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# Microsoft Corp. v. AT&T Corp.: Amputating the Long Arm of Patent Law with Regard to Software Patents, 127 S. Ct. 1746 (2007)

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# CASE NOTE

## *MICROSOFT CORP. v. AT&T CORP.*: AMPUTATING THE LONG ARM OF PATENT LAW WITH REGARD TO SOFTWARE PATENTS

### 127 S. Ct. 1746 (2007)

*G. Matthew Brockway**

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## I. THE GOLDEN AGE OF PATENTS

We are witnessing the sunset of the golden age of patents. Just as technology stocks experienced a meteoric rise in value during the bull market of the 1990s, such is the current state of patents.[1] In recent times, rapidly developing technologies were hastily shoehorned into patent protection for which they were poorly fitted.[2] Prime examples include business methods and software, both of which are considered by some experts as ill-suited for protection under principles of patent law. Nevertheless, they currently qualify as patentable subject matter.[3] In addition to the enlarged scope of patentable subject matter, corporations and other business enterprises increasingly focused their business models around patent portfolios. These patents and intellectual property portfolios currently account for a historically disproportionate percentage of many companies' assets.[4] But just as the pendulum of the stock market swings from irrational exuberance to unjustifiable pessimism, and sooner or later all bull markets end badly, the patent "market" is long overdue for a severe correction.[5] Recent actions of both the legislature and judiciary portend such imminent changes in patent law.

Recently, both the Senate and House of Representatives had before them legislation known as the Patent Reform Act of 2007.[6] The concept of patent reform, however, is not a recent phenomenon. Similar legislation was previously introduced as the Patent Reform Act of 2005[7] and the

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1. During the 1990s people got especially carried away on technology and Internet stocks, believing that the industry would outgrow all others forever. BENJAMIN GRAHAM & JASON ZWEIG, THE INTELLIGENT INVESTOR 15 (Harper Collins Publishers 2006) (1949).

2. *See* State St. Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999) (holding that the transformation of data by a machine through a series of mathematical calculations producing a useful, concrete, and tangible result constitutes a practical application of a mathematical algorithm, and the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, does not render it nonstatutory subject matter). *State Street* opened the floodgates for both software and business method patents. *See id.* at 1377.

3. *See id.*

4. Tangible assets include a company's physical property, such as real estate, factories, equipment, and inventories, as well as its financial balances, such as cash, short-term investments, and accounts receivable. GRAHAM & ZWEIG, *supra* note 1, at 9. Soft assets include patents, trademarks, copyrights, trade secrets, goodwill, and other intangibles. *Id.* A company's total assets consist of its tangible assets and its soft assets. *Id.* at 198.

5. The bull market of the 1990s ended quite dramatically. The period between March 2000 and October 2002 constituted the greatest market crash since the great depression, with U.S. stocks loosing 50.5% of their value, or 7.4 trillion dollars. *Id.* at 14.

6. S. 1145, 110th Cong. (1st Sess. 2007); H.R. 1908, 110th Cong. (1st Sess. 2007).

7. H.R. 2795, 109th Cong. (1st Sess. 2005).

Patent Reform Act of 2006.[8] Included in the 2007 reform effort were provisions seeking to institute a first-to-file priority system and eliminate interference proceedings, limit patent damages to the economic value of the improvement as compared to the prior art, limit trebling of damages for willful infringement, institute post-grant opposition proceedings, create a new patent trial and appeal board, and provide for greater third party rights.[9] In combination, these provisions would reduce the value of patents in general and allow for easier challenges to existing patents, resulting in more inventions and technology falling into the public domain.

The judiciary was also a party to this trend. Evincing an increased willingness to intervene in issues of patent law, the Supreme Court of the United States decided two notable patent cases during its October 2005 term. In *Illinois Tool Works Inc. v. Independent Ink, Inc.*[10] the Court established that patents do not create a presumption of market power in a tying arrangement under the antitrust laws.[11] The second case was *eBay, Inc. v. MercExchange, L.L.C.*,[12] which vacated the existing standard for granting permanent injunctions in patent cases and implemented a four-factor balancing test.[13]

During the October 2006 session, the Supreme Court exceeded the previous year's judicial effort, granting certiorari for three crucial patent law cases. All three cases would become landmark decisions and alter the landscape of patent law by weakening available protections. The Court first entertained oral arguments in *MedImmune, Inc. v. Genentech, Inc.*[14] and subsequently ruled that patent licensees are not required to materially breach license agreements prior to challenging the underlying patent via the Declaratory Judgment Act.[15] Next, the Court addressed the standard for non-obviousness in *KSR International Co. v. Teleflex, Inc.*[16] Discarding the rigid teaching-suggestion-motivation test for inventions combining elements of preexisting inventions, the Court raised the standard of non-

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8. S. 3818, 109th Cong. (2d Sess. 2006).

9. *Supra* note 6.

10. 547 U.S. 28 (2006). Illinois Tool Works, Inc. manufactured and marketed patented printing systems, and Independent Ink, Inc. developed ink with the same chemical composition as the ink sold by Illinois Tool Works. *Id.* at 31-32. After an unsuccessful infringement action Independent Ink filed a complaint alleging antitrust violations. *Id.* at 32.

11. *Id.* at 44-46.

12. 126 S. Ct. 1837 (2006). MercExchange owned a patent for a method of conducting online sales and sued eBay for infringement, but was denied relief of a permanent injunction. *Id.* at 1839.

13. *Id.* at 1841.

14. 127 S. Ct. 764 (2007).

15. *Id.* at 776-77.

16. 127 S. Ct. 1727 (2007).

obviousness and established a flexible and expansive fact intensive approach.[17]

The least heralded of the trio was *Microsoft Corp. v. AT&T Corp.*[18] The Supreme Court accepted certiorari only after asking the Office of the Solicitor for its opinion on the matter. The case primarily involved issues regarding the extraterritorial reach of patent law that were originally addressed by the Supreme Court in *Deepsouth Packaging Co., Inc. v. Laitram Corp.*[19] The *Deepsouth* decision created a loophole in the regime of patent protection, which required a legislative patch.[20] *Microsoft* presented a contemporary variation of the *Deepsouth* problem, posing a question of the extraterritorial reach of U.S. patent law with regard to software components.[21] Though *Microsoft* was given the least attention of the 2006 patent cases, the Supreme Court's decision is a harbinger of the future of patent law.

## II. THE *DEEPSOUTH* LOOPHOLE

The Supreme Court first addressed a situation involving the export of component parts of a patented invention in *Deepsouth*.[22] Laitram, holder of a patent for a shrimp-deveining machine, sued Deepsouth, the manufacturer of an infringing deveiner.[23] Deepsouth conceded that section 271[24] barred it from making and selling its deveining machine in the United States.[25] However, Deepsouth sought to salvage a portion of its business and shipped the component parts of the shrimp-deveining machine abroad for assembly by its foreign customers.[26] Deepsouth argued

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17. *Id.* at 1745-46.

18. 127 S. Ct. 1746 (2007).

19. 406 U.S. 518 (1972).

20. *Id.* at 530-32.

21. *Microsoft*, 127 S. Ct. at 1750-51.

22. *Deepsouth*, 406 U.S. at 523.

23. *Id.* at 524.

24. 35 U.S.C. § 271(a). All statutory sections hereinafter referred to are located in title 35 of the U.S. Code.

25. *Deepsouth*, 406 U.S. at 523.

26. *Id.* Deepsouth was entirely forthright in indicating that its course of conduct was motivated by a desire to avoid infringing Laitram's patent. *Id.* at 524. Deepsouth's president indicated as much to his foreign customers as follows:

> We are handicapped by a decision against us in the United States. This was a very technical decision and we can manufacture the entire machine without any complication in the United States, with the exception that there are two parts that

that it avoided infringing Laitram's patent by manufacturing and exporting the unassembled component parts of the deveiner for assembly and use abroad.[27]

The Supreme Court of the United States granted certiorari to consider whether Deepsouth, in addition to being barred from the U.S. market by Laitram's patent, was also precluded from exporting the unassembled component parts of its deveiners for assembly and use abroad.[28] The Court noted that if Deepsouth's conduct was intended to lead to use of patented deveiners inside the United States, its manufacturing and sales activity would constitute induced or contributory infringement.[29] However, the Court observed that settled law established that contributory infringement cannot exist without actual or intended direct infringement.[30]

Construing the statutory text of section 271, the Supreme Court recognized that making or using a patented product outside the United States does not constitute infringement.[31] Therefore, Deepsouth was not liable as a direct infringer because it did not make, use, or sell the fully assembled deveining machine within the United States.[32] Neither did foreign buyers of the deveining machines infringe Laitram's patent because the unassembled machine was sold to foreign entities, and it was assembled and used outside of the United States.[33] Accordingly, the Court concluded that Deepsouth was not liable for direct or contributory infringement.[34]

Thus, the Supreme Court's ruling in *Deepsouth* created a gaping hole in patent protection. Manufacturers easily escaped direct and contributory infringement simply by exporting unassembled component parts of inventions covered by U.S. patents. Eight years after the *Deepsouth* decision, Congress addressed this loophole by amending the patent laws.

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> must not be assembled in the United States, but assembled after the machine arrives . . .

*Id.*

27. *Id.*

28. *Id.* at 519.

29. *Id.* at 526.

30. *Deepsouth*, 406 U.S. at 526.

31. *Id.* at 527.

32. *See id.* The Court relied on prior decisions holding that "a combination patent protects only against the operable assembly of the whole and not the manufacture of its parts." *Id.* at 528-29. Hence, the export of the unassembled parts did not amount to infringement of Laitram's patent. *See id.*

33. *See id.*

34. *Id.* at 532.

## III. LEGISLATIVE AND JUDICIAL RESPONSE: ENACTING § 271(f)

In the Patent Law Amendments Act of 1984,[35] Congress directly responded to the *Deepsouth* problem by adding section 271(f), thereby making the export of unassembled components of an invention covered by a U.S patent a distinct act of infringement.[36] The new section 271(f) read as follows:

> (1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.
>
> (2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.[37]

According to the legislative history, through section 271(f), Congress intended to prevent unauthorized manufacturers from avoiding U.S. patents by exporting components of a patented product for assembly abroad.[38] Thus, Congress sought to close the loophole opened by the Supreme Court ruling in *Deepsouth*.[39]

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35. H.R. 6286, 98th Cong. 1984 (enacted). The Patent Law Amendments Act also included a definition of joint inventorship. *Id.* Prior to the 1984 amendment, 35 U.S.C. § 116 recognized joint inventorship, but did not define it. *See id.*

36. 35 U.S.C. § 271(f) (2003).

37. *Id.*

38. Pellegrini v. Analog Devices, Inc., 375 F.3d 1113, 1116 (Fed. Cir. 2004).

39. *Id.*

Under section 271(f), supplying components of a patented invention for combination or assembly outside the United States constitutes infringement of the U.S. patent.[40] The section also includes elements of contributory infringement by incorporating acts that merely cause components to be supplied for foreign combination with acts that "actively induce" such combination.[41] The term "actively induce" was drawn from section 271(b), which provides that whoever actively induces patent infringement is liable as an infringer.[42] "Active inducement" is applicable if the foreign assembly is under the direct control of the supplier, or carried out pursuant to supplier's express instructions, as was the case in *Deepsouth*.[43] The legislative history of section 271(f)(1) suggests that inclusion of "active inducement" was intended to broaden the scope of liability, extending it to cover both those who actually supply the components and contributory infringers who cause others to supply components.[44] The concept of "active inducement" is governed by standards developed under section 271(b).[45] To be liable as an infringer under section 271(f)(1), all or a substantial portion of the components must be supplied and combined in a manner infringing the patent if it occurred within the United States.[46]

Notably, both section 271(f)(1) and (f)(2) refer to "component[s] of a patented invention."[47] The wording differs from section 271(c), which refers to components of machines, manufactures, combinations, compositions, and "material or apparatus for use in practicing a patented process."[48] Because section 271(f) is not limited in such a manner, it

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40. 35 U.S.C. § 271(f) (2003).

41. *Id.*

42. 35 U.S.C. § 271(b) (2003). *Cf.* 35 U.S.C. § 271(f) (2003).

43. *See* Deepsouth Packaging Co., Inc. v. Laitram Corp., 406 U.S. 518, 523 n.5 (1972).

44. T.D. Williamson, Inc. v. Laymon, 723 F. Supp. 587, 591-92 (N.D. Okla. 1989).

45. 35 U.S.C. § 271(b) (2003) (providing that "whoever actively induces infringement of a patent shall be liable as an infringer"). A person may infringe a patent by actively and knowingly aiding and abetting another's direct infringement of the patent. *See* Nat'l Presto Indus., Inc. v. West Bend Co., 76 F.3d 1185, 1194-95 (Fed. Cir. 1996) (holding that "statutory liability for inducement of infringement derives from the common law, wherein acts that the actor knows will lead to the commission of a wrong by another, place shared liability for the wrong on the actor"). The relevant statutory language of § 271(f)(1) is "whoever . . . *causes to be supplied* . . . in such a manner as to *actively induce* the combination of such components . . ." 35 U.S.C. § 271(f)(1) (emphasis added).

46. 35 U.S.C. § 271(f)(1) (2003).

47. 35 U.S.C. § 271(f) (2003).

48. 35 U.S.C. § 271(c) (2003). Section 271(c)'s application to export of components is restricted by the rule that "there can be no contributory infringement in the absence of a direct infringement." Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 341-42 (1961).

appears to include components used in carrying out a patented process abroad.[49]

Under section 271(f)(1), components may be staple articles of commerce also suitable for substantial noninfringing uses, but under section 271(f)(2), components must be especially made or adapted for use in a particular invention.[50] The text in section 271(f)(2) reading "especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use" was derived from section 271(c), which governs contributory infringement.[51] Under section 271(f)(2), export of an "especially adapted" component suffices if the export supplier knows that the component is specially adapted, and intends for the component to be combined abroad in the patented invention.[52] Determinations of whether a component is "especially adapted" and whether the supplier possesses requisite knowledge are governed by the applicable standards under section 271(c).[53]

While section 271(f) responded to the *Deepsouth* problem, it ventured beyond a mere reversal of the decision. In *Deepsouth*, the defendant produced all of the parts of the patented shrimp deveiner and shipped them abroad for assembly according to the defendant's instructions. As written, section 271(f) clearly applies to such a situation under the "active inducement" provision.[54] Section 271(f) goes beyond the circumstances presented in *Deepsouth*, and prohibits exportation of even a "substantial portion" of the component parts of a patented invention.[55] Export of "a substantial portion of the components" constitutes infringement under

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49. *See* 35 U.S.C. § 271(f) (2003).

50. 35 U.S.C. § 271(f) (2003).

51. 35 U.S.C. § 271(f)(2) (2003). *Cf.* 35 U.S.C. § 271(c) (2003).

52. Pellegrini v. Analog Devices, Inc., 375 F.3d 1113, 1116 (Fed. Cir. 2004).

53. 35 U.S.C. § 271(c) (2003) (covering the situation in which contributory infringement arises through the sale of a component specially designed for use in a patented product or process). 35 U.S.C. § 271(c) provides:

> Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.

*Id.*

54. *See* 35 U.S.C. § 271(f) (2003).

55. 35 U.S.C. § 271(f)(1) (2003).

section 271(f)(1) if the exporter actively induces assembly of the entire combination abroad.[56] However, exporting less then a "substantial portion" of components does not constitute infringement. The determination of what constitutes a "substantial portion" of a given invention is a question of fact subject to judicial interpretation similar to the interpretation of what qualifies as a "component."

## IV. *MICROSOFT V. AT&T*

### A. *The Majority Opinion*

In *Microsoft v. AT&T*, the Supreme Court considered a modern permutation of the circumstances originally presented in *Deepsouth*.[57] Microsoft generated the software code for its Windows operating system in the United States and sold the Windows operating system software to computer manufacturers, both foreign and domestic.[58] Microsoft licensed its Windows software to foreign computer manufacturers and charged a licensing fee for each of the millions of copies installed onto computers.[59] For distribution, Microsoft encoded the Windows software onto CD-ROMs known as "golden masters."[60] The golden masters were then shipped abroad, or the software code was transmitted overseas via encrypted electronic transmission.[61] Foreign manufacturers used the golden masters of the software to generate second generation copies on other disks used to install the Windows software on foreign-manufactured computers.[62] Microsoft also distributed Windows software to the foreign manufacturers indirectly, by sending golden master disks to authorized foreign replicators for copying and distribution to manufacturers.[63] Only copies of the Windows golden masters, not the golden masters themselves, were installed on foreign manufacturers' computers.[64] No physical aspect

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56. 35 U.S.C. § 271(f)(1) (2003).
57. Microsoft Corp. v. AT&T Corp., 127 S. Ct. 1746, 1750-51 (2007).
58. *Id.* at 1752-53.
59. Brief of Respondent at 8-9, Microsoft, 127 S. Ct 1746 (2007) (No. 05-1056), 2007 WL 186523.
60. *Microsoft*, 127 S. Ct. at 1761.
61. *Id.* at 1753.
62. *Id.* at 1750.
63. *Id.* at 1753 n.4.
64. *Id.* at 1753.

of an original Windows golden master was ever incorporated into the foreign-manufactured computers.[65]

In 1981, employees of Bell Laboratories filed a patent application for a "Digital Speech Coder," which would eventually become vital to the international telecommunications industry and an integral part of the daily lives of the majority of the world's population.[66] The claimed system was adopted as a standard by the International Telecommunications Union and remains widely used in devices such as mobile phones, computers, videoconferencing software, and other speech transmission applications.[67] The claimed voice compression system converts analog audio signals into digital signals, thereby reducing the amount of information necessary to transmit the audio signal while maintaining the quality of the signal.[68] AT&T, which owned Bell Laboratories at the time, received U.S. Patent No. 4,472,832 for the system.[69] The patent covers an apparatus combining the software code and a general-purpose computer in a system that compresses speech.[70] The patent expired in 2001.[71]

In 2001, AT&T filed a lawsuit in the U.S. District Court for the Southern District of New York charging Microsoft with patent infringement and inducement of infringement for domestic and foreign installations of the Windows operating system.[72] AT&T alleged that by sending Windows to foreign manufacturers, Microsoft supplied for combination abroad, "components" of AT&T's patented speech processor.[73] Accordingly, AT&T contended Microsoft was liable for infringement under section 271(f).[74] Microsoft responded by arguing that because unincorporated software is intangible information, it does not qualify as a "component" of an invention under section 271(f).[75] Further, Microsoft contended that the foreign-generated copies of Windows

65. *Microsoft*, 127 S. Ct. at 1761.

66. Brief of Respondent at 7-8, *Microsoft*, 127 S. Ct. 1746 (2007) (No. 05-1056), 2007 WL 186523.

67. *Id.* at 8.

68. *Id.* at 7-8.

69. *Id.* at 7. AT&T also secured patents for its speech processor in Canada, France, Germany, Great Britain, Japan, and Sweden. *Microsoft*, 127 S. Ct. at 1759 n.17.

70. U.S. Patent No. 4, 472,832 (filed Dec. 1, 1981). The speech processor at issue contained software that enhanced the sound quality of synthesized speech while maintaining high data compression. Brief for Respondent at 7, *Microsoft*, 127 S. Ct. 1746 (2007) (No. 05-1056), 2007 WL 186523.

71. *Id.* at 7.

72. *Microsoft*, 127 S. Ct. at 1753.

73. *Id.*

74. *Id.*

75. *Id.*

installed abroad were not supplied from the United States under section 271(f).[76]

Microsoft, as part of its Windows operating system software, included programs that used embedded code covered by AT&T's patent when combined with a computer.[77] Microsoft and AT&T stipulated that the Windows operating system contained software enabling a computer to process speech in the manner claimed by AT&T's patent.[78] However, as the apparatus was claimed, uninstalled Windows software did not infringe AT&T's patent.[79] The same was true for a computer standing alone.[80] Instead, AT&T's patent was infringed only when a computer was installed with Windows, and thereby capable of functioning as the patented speech processor.[81] Further, Microsoft stipulated that by installing Windows on its own computers during the software development process, it directly infringed the patent in question.[82] Microsoft also acknowledged that by licensing copies of Windows to manufacturers of computers sold in the United States, it induced infringement of AT&T's patent.[83] However, Microsoft denied any liability based on the golden masters and electronic transmissions it dispatched for foreign installation that did not enter the U.S. market.[84] Microsoft and AT&T agreed that, for the purposes of this litigation, a foreign-manufactured computer containing the Windows code would violate AT&T's patent if imported into the United States.[85]

Rejecting Microsoft's responses, the district court held Microsoft liable for infringing AT&T's patent under section 271(f).[86] Afterward, Microsoft and AT&T entered into a negotiated settlement agreement preserving Microsoft's right to appeal and stipulating damage liability pending the outcome of any appeals.[87] On appeal to the U.S. Court of Appeals for the

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76. *Id.*

77. *Microsoft*, 127 S. Ct. at 1750.

78. *Id.*

79. *Id.*

80. *Id.*

81. *Id.* at 1753.

82. *Microsoft*, 127 S. Ct. at 1753. *See* 35 U.S.C. § 271(a) (providing that "whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent").

83. *Microsoft*, 127 S. Ct. at 1753. *See* 35 U.S.C. § 271(b) (providing that "[w]hoever actively induces infringement of a patent shall be liable as an infringer").

84. *Microsoft*, 127 S. Ct. at 1753.

85. *Id.* at 1761 (Alito, J., concurring as to all but footnote 14).

86. *Id.* at 1753 (majority opinion).

87. Brief of Respondent at 11, *Microsoft*, 127 S. Ct. 1746 (2007) (No. 05-1056), 2007 WL 186523. Microsoft would have been liable for royalties on every foreign copy of Windows sold

Federal Circuit, a divided panel affirmed the district court's ruling.[88] Subsequently, the U.S. Supreme Court granted certiorari to consider two specific issues.[89]

The first issue before the Supreme Court was whether Microsoft's infringement liability extended to the computers installed with Windows operating system software copied abroad from golden masters or electronic transmissions dispatched by Microsoft.[90] In other words, the Supreme Court was faced with determining the applicability of section 271(f) in the context of computer software exported from the United States on golden master disks or by electronic transmission, and specifically whether, or in what form, software qualified as a component under section 271(f).[91]

As to which subsection of section 271(f) AT&T's claim invoked, the record was unclear. While sections 271(f)(1) and (f)(2) differ, neither Microsoft nor AT&T suggested that the differences were outcome determinative.[92] Section 271(f) applied to the supply abroad of "components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components."[93] Thus, the provision applies only to "such components" as are combined into the patented invention at issue, specifically AT&T's speech-processing computer.[94]

First the Court addressed the fundamental nature of software, namely "the 'set of instructions, known as code, that directs a computer to perform specified functions or operations.'"[95] According to the majority, software could be conceptualized in two ways. Software in abstract form consists of disembodied code.[96] Until it is expressed on a tangible medium as a computer readable copy, the code remains uncombinable and cannot be

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until 2001 and experts estimated that Microsoft's potential liability was over one billion dollars if it lost. Shaheen Pasha, *Microsoft and Ma Bell in Supreme Court Duel*, CNNMONEY.COM (2007), http:// money.cnn.com/2007/02/16/news/companies/scotus_microsoft/index.htm.

88. AT&T Corp. v. Microsoft Corp., 414 F.3d 1366, 1372 (Fed. Cir. 2005).

89. *Microsoft*, 127 S. Ct. at 1753-54.

90. *See id.* at 1755.

91. *Id.*

92. *Id.* at 1754 n.7. For the purposes of its analysis, the Supreme Court addressed only 25 U.S.C. § 271(f)(1). *Id.*

93. 35 U.S.C. § 271(f).

94. *Microsoft*, 127 S. Ct. at 1755.

95. *Id.* at 1754 (quoting Fantasy Sports Properties, Inc. v. Sportsline, Inc., 287 F.3d 1108, 1118 (Fed. Cir. 2002)).

96. *Id.*

installed or executed on a computer.[97] Alternatively, abstract software could be reduced to a tangible medium.[98] AT&T reasoned that software in the abstract, rather than a particular copy of software, qualifies as a "component" under section 271(f).[99] AT&T took the position that because encoding software onto a computer-readable medium is routine, this step should not play a decisive role in determining liability under section 271(f).[100] Conversely, Microsoft urged that only tangible copies of software could be "components."[101]

The Supreme Court deduced that if Windows in the abstract qualified as a component within section 271(f), the fact that the actual golden masters were not installed abroad as working parts of the foreign computers would be irrelevant.[102] While the Federal Circuit relied on the prior decision in *Eolas Technologies Inc. v. Microsoft Corp.*,[103] which held that software qualifies as a component under section 271(f), the Supreme Court was unable to determine whether the Federal Circuit regarded software in the abstract or a tangible copy of the software as the "component."[104]

Alternatively, the Supreme Court reasoned that if only tangible software could comprise a component and the relevant components are the copies of Windows actually installed on the computer, AT&T could not persuasively argue that those components, generated abroad, were supplied from the United States, as required for liability under section 271(f).[105] By this construction, the copies of Windows on the master disks and electronic transmissions that Microsoft sent from the United States could not serve as a basis for liability because they were not actually installed on the foreign manufactured computers.[106]

The Court concluded that a tangible copy of Windows software, rather than Windows software in the abstract, qualified as a "component" under section 271(f).[107] The Court pointed out that the extra step of reducing software to a tangible computer readable medium renders the software a

97. *Id.* at 1755.
98. *Id.* at 1754.
99. *See Microsoft*, 127 S. Ct. at 1755.
100. *Id.* at 1756.
101. *See id.* at 1754.
102. *Id.*
103. 399 F.3d 1325 (Fed. Cir. 2005).
104. *Id.* at 1341.
105. *Microsoft*, 127 S. Ct. at 1754.
106. *Id.* at 1754 n.9.
107. *See id.* at 1755-56.

usable, combinable part of a computer.[108] Consequently, the majority found that abstract software code is an idea without a physical embodiment, and as such, does not qualify as a component amenable to combination under section 271(f).[109] The Court refused to reach the issue of whether any other intangible element can ever qualify as a component under section 271(f).[110]

After determining that only software reduced to a tangible computer readable medium could qualify as a "component" under section 271(f), the Supreme Court addressed the interrelated question of whether Microsoft in fact supplied "components" of the foreign manufactured computers from the United States.[111] According to the Court, a conventional reading of section 271(f) required the question to be answered in the negative because the copies of Windows installed on the computers were created abroad, and, thus supplied, from outside the United States.[112] Below Federal Circuit majority opined that, in the case of software components, the act of replication was subsumed in the act of supplying and observed that a golden master was easily, inexpensively, and swiftly replicated abroad.[113] Hence, the Federal Circuit concluded that sending a single copy of Windows abroad with intent that it be replicated invoked section 271(f) liability for the foreign-made copies.[114]

Again, the Supreme Court noted that the copies of the Windows operating system actually installed on the computers were not directly supplied from the United States.[115] The installation copies of Windows did not exist until third parties outside the United States generated them from the golden masters.[116] Relying on the fact that section 271(f) does not address the act of copying in any context, the majority determined such absence of copying in the statutory text weighed against an interpretation that replication abroad was subsumed within the scope of section 271(f).[117] Because Microsoft did not export from the United States the copies of Windows actually installed, the Supreme Court found that the software installed on the relevant computers was not supplied from the United

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108. *Id.* at 1755
109. *See id.*
110. *Microsoft*, 127 S. Ct. at 1756 n.13.
111. *Id.* at 1756.
112. *Id.*
113. AT&T Corp v. Microsoft Corp, 414 F.3d 1366, 1370 (Fed. Cir. 2005).
114. *Id.*
115. *Microsoft*, 127 S. Ct. at 1757.
116. *Id.*
117. *Id.*

States.[118] Therefore, Microsoft was not liable for infringement under 35 U.S.C. § 271(f).[119]

In a final policy argument, AT&T contended that construing section 271(f) to cover only those copies of software actually dispatched from the United States created a loophole for software makers.[120] Liability for infringing a U.S. patent could be avoided by simply generating installation copies of software abroad from a golden master supplied from the United States.[121] While the Federal Circuit found AT&T's plea compelling, the Supreme Court declined the opportunity for an expansive interpretation and instead left the issue for Congress to consider.[122]

The Supreme Court resolved any doubt that Microsoft's conduct fell outside the ambit of section 271(f) through a presumption against extraterritoriality.[123] The Court recognized an axiom of patent law which holds that no infringement occurs when a patented product is made and sold in another country.[124] The lone exception to the rule is section 271(f), which attaches infringement liability when components of a patented invention are supplied for combination abroad.[125] Applied to the circumstances at issue, the presumption strongly favored a restrictive construction of section 271(f), encompassing only the golden masters directly exported from the United States.[126] The Supreme Court asserted foreign law alone, not U.S. law, governs the manufacture and sale of

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118. *Id.*

119. *See id.* at 1759-60.

120. *Microsoft*, 127 S. Ct. at 1759.

121. *Id.*

122. AT&T Corp v. Microsoft Corp, 414 F.3d 1366, 1370 (Fed. Cir. 2005). The Federal Circuit majority stated,

> [w]ere we to hold that Microsoft's supply by the exportation of the master versions of the Windows software—specifically for the purpose of foreign replication—avoids infringement, we would be subverting the remedial nature of § 271(f), permitting a technical avoidance of the statute by ignoring the advances in a field of technology—and its associated industry practices—that developed after the enactment of § 271(f) . . . Section 271(f), if it is to remain effective, must therefore be interpreted in a manner that is appropriate to the nature of the technology at issue.

*Id.* at 1371.

123. *Microsoft*, 127 S. Ct. at 1758.

124. *Id.*

125. *Id.*

126. *Id.*

components of patented inventions in foreign countries.[127] Consequently, if AT&T desired to prevent the manufacture of its apparatus in foreign countries, its sole remedy is to obtain and enforce foreign patents.[128]

While the Court acknowledged that plausible arguments exist for extending section 271(f) to the conduct at issue, the Court resisted expanding section 271(f) beyond its textual scope and left Congress the discretion to amend the terms of section 271(f) to account for emerging technologies.[129] Moreover, the Court assumed that legislators take account of the legitimate sovereign interests and concerns of extraterritorial application when drafting laws.[130] Responding to the *Deepsouth* loophole, Congress did not address other gaps in patent protection.[131] For example, section 271(f) does not identify as an infringing act conduct in the United States supplying information, instructions, or other materials for making copies abroad.[132] Accordingly, the Supreme Court deferred to the legislature any adjustment to patent law better taking into account the practical realities of software distribution.[133] Any such amendment should be subjected to focused legislative consideration, and not achieved through judicial forecasting of Congress's disposition.[134]

### B. *The Concurring Opinion*

In a separate concurring opinion, three justices emphasized components under section 271(f) must be something physical.[135] According to the concurring justices, the word "component," when concerning a physical device was most naturally read to mean a physical part of the device.[136] As a result, software did not qualify as a component under section 271(f).[137]

Further, the concurring justices reasoned that section 271(f) requires that a component be combined with other components to form the infringing device, meaning the component must permanently remain a part of the infringing apparatus.[138] In the circumstances at issue, the Windows

127. *Id.* at 1759.
128. *Microsoft*, 127 S. Ct. at 1759.
129. *Id.*
130. *Id.* at 1758-59.
131. *Id.* at 1759-60.
132. *Id.*
133. *Microsoft*, 127 S. Ct. at 1760.
134. *Id.*
135. *Id.* at 1761 (Roberts, Alito, Thomas, & Breyer, JJ., concurring). *Id.* at 1760.
136. *Id.* at 1761.
137. *Id.*
138. *Microsoft*, 127 S. Ct. at 1761.

operating system software was recorded in a physical form in the magnetic fields on the computers' hard drives once the installation process was completed.[139] No physical part of the master disks was ever physically incorporated, permanently or temporarily, in the computers.[140] Because the physical incarnation of software on the Windows master disks was not a "component" of an infringing device under section 271(f), it logically followed that copies of the master disks likewise did not qualify as components.[141]

Lastly, because no physical object originating in the United States was combined with the foreign-manufactured computers, the concurring justices determined there was no violation of section 271(f).[142] Correspondingly, the concurring justices believed it was irrelevant whether the Windows software was installed onto the foreign-manufactured computers directly from the golden masters or directly from an electronic transmission originating from the United States.[143] However, they also hypothesized that if the computers could not run the Windows operating system without inserting and keeping a golden master containing the software in the appropriate drive, then the golden master might qualify as a component of the computer.[144] For these reasons, the concurring justices concluded that software, whether in the abstract or fixed in a tangible medium, did not qualify as a component under section 271(f).[145]

### C. *The Dissenting Opinion*

A lone dissenting justice embraced AT&T's arguments and was persuaded that affirming the Federal Circuit's decision was faithful to the congressional intent of section 271(f).[146] The dissent recognized software, whether attached or detached from any medium, as plainly satisfying the dictionary definition of the term "component."[147] Moreover, while the majority avoided addressing the individual subsections of section 271(f), the dissent noticed that section 271(f)(2) best supported AT&T's

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139. *Id.* at 1762.

140. *Id.* The concurring justices acknowledged that such an occurrence would be contrary to the general workings of computers. *Id.*

141. *Id.* at 1762.

142. *Id.*

143. *Microsoft*, 127 S. Ct. at 1762.

144. *Id.*

145. *Id.*

146. *Id.* (Stevens, J., dissenting).

147. *Id.* at 1763.

position.[148] Under that subsection, the export of an especially designed component having no use other than as part of a patented apparatus constitutes infringement.[149] In the dissent's view, the Windows operating system was not a staple article or commodity suitable for substantial noninfringing uses under section 271(f)(1).[150] To the contrary, its sole intended use was for infringing purposes.[151] Therefore, according to the dissent, the Windows software comprised a component of an infringing apparatus under section 271(f)(2).[152]

## V. STATUS OF § 271(f): CHANGING THE JUDICIAL COURSE OF SOFTWARE COMPONENTS

The *Microsoft* decision is an example of that most uncommon legal situation where the judiciary is forced to choose, not between good or bad, silly or serious, law or physics, but rather between two equally reasonable positions. Nevertheless, *Microsoft* was a truly rare occurrence in patent law. Microsoft and AT&T advanced equally cogent arguments in favor of their respective positions. Judging from the numerous amicus briefs on either side, reasonable minds differed as to the specific questions before the court.

Paramount before the Court were questions of basic statutory construction, specifically whether, or in what form, software fell within the scope of the term "component" of section 271(f), and whether Microsoft's conduct was within the meaning of "supplying or causing to be supplied."[153] The Supreme Court answered both in a restrictive fashion, thus continuing its recent trend of retracting the scope of patent protection. For instance, in *eBay*, the Supreme Court discarded the practice of automatically granting permanent injunctions in successful patent infringement cases, and instituted a more traditional four-factor test similar to that for granting other injunctions.[154] Further, the Supreme Court in *MedImmune* exposed licensed patents to potential invalidation by licensees via the Declaratory Judgment Act without requiring the licensee to materially breach the license agreement, again restricting the scope of

148. *Microsoft*, 127 S. Ct. at 1763.
149. *Id.*
150. *Id.*
151. *Id.*
152. *Id.*
153. *Microsoft*, 127 S. Ct at 1753-54.
154. *Supra* text accompanying note 12.

protection afforded by patents.[155] Finally, the Supreme Court in *KSR* rejected the rigid "teaching-suggestion-motivation" non-obviousness test in the case of patents combining elements of preexisting inventions, instead opting for a flexible fact intensive inquiry, thereby raising the bar of non-obviousness and subjecting patents to easier invalidation.[156]

Each of the three above mentioned cases lessened the scope of protection afforded by patents, albeit in different manners. In *Microsoft*, the Supreme Court declined to extend the extraterritorial reach of patent law to software incorporated in a patented apparatus overseas.[157] In doing so the Court deferred such an extension to the legislature, which could presumably amend section 271(f) and enlarge the scope of the term "component" to include certain software elements, either in abstract or tangible form.[158]

Deferring such an extension to the legislature, the Supreme Court reversed the direction of patent case law in regard to software components under section 271(f). Prior to *Microsoft*, litigants successfully argued for the gradual extension of section 271(f), eventually reaching the point where software was deemed a "component" under the statute. In *Union Carbide Chemicals & Plastics Technology Corp. v. Shell Oil Co.* the Federal Circuit clarified the then existing interpretation of section 271(f), finding that method claims possessed components, which include elements used in practicing the method.[159] In that case, the component was a specific compound used in a patented chemical process. Thus, a defendant could be liable under section 271(f) for exporting a stock chemical if it was intended for use in a manner infringing the patent if conducted in the United States.[160] To the contrary, in *Bayer AG v. Housey Pharms., Inc.*, the Federal Circuit held that a "component under § 271(g) does not apply to the importation of intangible information.[161] Similarly, the Federal Circuit in *Pellegrini v. Analog Devices* held that a "component" under section

155. *Supra* text accompanying notes 14-15.

156. *Supra* text accompanying notes 16-17.

157. *Microsoft*, 127 S. Ct. at 1760.

158. *Id.* at 1756.

159. Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co., 425 F.3d 1366, 1379 (Fed. Cir. 2005) (stating that components of every form of invention are protected under 35 U.S.C. § 271(f), and that "components" and "patented inventions" under § 271 (f) are not limited to physical machines) (citing Eolas Techs., Inc. v. Microsoft Corp).

160. *Id.* Union Carbide sued Shell, a direct competitor, alleging infringement of its patent related to silver catalysts for the commercial production of ethylene oxide. *Id.* at 1369-70.

161. Bayer AG v. Housey Pharms., Inc., 340 F.3d 1367, 1374 (Fed. Cir. 2003) (stating that nothing in the legislative history suggesting that Congress was concerned that the preexisting statutory scheme failed to reach intangible information).

271(f) does not include the export of plans or instructions relating to a patented item manufactured abroad.[162]

Subsequently, in *Eolas Technologies Inc. v. Microsoft Corp.*, the Federal Circuit found that transmitting computer code abroad could create liability under section 271(f) as a "component" of a patented invention "supplied" from the United States.[163] Judge Rader authored the Federal Circuit opinion in *Eolas* holding that section 271(f) applies to golden master sales overseas and that copying is subsumed within the term "supply" for the purposes of software, based on its replicable nature.[164] The basic rationale was that software code is the essential part of a computer, and therefore, must be regarded as a component.[165] Strangely enough, Judge Rader was commended by the Supreme Court majority in *Microsoft* for his dissent at the Federal Circuit level, but the Court overlooked the fact that he also authored the opinion in *Eolas* advocating the contrary position.[166]

It is often overlooked that a component under section 271(f) need not be patentable or statutory subject matter. In fact, this principle was the basis of section 271(f) and the legislative reaction to *Deepsouth*. Patented inventions are often comprised of many parts that are individually unpatentable. For example, a gear or switch is not patentable, but may comprise a component of a patentable system. No one defending liability under section 271(f) would argue that the gears of a machine are not "components" simply because they are anticipated or obvious. Similarly, in *Microsoft*, the software at issue was not patented.[167] AT&T's patent claimed an apparatus programmed to execute a specific process.[168] Consequently, arguments in *Microsoft* regarding the patentability of software in the abstract are misplaced.

Of course, Microsoft wanted to avoid liability for infringing the U.S. patent for its conduct abroad and gave two separate reasons why the export of the Windows operating system software fell outside the ambit of section

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162. Pellegrini v. Analog Devices, Inc., 375 F.3d 1113, 1118 (Fed. Cir. 2004) (holding that the transmission abroad of instructions for producing patented computer chips not covered by § 271(f)).

163. Eolas Techs., Inc. v. Microsoft Corp., 399 F.3d 1325, 1341 (Fed. Cir. 2005) (holding that the language and history of § 271(f), as well as the Federal Circuit law protecting software inventions, support a finding that software code on golden master disks fall within the meaning of the term "component" in § 271(f)).

164. *Id.* at 1339-40.

165. *Id.* at 1339.

166. *See* Microsoft Corp. v. AT&T Corp., 127 S. Ct. 1746, 1756-57 (2007).

167. *See id.* at 1753.

168. *Id.*

271(f). First, Microsoft argued that software code is intangible information, and, therefore, not a "component" under the statute.[169] Second, Microsoft urged that, because copies of Windows were used to create the patented apparatus, no physical particle Microsoft exported actually became a permanent part of the assembled apparatus.[170] Thus, nothing in the infringing apparatus was actually supplied from the United States as required by the statute.[171]

The distinction a court draws between abstract software and a tangible copy is somewhat strained. The statute does not spell out a tangibility requirement.[172] This being said, Microsoft did not export abstract information. It exported tangible copies of the software embodied on the golden master.[173] Perhaps what the Supreme Court meant was that the material stored on the golden master disk was abstract, intangible information that was incapable of classification as a component. Only the disk containing the Windows operating system was potentially a component, but was disqualified as such because it did not become a permanent part of the computer. Meanwhile, the intangible information on the disk is transferred to the computer. If this were the case, Microsoft would escape section 271(f) liability if it individually exported each copy of Windows for direct installation onto the foreign manufactured computers.

The tangibility requirement also breaks down when mechanics of a computer are examined at an operational scale. Software does not exist unless it is embodied in some medium, and computers cannot function off of "disembodied software" as the Court seems to imply. Electrical signals, which include stationary magnetic fields on a computer's hard disk, may comprise that medium. Electrical signals are generally manifested by drifting electrons and by electromagnetic force lines emanating from those "real" compositions of matter. Accordingly, information represented by software is not abstract. It is real, and concrete, and it exists in physical form. It is not an abstract notion, but a real and tangible mechanism triggering specific functions within a computer. The fact that software is easily transferable via electrical impulses or photons does not change this fact.

Moreover, computers only respond to software when it is embodied in a physical signal. It is necessary for physical particles, such as electrons

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169. *Id.* at 1754 n.8.
170. *See id.* at 1757.
171. *Microsoft*, 127 S. Ct. at 1757.
172. *See* 35 U.S.C. § 271(f).
173. *Microsoft*, 127 S. Ct. at 1761.

or photons, to move before the computer responds to the software, thereby transferring the signaling energy into the computer and causing a real physical change in the magnetic domains of the computer's hard drive and a physical change in the trapped charge of the computer's flash memory.

Admittedly, while the export of software through a secure electronic signal appears more likely to qualify as abstract information, that argument also collapses upon closer examination. Real, tangible signals were used to record the signal in the master disk and real tangible signals were used to transfer the software from the master disk to the foreign manufactured computers. Similarly, a sinusoidal 120 volt AC signal is present in your nearest outlet. It can yield real, tangible, and concrete results if one is inclined to investigate.

Addressing whether Microsoft supplied "components" of the foreign made computers the United States pursuant to section 271(f), the Supreme Court employed a molecular conservation approach.[174] The plain language of the statute requires that inducing foreign combination constitutes infringement only if the assembled components are the exact same components exported from the United States.[175] Conduct that merely induces the combination of foreign made components does not violate section 271(f).[176] Supplying exact copies of the components is insufficient under the statute.[177] Thus, the statute arguably leaves foreign manufacturers free to fabricate and assemble identical components overseas, so long as none of the components were made within the United States.

Furthermore, under a strict application of the molecular conservation requirement, as adopted by the concurring opinion, no infringement would occur even if the golden masters were directly installed on the foreign computers.[178] During the installation process there is no physical transfer of molecules or electrons from the installation disk to the hard drive. The installation disk generates an electrical signal, which after processing applies a magnetic field to the surface of the computer's hard drive and changes the magnetic orientation of molecules in the hard drive. The configuration of pits and lands existing on the installation disk were not removed and added to the hard drive, but were merely translated and recreated on the hard disk, leaving the installation disk undisturbed. Because the installation disk is merely a template to configure another

174. *See id.* at 1756-57.
175. *Id.* at 1757.
176. *See id.*
177. *See id.* at 1756-57.
178. *Microsoft*, 127 S. Ct. 1757 n.14.

device that is removed after the installation process, it is best characterized as a tool for creating the Windows operating system on the finished computers. The same would be true if the golden masters were installed, rather than the foreign generated copies.

However, the installation of software does change the configuration of atoms and molecules on the hard drive, which represent ones and zeroes of binary code. Thus, one can feasibly argue that installing Windows onto the hard drive of a computer changes the configuration thereof and becomes a physical part of the molecular structure of the apparatus. If such configuration of atoms and molecules are removed from the hard drive, the computer becomes inoperable and is only functionally useful as a paperweight. Perhaps Justice Stevens expressed the more convincing view in his dissent stating, "if a disk with software inscribed on it is a 'component,' I find it difficult to understand why the most important ingredient of that component is not also a component."[179]

In its brief AT&T aptly pointed out that if Microsoft Windows were installed on a computer within the United States by any method, it would infringe AT&T's patent, the type of conduct section 271(f) specifically sought to address.[180] Therefore, the export of golden masters with the sole purpose of replication for assembly falls squarely within the scope of section 271(f)(2). Microsoft's intent is evidenced by collection of licensing royalties on every installed copy of Windows.[181] Knowing the golden master was specially designed and adapted, Microsoft intended that the software embodied on the golden master would ultimately be combined into the patented invention. But arguably the Patent Law Amendments Act of 1984 was never intended to capture millions of infringing acts based on the supply of a single "component."

Not surprisingly, Microsoft previously acknowledged in a different arena that the number of golden masters it sends abroad does not limit the number of units supplied. In *Microsoft Corp. v. Commissioner of Internal Revenue*, Microsoft argued that it was entitled to tax deductions for all foreign sales of software replicated from the golden masters abroad.[182] Microsoft claimed that such copies were "export property" under the

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179. *Id.* at 1763.

180. *See* Brief for Respondent at 32-33, *Microsoft*, 127 S. Ct. 1746 (2007).

181. *Id.* at 2.

182. Microsoft Corp. v. Comm'r of Internal Revenue, 311 F.3d 1178, 1181-82 (9th Cir. 2002) (holding that Microsoft's tax deduction for "export property" applied not only to the physical disks exported from the United States, but to all "royalties that Microsoft earned" from licenses to foreign manufacturers, including the "royalty for each copy of the [software] distributed in the market or for each computer system the [manufacturers] sold").

statute.[183] The Ninth Circuit agreed with Microsoft that all copies created from the golden master were export property.[184]

The distinction the Supreme Court draws in analyzing the supply issue is that the golden masters were shipped directly from the United States, while the copies of Windows used for installation on the foreign manufactured computers were not.[185] Indeed, if the Court decided that abstract software qualified as a component under section 271(f), any export intending that Windows be installed on millions of foreign manufactured computers would attach liability. Consequently, the Supreme Court had no choice but to find the golden master as containing software in the abstract, and therefore outside the scope of section 271(f).

The Supreme Court buttressed its determination that only software reduced to a tangible medium qualifies as a component through a molecular conservation requirement. This allowed the Court to limit section 271(f) liability to a specific point in the supply chain. Microsoft's distribution methodology allowed it to compartmentalize the supply process, resulting in a finding that Microsoft supplied from the United States only the golden master disks. The practical realities of the supply and distribution process were awkwardly cast aside.

Upon deciding that only tangible software may qualify as a component, the Court was forced to define the limits of Microsoft's supply process. Microsoft successfully argued that replication is part of the assembly process, rather than being included in the supply process.[186] But wrestling over where the supply process ends and the assembly process begins is akin to arguing where a circle begins. The replication process might more appropriately fall within the language "or causing to be supplied" in section 271(f)(2). Nonetheless, it is difficult to fathom that whether software is deemed a component of a patented invention turns on an inquiry asking whether several copies of the software are made from one disk or several disks are used to create one copy each.

Conceptually more interesting than the question of whether Microsoft supplied "components" of the foreign made computers the United States pursuant to section 271(f) is the issue of where in the supply chain to define components. Should the analysis follow the typical manufacturing process and follow components forward in toward combination in the potentially infringing product? Alternatively, should the analysis begin with the finished product and sequentially divide the final assemblage into

183. *Id.* at 1183.
184. *Id.* at 1188-89.
185. *Microsoft*, 127 S. Ct. at 1757.
186. *See id.* at 1756-57.

components? Do the different approaches yield different outcomes? Further, are subcomponents considered components of the finished product? At what scale do individual parts cease to be components?

## V. IMPLICATIONS OF *MICROSOFT V. AT&T*

### A. *Extraterritorial Reach of U.S. Patent Law*

International patents do not exist. Instead, patent law is restricted, with few exceptions, to the territory of the sovereign granting the patent.[187] Hence, a U.S. patent covers infringing acts occurring in the United States and its territories, but generally disregards extraterritorial activities.[188] The lone exception is section 271(f), which expands the territorial scope of U.S. patent protection by creating liability for exporting "components" of a patented invention so that the invention may be assembled and practiced abroad.[189]

In the economics of modern business, section 271(f) is nearly irrelevant with respect to manufacturing. Because of lower production costs in foreign countries, physical components are rarely exported from the United States for assembly elsewhere. However, the United States continues to lead the world in developing and exporting software through Microsoft and other software giants. Naturally, Microsoft does not distribute its software by manufacturing millions of CDs domestically and loading them onto a cargo ship. Instead, Microsoft creates relatively few copies of golden masters and ships them to foreign manufacturers for replication and installation.[190]

Strangely enough, Microsoft's arguments before the Supreme Court implicitly advocated the weakening of software patents in the United States. Microsoft is perhaps the single software company that does not need extraterritorial protection of its software patents. Compared to all other software development companies, Microsoft can best afford procuring and enforcing foreign patents, while others may lack the necessary resources. In the existing market structure, Microsoft possesses the capacity to pillage and plunder the patents of smaller companies simply by exporting software components for foreign replication. In this

187. *Id.* at 1758.
188. *Id.*
189. 35 U.S.C. § 271(f).
190. *Supra* text accompanying notes 62-64.

case, Microsoft was serendipitously able to align its interests in both winning the case at bar and undermining software patents at the same time.

The consequence of finding liability for Microsoft would have driven the software development industry offshore to assure that "components" are never exported, thereby avoiding any future infringement under section 271(f). Software developers would be forced into paying royalties for software they reproduced and sold abroad. Such a mutation of patent law would prevent the export of software without the payment of royalties. This would place the domestic software development industry at a significant disadvantage in relation to foreign software developers in markets overseas. This potential was raised in several amicus briefs and buttressed by the principle that patent protection was intended to encourage domestic innovation, as opposed to driving it overseas.[191]

However, by negatively answering whether software constitutes a "component" under section 271(f), the Supreme Court opened another *Deepsouth* loophole for circumventing patent law. An infringer can simply select a foreign manufacturing location in a country where the patentee lacks protection and upload software from the United States for replication and assembly into the patented apparatus. Likewise, this loophole effectively kills protection for Internet software patents. A potential infringer can simply locate a server in any territory where patent protection was not sought, or in a territory not recognizing software patents.

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191. *See* Brief for the United States as Amicus Curiae Supporting Petitioner at 25, *Microsoft*, 127 S. Ct. at 1746 (urging that the court of appeals' interpretation of § 271(f) frustrates the goal of a technology-neutral statutory scheme, and under that approach, the software industry alone is regulated in a manner that differs significantly from the fundamental balance struck by Congress, which prohibits the manufacture of components in the United States while permitting it abroad); Brief for Shell Oil Company as Amicus Curiae in Support of Petitioner at 3, *Microsoft*, 127 S. Ct. at 1746 (stating that the Federal Circuit's judgment, if upheld, would adversely affect the software industry, as well as every company and industry operating domestically and supplying materials for use in processes performed by overseas customers); Brief for the Business Software Alliance as Amicus Curiae Supporting Petitioner at 7, *Microsoft*, 127 S. Ct. at 1746 (arguing that the Federal Circuit's creation of liability that Congress did not intend will have a profound impact both on the companies now faced with potentially limitless exposure and on the U.S. economy as a whole, and threatens the competitive viability of an industry that receives on average 50% of its revenues from foreign sales). *See also* Brief for Bayhdole25, Inc. as Amicus Curiae Supporting Respondents at 4, *Microsoft*, 127 S. Ct. at 1746 (arguing that the judgment of the Federal Circuit should not be reversed because the precedent would have a harmful effect on the biotechnology industry). Ironically, a Microsoft victory would have been quite unsettling for its employees in the United States. Microsoft would have likely relocated thousands of jobs in the software development sector to foreign countries. Accordingly, such a victory would be bittersweet for Microsoft employees. Winning a legal argument is of little comfort when standing with your colleagues in the unemployment line.

Because section 271(f) no longer applies to the export of software elements, patentees must take appropriate protective measures. Consequently, the Patent Cooperation Treaty (PCT) will assume a more prominent role in protecting inventions containing software elements. Whereas filing for protection concurrently in multiple jurisdictions through the PCT was prudent for all classes of inventions, it is an absolutely necessary practice for inventions containing software elements after *Microsoft*. By utilizing the Patent Cooperation Treaty, the inventor may easily seek patent protection in multiple countries through a centralized administrative structure.[192] Nevertheless, the invention must satisfy each respective country's criteria for patentability.[193]

After obtaining foreign patents through the use of the Patent Cooperation Treaty, the inventor can then enforce the corresponding patent rights in each nation. With respect to protecting inventions with software elements, the only limitation is the policy of a foreign nation in recognizing the patentability of software. While obtaining patent protection in multiple nations may initially impede the efforts of potential infringers, they may still relocate to countries not recognizing software under their patent system.

Notably, the outcome in *Microsoft* likely pleased other nations by evidencing that the United States is not willing to infringe on their sovereignty with respect to patent policy. If section 271(f) covered software as "components," U.S. patent law would partially frustrate efforts of other countries to abolish patent protection of software. Additionally, *Microsoft* creates an incentive for developing nations to exclude software, or software elements, from patent protection. While intellectual property protection is generally recognized as a tool for economic development, excluding software from protection arguably results in greater economic benefit for developing nations under the circumstances present in *Microsoft*. Under this approach, developing nations would attract software development and related manufacturing industries with an intellectual property regime free of potential infringement liability.

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192. *See* Patent Cooperation Treaty art. 4, June 19, 1970-Nov. 26, 1975, 28 U.S.T. 7645, 1160 U.N.T.S. 231. The Patent Cooperation Treaty allows an inventor to seek patent protection simultaneously in each of a large number of countries. About the Patent Cooperation Treaty, http://www.wipo.int/pct/en/treaty/ about.htm (last visited Aug. 22, 2007). Such an application under the Patent Cooperation Treaty may generally be filed with the national patent office of the Contracting State of which the applicant is a national or resident or with the International Bureau of the World Intellectual Property Organization in Geneva. *Id.*

193. *See* Patent Cooperation Treaty art. 27, June 19, 1970-Nov. 26, 1975, 28 U.S.T. 7645, 1160 U.N.T.S. 231.

### B. *Fundamental Shift in Drafting Claims for Software Elements*

*Microsoft* undoubtedly affects the strategy for drafting future patents claiming inventions with software elements. Patent prosecutors will attempt to close the section 271(f) loophole opened in *Microsoft* through shrewd drafting strategies. As always, a patent prosecutor always must be mindful that patents do not protect the software code itself.[194] Only the function and utility of the software are protected.[195] Likewise, patents do not protect algorithms, but can be used to claim the real world application of an algorithm.[196] Claims directed toward software should articulate a series of steps or functions performed through the use of software elements. The standard is identical to claims for non-software inventions. A patent should be issued so long as the steps or functions are new, useful, and non-obvious. Indeed, one would be hard pressed to find a patent concluding "I claim: software comprising . . . ."

Also, the patentability of hardware inventions is a long-settled question. Therefore, claims for software elements should be drafted as potentially implemented through hardware circuitry, although a software version is preferred. If an inventor implements an invention through both software and hardware, a patent should issue for either embodiment so long as the basic requirements for patentability are satisfied. Similarly, one can write software to achieve the same end in a large number of ways. Ideally, the patent claims them all, even those never to be written or constructed. In this sense, a software patent can cover a result, regardless of how it was achieved.

After the Supreme Court's decision in *Microsoft*, future software patents should include claims for a replicating system using a master disk in order to potentially attach liability under section 271(f). The claimed replication system would include a golden master, thereby rendering the golden master a tangible component of the claimed replication system.

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194. 35 U.S.C. § 101 (stating that "whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor . . ."). Inventions composed of software elements are nonetheless patentable subject matter. *See generally* Arrhythmia Research Tech., Inc. v. Corazonix Corp, 958 F.2d 1053 (Fed. Cir. 1992) (holding that patent claims covering human heart electrocardiographic signal analysis methods and apparatus, including software elements, were for statutory subject matter). Software code is protected by copyright. *See* 17 U.S.C. § 102(a) (stating that "original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device" are copyrightable).

195. *Arrhythmia*, 958 F.2d at 1056-57. *See also* Parker v. Flook, 437 U.S. 584, 594-95 (1978) (involving an improper attempt to patent a mathematical formula or algorithms in the abstract).

196. *Id.*

Accordingly, section 271(f) would apply to the export and foreign replication of the golden master. In the absence of claims directed to a replication system, the master disk is not a part of a patented invention and is a mere tool used to create the patented invention, similar to an electronic lathe. Recall that the statute covers components especially made or especially adapted for use in the patented invention—not implements used to create patented inventions or their components.[197]

At first blush it appears that this drafting strategy would fail the obviousness standard. However, dependent claims and multiple dependent claims contain all the restrictions and elements of the claims on which they depend. Thus, if an invention containing software elements is novel and non-obvious, logic dictates that the replication of that invention is necessarily novel and non-obvious if set forth in a dependent claim or multiple dependent claim.

### C. *Other Applicability of Microsoft*

Aside from application to patented inventions containing software, the rationale present in *Microsoft* can be applied in a parallel fashion to other emerging technologies. *Microsoft* likely affects the scope of protection available for easily replicable inventions. Some examples include cell lines, patented seeds, and DNA. The numerous amicus briefs suggest that a variety of industries and businesses closely monitored this case. Accordingly, the implications of the *Microsoft* decision may reach far beyond the domestic software development industry.

The biotechnology industry is the most likely to feel the effect of the *Microsoft* decision. At the most basic level DNA is comparable to computer software because it is the embodiment of instructions for building, operating, and replicating an organism. Apart from the debate on whether it comprises patentable subject matter, DNA containing the "instructions" at the heart of a patented invention, much like software, can be easily exported and replicated for incorporation into an organism. Therefore, any decision on the subject of software may potentially manifest itself in this arena as well. If applicable to biotechnology, the *Microsoft* ruling will certainly encourage development of intellectual property dynamics similar to the software industry, allowing for the international distribution of materials without royalty payments.

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197. 35 U.S.C. § 271(f).

The most probable circumstances to which the *Microsoft* rationale is applicable involve exporting actual DNA or DNA sequences.[198] In biotechnology, the finished product is typically a protein, which does not contain DNA. Hence, the viral vector used to deliver the DNA is the equivalent of a golden master. In each case the instructions contained therein can be exported without infringing the claims of the related invention. Also like software, no molecule of the vector's DNA is present in the finished protein. Therefore, the export and replication of the DNA or its sequence would not infringe the claims to the protein according to *Microsoft*. As for cells that produce the proteins, their DNA is replicated from DNA originally supplied through the viral or plasmid vectors. Consequently, an organism subject to a U.S. patent and engineered abroad using DNA or DNA sequences supplied from the United States is almost entirely analogous to the circumstances presented in *Microsoft*.

In light of the similarities, the primary issue in applying the reasoning of *Microsoft* is whether a set of instructions, either in the abstract, or in tangible form, qualifies as a "component" under section 271(f). The export of the DNA sequence listing likely constitutes instructions in the abstract, while the actual genetic material is a tangible set of instructions. Following *Microsoft*, exporting DNA sequences might escape liability under section 271(f), while liability might attach for the export of actual genetic material. Further, one escapes section 271(f) liability because no exported material is physically present in the finished product.

Justice Breyer realized the potential scope of applicability during oral arguments and stated, "I would be quite frightened of deciding and then discovering that all over the world there are vast numbers of inventions that really can be thought of in the same way you're thinking of this one, and suddenly all kinds of transmissions of information themselves and alone become components."[199] However, given the resources invested in genetic research, protein therapy, and other emerging biotechnology fields, protecting the biological equivalent of "instructions" under some sort of intellectual property regime is entirely reasonable. The chief stumbling block is that neither the patent, nor the copyright statutes are well suited for the task. Again, the question likely requires a legislative answer, rather than judicial.

Also potentially implicated by *Microsoft* is the developing field of nanotechnology. Instead of questions regarding abstract and tangible

198. Reconstructing full-length DNA from sequences is well within today's technology, as the poliovirus genome was artificially created in 2002.

199. Transcript of Oral Argument at 43, Microsoft Corp. v. AT&T Corp., 127 S. Ct. 1746 (2007).

instruction, nanotechnology raises the issue of scale in regard to section 271(f) components. At what scale does section 271(f) become inapplicable? At a small enough scale, might individual atoms or photons constitute "components?" Again, these are issues for which the judiciary and patent statutes are unprepared.

## VI. CONCLUSION

Technology creates new capabilities for the public and new problems for the judiciary. It is a rare occurrence indeed that judges possess a thorough understanding of the emerging technologies before them. Inevitably, the judge will demand an analogy, but analogies will always be imperfect when describing emerging technologies.[200] Complicating matters further, statutes almost always will be inadequate when interpreting them in light of emerging technologies. To have a meaningful discussion and decide issues soundly, all sides must have a proper understanding of the issues, both technological and legal. Inevitably, section 271(f) will be the subject of further interpretation on account of developing technology and creative patent drafting. It remains to be seen whether AT&T rushes to Capitol Hill and lobbies for an amendment to section 271(f) and halts the recession of patent law. If AT&T succeeds in this endeavor, equally as compelling is the question of whether such legislation be upheld as constitutionally valid.

In *Microsoft*, the federal judiciary continued its trend of weakening patent protection in response to the previous improvident extension of patent law. While confining the scope of infringing activities in regard to software elements, the Supreme Court raised questions of even greater technological difficulty but managed to sidestep them in this case. Luckily for the Supreme Court, Microsoft and AT&T stipulated the most controversial issues, the prime example being the validity of the patent at issue. In this manner, Microsoft and AT&T limited the specific issues the court could address.

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200. One analogy raised was that of someone reading the text of a patent claim over the phone to a person in a foreign country who then manufactured the patented product according to the claims. By a similar analogy, Microsoft attempted to illustrate the abstract nature of software. Microsoft compared its export of the Windows operating system to a situation in which one person read the binary ones and zeroes of a software program over the phone to a person in a foreign country. Contrary to the initial purpose of the analogy, it demonstrated another possible, though tedious, method for physically transferring the tangible mechanism of the software from one location to another.

Despite the stipulations, Microsoft's petition impliedly argued that software itself does not constitute patentable subject matter, a topic over which much ink has been spilled. The Supreme Court never has ruled on software patents as statutory subject matter and this issue remains to be decided conclusively, as noted during oral arguments.[201] Conspicuously, the text of the opinion is couched in terms of copyright, as a significant portion is devoted to whether the software was reduced to a tangible medium.[202] Will the Supreme Court continue to retract the scope of patent protection? Is software patentable? After *Microsoft*, there is no right answer in the abstract. Only the Supreme Court can provide the answer, which we must live with until the legislature amends the statute or the Supreme Court changes its mind. In preparation for the imminent decision, we should perhaps divide the world into 10 kinds of people: those who count in binary and those who do not.

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201. Transcript of Oral Argument at 22, *Microsoft*, 127 S. Ct. at 1746. Justice Breyer stated, "I take it that we are operating under the assumption that software is patentable? We have never held that in this Court, have we?"

202. *Microsoft*, 127 S. Ct. at 1754. *See also* 17 U.S.C. § 102(a) (stating that "[c]opyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device").