In May 2012, the CJEU ruled that Article 1(2) of the Software Directive:

[M]ust be interpreted as meaning that neither the functionality of a computer program nor the programming language and the format of data files used in a computer program in order to exploit its functions constitute a form of expression of that program and, as such, are not protected by copyright in computer programs for purposes of that directive.³⁴

The CJEU explained that “to accept that the functionality of a computer program can be protected by copyright would amount to making it possible to monopolize ideas, to the detriment of technological progress and industrial development.”³⁵ The CJEU observed that “the main advantage of protecting computer programs by copyright” as opposed to patents, “is that such protection covers only the individual expression of the work and thus leaves other authors the desired latitude to create similar or even identical programs,” provided that they

31. (C-406/10) [2012] 3 CMLR 4 (Eng.).

32. *Id.* at ¶ 46.

33. SAS brought a separate action in the United States. The trial court found that WPL did not infringe SAS’s copyrights, but breached its license with SAS. *See SAS Inst. Inc. v. World Programming Ltd.*, 125 F. Supp. 3d 579 (E.D.N.C. 2015). The Fourth Circuit affirmed the breach of contract holding, but reversed the non-infringement ruling as moot. *See SAS Inst. Inc. v. World Programming Ltd.*, 874 F.3d 370 (4th Cir. 2017).

34. *SAS*, [2012] 3 CMLR 4 at ¶ 71.

35. *Id.* at ¶ 40.

refrain from copying protected expression.³⁶ In other words, the CJEU reached precisely the same conclusion as U.S. courts at the end of the first U.S. API copyright war and the *Oracle* district court in its 2012 decision.

The CJEU also held the copies made during the course of running the program to observe its operation did not infringe SAS's copyrights, even though a license prohibited such black-box reverse engineering. The CJEU noted that Article 5(3) "seeks to ensure that the ideas and principles which underlie any element of a computer program are not protected by the owner of the copyright by means of a licensing agreement."³⁷ Further, the Court recognized that Article 9(1) provides that "any contractual provisions contrary to the exceptions provided for in Article 5(2) and (3) of that directive are null and void."³⁸

III. THE PACIFIC RIM DURING THE 1990S

The policy battles between the members of CBEMA and BSA and the members of CCIA and ACIS repeated themselves throughout the Pacific Rim during the 1990s. The Pacific Rim countries considering the issue of copyright and interoperability had two models before them: (1) the fair use approach followed by U.S. courts in *Sega Enters. v. Accolade, Inc.*³⁹ and *Atari Games Corp. v. Nintendo Am.*⁴⁰ and (2) the specific reverse-engineering exceptions adopted in 1991 in the EU Software Directive.

The Pacific Rim countries, however, did not confront reverse engineering in a complete vacuum. First, the Commonwealth countries had to consider whether their fair-dealing provisions, which were based on British copyright law, were flexible enough to permit software reverse engineering. Second, at least during the 1990s, these countries had to deal with political pressure from the Office of the U.S. Trade Representative ("USTR"), driven by pressure from dominant U.S. software companies. These U.S. interests generally opposed any amendment permitting reverse engineering and signaled a preference for the U.S. fair-use approach over the EU Software Directive approach. The United States succeeded in convincing Japan and South Korea to abandon their reverse-engineering initiatives altogether. In Hong Kong, the United States persuaded the Legislative Council to adopt the fair-use approach rather than the Software Directive approach. Australia adopted the Software Directive approach despite

36. *Id.* at ¶ 41.

37. *Id.* at ¶ 50.

38. *Id.* at ¶ 53.

39. 977 F.2d 1510 (9th Cir. 1992)

40. 975 F.2d 832 (Fed. Cir. 1992).

U.S. government opposition. The Philippines responded to U.S. pressure by enacting a hybrid of Software Directive and fair use.

It is not entirely clear why the USTR and the U.S. software firms preferred the fair-use approach to the Software Directive approach. The former is more flexible than the latter, and might permit a wider range of reverse-engineering activities. This preference for the fair-use approach might have reflected a belief at the time that *Sega* was an anomalous decision that U.S. courts eventually would reject. However, the opposite occurred; as explained by Professor Menell, *Sega* has become more firmly entrenched in U.S. jurisprudence.⁴¹

A. Japan

In July 1993, the International Copyright Office of the Japanese Cultural Affairs Agency announced that the Consultative Committee, a private sector advisory body, would study whether Japanese copyright law should be revised to permit reverse engineering.⁴² The press release specifically referenced “developments on the international horizon,” including the EU Software Directive and the U.S. fair use decisions.⁴³ The U.S. government interpreted this initiative as an example of the Japanese government’s efforts to exclude U.S. companies from the Japanese market. Bruce Lehman, the Commissioner of the U.S. Patent and Trademark Office (“USPTO”), expressed concern that U.S. companies might not have the opportunity to comment before the Committee issued its report.⁴⁴ The U.S. government then escalated its pressure in a joint letter from Commerce Secretary Ron Brown and Trade Representative Mickey Kantor to Minister of International Trade and Industry Hiroshi Kumagai. They asserted that “there is a clear indication that the purpose of the study is to determine ways to weaken Japan’s protection of computer programs under its copyright law.”⁴⁵ They said that this could undermine efforts to provide greater access for U.S. goods to the Japanese market.⁴⁶ Bob Holleyman, then president of BSA, warned at a hearing of the International Trade Subcommittee of the Senate Finance Committee “of the enormous consequences to U.S. companies should legislation be in-

41. Menell, *supra* note 1, at 332–34, 341–42.

42. See INTERFACES 1.0, *supra* note 2, at 297–316 for a more detailed discussion of this initiative.

43. Press Release, Int’l Copyright Office, Copyright Division, Cultural Affairs Dep’t, Agency for Cultural Affairs, Meeting of Survey/Research Consultants, Council on Copyright Issues Pertaining to Computer Programs 2 (July 1993).

44. In fact, IBM Japan participated in the deliberations over a Japanese industry association submission to the Consultative Committee. See INTERFACES 1.0, *supra* note 2, at 315–16.

45. Letter from Ronald H. Brown, Sec’y of Commerce, and Michael Kantor, U. S. Trade Representative, to Hiroshi Kumagai, Minister of Int’l Trade and Indus. 1–2 (Nov. 2, 1993).

46. *Id.*

roduced and approved in Japan to legalize disassembly of computer programs for the development of clone products.”⁴⁷ BSA also circulated a detailed memorandum explaining why a reverse-engineering exception was unnecessary and why the Software Directive was a poor model for legislation outside of the EU.⁴⁸

ACIS and CCIA each responded to the Brown/Kantor letter with their own letter to Ron Brown.⁴⁹ ACIS expressed concern with the Brown/Kantor letter’s hostility to software reverse engineering. CCIA explained that a reverse engineering exception like the Directive’s was appropriate in Japan because its copyright law did not have the fair use doctrine. ACIS also prepared a detailed response to the BSA memorandum.⁵⁰

Conceding to the U.S. government’s insistence on participating in the Consultative Committee’s deliberative process, the Committee conducted a U.S.-style public hearing in December 1993. Witnesses from Apple Japan, Wordperfect, and IBM testified against a reverse-engineering exception. Marshall Phelps, IBM’s vice president for intellectual property, stated that disassembly permitted disguised piracy, and that IBM had been victimized by such piracy.⁵¹ Peter Choy, Deputy General Counsel of Sun Microsystems and ACIS Chairman, testified in favor of a reverse-engineering exception: “it is appropriate for Japanese law on this subject to be clarified so that it is consistent with the copyright law developments that have recently emerged in other major nations with innovative computer industries.”⁵²

Chris Meyer, Senior Copyright Attorney in the USPTO, also testified at the hearing, providing an extremely narrow interpretation of the *Sega* and *Atari* decisions. He stressed that both of these cases “involved attempts by hardware manufacturers to use software copyrights to deny competitors access to a niche in the software market.”⁵³ He claimed, “in the more common case of head-to-head competition

47. *United States-Japan Trade Negotiations: Hearings Before the Sen. Comm. on Finance International Trade Subcommittee*, 103rd Cong. 3 (Nov. 8, 1993) (testimony of Robert W. Holleyman II, President of the BSA).

48. Business Software Alliance, *Opposition to Proposed Changes to the Protection of Computer Software Under Japanese Copyright Law* (Nov. 1993).

49. Letter from Peter Choy, Chairman of ACIS, to Ronald H. Brown, Sec’y of Commerce (Nov. 17, 1993); Letter from Stephanie Biddle, President of the CCIA, to Ronald H. Brown, Sec’y of Commerce (Dec. 3, 1993).

50. ACIS, *ACIS Comments Regarding Potential Revisions to Japanese Copyright Law to Permit Reverse Engineering of Computer Programs* (Nov. 26, 1993).

51. Marshall C. Phelps, Vice President, IBM Corp., *Remarks Before the CAA Consultative Committee on Copyright Issues Relating to Computer Programs* (Dec. 13, 1993).

52. Peter M.C. Choy, Deputy Gen. Counsel, Sun Microsystems, and Chairman, ACIS, *Remarks before the CAA Consultative Committee on Copyright Issues Relating to Computer Programs 3* (Dec. 13, 1993).

53. Christopher A. Meyer, Senior Copyright Att’y, U.S. Patent and Trademark Office, *Remarks Before the CAA Consultative Committee on Copyright Issues Relating to Computer Programs 2* (Dec. 13, 1993).

between publishers of competing software products, no court would countenance reverse engineering.⁵⁴ He then expanded on this view:

To suggest that one holding of fair use, by one court of appeal, in the extraordinary factual context presented in *Sega*, might mean a major change in US copyright policy is preposterous. The most that can fairly be said is that on those rare occasions when compatibility between software and hardware (or perhaps between software and software) can be established only by reverse engineering, then decompilation may be a fair use if it is used to create a compatible product that does not substitute for the copyright owner's own work in the market place. It is simply not probable . . . that a US court would today permit the decompilation of a word processing or spreadsheet program so as to permit the marketing of a competing program of the same type.⁵⁵

On December 16, 1993, three days after the hearing, Walter Mondale, the U.S. Ambassador to Japan, called on the Japanese Minister of Education (who oversaw the Cultural Affairs Agency) expressing his concerns over the reverse engineering study.⁵⁶ A U.S. Embassy press release concerning the meeting perpetuated the narrow interpretation of the U.S. cases and the Directive:

Two recent court cases in the US concerning decompilation and the EC software directive are not precedents for Japan's adoption of a decompilation right. The *Sega* and *Atari* cases apply to extraordinary circumstances and have limited applicability. The EC directive severely restricts any decompilation. Given the weaker underlying protection for software in Japan relative to the EC and the U.S., the introduction of even a limited decompilation right in Japan would be viewed with gravest concern by the U.S. government.⁵⁷

54. *Id.*

55. *Id.* at 9.

56. INTERFACES 1.0, *supra* note 2, at 313.

57. Press Release, Press Office, United States Information Service, American Embassy, Tokyo Ambassador Mondale Expresses Concern on Software Reverse Engineering to Minister of Education (Dec. 16, 1993).

The same day, the Japanese Ambassador to the U.S. was summoned to the State Department to receive a similar message. The Japanese government, fearful that the reverse engineering issue would prevent conclusion of framework negotiations intended to reduce the US trade deficit with Japan, urged the Consultative Committee to delay issuance of its report.⁵⁸

When it finally issued the report in the spring of 1994, the Consultative Committee punted on the issue of reverse engineering. It noted, "while there is a need for internationally harmonized measures on this issue, the direction of the international trends is not yet clear."⁵⁹ It proposed to "re-examine this issue in light of future national and international developments."⁶⁰ The re-examination never occurred, and Japan never adopted a reverse engineering exception.

Throughout this entire episode in Japan, the U.S. government behaved far more belligerently than it had during the E.U.'s adoption of the Directive. The first official communication from the U.S. government concerning the Directive came in response to the Commission's request for information concerning decompilation. The U.S. response to this request contained a balanced discussion of the then indeterminate state of U.S. law, two years before the *Sega* and *Atari* decisions.⁶¹ Soon thereafter, USTR Carla Hills voiced concerns about the proposed decompilation exception, but only after the Commission promulgated a draft Directive. Moreover, although the U.S. government initially viewed the Directive's decompilation provision with suspicion, it accepted the E.U. language concerning reverse engineering once it understood that this issue divided U.S. industry just as it divided the European software industry.

In contrast, the U.S. government sharply criticized the Japanese reverse engineering study before the private sector advisory committee had made any recommendations to a government entity. Moreover, the U.S. government made significant misrepresentations concerning the *Sega* decision and the possible impact of a decompilation exception. The government completely ignored the views of a significant segment of the U.S. industry, notwithstanding the segment's repeated statements that an explicit reverse engineering provision would assist penetration of the Japanese market.⁶²

58. Andrew Pollack, *Japan to Give More Thought to Software Copyright Law*, N.Y. TIMES, Dec. 22, 1993, at D5.

59. REPORT OF THE CONSULTATIVE COMMITTEE ON COPYRIGHT ISSUES RELATING TO COMPUTER PROGRAMS 2 (May 30, 1994) (Summary).

60. *Id.*

61. See INTERFACES 1.0, *supra* note 2, at 232–33.

62. There is no clear explanation for this increased hostility to reverse engineering. It might be attributable to personnel changes when President Clinton took office. The PTO Commissioner in the Clinton Administration was Bruce Lehman, who had represented

B. South Korea

The year after it shut down the Japanese initiative, the U.S. government took a similarly heavy-handed approach to South Korea's consideration of a reverse engineering exception.⁶³ The Korean episode began in early May of 1995, when the Ministry of Information and Communication ("MIC") of the Republic of Korea (*i.e.*, South Korea) proposed consideration of a reverse-engineering exception in the Computer Program Protection Act. The provision would excuse reproductions "where the program is temporarily reproduced or translated within the limits required for purposes of research and analysis necessary for the creation of interoperable programs."⁶⁴

BSA promptly submitted lengthy comments opposing the amendment. Although MIC's proposal addressed software reverse engineering generally, BSA's comments focused on decompilation. It argued that decompilation would facilitate disguised piracy and thereby harm the Korean software industry and prevent foreign investment in Korea.⁶⁵ It further stated the *Sega* decision was "the view of only one U.S. court on a matter of first impression decided on an incomplete factual record and on a particular set of facts."⁶⁶

The U.S. government also strongly protested MIC's proposal. A position paper prepared by the USPTO argued that the Directive's decompilation provision was far narrower than the proposed Korean exception.⁶⁷ In particular, under the Directive "[d]ecompilation can never be used to create a program that competes with the program which is being decompiled."⁶⁸ Additionally, the PTO paper read the *Sega* and *Atari* decisions very narrowly, concluding that "[d]ecompilation could not be used to create programs which competed with the programs being decompiled."⁶⁹

ACIS, in letters to the USPTO and the USTR, responded sharply to what it called "errors" in the U.S. government's position paper. ACIS first referred to the legislative history of the Directive and its implementations in the member states to demonstrate that Article 6 of the Directive permitted decompilation for purposes of developing

entertainment companies when he was an attorney in private practice. He proved to be a strong ally to the dominant software companies.

63. For a more detailed discussion of the South Korean consideration of a reverse engineering exception, see INTERFACES 2.0, *supra* note 2, at 178–80.

64. *Id.* at 179.

65. BSA Position Paper Submitted to the Ministry of Information and Communications of the Republic of Korea on Proposed Exceptions for Protection for Computer Programs Under the Computer Protection Act (May 2, 1995).

66. *Id.*

67. U.S. Government Views on Decompilation Position in Korean Computer Program Law (June 12, 1995).

68. *Id.*

69. *Id.*

both attaching *and* competing programs. Next, ACIS rebutted the U.S. government's parsimonious reading of *Sega* and "improper[] trivializ[ation]" of *Atari*.⁷⁰ Finally, it challenged BSA and the U.S. government's suggestion that decompilation could facilitate disguised piracy.⁷¹

In a letter to the Office of the U.S. Trade Representative, CCIA "object[ed] in the strongest terms possible to the Government's flawed analysis of the E.U. Directive and the *Sega* decision."⁷² It continued, "we are especially concerned that the Government is making representations to foreign governments that do not reflect an accurate and balanced analysis of the developing international jurisprudence relating to the permissibility of disassembly."⁷³

In late July of 1995, the South Korean president traveled to Washington to participate in the dedication of the Korean War Memorial on the National Mall. Secretary of Commerce Ron Brown used the opportunity to complain to his South Korean counterpart about MIC's reverse-engineering proposal. Soon thereafter, the MIC abandoned the proposal.

Sixteen years later, in 2011, South Korea finally adopted a reverse engineering exception as part of legislation implementing the Korea-U.S. Free Trade Agreement: a person "may perform reverse engineering of program codes without obtaining permission of the holder of author's property right of the program limited to necessary part for compatibility of the relevant program."⁷⁴ There was no public U.S. government opposition to this provision.

C. Hong Kong

In November of 1996, a year after the U.S. government pressured Korea to abandon its consideration of a reverse engineering exception, the Department of Intellectual Property of Hong Kong's Board of Trade and Industry produced a consultation paper on a new copyright law, which included proposed text for the bill. Section 57 of the Consultation Paper draft specifically permitted decompilation of object code for purposes of achieving interoperability.⁷⁵

70. Letter from Peter M. C. Choy, Chairman, ACIS, to Bruce Lehman, Comm'r, U.S. Patent and Trademark Office (June 26, 1995); letter from Peter M. C. Choy, Chairman, ACIS to Thomas Robertson, Assistant Gen. Counsel, Office of the U.S. Trade Representative (June 26, 1995).

71. *Id.*

72. Letter from Gregory E. Gorman, Gov't Affairs Manager, CCIA, to Thomas Robertson, Assistant Gen. Counsel, Office of the U.S. Trade Representative (July 5, 1995).

73. *Id.*

74. Cheojakkweonbeob [Copyright Act], Act No. 432, Jan. 28, 1957, *amended by* Act No. 11110, Dec. 2, 2011, art. 101-4(1) (S. Kor.).

75. INTERFACES 2.0, *supra* note 2, at 169.

Section 57 of the Consultation Paper closely followed the decompilation provision of the UK copyright statute, Section 50B, which in turn closely followed the Article 6 of the E.U. Software Directive.⁷⁶ In other words, from a substantive perspective, there was nothing controversial about Section 57. Nonetheless, Section 57 drew a sharp reaction from the U.S. government. In a cable sent in December of 1996, the U.S. government recommended deletion of Section 57.⁷⁷ The United States specifically objected to the voiding of contractual restrictions on decompilation, noting that this stood “in marked contrast to the EC Software Directive.”⁷⁸ The cable explained that “a similar restriction on the freedom of contract was proposed and rejected during consideration of the directive.”⁷⁹ In fact, the opposite was true.⁸⁰

Further, the cable suggested that Section 57 was broader than Article 6 of the E.U. Software Directive because Section 57 permitted decompilation for the purpose of creating new programs, whereas the Directive permits decompilation only for the purpose of achieving interoperability of existing programs. However, this interpretation of Article 6 had no basis in the text of the directive or in its legislative history.

In late February of 1997, the Board of Trade and Industry submitted its Copyright Bill, with the decompilation provision, to the Legislative Council.⁸¹ During April and May of 1997, the Bills Committee held a series of public hearings on the Copyright Bill.⁸² ACIS Chairman (and Deputy General Counsel of Sun Microsystems) Peter Choy testified in favor the decompilation provision. Emery Simon, a former official in the Office of the U.S. Trade Representative, testified for BSA against the provision.⁸³ Simon suggested that instead of adopting a specific exception, the Legislative Council should allow for decompilation to be handled case by case under Hong Kong’s fair-dealing exception.

The Legislative Council directed the Board of Trade and Industry to delete the decompilation exception and instead to prepare amendments to the fair-dealing provisions that would accommodate decompilation in appropriate circumstances. The staff of the Board of Trade and Industry’s Department of Intellectual Property proposed adding the following language to Section 37 concerning fair dealing:

76. *Id.*

77. *Id.*

78. *Id.*

79. *Id.*

80. *See* Directive, *supra* note 18, at art. 9(1); *see also supra* Section II.A.

81. INTERFACES 2.0, *supra* note 2, at 171.

82. *Id.* at 172.

83. *Id.*

The incidental copying by a lawful user of a computer program in the course of research or private study is fair dealing if it is done for the purpose of studying the operation of the program under study, or of creating another independent program which is compatible with, but not substantially similar to or adapted from the program under study.⁸⁴

Exactly what happened next is unclear, but it is rumored that when BSA learned of the fair-dealing amendment proposed by the Department of Intellectual Property, it requested that the Office of the U.S. Trade Representative intervene. A senior official in the Office of the USTR called the Secretary of Trade and Industry and insisted that the Board of Trade and Industry replace its fair-dealing amendment with language from the fair-use provision of the U.S. Copyright Act, 17 U.S.C. § 107.⁸⁵

In June 1997, the Secretary of Trade and Industry submitted the bill, with language based on the U.S. fair use factors, to the Legislative Council for final consideration. The Secretary issued a statement explaining that the language was intended to implement Hong Kong's policy with respect to decompilation. She stated that this amendment was intended "to encourage competition in the information-technology industry by facilitating timely access to information and ideas underlying computer programs."⁸⁶ The Secretary accepted that "the incidental copying of a computer program by a lawful user during the course of decompilation or other reverse engineering performed to understand the operation of the program under study, or to develop a product inter-operable with the program under study, need not be absolutely restricted by copyright."⁸⁷

Although the proposed decompilation provision explicitly permitted decompilation, it did so only for purposes of achieving interoperability, and only if there was no other way of obtaining the necessary information. By contrast, the fair dealing amendment enacted by the Legislative Council is far broader. The speech by the Secretary of Trade and Industry makes clear that decompilation could be lawful when conducted "to understand the operation of the program under study" as well as "to develop a product inter-operable with the program under study."⁸⁸ Thus, the amendment recognizes legitimate objectives beyond achieving interoperability.

84. *Id.* at 174.

85. *Id.*

86. Denise Yu, Sec'y of Trade and Indus., Speech by the Secretary of Trade and Industry on Resumption of Second Reading Debate 10 (June 24, 1997).

87. *Id.*

88. *Id.*

The fair dealing amendment is broader than the proposed decompilation provisions in another significant respect. The earlier provisions referred to decompilation, but were silent about the lawfulness of the copying that occurs during the course of black-box reverse engineering — for example, creating interim copies of the program in RAM when the program is run for the purpose of observing its operation. The fair dealing amendment, by contrast, is broad enough to excuse such incidental copying. Once again, the statement by the Secretary of Trade and Industry confirms this by referring to the incidental copying “during the course of decompilation or *other reverse engineering*.”⁸⁹

Since BSA had acknowledged that Article 6 of the EU Software Directive was a reasonable compromise in the European context, and since courts in four circuits had found decompilation to be a fair use,⁹⁰ it is not clear why BSA so strongly preferred fair use to Article 6 of the Directive in Hong Kong. By all appearances, the BSA gained nothing when it pressured countries to follow the fair-use model rather than the EU Software Directive model.

D. The Philippines

In 1997, the government of the Philippines proposed a reverse-engineering exception based on the EU Software Directive. Not surprisingly, that proposal encountered fierce opposition from USTR and BSA. In response, the Philippines crafted a hybrid of the fair-use provision of the U.S. Copyright Act and Article 6 of the EU Software Directive. After a general sentence stating that fair use of a work for purposes such as criticism, comment, and research is not an infringement, the following sentence was added: “Decompilation, which is the reproduction of code and translation of the form of the computer program indispensable to obtain the information necessary to achieve the inter-operability of an independently created computer program with other programs may also constitute fair use.”⁹¹ Then the statute required consideration of the four factors identical to those in 17 U.S.C. § 107 in “determining whether the use made of a work in any particular case is fair use”⁹²

As noted above, when the Hong Kong Department of Intellectual Property had proposed a similar drafting of reverse-engineering language onto the fair-use provision, the USTR voiced strong opposition.

89. *Id.*

90. By 1997, the *Sega* and *Atari* decisions were joined by *Bateman v. Mnemonics, Inc.*, 79 F.3d 1532 (11th Cir. 1996), and *DSC Comms. v. DGI Techs.*, 898 F. Supp. 1183 (N.D. Tex. 1995), *aff'd*, 81 F.3d 597 (5th Cir. 1996).

91. INTELLECTUAL PROPERTY CODE, § 185.1, Rep. Act 8293, as amended (Phil.).

92. *Id.*

But there is no public record of the USTR's objecting to the Philippine approach. As with the provision adopted in Hong Kong, it is far from clear that this formulation constrains reverse engineering more than Article 6 of the Directive; indeed, the opposite may be the case.

E. Singapore

In 1997, the Singapore Court of Appeal reversed a lower court ruling holding that decompilation in order to develop an interoperable product was a fair dealing. Specifically, the Court of Appeal found that reverse engineering for a commercial purpose did not fall within the scope of the fair dealing exception.⁹³ This decision prompted Singapore's Attorney General of Law to draft an amendment to the Copyright Act that would eliminate the language limiting the scope of the fair dealing provision to noncommercial activities.⁹⁴ When the Attorney General introduced the amendment to the Singapore Parliament in February 2008, he said that this amendment "will bring us in line with the United States, the United Kingdom, other European Union countries, Hong Kong, and Australia, which do not bar the use of copyright materials for commercial research."⁹⁵ Professor Chin Tet Yung, in the brief debate of the amendment in Parliament, said that it "is very important to ensure that there is a fair balance in any Copyright Bill between the interests of holders of rights in 'cutting edge' software and the interest of competitors who want to design and market non-infringing competing programmes which interface or are interoperable with the basic programmes."⁹⁶ Professor Chin noted that in the United States, the fair use doctrine was employed to achieve this balance.⁹⁷ Thus, Professor Chin stated, this amendment would "bring the law of Singapore very close to that of the United States" and "this is especially welcome and should receive warm support from the industry."⁹⁸ Indeed, there is no record of U.S. government or BSA opposition to this amendment.

F. Australia

Throughout the entire period Japan, South Korea, Hong Kong, the Philippines, and Singapore were considering reverse-engineering amendments, Australia was laboriously deliberating the issue as

93. *Creative Technology, Ltd. v. Aztech Systems Pte. Ltd* (1997) 1 SLR 621.

94. *INTERFACES 2.0*, *supra* note 2, at 166.

95. Second Reading of Copyright (Amendment) Bill of 1998 (February 19, 1998).

96. *Id.*

97. *Id.*

98. *Id.*

well — with much less U.S. government interference.⁹⁹ In 1988, the Attorney General of Australia asked the Copyright Law Review Commission (“CLRC”), an officially convened group of jurists, intellectual property practitioners, and industry representatives, to consider whether Australian copyright law “adequately and appropriately protected computer programs.”¹⁰⁰ The CLRC conducted an open, eight-year process involving public hearings, several rounds of comments, technical demonstrations, and draft recommendations. Among the more contentious issues to emerge in the course of the CLRC’s deliberations were the protectability of interface specifications and the permissibility of software reverse engineering.¹⁰¹ The interoperable developers, represented by SISA, filed numerous submissions and conducted demonstrations in support of an exception for reverse engineering for purposes of interoperability.¹⁰² SISA was opposed by dominant companies organized in the CBEMA.

In July 1993, the CLRC issued a draft report, which recommended adoption of the reverse-engineering exception similar to Article 6 of the Software Directive, permitting decompilation for the purpose of achieving interoperability.¹⁰³ SISA supported the proposed amendment, but suggested that the CLRC also recommend adoption of the Directive’s exception for black-box reverse engineering, Article 5(3).¹⁰⁴ CBEMA opposed the decompilation recommendation, arguing that Australia’s fair dealing provisions provided the means for “an Australian court to balance interests in the arena.”¹⁰⁵ The U.S. government also submitted comments that actually approved of the decompilation provision, stating it “appear[s] to be generally consistent with the provisions of Article 6 of the EC Software Directive and appear[s] to be directed to achieving the goal of the creation of interoperable programs while protecting the copyright owner against abuse.”¹⁰⁶ Thus, at precisely the same time the U.S. government was attacking Japan for its consideration of a decompilation provision modeled on the Software Directive, it signaled its support for Australia adopting a similar provision.

99. For a more detailed discussion of Australia’s consideration of a reverse engineering exception, see INTERFACES 2.0, *supra* note 2, at 136–58.

100. Copyright L.R. Comm., CLRC Issues Paper 1 (April 1990).

101. See INTERFACES 2.0, *supra* note 2, at 138.

102. *Id.* at 139.

103. COPYRIGHT L.R. COMM., CLRC DRAFT REPORT OF COMPUTER SOFTWARE PROTECTION (1993).

104. SISA, Comments of Draft Report of the Copyright Law Review Committee on Computer Software Protection (1993).

105. CBEMA Comments on CLRC Draft Report 6 (October 1993).

106. United States Government Comments on the Copyright Law Review Committee’s Draft Report on Computer Software Protection, United States Government Cable to United States Embassy, Australia (1993).

After considering the comments it received on its draft report, the CLRC issued its final report in 1995.¹⁰⁷ It recommended adopting reverse engineering exceptions modeled on the Articles 5(3) and 6 of the EU Software Directive, as SISA suggested. Four years later, the Australian Parliament enacted reverse engineering exceptions.

The Attorney-General of Australia, the Hon. Daryl Williams QC, explained the government's rationale for introducing these exceptions. With the advent of the Internet, "there is an obvious need for computers and the programs which drive them to communicate, connect, or 'interoperate' with each other."¹⁰⁸ The Attorney-General then explained the need for interface information in order to achieve interoperability and how this information as a technical matter can often be obtained only through reverse engineering.¹⁰⁹ The Attorney-General noted:

[T]he law of the leading software producing country in the world, the United States, allows makers of new programs to use decompilation to find out the interface information of existing programs for achieving interoperability. The countries of the European Union, and other countries, also allow this to be done.¹¹⁰

The Attorney-General then asserted that Australia needed a reverse-engineering exception to compete in the world market:

Because [Australia's] industry is not of a scale to compete across the board with such dominant industries as that of the United States, its comparative advantage lies in the ability to cater for niche markets. In order to do this, it must be able to ensure that its successful niche products interoperate with other existing products If Australian industry is to be allowed to compete on level terms with producers of similar products in the USA and Europe, Australian software copyright laws must be brought more into line with the law in these countries.¹¹¹

107. COPYRIGHT L. REV. COMM., COMPUTER SOFTWARE PROTECTION (1995).

108. Commonwealth, *Parliamentary Debates*, House of Representatives, 11 August 1999, 8479 (Daryl Williams, Attorney-General) (Austl.).

109. *Id.*

110. *Id.*

111. *Id.*

IV. THE NEW MILLENNIUM

In the new millennium, BSA members and the U.S. government became much less resistant to the adoption of reverse-engineering exceptions for the purpose of achieving interoperability. Exceptions modeled on the Software Directive were adopted in: India in 1999;¹¹² Singapore in 2004; Israel in 2007;¹¹³ New Zealand in 2008;¹¹⁴ Kenya in 2009;¹¹⁵ Chile in 2010;¹¹⁶ Canada in 2012;¹¹⁷ and Malawi in 2016.¹¹⁸

In addition, Taiwan,¹¹⁹ South Korea,¹²⁰ and Malaysia¹²¹ imported the U.S. fair use factors, thereby enabling domestic courts to rely upon U.S. fair use jurisprudence to permit reverse engineering.

These provisions all were adopted with far less controversy than the provisions enacted in the Pacific Rim during the 1990s.¹²² The decrease in opposition from the U.S. government and the dominant U.S. firms is probably attributable to several factors. First, by 2000, the Software Directive's reverse-engineering exceptions were being implemented by the growing number of EU member states as the EU

112. Copyright Act, No. 14 of 1957, INDIA CODE (1999), § 52(1)(ab) (permitting “the doing of any act necessary to obtain information essential for operating interoperability of an independently created computer programme with other programmes . . .”).

113. Copyright Act, 5767–2007, § 24(c)(3), 2199 LSI 34 (as amended) (Isr.) (allowing the copying of a computer program to “obtain[] information which is needed to adapt a different and independently developed computer system or program, in such a way that it will be interoperable with the computer program.”).

114. Copyright Amendment 2008, s 80A (N.Z.) (permitting decompilation “necessary to obtain information necessary for the objective of creating an independent program that can be operated with the program decompiled or with another program . . .”).

115. The Copyright Act (2009) Cap. 130 § 26(5) (Kenya) (stating that authorization “shall not be required to decompile [a] program, convert the program into a version expressed in different programming language, code, notation for the purpose of obtaining information needed to enable the program to operate with other programs”).

116. Law No. 20435 art. 71N, Abril 23, 2010, DIARIO OFICIAL [D.O.] (Chile) (permitting “reverse engineering activities with regard to a lawfully obtained copy of a computer program, carried out for the sole purpose of achieving interoperability between or among computer programs or for research and development purposes”).

117. Copyright Modernization Act, S.C. 2012, c 20, sec 30.61 (Can.) (permitting the owner or licensee of a copy of a computer program “to reproduce the copy for the sole purpose of obtaining information that would allow the person to make the program and any other computer program interoperable”).

118. Copyright Act (2016), § 52(3) (Malawi) (permitting a user “to make a copy of the code of a computer programme and translate the form of the code when this is indispensable in order to obtain the information necessary to achieve the interoperability of an independently created computer programme with other programmes”). The South African Copyright Amendment Bill, 2017, now pending in the South Africa Parliament, also includes a reverse engineering exception based on the Software Directive.

119. Copyright Act art. 65 (Taiwan).

120. Cheojakkweonbeob [Copyright Act], Act No. 432, Jan. 28, 1957, *amended by* Act No. 11110, Dec. 2, 2011, art. 35-3 (S. Kor.).

121. Copyright Act § 13.2 (2012) (Malaysia).

122. ACIS or CCIA submitted comments supporting many of these amendments.

expanded to include countries in Central and Eastern Europe.¹²³ Many of these new member states were at a lower level of development, and historically had a higher rate of software piracy than the countries in other regions that were considering reverse-engineering exceptions. Accordingly, there was no rational basis for arguing that countries such as Israel or New Zealand should not adopt exceptions similar to those in the Software Directive.

Second, as Professor Menell discusses, the prohibition on circumvention of technological protection measures (“TPMs”) in the 1998 Digital Millennium Copyright Act included an exception for reverse engineering for the purpose of achieving interoperability, 17 U.S.C. § 1201(f).¹²⁴ The legislative history of section 1201(f) stated that Congress intended for it to preserve the effect of existing case law, including specifically the Ninth Circuit’s *Sega* decision.¹²⁵ Given Section 1201(f) and the committee reports explicitly referencing *Sega*, the U.S. government and large U.S. companies could no longer argue that decompilation facilitated disguised piracy or that *Sega* was an outlier.

V. FREE TRADE AGREEMENTS MANDATE PROTECTIONS FOR INTEROPERABILITY

Starting in 2002, the United States negotiated a series of free trade agreements (“FTAs”), which, *inter alia*, included provisions modeled on Section 1201 of the DMCA. In addition to requiring parties to adopt prohibitions on the circumvention of TPMs, these provisions allowed countries to adopt exceptions permitting circumvention performed during the course of reverse engineering for the purpose of achieving interoperability. The Korea-U.S. Free Trade Agreement, for example, provides that each party may permit:

Noninfringing reverse engineering activities with regard to a lawfully obtained copy of a computer program, carried out in good faith with respect to particular elements of that computer program that have not been readily available to the person engaged in those activities, for the sole purpose of

123. There were only 12 member states in 1991, when the Software Directive was adopted. By 2004, the E.U. expanded to 25 member states. Two more joined in 2007, and the 28th member state joined in 2013.

124. Menell, *supra* note 1, at 341–42.

125. S. REP. NO. 105-190, at 13 (1998).

achieving interoperability of an independently created computer program with other programs.¹²⁶

The FTAs with the following countries include similar language permitting the adoption of exceptions for reverse engineering for purposes of interoperability: Australia,¹²⁷ Bahrain,¹²⁸ Chile,¹²⁹ Colombia,¹³⁰ Costa Rica,¹³¹ Dominican Republic,¹³² El Salvador,¹³³ Guatemala,¹³⁴ Honduras,¹³⁵ Morocco,¹³⁶ Nicaragua,¹³⁷ Oman,¹³⁸ Panama,¹³⁹ Peru,¹⁴⁰ and Singapore.¹⁴¹ As in the United States, these countries have adopted exceptions permitting circumvention for the purpose of reverse-engineering exceptions in their domestic law. Additionally, Canada¹⁴² and Malaysia¹⁴³ have adopted similar exceptions.

VI. CONCLUSION

So far, the second API copyright war is being fought only in the United States. The CJEU's 2012 decision in *SAS* unambiguously denied copyright protection in the EU for elements necessary for

126. Free Trade Agreement Between the United States of America and the Republic of Korea, S. Kor.-U.S., art. 18.4.7(d)(i), June 30, 2007, 8 U.S.T. 2217. CCIA assisted USTR in the drafting of this language.

127. Australia-U.S. Free Trade Agreement, Austl.-U.S., art. 17.4.7(e)(i), May 18, 2004, 34 I.L.M. 1248.

128. Agreement between the Government of the United States and the Government of the Kingdom of Bahrain on the Establishment of a Free Trade Agreement, Bahr.-U.S., art. 14.4.7(e)(i), Sept 14, 2004, 44 I.L.M. 544.

129. U.S.-Chile Free Trade Agreement, U.S.-Chile, art. 17.7(5)(d)(ii), June 6 2003, 42 I.L.M. 1026.

130. U.S.-Colombia Trade Promotion Agreement, U.S.-Colom., art. 16.7.4(e)(i), Nov. 22, 2006.

131. Dominican Republic-Central America Free Trade Agreement (CAFTA), Costa Rica-El Sal.-Guat.-Hond.-Nicar.-Dom. Rep.-U.S., art. 15.5.7(d)(i), August 5, 2004, 43 I.L.M. 514.

132. *Id.*

133. *Id.*

134. *Id.*

135. *Id.*

136. U.S.-Morocco Free Trade Agreement, U.S.-Morocco, art. 15.5.8(d)(i), June 15, 2004, 44 I.L.M. 544.

137. U.S.-Colombia Trade Promotion Agreement, U.S.-Colom., art. 16.7.4(e)(i), Nov. 22, 2006.

138. U.S. Oman Free Trade Agreement, U.S.-Oman, art. 15.4.7(d)(i), Jan. 18, 2006, 2006 U.S.T. LEXIS 119.

139. U.S.-Panama Free Trade Agreement, U.S.-Pan., art. 15.5.7(d)(i), Jun. 28, 2007.

140. U.S.-Peru Trade Promotion Agreement, U.S.-Peru, art. 16.7.4(e)(i), April 12, 2006, 2006 U.S.T. LEXIS 134.

141. United State-Singapore Free Trade Agreement, U.S.-Sing., art. 16.4.7(e)(i), May 6, 2003, 42 I.L.M. 1026.

142. Copyright Modernization Act, S.C. 2012, c 20, sec 41.12(1) (Can.).

143. Copyright Act § 36A(2)(a) (2012) (Malaysia).

interoperability. In the non-EU countries that have adopted specific exceptions permitting reverse engineering for the purpose of achieving interoperability, courts without doubt will exclude interface specifications from the scope of copyright protection. They will be guided by the CJEU's *SAS* decision, and they will recognize that it would make no sense for their legislatures to adopt an exception permitting the reverse engineering necessary to learn the information essential to interoperability if that information fell within the scope of copyright protection.

The Federal Circuit's 2014 decision in *Oracle v. Google*¹⁴⁴ thus is an aberration in a global consensus favoring copyright principles that support software interoperability, particularly to the extent that it gave new life to the long discredited dicta in *Apple Computer v. Franklin Computer*¹⁴⁵ stating compatibility is "a commercial and competitive objective which does not enter into the somewhat metaphysical issue of whether particular ideas and expression have merged."¹⁴⁶ Affirmance of the district court's fair use determination would somewhat mitigate the damage caused by the *Oracle* decision. However, by ruling that interoperability is relevant only to fair use, and not to protectability, the Federal Circuit would require a developer to perform a fair use analysis before developing an interoperable product. Judge Boudin in *Borland* recognized that widespread application of the fair use doctrine for purposes of achieving compatibility "would entail a host of administrative problems that would cause cost and delay, and would also reduce the ability of the industry to predict outcomes."¹⁴⁷ This would place U.S. programmers at a competitive disadvantage to developers in other jurisdictions, such as the EU, that recognize that copyright does not protect program elements necessary for interoperability.

144. 750 F.3d 1339 (Fed. Cir. 2014).

145. 714 F.2d 1240 (3d Cir. 1983).

146. *Id.* at 1253.

147. *Lotus Dev. Corp. v. Borland Int'l*, 49 F.3d 807, 821–22 (2d Cir. 1992) (Boudin, J., concurring).