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### **SOFTWARE PATENTS UNDER 35 U.S.C. § 271(F): SHOULD CONGRESS AMEND § 271 TO HARMONIZE PROTECTION BETWEEN TANGIBLE AND INTANGIBLE INVENTIONS?**

by ROBERT A. MCFARLANE AND TIMOTHY V. FISHER

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#### **Abstract**

U.S. Patent laws presumptively apply only to acts committed within this country. Congress has, however, imposed liability for domestic patent infringement based on actions taken, or at least completed, outside the United States. For example, Congress added § 271(f) to the patent statutes in 1984 to impose liability for the unauthorized exportation of components of patented inventions to be assembled abroad, even where no infringing acts are completed in the United States. Courts' varying application of § 271(f) to patented inventions in various fields led to inconsistent protections across different technologies. The current article explores this asymmetry in patent protection, its origin, and the implications for inventions in the digital and software fields. This article provides a detailed analysis of the two leading cases in this area, *Microsoft Corp. v. AT&T Corp.* (commonly referred to as *AT&T II*) and *Cardiac Pacemakers v. St. Jude*, and then considers whether, and how, §271 might be revised to address the noted imbalance.

# Software Patents Under 35 U.S.C. § 271(f): Should Congress Amend § 271 to Harmonize Protection Between Tangible and Intangible Inventions?

by ROBERT A. MCFARLANE\* AND TIMOTHY V. FISHER\*\*

## I. Introduction

United States patent law defines patent infringement to include the unauthorized making, using, selling, or offering for sale of a patented invention within the United States as well as the unauthorized importation of a patented invention into the country.<sup>1</sup> Notwithstanding the territorial limits of these infringement provisions, courts have been asked through the years to settle difficult questions regarding liability for potential patent infringement based on conduct committed in whole or in part outside of the United States.<sup>2</sup>

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1. 35 U.S.C.A. § 271(a) (West 2010).

2. See, e.g., *Microsoft Corp. v. AT&T Corp.*, 550 U.S. 437 (2007) (*AT&T II*); *DeepSouth Packing Co., Inc. v. Laitram Corp.*, 406 U.S. 518, 532 (1972) (*DeepSouth*);

Congress has also acted upon occasion to clarify the potential for liability to be imposed for domestic patent infringement based on actions taken, or at least completed, outside of the United States.<sup>3</sup> For example, Congress added § 271(f) to the patent statutes in 1984 to close a loophole that allowed a competitor to entirely avoid infringement liability if it largely manufactured a patented device within the United States, but intentionally exported the device so that a final, insubstantial assembly step could be completed abroad.<sup>4</sup> Today the same loophole closed by the passage of § 271(f) manifests itself in the realm of patented software because of two recent decisions issued by the Supreme Court and the Federal Circuit that limit protections under § 271(f) to apparatus patents and their physical components.<sup>5</sup> Specifically, the Supreme Court held in *Microsoft v. AT&T* that a software “master disk”<sup>6</sup> is not a “component” for purposes of § 271(f), and, therefore, exporting a master disk from the United States for duplication and installation onto computers abroad is not infringement.<sup>7</sup> Subsequently, the en banc Federal Circuit held in *Cardiac Pacemakers v. St. Jude* that 271(f) does not apply to process patents at all.<sup>8</sup> The end result of these two decisions is that holders of patents covering apparatus and other tangible inventions have a remedy against parties in the United States who export tangible components of the patented articles while holders of software or process patents do not.

This article explores this asymmetry in patent protection, its origin, and its implications for inventions in the digital and software fields. The article then considers whether § 271 should be revised, and examines two options for doing so: 1) adding a statutory provision to protect software against unauthorized exportation, and

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*Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 576 F.3d 1348 (2009) (en banc), *cert. denied*, 78 U.S.L.W. 3322 (U.S. Jan. 11, 2010) (No. 09-596) (*Cardiac Pacemakers*).

3. See, e.g., § 271(f); H.R. 6286, 98th Cong. § 101 (1982) (enacted).

4. *Id.*

5. *AT&T II*, 550 U.S. 437; *Cardiac Pacemakers*, 576 F.3d 1348.

6. A software master disk or “golden master” is a disk sent by the software creator to the manufacturer for duplication. The duplicates are installation disks, which are the copies of the software that are actually installed on computers. See *AT&T II*, 550 U.S. at 459–60.

7. *AT&T II*, 550 U.S. at 449 (“Abstract software code is an idea without physical embodiment, and as such, it does not match § 271(f)’s categorization: ‘components’ amenable to ‘combination.’”).

8. *Cardiac Pacemakers*, 576 F.3d at 1365 (“In sum, the language of Section 271(f), its legislative history, and the provision’s place in the overall statutory scheme all support the conclusion that Section 271(f) does not apply to method patents.”).

2) simply repealing § 271(f) in light of new intellectual property treaties that arguably render § 271(f) redundant.

## II. Historical Background

### A. A Loophole in the Patent Statutes: Avoiding Infringement Liability by Performing an Insubstantial Assembly Step Abroad

#### 1. Deepsouth Packing Co.: *the Supreme Court Endorses the Loophole*

In 1972, the Supreme Court held that a would-be patent infringer could avoid liability by simply exporting a patented article in disassembled form.<sup>9</sup> In that case, the district court held Deepsouth Packing Co. liable for infringing patents owned by Laitram Corporation.<sup>10</sup> After being permanently enjoined from making or selling machines covered by Laitram's patents, Deepsouth requested that the district court modify the injunction to permit Deepsouth to sell unassembled units to a customer in Brazil, where it would be assembled into the infringing device.<sup>11</sup> The district court held that a combination patent protects only the combination, not the unassembled parts, and ruled that the injunction did not prohibit the sale of the unassembled product to a foreign entity.<sup>12</sup>

The Fifth Circuit reversed on appeal and directed the district court to withdraw its modifications of the injunction.<sup>13</sup> The circuit court noted that the district court correctly applied the rule adopted by the Second, Third, and Seventh Circuits (that a machine is not "made" in the United States until it is fully assembled),<sup>14</sup> but refused to adopt that rule to disputes in the Fifth Circuit.<sup>15</sup> Rather than adopt what it called the "artificial, technical construction" of the word "makes" in § 271(a),<sup>16</sup> the Fifth Circuit ruled that "when all the parts

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9. *Deepsouth*, 406 U.S. at 532.

10. *Laitram Corp. v. Deepsouth Packing Co.*, 301 F. Supp. 1037 (E.D. La. 1969).

11. *Id.*

12. *Id.* at 929.

13. *Laitram Corp. v. Deepsouth Packing Co.*, 443 F.2d 936, 939 (5th Cir. 1971).

14. *Radio Corp. of America v. Andrea*, 79 F.2d 626 (2nd Cir. 1935) (*Andrea I*); *Cold Metal Process Co. v. United Engineering & Foundry Co.*, 235 F.2d 224 (3rd Cir. 1956) (following *Andrea I*); *Hewitt-Robins, Inc. v. Link Belt Co.*, 371 F.2d 225 (7th Cir. 1966) (following *Andrea I*).

15. *Laitram Corp.*, 443 F.2d at 938.

16. § 271(a) states 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 therefore, infringes the patent."

of a patented machine are produced in the United States and, in merely minor respects, the machine is to be finally assembled for its intended use in a foreign country, that machine is ‘made’ within the United States.”<sup>17</sup>

The Supreme Court reversed on a 5-4 vote.<sup>18</sup> The majority focused on the question of manufacture: “did Deepsouth ‘make’ (and then sell) something cognizable under the patent law as the patented invention, or did it ‘make’ (and then sell) something that fell short of infringement?”<sup>19</sup> Citing “a line of decisions so firmly embedded in our patent laws as to be unassailable absent a congressional recasting of the statute,”<sup>20</sup> the Court held that what was made and sold domestically was something less than the claimed invention, and therefore no infringement occurred.<sup>21</sup>

In addition to its well-settled precedent, the Court cited three basic judicial principles to support its opinion. First, the Court described the legislative history of the patent statute, and noted that its enactment left the patent laws unmodified in light of the case law at the time.<sup>22</sup> Second, the Court cited the nation’s “antipathy to monopoly.”<sup>23</sup> Finally, the Court referred to what is generally called the presumption against extraterritoriality – that the patent laws are limited to domestic application.<sup>24</sup>

## 2. Deepsouth Dissent

*Deepsouth* was narrowly decided, with four justices dissenting.<sup>25</sup> In the dissent, Justice Blackmun first focused on the statutory

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17. *Laitram Corp.*, 443 F.2d at 938.

18. *Deepsouth*, 406 U.S. at 532.

19. *Id.* at 527.

20. *Id.* at 528–29 (citing *Mercoird Corp. v. Minneapolis-Honeywell Regulator Co.*, 320 U.S. 680, 684 (1944) (“[A] patent on a combination is a patent on the assembled or functioning whole, not on the separate parts.”); *Leeds & Catlin Co. v. Victor Talking Machine Co.*, 213 U.S. 301 (1909) (“One element is not the combination. Indeed, all of the elements are not. To be that – to be identical with the invention of the combination – they must be united by the same operative law.”); *Aro Mfg. Co. v. Convertible Top Replacements Co.*, 365 U.S. 336, 344 (1961) (“[I]f anything is settled in patent law, it is that the combination patent covers only the totality of the elements in the claim and that no element, separately viewed, is within the grant.”)).

21. *Id.* at 532.

22. *Id.* at 530 (referring to the Patent Act of 1952).

23. *Deepsouth*, 406 U.S. at 530 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 7 et seq. (1966)).

24. *Id.* at 531.

25. *Id.* at 532.

language, particularly Congressional use of the word “making.”<sup>26</sup> He wrote, “I do not see how one can escape the conclusion that the Deepsouth machine was made in the United States,” noting that by Deepsouth’s own representations the machine was shipped with every necessary part and could be assembled in less than an hour.<sup>27</sup>

Justice Blackmun then took issue with the majority’s application of *Radio Corp. of America v. Andrea (Andrea I)*.<sup>28</sup> *Andrea I*, like *Deepsouth*, involved exportation of a disassembled patented article.<sup>29</sup> *Andrea I* was seriously undermined by a subsequent opinion in the same litigation (*Andrea II*)<sup>30</sup> such that Judge Swan, the author of *Andrea I*, lamented in his dissent to *Andrea II* that his prior decision had been overruled.<sup>31</sup>

*Andrea I* held that the defendants had not infringed the plaintiff’s patents because they had not manufactured or sold a complete combination.<sup>32</sup> *Andrea II*, which was decided on a more complete factual record than *Andrea I*, found infringement in two forms. The first was substantial assembly: “Where the elements of an invention are thus sold in substantially unified and combined form, infringement may not be avoided by a separation or division of parts which leaves to the purchaser the simple task of integration.”<sup>33</sup> The second was testing fully assembled units: “The tests were made to see if [the radios] were marketable – a commercial and hence an infringing use.”<sup>34</sup> The holding of *Andrea II* reads on the facts of *Deepsouth*, but the *Deepsouth* majority did not make clear why they applied *Andrea I* instead.

### 3. Deepsouth’s Vulnerability

The effective reversal of *Andrea I* by *Andrea II* presented a two-fold problem for the majority opinion in *Deepsouth*: First, it undermined somewhat the “unassailable” precedent cited by the

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26. *Id.* at 533.

27. *Id.*

28. *Deepsouth*, 406 U.S. at 533.

29. *Andrea I*, 79 F.2d at 627. *Andrea* was exporting a radio receiver covered by the plaintiff’s patent. He attempted to avoid infringement by shipping the radios with their vacuum tubes included, but removed from their sockets.

30. *Radio Corp. of America v. Andrea*, 90 F.2d 612 (2d. Cir. 1937) (*Andrea II*).

31. *Id.* at 615 (Swan, J., dissenting in part).

32. *Andrea I*, 79 F.2d at 629.

33. *Andrea II*, 90 F.2d at 613 (“The purchaser to connect the tubes needs only insert it in the socket. No adjustment is required; no screw or nut need be tightened.”).

34. *Id.* at 614.

majority. The *Deepsouth* Court cited three previous Supreme Court decisions for the notion that a combination patent protects only the combination.<sup>35</sup> However, none of the cases cited discussed exportation or substantial assembly.<sup>36</sup> Rather, *Deepsouth* cited *Andrea I* as applying those cases to the case of exportation of a substantial assembly.<sup>37</sup> *Andrea II*, on the other hand, found that the substantial assembly that had occurred – substantial assembly equivalent to the facts of *Deepsouth* – was sufficient for a finding of infringement.<sup>38</sup>

Second, the silence of the patent statute’s legislative history with regard to *Andrea I* was understood as an implicit codification of its ruling.<sup>39</sup> However, the majority offered no reason why Congress implicitly adopted the rule of *Andrea I* but not the arguably more viable rule of *Andrea II*. Both cases were decided more than a decade prior to the Patent Act of 1952, which was the law governing *Deepsouth*.<sup>40</sup>

The two other legs of the *Deepsouth* majority opinion – antipathy towards monopoly and the presumption against extraterritoriality – were also subject to reasoned criticism. First, the Court focused on a “false conflict of policies” between the monopolistic nature of the patent system and the pro-competitive policy of a free capitalist society.<sup>41</sup> There is no question that a patent is a government-

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35. *Deepsouth*, 406 U.S. at 528 (citing *Mercoide v. Minneapolis-Honeywell*, 320 U.S. at 684 (“[A] patent on a combination is a patent on the assembled or functioning whole, not on the separate parts.”); *Leeds v. Victor*, 213 U.S. at 320 (“To be that – to be identical with the invention of the combination – [the elements] must be united by the same operative law.”); *Aro Mfg. Co. v. Convertible Top*, 365 U.S. at 344 (“[I]f anything is settled in patent law, it is that the combination patent covers only the totality of the elements in the claim and that no element, separately viewed, is within the grant.”)).

36. *Id.* (citing *Leeds v. Victor*, 213 U.S. 301 (holding, based on the rule that an American patent expires on the same date as its identical foreign counterpart, that an American patent for a combination does not expire when a foreign patent identical to less than the whole of the American patented combination expires); *Mercoide v. Minneapolis-Honeywell*, 320 U.S. at 684 (holding that selling a single element of a combination patent, no matter how essential to the operation of the combination, is not infringement); *Aro Mfg. Co. v. Convertible Top*, 365 U.S. at 344 (holding that repair of a patented combination through the replacement of a spent, unpatented element does not constitute infringing reconstruction)).

37. *Id.* at 529.

38. *Andrea II*, 90 F.2d at 613.

39. *Deepsouth*, 406 U.S. at 530.

40. *Id.*

41. Charles M. Kerr, *Operable Versus Substantial Assembly of Patented Combinations: A Critique of Deepsouth v. Laitram*, 26 STAN. L. REV. 893, 895–96 (1974).

sponsored monopoly on an invention.<sup>42</sup> Conversely, the patent statutes limit the extent of the monopoly by imposing patent term limits<sup>43</sup> and disclosure requirements.<sup>44</sup> Thus, Congress set the balance between monopoly and competition and courts should seek to effectuate the patent statutes rather than re-weighing already settled policy considerations.<sup>45</sup>

Second, the Court relied on a Congressional intent to restrain extraterritorial application of the patent laws for unassembled articles.<sup>46</sup> The *Deepsouth* majority reasoned that the issue was one of domestic manufacture, i.e., “did Deepsouth ‘make’ (and then sell) something cognizable under the patent law as the patented invention?”<sup>47</sup> The majority did not, however, adequately address the obvious question of statutory interpretation: If operable assembly in the United States constitutes infringement, then why not substantial assembly? Drawing a line between the two and justifying it in terms of their extraterritorial effect seems inappropriate when the extraterritorial effect is the same in either case.<sup>48</sup>

## **B. Closing the Loophole: the Patent Law Amendments Act of 1984**

### *I. Congress Enacts 35 U.S.C. § 271(f)*

Congress addressed the perceived inequity of *Deepsouth* by passing the Patent Law Amendments Act of 1984,<sup>49</sup> which included a new subsection, 271(f), providing that:

(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

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42. U.S. CONST. art. I, § 8, cl. 8 (“To promote the progress of science and useful arts, by securing for limited times to authors and inventors the *exclusive right* to their respective writings and discoveries;”) (emphasis added).

43. See 35 U.S.C.A. § 154 (West 2010).

44. See 35 U.S.C.A. § 112 (West 2010).

45. Kerr, *supra* note 41, at 896.

46. *Id.* at 916.

47. *Deepsouth*, 406 U.S. at 527.

48. Kerr, *supra* note 41, at 896.

49. H.R. 6286, 98th Cong. § 101 (1984) (“The . . . change made by section 101 will prevent copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad. This proposal responds to the United States Supreme Court decision in *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972), concerning the need for a legislative solution to close a loophole in patent law.”).

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.<sup>50</sup>

These paragraphs were specifically drawn from the separate provisions of § 271 that create liability for indirect infringement.<sup>51</sup> Specifically, paragraph (1) parallels § 271(b),<sup>52</sup> which governs inducement, and paragraph (2) parallels § 271(c),<sup>53</sup> which governs contributory infringement. Liability for either type of indirect infringement requires an act of direct infringement in the United States,<sup>54</sup> but liability under § 271(f) applies when equivalent activity occurs abroad.<sup>55</sup> Thus § 271 (c) has been used as a guide for how to apply the provisions of § 271(f).<sup>56</sup>

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50. § 271(f).

51. Patent Law Amendments Act § 101.

52. 35 U.S.C. § 271(b) (“Whoever actively induces infringement of a patent shall be liable as an infringer.”).

53. 35 U.S.C. § 271(c) (“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.”).

54. *See, e.g., Aro Mfg.*, 365 U.S. at 341–342 (“[T]here can be no contributory infringement in the absence of a direct infringement.”); *Alloc, Inc. v. U.S. Int’l Trade Comm’n*, 342 F.3d 1361, 1374 (Fed. Cir. 2003) (“[D]irect infringement ... is a prerequisite to indirect infringement.”)

55. § 271(f).

56. *See Ormco Corp. v. Align Techs, Inc.*, 609 F. Supp. 2d 1057, 1074 (C.D. Cal. 2009) (interpreting the standard for determining “substantial noninfringing use” under § 271(f)(2) in light of the case law interpreting the same phrase in § 271(c) based on the

## 2. *Initial Applications of § 271(f)*

Case law interpreting § 271(f) gradually developed as courts applied the new statute to diverse classifications of inventions.<sup>57</sup> The provision was first applied in a relatively straightforward manner to mechanical inventions,<sup>58</sup> and later to inventions directed to chemical<sup>59</sup> and drug compounds.<sup>60</sup> Interestingly, early cases applying section 271(f) held that it did not protect intangibles such as patented designs or information. *Aerogroup International, Inc. v. Marlboro Footworks, Ltd.* held that § 271(f) did not extend to design patents, reasoning that design patents have no “component parts” to which § 271(f) would apply.<sup>61</sup> *Pellegrini v. Analog Devices, Inc.* held that mere information was not an export sufficient to trigger § 271(f).<sup>62</sup> The current controversy regarding the application of section 271(f) arose when courts started applying the provision to inventions related to software.

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“normal rule of statutory construction that identical words used in different parts of the same act are intended to have the same meaning.” (citing *Agro Dutch Indus. Ltd. v. United States*, 508 F.3d 1024, 1032 (Fed. Cir. 2007))).

57. See Alan M. Fisch & Brent H. Allen, *The Application of Domestic Patent Law to Exported Software: 35 U.S.C. 271(f)*, 25 U. PA. J. INT’L ECON. L. 557, 567 (2004).

58. See *Smith Int’l, Inc. v. Hughes Tool Co.*, 229 U.S.P.Q. 81 (C.D. Cal. Mar. 12, 1986) (applying § 271(f) to a patent for drill bits for oil exploration); *Windsurfing Int’l, Inc. v. Fred Ostermann GmbH*, 668 F. Supp. 812, 820–21 (S.D.N.Y. 1987), *aff’d*, *BIC Leisure Prods. v. Windsurfing Int’l*, 1 F.3d 1214 (Fed. Cir. 1993) (applying § 271(f) to a patent for a windsurfing board); *T.D. Williamson, Inc. v. Laymon*, 723 F. Supp. 587 (N.D. Okla. 1989) (applying § 271(f) to a patent for an instrument for measuring the internal geometry of pipelines).

59. *W.R. Grace & Co. v. Intercat, Inc.*, 60 F. Supp. 2d 316, 320 (D. Del. 1999) (“There is no limitation in the statute excluding protection for chemical composition inventions.”).

60. *Bristol-Myers Squibb Co. v. Rhone-Poulenc Rorer, Inc.*, 2001 WL 1263299 (S.D.N.Y. 2001) (holding that § 271(f) applied to chemical patents in the context of drug patents), *aff’d*, *Bristol-Myers Squibb Co. v. Rhone-Poulenc Rorer, Inc.*, 326 F.3d 1226 (Fed. Cir. 2003).

61. *Aerogroup Int’l*, 955 F. Supp. at 232 (holding that the language of § 271(f)(1) “by its terms does not apply to the patent at issue here, which has no ‘component parts’ but is rather a design patent for a shoe sole.”).

62. *Pellegrini*, 375 F.3d at 1118 (“‘Supplying or causing to be supplied’ in § 271(f) clearly refers to physical supply of components, not simply to the supply of instructions or corporate oversight. In other words, although Analog may be giving instructions from the United States that cause the components of the patented invention to be supplied, it is undisputed that those components are not being supplied in or from the United States.”).

### C. The Difficulties of Applying § 271(f) to Software

Courts have had difficulty analyzing the application of section 271(f) to software patents.<sup>63</sup> Practitioners have struggled to fit software patents into one of the enumerated categories of patentable subject matter listed in § 101,<sup>64</sup> and several types of patent claims have evolved to bring software inventions within the statutory scope.<sup>65</sup> Software patents have been issued with claims drafted in both apparatus and process claims. Apparatus claims in this field are typically drawn to describe an invention in which the software is defined as configuring a computer into a special purpose machine; e.g., an off-the-shelf PC running the software.<sup>66</sup> Process claims covering software inventions, on the other hand, are typically drafted to recite the individual steps executed by a novel computer program.<sup>67</sup>

Courts and the USPTO have faced two difficulties in applying § 271(f) to software patents: First, whether software may be considered a “component” of a patented apparatus such that exporting the software falls under § 271(f).<sup>68</sup> Second, whether a patented process can have “components,” and thus whether a process patent can ever be within the purview of § 271(f).<sup>69</sup> On both questions the law has made at least one complete reversal and narrowed the scope of patent protection.<sup>70</sup>

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63. Compare *AT&T II*, 550 U.S. at 453 (holding that “the very components supplied from the United States, and not copies thereof, trigger § 271(f) liability when combined abroad to form the patented invention at issue,” thereby reversing *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366 (Fed. Cir. 2005) (*AT&T I*)), with *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1341 (Fed. Cir. 2005) (holding that “‘components,’ according to section 271(f)(1), includes software code on golden master disks”).

64. § 101 (Providing that patentable subject matters includes processes, machines, manufactures, and compositions of matter.). For a history of the early controversy surrounding the patentability of software inventions, see Frederick Kyle Longhofer, *Patentability of Computer Programs*, 34 BAYLOR L. REV. 125, 127–37 (1982).

65. JEFFREY G. SHELDON, HOW TO WRITE A PATENT APPLICATION § 14:14.2 (Practicing Law Institute, 2d ed. 2009) (describing five claim types: apparatus, method, software product, signal, and Beauregard).

66. *Id.* at § 14:14.2[A].

67. *Id.* at § 14:14.2[B].

68. See, e.g., *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1338 (Fed. Cir. 2005).

69. See, e.g., *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 425 F.3d 1366 (Fed. Cir. 2005).

70. See, e.g., *Cardiac Pacemakers*, 576 F.3d at 1365 (overruling *Union Carbide*, 425 F.3d 1366); *AT&T II*, 550 U.S. 437 (2007) (reversing *AT&T I*, 414 F.3d 1366).

I. *Eolas and AT&T I: Is Software a ‘Component’ of an Apparatus?*

Initially, courts unambiguously held that software was indeed a “component” for purposes of infringement under § 271(f).<sup>71</sup> *Imagexpo, L.L.C. v. Microsoft Corp.* involved allegations that Microsoft’s NetMeeting software infringed Imagexpo’s patent related to video and teleconferencing over the internet.<sup>72</sup> Microsoft typically exported its software programs on master disks that then served as templates for duplication. The copies thus made were what were ultimately installed and executed on computers. Relying on *Aerogroup*,<sup>73</sup> which held that § 271(f) did not apply to design patents, and *Enpat, Inc. v. Microsoft Corp.*,<sup>74</sup> which held that a method patents had no “components” for purposes of § 271(f), Microsoft argued that it should not be liable under § 271(f) for foreign software sales because software, like a patented design or process, is intangible and therefore cannot be a “component.”<sup>75</sup> Nevertheless the court concluded that the “‘golden master’ and the electronic codes supplied by Microsoft to its overseas representatives constitute[d] ‘components’ under 35 U.S.C. § 271(f),” and permitted Imagexpo to seek damages on units of NetMeeting made outside of the United States.<sup>76</sup> The jury eventually awarded Imagexpo \$62.3 million.<sup>77</sup>

a. *Eolas Technologies v. Microsoft Corp.*

The Federal Circuit quickly adopted *Imagexpo*’s holding in *Eolas Technologies v. Microsoft Corp.*<sup>78</sup> *Eolas* was an instructive and ground-breaking decision governing application of § 271(f) to software patents that relied on numerous authorities from diverse

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71. See generally *Imagexpo, L.L.C. v. Microsoft Corp.*, 299 F. Supp. 2d 550 (E.D. Va. 2003) (denying Microsoft’s motion *in limine* to bar Imagexpo from seeking damages on units of NetMeeting made outside the United States).

72. *Id.* at 551.

73. *Aerogroup Int’l*, 955 F. Supp. at 232, discussed *supra* at note 61.

74. *Enpat, Inc. v. Microsoft Corp.*, 6 F. Supp. 2d 537, 539 (E.D. Va. 1998) (holding that that “[w]hile it is true that any process involves the use of physical objects, this alone is not enough to bring a method patent within the purview of § 271(f), . . . We conclude that plaintiffs’ patent has no ‘components’ for purposes of § 271(f).”).

75. *Imagexpo*, 299 F. Supp. 2d at 552–53.

76. *Id.* at 553.

77. Susan Hansen, *Making Microsoft Pay: This Howrey Simon team won \$60 million from Microsoft in the Second largest IP verdict in 2003*, 4/1/04 IP L. & BUS. 26 (2004). In a post-verdict settlement, Microsoft agreed to pay \$60 million, but was permitted to continue selling NetMeeting.

78. *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Circ. 2005).

sources to support its decision.<sup>79</sup> Eolas alleged that Microsoft's Internet Explorer incorporated Eolas's invention for automatically invoking external applications to open objects embedded in a webpage.<sup>80</sup> The narrow issue before the Court was "whether software code made in the United States and exported abroad is a 'component of a patented invention' under section 271(f)."<sup>81</sup> However, the case involved both an apparatus claim and a process claim, and the Federal Circuit took the opportunity to issue a sweeping decision that broadly governed the application of § 271(f):

This statutory language did not limit section 271(f) to patented "machines" or patented "physical structures." Rather every form of invention eligible for patenting falls within the protection of section 271(f). By the same token, the statute did not limit section 271(f) to "machine" components or "structural or physical" components. Rather every component of every form of invention deserves the protection of section 271(f).<sup>82</sup>

Thus, the Federal Circuit unambiguously extended protections under §271(f) to process claims. In doing so, the Federal Circuit arguably ignored its previous ruling in *Standard Havens*,<sup>83</sup> which held that § 271(f) did not apply to process patents. Nevertheless, *Eolas* carried the day. Shortly after the Court's decision in *Eolas*, *AT&T I* (discussed in the next section) extended application of § 271(f) to software master disks that are duplicated overseas,<sup>84</sup> and *Union Carbide* (also discussed below) explicitly adopted the application of § 271(f) to process patents.<sup>85</sup>

b. *AT&T Corp. v. Microsoft Corp.*

*AT&T Corp. v. Microsoft Corp. (AT&T I)*,<sup>86</sup> applied § 271(f) not just to software disks exported for installation on computers abroad, but to "golden master" disks that were never themselves installed on

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79. Indeed, the Federal Circuit cited principles of statutory construction, legislative history, international treaty, its own precedent, and scholarly publications. See *id.* at 1339–40.

80. *Id.* at 1328.

81. *Id.* at 1338.

82. *Id.* at 1339.

83. *Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1374 (Fed. Cir. 1991), discussed *infra* in Section (II)(C)(2).

84. *AT&T I*, 414 F.3d at 1366.

85. *Union Carbide*, 425 F.3d at 1380.

86. *AT&T I*, 414 F.3d 1366.

computers, but rather were duplicated abroad. AT&T alleged that Microsoft's Windows operating system incorporated speech codecs<sup>87</sup> that infringed AT&T's patent.<sup>88</sup> The *AT&T I* court, in interpreting the word "supplies" in the statute,<sup>89</sup> held that "for software 'components,' the act of copying is subsumed in the act of 'supplying,' such that sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign made copies."<sup>90</sup> Judge Raders's dissent disputed the majority's merger of copying and supplying; however, the majority maintained that to do otherwise would "emasculate § 271(f) for software inventions."<sup>91</sup> In fact, the majority believed that even an electronic transmission of software could result in liability.<sup>92</sup>

## 2. Union Carbide: *Do processes have 'components'?*

Long before the dispute regarding Microsoft's golden master disks, the Federal Circuit initially ruled that process patents were outside the purview of § 271(f). *Standard Havens Prods., Inc. v. Gencor Indus., Inc.* held that § 271(f) was not implicated by a sale to a foreign customer of an apparatus – in this case a drum for making asphalt – even though the apparatus was specifically designed to perform the patented process.<sup>93</sup> That rule was followed by

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87. "Codec" is short for "coder / decoder," which is software that converts speech signal into a digital signal, and then converts it back such that it sounds like the original.

88. *AT&T I*, 414 F.3d at 1368.

89. § 271(f) ("Whoever without authority supplies or causes to be supplied . . .").

90. *AT&T I*, 414 F.3d at 1370.

91. *Id.* at 1370 n.2.

92. *Id.* at 1371 ("[W]hether software is sent abroad via electronic transmission or shipped abroad on a 'golden master' disk is a distinction without a difference for the purposes of § 271(f) liability. Liability under § 271(f) is not premised on the mode of exportation, but rather the fact of exportation."). Two years later, the Supreme Court reversed *AT&T I* in *AT&T II* (550 U.S. at 459, discussed in *infra* Section (III)(A)), but not before the Federal Circuit extended § 271(f) even further to include the exportation of unpatented components used to practice patented processes in *Union Carbide*, 425 F.3d at 1380.

93. *Standard Havens*, 953 F.2d at 1374.

subsequent district court cases<sup>94</sup> prior to being contradicted by the Federal Circuit decision in *Union Carbide v. Shell Oil*.<sup>95</sup>

a. *Union Carbide v. Shell Oil*

The Federal Circuit reversed course in 2005 and held that § 271(f) did indeed cover process patents.<sup>96</sup> *Union Carbide* involved an appeal over an accounting of damages for Shell's infringement of Union Carbide's patented process for producing ethylene oxide (a chemical used to make polyester) using improved catalysts.<sup>97</sup> The district court awarded damages for direct infringement based on Shell's use of the catalysts in making ethylene oxide, and indirect infringement based on sales of the catalysts to third parties.<sup>98</sup> The district court refused, however, to award damages for the exportation of the catalysts, ruling instead that § 271(f) damages were not available for process claims.<sup>99</sup>

The Federal Circuit reversed and held that a catalyst necessary for performing a patented process was a "component" of that process for purposes of § 271(f).<sup>100</sup> The ruling was based on its recent decision in *Eolas*,<sup>101</sup> which suggested that § 271(f) protection extended to any type of component, tangible or otherwise, of both machine and process patents.<sup>102</sup> As described above, *Eolas* concerned infringement of both process and product claims, so its extension of § 271(f) to process claims could have been considered dictum. *Union Carbide*, however, explicitly adopted the component-of-a-process rule, but

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94. *Enpat*, 6 F. Supp. 2d at 539 (holding that that "[w]hile it is true that any process involves the use of physical objects, this alone is not enough to bring a method patent within the purview of § 271(f). . . . We conclude that plaintiffs' patent has no 'components' for purposes of § 271(f)."); *Synaptic Pharm. Corp. v. MDS Panlabs, Inc.*, 265 F. Supp. 2d 452, 464 (D.N.J. 2002) (following the lead of other courts in holding that § 271(f) "does not protect against the foreign use of process patents.").

95. *Union Carbide*, 425 F.3d at 1380. The opposite results of these two cases are striking under Federal Circuit procedure. Decisions issued by three-judge panels constitute binding precedent on later three-judge panels unless and until the prior decision is overturned en banc. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563 (Fed. Cir. 1991); *Newell Cos. v. Kenney Manufacturing Co.*, 864 F.2d 757, 765 (Fed. Cir. 1988); *Jacobs Wind Electric Co. v. Florida Dept. of Transportation*, 919 F.2d 726, 728 (Fed. Cir. 1990).

96. *Id.*

97. *Id.* at 1369.

98. *Id.*

99. *Id.*

100. 425 F.3d at 1379.

101. Discussed *supra* in Section (II)(C)(1)(a).

102. *Union Carbide*, 425 F.3d at 1379.

surprisingly cited neither *Standard Havens* nor *Enpat*, cases that contradicted its central holding.<sup>103</sup>

3. *Controversy Immediately Followed Eolas, AT&T I, and Union Carbide*

Reactions to the *Eolas – AT&T I – Union Carbide* trilogy ranged from confusion<sup>104</sup> to contempt<sup>105</sup> to a call for the outright repeal of § 271(f).<sup>106</sup> Even within the Federal Circuit there seemed to be some disagreement as to the cross-border activities that could constitute infringement. Judge Rader, who expounded on the Manifest Destiny of § 271(f) in *Eolas*,<sup>107</sup> dissented in *AT&T I* on the grounds that Microsoft should only be held liable for each master disk exported, but not for the copies made overseas.<sup>108</sup> Some of this reaction may have stemmed from the immensity of the damages awarded in *Eolas*: \$521 million including \$333 million based on foreign sales, which at the time stood as the second largest monetary judgment ever rendered in a U.S. patent infringement suit.<sup>109</sup> However, within a matter of months Judge Rader broadened the sweep of § 271(f) once again in *Union Carbide*, and effectively doubled the damages by applying §271(f) in an extraterritorial manner.<sup>110</sup>

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103. *Id.*

104. Denise W. DeFranco & Adrienne N. Smith, *Technology and the Global Economy: Progress Challenges the Federal Circuit to Define the Extraterritorial Scope of U.S. Patent Law*, 34 AIPLA Q.J. 373, 397 (2006) (cataloging a list of unanswered questions regarding the extraterritorial application of § 271).

105. Harold C. Wegner, *Microsoft Extraterritoriality: “Mutiny . . . Heresy”*, 25 BIOTECH. L. REP. 659, 673 (2006) (“The judicial activism manifested in the *Eolas – AT&T – Carbide* trilogy has created an untenable situation of intra-circuit balkanization of case law – a case of ‘mutiny . . . heresy [and] illegal’ actions in disregard of controlling precedent.” (citing *Atlantic Thermoplastics Co., Inc. v. Faytex Corp.*, 974 F.2d 1279, 1281 (Fed. Cir. 1992) (Rich, J., dissenting from denial of reh’g en banc of panel opinion, 970 F.2d 834 (1992))).

106. James R. Farrand, *Territoriality and Incentives Under the Patent Laws: Overreaching Harms U.S. Economic and Technological Interests*, 21 BERKELEY TECH. L.J. 1215, 1291 (2006).

107. *Eolas*, 399 F.3d at 1339 (“[E]very component of every form of invention deserves the protection of section 271(f).”).

108. *AT&T I*, 414 F.3d at 1373 (Rader, J., dissenting) (“This court today determines that supplying a single ‘component’ of a patented invention from the United States gives rise to endless liability in the United States under § 271(f) for products manufactured entirely abroad.”).

109. Paul Morico & Thomas Morrow, *All Grown Up: a \$521 Million Verdict Signals Adulthood for Business Method and Software Patents*, IP LAW & BUSINESS Nov. 1, 2003, at 23.

110. See Farrand, *supra* note 106 at 1253.

Four of the Federal Circuit Judges dissented from the denial of rehearing en banc in *Union Carbide*, and three wrote a separate opinion.<sup>111</sup> The dissent argued that the majority decision in *Union Carbide* violated both the statutory scheme of § 271 and the court's own precedent. They noted that § 271(f) was based on § 271(c), which clearly distinguishes between "a component of a patented machine, manufacture, combination or composition" and a "material . . . for use in practicing a patented process."<sup>112</sup> Congress thus recognized the distinction and purposely limited the protection of § 271(f) to "components" in the § 271(c) sense; i.e., not materials for use in practicing a patented process.<sup>113</sup> The dissent also noted to no avail that the majority holding was directly contrary to *Standard Havens*.<sup>114</sup>

Scholars and practitioners did not respond positively to the Federal Circuit's *Union Carbide* decision. One professor believed that the Court's application of § 271(f) was inappropriate, and that the proper vehicle for protection of American patentees was strong enforcement of the World Trade Organization Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPs"),<sup>115</sup> whose purpose is to set minimum standards for patent protection and to ease the filing of patents in foreign countries.<sup>116</sup> He also pointed out that TRIPs does not mandate protection akin to the anomalous § 271(f) and that no other country has enacted such a provision.<sup>117</sup> Another prominent attorney called for repeal of § 271(f) altogether, citing its "perverse incentives" for outsourcing operations abroad, its discriminating effect on U.S. producers, and its inappropriateness in light of advances in international patent cooperation.<sup>118</sup>

Meanwhile, Microsoft petitioned the Supreme Court for a writ of certiorari, asking the Court to address the dual questions of

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111. *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 434 F.3d 1357, 1358 (Fed. Cir. 2006) (Lourie, J., joined by Michel, J. and Linn, J., dissenting from denial of reh'g en banc. Dyk, J., also dissented, but did not join the written dissent.).

112. *Id.*

113. *Id.*

114. *Id.* at 1359

115. Agreement on Trade-Related Aspects of Intellectual Property Rights, WTO, Apr. 15, 1994, 1994 WL 1711191. The TRIPs agreement is an international treaty among World Trade Organization nations for the promotion of international recognition of intellectual property rights and for combating international trade in counterfeit goods.

116. See Wegner, *supra* note 105 at 670.

117. *Id.* at 668.

118. See Farrand, *supra* note 106 at 1216-18.

“[w]hether digital software code . . . may be considered a ‘component[] of a patented invention’ within the meaning of Section 271(f)(1); and, if so, [w]hether copies of such a ‘component[]’ made in a foreign country are ‘supplie[d] . . . from the United States.’”<sup>119</sup> The Solicitor General of the United States submitted an amicus brief agreeing that the High Court should review this issue and supporting Microsoft’s petition.<sup>120</sup> The Solicitor General believed that, although software could be a component for purposes of § 271(f), liability should not extend to copies made overseas. In the Solicitor General’s view, such an application would “improperly extend[] United States patent law to foreign markets and put[] the United States software companies at a competitive disadvantage *vis-à-vis* their foreign competitors in foreign markets.”<sup>121</sup> The Supreme Court granted Microsoft’s petition and granted certiorari.<sup>122</sup>

### III. *AT&T II*, *Cardiac Pacemakers*, and the Limited Scope of Section 271(f)

#### A. *Microsoft Corp. v. AT&T Corp. (AT&T II)*

The Supreme Court carefully framed the two issues for resolution: “First, when, or in what form, does software qualify as a ‘component’ under § 271(f)?” Second, “[w]ere ‘components’ of the foreign-made computers involved in this case ‘supplie[d]’ by Microsoft ‘from the United States?’”<sup>123</sup> In other words, did the software supplied by Microsoft and loaded from a golden master disk to computers overseas constitute a “component” for purposes of § 271(f)? The Court further clarified the scope of its rulings by stating that it was not addressing “whether software in the abstract, or any other intangible, can *ever* be a component under § 271(f),”<sup>124</sup> or whether “a disk shipped from the United States, and used to install Windows directly on a foreign computer, would . . . give rise to liability under § 271(f) if the disk were removed after installation.”<sup>125</sup>

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119. Petition for Writ of Certiorari, *Microsoft Corp. v. AT&T Corp.*, 550 U.S. 437 (No. 05-1056).

120. Brief for the United States as Amicus Curiae Supporting Petitioners, *Microsoft Corp. v. AT&T Corp.*, No. 05-1056 (Sept. 29, 2006).

121. *Id.* at 7.

122. 549 U.S. 991 (2006).

123. *AT&T II*, 550 U.S. at 447–48.

124. *Id.* at 452 n.13.

125. *Id.* at 454 n.14.

Regarding the first question – when does software become a component – the Court looked to the text of § 271(f)(1), which applies to components that are combined to form the patented invention. The Court held that “[u]ntil [software] is expressed as a computer-readable ‘copy,’ e.g., on a CD-ROM, Windows software . . . remains uncombinable. . . . Abstract software code is an idea without physical embodiment, and as such, it does not match § 271(f)’s categorization: ‘components’ amenable to ‘combination.’”<sup>126</sup> The Court analogized software to a blueprint or a set of instructions, which are outside of the protection of § 271(f).<sup>127</sup> In another analogy, the Court stated that an unpatented machine for making patented sprockets would not be considered a “component” of the patented invention despite its ability to be shipped overseas and used to create thousands of the patented sprockets outside of the United States.<sup>128</sup> The Court thus held that “a copy of Windows, not Windows in the abstract, qualifies as a ‘component’ under § 271 (f).”<sup>129</sup>

The Court then addressed the next issue: whether components of the foreign-made computers alleged to infringe AT&T’s patent were “supplied” from the United States. The Court disagreed with the Federal Circuit’s conclusion that “for software ‘components,’ the act of copying is subsumed in the act of ‘supplying.’”<sup>130</sup> Citing the text of the statute, the Court held that “components supplied from the United States, and not copies thereof, trigger § 271(f) liability when combined abroad to form the patented invention at issue.”<sup>131</sup> The Court bolstered its holding by citing the presumption against territoriality: “[a]ny doubt that Microsoft’s conduct falls outside § 271(f)’s compass would be resolved by the presumption against extraterritoriality, . . .”<sup>132</sup>

The ultimate result was that Microsoft was neither liable for shipping its golden master disk abroad, nor for the computers running copies of Windows that were installed from copies of those disks abroad. The Court did not, however, answer whether disks shipped abroad and directly installed on computers to form the patented

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126. *Id.* at 449.

127. *Id.* at 450 (citing *Pellegrini, Inc.*, 375 F.3d at 1117–19 (transmission abroad of instructions for production of patented computer chips not covered by § 271(f))).

128. 550 U.S. at 451.

129. *Id.* at 451–52.

130. *Id.* at 452 (citing *AT&TI*, 414 F.3d at 1370).

131. *Id.* at 453.

132. *Id.* at 454.

invention would constitute infringement, although Justice Alito opined in his concurrence that § 271(f) would not apply unless a disk originating in the United States were permanently installed in a computer.<sup>133</sup> The Court also declined to answer whether or not an intangible invention such as a process could have intangible “components” for purposes of § 271(f).<sup>134</sup>

### 1. Justice Stevens’ Dissent in AT&T II

Justice Stevens, the lone dissenting vote, believed that affirming “the Court of Appeals judgment [was] more faithful to the intent of the Congress that enacted § 271(f) . . . .”<sup>135</sup> He reasoned that the “sole intended use” of the software, like the machine in *Deepsouth*, was an infringing use.<sup>136</sup> He was also dubious of the proposition that, while a disk could be a component, the most important part of that disk – namely the software code it contains – could not.<sup>137</sup> He further analogized between sheet music and the roller of a player piano, noting that unlike a set of instructions the “software actually cause[d] infringing conduct to occur.”<sup>138</sup>

Justice Stevens reached the opposite conclusion from the majority because he began his analysis from a different perspective. The majority examined the statutory language and legislative context and found that they did not speak directly to the facts of the case because the items that were combined abroad to form the patented invention were merely copies of the exported items and not the exported items themselves. The majority thus resolved the matter by relying upon the presumption against extraterritorial application of domestic patent laws.<sup>139</sup> The dissent, on the other hand, looked to the criticism of the *Deepsouth* decision that motivated Congress to pass of § 271(f), and recognized that Microsoft’s position was equivalent even though it was technically distinguishable.<sup>140</sup> After all, Microsoft was an American company capitalizing on a highly-educated American

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133. 550 U.S. at 462 (Alito, J., concurring) (“[I]f these computers could not run Windows without inserting and keeping a CD-ROM in the appropriate drive, then the CD-ROMs might be components of the computer. But that is not the case here.”).

134. *Id.* at 452 n.13.

135. *Id.* at 462 (Stevens, J., dissenting).

136. *Id.* at 463–64.

137. *Id.*

138. 550 U.S. at 464 (Stevens, J., dissenting).

139. *AT&T II*, 550 U.S. at 454 (majority opinion).

140. *Id.* at 463 (Stevens, J., dissenting).

workforce to create an infringing product that was sold abroad with profits returned to America. Furthermore, the Court's characteristically narrow reading of the issues left plenty of room for other software manufacturers to avoid liability by performing an insubstantial duplication step abroad. Indeed, the result of the majority opinion duplicated the result of the controversial *Deepsouth* decision decades earlier: infringement could easily be avoided by offshoring an insignificant final step in the creation of the infringing products.<sup>141</sup> The ultimate result is that patented software, the driving force of much of the U.S. economy, receives very little protection in the United States from unauthorized exportation.<sup>142</sup>

### **B. *Cardiac Pacemakers v. St. Jude***

*AT&T II* explicitly declined to rule regarding the applicability of § 271(f) to process patents, but the Federal Circuit took their cue and revisited *Union Carbide*,<sup>143</sup> which previously held that process patents could have “components” for purposes of § 271(f). In *Cardiac Pacemakers*, the en banc Federal Circuit faced the question of whether exportation of an apparatus, in this case an implantable cardioverter defibrillator (“ICD”), designed to perform a patented process constituted infringement under § 271(f).<sup>144</sup> The en banc Court overruled *Union Carbide* and held that § 271(f) protection simply did not apply to process patents.<sup>145</sup>

The Court based its ruling on a distinction between a “component” of a tangible invention as opposed to a “component” of an intangible invention. “A component of a tangible product, device, or apparatus is a tangible part of the product, device, or apparatus, whereas a component of a method or process is a step in that method or process.”<sup>146</sup> In other words, *Cardiac Pacemakers*' patented process could have no physical components, and *St. Jude Medical*'s ICD could not constitute a component of the *Cardiac Pacemakers* patent.

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141. See Mary LaFrance, *LaFrance on Software as a Component of a Patented Invention under Section 271(f)*, *Emerging Issues in Copyright* (Mathew Bender & Company, Inc., 2008) (“As a result of this ruling, infringement liability for supplying software for overseas use in a patented combination can easily be avoided if the actual copies of the software used in the combination are made overseas, even if they are copied from a master copy that was supplied from the United States.”).

142. *Id.*

143. *Union Carbide*, 425 F.3d 1366.

144. *Cardiac Pacemakers*, 576 F.3d at 1359.

145. *Id.* at 1365.

146. *Id.* at 1362.

Consequently, exportation of the ICD could not trigger liability under § 271(f). This was in stark contrast to the reasoning in *Union Carbide*, which held that a catalyst required to practice the process patent *was* a “component” of that process.<sup>147</sup>

*Cardiac Pacemakers* next addressed the term “supply” as it appears in the statute and held that in its ordinary meaning refers to the “transfer of a physical object[]” and that “[s]upplying an intangible step is thus a physical impossibility.”<sup>148</sup> Based on its definitions of the words “component” and “supplies” in the statute, the Court held that “Section 271(f) does not apply to method patents.”<sup>149</sup>

Judge Newman, the lone dissenting vote of the 12-judge panel, felt that the term “patented invention” as it is used in § 271(f) should be given its ordinary meaning and the meaning ascribed to it in every other section of Title 35, which would necessarily include process patents.<sup>150</sup> Judge Newman also surveyed multiple bills that were introduced to rectify the *Deepsouth* loophole before the final version of § 271(f) was adopted. She noted that early bills included specific language limiting the proposed provision to “components of a patented machine, manufacture, or composition of matter,” but that the specific language was later removed and replaced with the broadly encompassing term “patented invention.”<sup>151</sup> Thus, in her view, Congressional intent to include process patents in the protection afforded by § 271(f) was clear.<sup>152</sup>

*Cardiac Pacemakers* represented a dramatic reversal from prior Federal Circuit precedent regarding the possible application of § 271(f) to process patents. The en banc *Cardiac Pacemakers* decision vacated the prior panel decision<sup>153</sup> and reached the opposite conclusion and, perhaps surprisingly, Judge Lourie authored both

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147. *Union Carbide*, 434 F.3d at 1380.

148. *Cardiac Pacemakers*, 576 F.3d at 1364.

149. *Id.* at 1366.

150. *Id.* at 1367 (Newman, J., dissenting).

151. *Id.* at 1370.

152. *Id.* at 1369–1370.

153. *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 303 Fed. Appx. 884 (Fed. Cir. 2008) (holding that § 271(f) applied to process patent claims for purposes of calculating damages for infringement. The panel found that *Union Carbide* governed, and that *AT&T II* did not compel a different result).

decisions.<sup>154</sup> The en banc decision also overruled *Eolas* and *Union Carbide*.<sup>155</sup>

There seemed to be little controversy within the Federal Circuit prior to the en banc decision. Indeed, there were no dissenting opinions in either *Eolas* or *Union Carbide*, and three of the five circuit judges who took part in those prior decisions joined the majority *Cardiac Pacemakers* opinion; the other two took no part in deciding *Cardiac Pacemakers*.<sup>156</sup> Moreover, the result of *Cardiac Pacemakers* was not clearly required under *AT&T II*, which expressly refrained from deciding whether an intangible process qualifies as a “patented invention” under § 271(f).<sup>157</sup>

There was, however, significant scholarly criticism of the Federal Circuit decisions as described previously<sup>158</sup> as well as strong amicus curiae support for the Federal Circuit’s change in course.<sup>159</sup> The Federal Circuit Bar Association and the American Intellectual Property Law Association jointly submitted a brief arguing four points against applying § 271(f) to method claims. First, the statutory language was inconsistent with any reading that encompasses method claims.<sup>160</sup> Second, these amici argued that *Standard Havens* was correctly decided, that no reported decision disagreed with its holding, and that leading patent scholars had considered the issue settled.<sup>161</sup> Third, *Union Carbide* erroneously ignored controlling precedent *sub silencio*.<sup>162</sup> Finally, the change of law resulting from

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154. *Id.* at 893.

155. *Cardiac Pacemakers*, 576 F.3d at 1365.

156. *Eolas*, 399 F.3d 1325 (heard before Rader, J., Friedman, J., and Plager, J.); *Union Carbide*, 425 F.3d 1366 (heard before Mayer, J., Rader, J., and Prost, J.); *Cardiac Pacemakers*, 576 F.3d 1348 (part C.2 regarding application of § 271(f) heard before Michel, J., Newman, J., Mayer, J., Lourie, J., Rader, J., Schall, J., Bryson, J., Gajarsa, J., Linn, J., Dyk, J., Prost, J., and Moor, J.).

157. *Cardiac Pacemakers*, 576 F.3d at 1365; 550 U.S. at 452 n.13.

158. *See supra* Section (II)(C)(3).

159. *See Cardiac Pacemakers*, 576 F.3d at 1363 n.4 (noting that of all the amicus briefs received, all but one supported the conclusion that § 271(f) does not apply to method patents).

160. Brief for the Fed. Circuit Bar Ass’n and Am. Intellectual Prop. Law Ass’n as Amici Curiae Supporting Cross-Appellants, *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, Nos. 2007-1296, 2007-1347 at 5 (April 15, 2009).

161. *Id.* at 17 (citing Mark A. Lemley et al., *Divided Infringement Claims*, 6 *Sedona Conf. J.* 117, 121 (2005); Donald S. Chisum, *Normative and Empirical Territoriality in Intellectual Property: Lessons from Patent Law*, 37 *Va. J. Int’l L.* 603, 607 (1997)).

162. *Id.* at 19 (citing *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 765 (Fed. Cir. 1988) (stating that prior panel decisions govern later panel decisions until overturned en banc)).

*Union Carbide* carried a risk of hurting American economic interests because it will force America's high technology innovators to move R&D and manufacturing facilities overseas to avoid increased liability, with a resulting decrease in domestic investment in research, manufacturing, and distribution.<sup>163</sup>

The threat to American economic interests was further illustrated by the signatories of the Cisco Systems amicus brief who represented some of the largest software and computer companies in America.<sup>164</sup> The brief urged reversal of the Federal Circuit's application of § 271(f) to process patents, arguing that there was a risk of negative economic impact from disrupting the settled expectation of the amici and the public at large.<sup>165</sup> Specifically, they noted that it is a common business arrangement for American companies to export instructions, materials, recipes, and other knowledge-exports to off-shore locations where manufacturing takes place.<sup>166</sup> An overbroad interpretation of § 271(f) to include process patents would create potential worldwide infringement allegations for companies based in the United States that export anything that could be considered a process step or that could be configured to perform a process abroad, while their foreign competitors faced no such threat.<sup>167</sup> Cisco Systems further argued that the presumption against extraterritoriality militated against interpreting § 271(f) to encompass process claims.<sup>168</sup>

A third amicus brief submitted by Research in Motion argued similar points and added that the proper vehicle for preventing use of a patented invention abroad is foreign patents or, failing that, asking Congress to amend the patent laws.<sup>169</sup>

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163. *Id.* at 24.

164. Intel Corp., Apple Inc., Oracle Corp., Microsoft Corp., and Symantec Corp. all joined in Cisco's *amici* filing. Brief for Cisco Sys., Inc., et al. as Amici Curiae Supporting Cross-Appellants, *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, Nos. 2007-1296, 2007-1347 at 8–11 (April 15, 2009).

165. *Id.* at 8, n.1.

166. *Id.* at 8.

167. *Id.*

168. Intel Corp., Apple Inc., Oracle Corp., Microsoft Corp., and Symantec Corp. all joined in Cisco's *amici* filing. Brief for Cisco Sys., Inc., et al. as Amici Curiae Supporting Cross-Appellants, *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, Nos. 2007-1296, 2007-1347 at 3–7.

169. Brief for Research in Motion, Ltd. as Amici Curiae Supporting Cross-Appellants, *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, Nos. 2007-1296, 2007-1347 at 10–15 (April 15, 2009).

### C. Common Themes

The differences of opinion regarding application of § 271(f) to software and process patents can be explained at least in part by the ambiguity in the statutory language and the difficulty of applying the provision to software patents, which did not become common until after passage of the provision. When Congress passed § 271(f), process patents were well-established,<sup>170</sup> but the provision did not expressly address them or describe how their protection was to be interpreted. The judicial determination whether to include process patents in the scope of protection under §271(f) has followed from Court's evolving interpretation of the statutory language and the legislative history.<sup>171</sup> With the advent of software patents, courts were forced to grapple with yet more difficult issues regarding the statute and the extent of its extra-territorial application. Such issues were particularly complex in the software field since the novel elements of the claims were intangible.

One of the guiding principles in construing §271(f) and its application to software patents has been the well-settled presumption against extraterritoriality. That presumption, simply stated, is that Congress's law-making authority is limited to the United States and its territories, thus extending United States laws to cover acts occurring in foreign nations has the potential to offend the sovereignty of those nations. Therefore, unless a statute states so explicitly, it is presumed that Congress did not intend for it to apply to acts abroad.<sup>172</sup>

#### 1. Section 271(f): Statutory Interpretation and Legislative Intent

Section 271(f) was born from the Supreme Court's much-criticized statutory interpretation of the basic scope of U.S. patent law in the infamous *Deepsouth* case. *Deepsouth* held that "making" and "selling" within the United States applied only to a complete, operable assembly, and not to a substantial assembly that could be

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170. Indeed, 35 U.S.C. § 101 had long defined patentable subject matter to include processes.

171. Compare *Union Carbide*, 425 F.3d at 1380, with *Cardiac Pacemakers*, 576 F.3d at 1365 (reasoning that "method patents do have 'components,' viz., the steps that comprise the method, . . . but the steps are not the physical components used in performance of the method." And that "Section 271(f) further requires that those components be 'supplied.'" But that "[s]upplying an intangible step is . . . a physical impossibility," thus, "Section 271(f) does not apply to method patents.").

172. Curtis A. Bradley, *Territorial Intellectual Property Rights in an Age of Globalism*, 37 Va. J. Int'l L. 505, 510-11 (1997).

easily completed abroad.<sup>173</sup> This decision permitted companies to circumvent the protection afforded by combination patents by offshoring insignificant assembly steps.<sup>174</sup> Congress passed § 271(f) in direct response to *Deepsouth* to make exportation of a substantial assembly, or of merely a key component that has no substantial non-infringing use, an infringing act.<sup>175</sup> Courts had no difficulty applying the new provision until faced with the issues of whether “patented invention” included processes, and whether software, in the abstract or on a disk, could be a “component.”<sup>176</sup>

Patented processes were initially held to be outside of the purview of § 271(f) by *Standard Havens*.<sup>177</sup> If there was any detailed statutory interpretation supporting that decision, the court made no mention of it in its brief discussion. The court summarily dismissed the application of § 271(f) to the sale abroad of an unpatented machine whose sole use was performing a patented method.<sup>178</sup> *Union Carbide* reached the opposite conclusion from *Standard Havens*, based in part on the holdings of two intervening cases, *Eolas* and *AT&T I*. *Union Carbide* interpreted the terms “component” and “patented invention” in § 271(f) to have broad meaning that included process patents and physical items used in performing those processes.<sup>179</sup> *Union Carbide* was then contradicted by *Cardiac Pacemakers*, which held that the term “components” in the context of a process patent meant “the steps that comprise the method,”<sup>180</sup> and that “steps are not the physical components used in performance of the method.”<sup>181</sup> The court then interpreted the statutory term “supplied” and found that “[s]upplying an intangible step is thus a

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173. *Deepsouth*, 406 U.S. at 532.

174. *Id.* at 533 (Blackmun, J. dissenting); Kerr, *supra* note 41 at 920–21.

175. H.R. 6286, 98th Cong. § 101 (1984).

176. See, e.g., *Smith Int'l*, 229 U.S.P.Q. 81 (applying § 271(f) to a patent for drill bits for oil exploration); *W.R. Grace & Co. v. Interact, Inc.*, 60 F. Supp. 2d at 320 (“There is no limitation in the statute excluding protection for chemical composition inventions.”); *Aerogroup*, 955 F. Supp at 232 (holding that the language of § 271(f)(1) “by its terms does not apply to the patent at issue here, which has no ‘component parts’ but is rather a design patent for a shoe sole.”).

177. *Standard Havens*, 953 F.2d at 1374.

178. *Id.*

179. *Union Carbide*, 425 F.3d at 1380.

180. *Cardiac Pacemakers*, 576 F.3d at 1363.

181. *Id.* at 1364.

physical impossibility, . . .”<sup>182</sup> Through this interpretation the court completely removed process patents from the protection of § 271(f).

*Cardiac Pacemakers* went further, however, and compared § 271(f) to § 271(c), after which § 271(f)(2) was modeled. Section 271(c) distinguishes between a “component of a patented machine, manufacture, combination, or composition” and a “material or apparatus for use in practicing a patented process.”<sup>183</sup> The court interpreted this distinction as a reflection of Congressional recognition of the difference between machines and methods and Congress’s choice not to include methods within the protections of § 271(f).<sup>184</sup> Finally, the court turned to Congressional intent in passing the statute, noting that it was passed with the purpose of closing the *Deepsouth* loophole, which involved only an apparatus patent, and that the legislative history simply made no reference to process patents.<sup>185</sup>

The application of § 271(f) to software inventions similarly rested on courts’ interpretation of the terms “component,” “supplied,” and “patented invention.” *Imagexpo*, the first case to deal with the issue of whether a software disk was a “component” for purposes of § 271(f) held that it was.<sup>186</sup> The court agreed with the plaintiff’s position that the golden master disk “actually involves an information- or code-base which becomes an integral ingredient in the finished computer product. . . . [T]he functional nucleus of the finished computer product is driven by the code, which is transmitted through the ‘golden master.’”<sup>187</sup>

*Eolas* went even further. *Eolas* held that § 271(f) used the “broad and inclusive” term “patented invention,” which, as defined by § 101 included “any new and useful process, machine, manufacture or composition of matter.”<sup>188</sup> The court found that without the software code, “the invention would not work and thus would not even qualify as new and ‘useful.’” Thus, the software code on the golden master disk is not only a component, it is probably the key part of this patented invention.”<sup>189</sup> Finally, the court cited the

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182. *Id.*

183. *Id.* at 1363.

184. *Id.* at 1363–64.

185. *Id.*

186. 299 F. Supp. 2d at 553.

187. *Id.*

188. 399 F.3d at 1338–39.

189. *Id.* at 1339.

legislative history of § 271(f) and found nothing in the record indicating the statute was limited to physical components.<sup>190</sup>

Of course *Eolas* was mostly overruled by *AT&T II*, which held that only an installable copy of software (but not a master disk) could be a “component,” and that only installable copies could be “supplied” from the United States.<sup>191</sup> The *AT&T II* Court held that abstract software code was “an idea without physical embodiment, and as such, it does not match § 271(f)’s categorization: ‘components’ amenable to ‘combination.’”<sup>192</sup> However, the decision stopped short of the formalistic interpretation found in Justice Alito’s concurrence, which suggested a software disk could *only* qualify as a component if the disk were required to remain installed in the computer for the computer to perform the patented function.<sup>193</sup>

The Court similarly believed that only the software disk intended for installation onto a computer, and not a master disk, could be “supplied” from the United States.<sup>194</sup> *AT&T II* also considered the purpose of the statute, and although recognizing that technological progress had led to a new “gap” in patent protection, the majority believed any adjustment to the scope of patent protection “should be made after focused legislative consideration, and not by the Judiciary forecasting Congress’ likely disposition.”<sup>195</sup>

Following these decisions, § 271(f), which does not on its face distinguish between process and device patents, or by component types, is nevertheless applied differently depending on the technological field at issue. Such differing treatment appears to be at odds with the international agreements governing patent protection. For example, the TRIPs Agreement adopted by the United States in 1994 sets minimum standards for intellectual property protection among member nations.<sup>196</sup> TRIPs states that “patents shall be available for any inventions, whether products or processes, in all fields of technology, . . .”<sup>197</sup>

This narrow view of the protection afforded by § 271(f) also appears inconsistent with the recent Supreme Court decision *Quanta*

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190. *Id.* at 1340.

191. 550 U.S. at 451–53.

192. *Id.* at 449.

193. *Id.* at 462 (Alito, J., concurring).

194. *Id.* at 454 (majority opinion).

195. *Id.* at 458–59.

196. See Wegner, *supra* note 105 at 667.

197. TRIPs Art. 27(1).

*Computer, Inc. v. LG Electronics, Inc.*<sup>198</sup> In *Quanta*, the Supreme Court explained in the context of the patent exhaustion doctrine<sup>199</sup> that “methods . . . may be embodied in a product” and that “precedent[] do[es] not differentiate transactions involving embodiments of patented methods or processes from those involving patented apparatuses or materials.”<sup>200</sup> However, this is precisely the result of *AT&T II* and *Cardiac Pacemakers*. *Quanta* further explained why inconsistent application of the law to apparatus and process patents would result in the circumvention of the patent exhaustion doctrine for nearly any patented item through the artifice of clever patent drafting.<sup>201</sup>

The combined holdings of *AT&T II* and *Cardiac Pacemakers* arguably allow for a similar loophole: to avoid infringing a software patent under § 271(f), a party appears to have the opportunity to simply undertake a business practice in which software code, in whatever medium transmitted, is copied to another medium prior to installation or execution.<sup>202</sup> As far as process patents are concerned, no special action is required since process patents are not protected by § 271(f).<sup>203</sup> The facts of *Quanta* did not involve foreign use,

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198. *Quanta Computer, Inc. v. LG Electronics, Inc.*, 128 S.Ct. 2109, 2117 (2008).

199. The patent exhaustion doctrine, also called the first sale doctrine, “provides that the initial authorized sale of a patented item terminates all patent rights to that item.” *Quanta*, 128 S.Ct. at 2115. In other words, once a patented article has been sold, the patentee has reaped the benefit of his or her exclusive right, which is thus exhausted; the patentee has no further rights against a subsequent third party’s ownership or use of the article.

200. *Quanta*, 128 S.Ct. at 2117. *But see* *NTP, Inc. v. Research In Motion, LTD.*, 418 F.3d 1282 (Fed. Cir. 2005) (holding that a patent directed to a communication system could be infringed in the United States even though an element of that system was in Canada; but holding simultaneously that a process patent could not be infringed in the United States if a step of that method was performed abroad.)

201. *Id.* at 2118 (“By characterizing their claims as method instead of apparatus claims, or including a method claim for the machine’s patented method of performing its task, a patent drafter could shield practically any patented item from exhaustion.”).

202. *AT&T II*, 550 U.S. at 453 (“[T]he very components supplied from the United States, and not copies thereof, trigger § 271(f) liability when combined abroad to form the patented invention at issue.”). *See also* LaFrance, *supra* note 141 (“As a result of [*AT&T II*], infringement liability for supplying software for overseas use in a patented combination can easily be avoided if the actual copies of the software used in the combination are made overseas, even if they are copied from a master copy that was supplied from the United States.”).

203. *Cardiac Pacemakers*, 576 F.3d at 1365. *See also* *Ricoh Co., Ltd. v. Quanta Computer Inc.*, 550 F.3d 1325, 1335 (Fed. Cir. 2008) (holding that “a party that sells or offers to sell software containing instructions to perform a patented method does not infringe the patent under § 271(a).”).

however, so despite *Quanta*'s holding that patented apparatuses and processes are equal under the principle of exhaustion, the Court viewed the presumption against extraterritorial application of American laws as overriding.<sup>204</sup>

## 2. *The Presumption Against Extraterritoriality*

When courts are unsure of whether Congress intended for a statute to govern acts occurring abroad, they apply a presumption against extraterritorial effect.<sup>205</sup> This presumption is long-established and has been recognized in the application of patent laws since the mid 19th century.<sup>206</sup>

There are two important justifications for the presumption against extraterritorial application of U.S. laws: The first is comity; i.e., the mutual respect for the sovereignty and laws of other countries.<sup>207</sup> The second is separation of powers.<sup>208</sup> Extension by the judiciary of U.S. laws to acts occurring in foreign countries interferes with the political branches' prerogative to reach international agreements for the protection of intellectual property.<sup>209</sup>

The presumption against extraterritoriality is so strong that it can be invoked like a trump card to resolve any controversy in the application of a statute.<sup>210</sup> The problem with applying the presumption in the case of § 271(f), however, is that § 271(f) was drafted

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204. *Cardiac Pacemakers*, 576 F.3d at 1365.

205. *Foley Bros., Inc., v. Filardo*, 336 U.S. 281, 285 (1949).

206. *Brown v. Duchesne*, 60 U.S. 183, 195 (1857).

207. See Farrand, *supra* note 106 at 1221. See *Hilton v. Guyot*, 159 U.S. 113, 163–64 (1895) (“‘Comity,’ in the legal sense, is neither a matter of absolute obligation, on the one hand, nor of mere courtesy and good will, upon the other. But it is the recognition which one nation allows within its territory to the legislative, executive or judicial acts of another nation, having due regard both to international duty and convenience, and to the rights of its own citizens, or of other persons who are under the protection of its laws.”). See generally Robert A. McFarlane, *The Effect of International Comity on the Application of the Attorney-Client Privilege and Foreign Privilege Laws in U.S. Patent Litigation*, 23 SANTA CLARA COMPUTER & HIGH TECH. L.J., 667 (2007) (reviewing application of comity principles to additional issues in patent litigation).

208. Bradley, *supra* note 172 at 562.

209. *Id.*

210. See, e.g., *AT&T II*, 550 U.S. at 454 (Any doubt that Microsoft's conduct falls outside § 271(f)'s compass would be resolved by the presumption against extraterritoriality, . . .); *Deepsouth*, 406 U.S. at 531 (“Our patent system makes no claim to extraterritorial effect; . . .”); *Brown*, 60 U.S. at 195 (“[T]hese acts of Congress do not, and were not intended to, operate beyond the limits of the United States.”); *Cardiac Pacemakers*, 576 F.3d at 1365 (“Any ambiguity as to Congress's intent in enacting Section 271(f) is further resolved by the presumption against extra-territoriality.”).

with extraterritorial application specifically in mind; namely, it was drafted to capture acts of infringement that the Supreme Court felt were outside of the territorial purview of §§ 271(a), (b), and (c).<sup>211</sup> In *Deepsouth*, applying the presumption seemed appropriate: an infringing product never existed in the United States. Cases construing § 271(f), however, arguably have a weaker legal foundation. To be clear, the question is *not* whether to apply § 271(f) to acts occurring abroad – that is its *only* application; nor has the issue been the substantiality of the domestic acts, i.e., how much or how little domestic activity satisfies § 271(f). Rather, a central issue has been whether to apply § 271(f) differently to patented inventions of different types, namely process and device patents.<sup>212</sup> In other words, the presumption against extraterritoriality has been used to justify granting or withholding the protections of a statute with intended extraterritorial effect based on the nature of the underlying invention. Such distinctions invite exactly the type of gaming feared by Justice Thomas in *Quanta*.<sup>213</sup> But perhaps the real purpose of these rulings was to limit, as has been suggested, the application of § 271(f) as much as possible.<sup>214</sup>

#### IV. Implications and Suggestions

##### A. Different Protections for Tangible and Intangible Inventions

The most striking result of *AT&T II* and *Cardiac Pacemakers* is the significant limitation of the protections available to software inventions under § 271(f). While *AT&T II* does not completely preclude liability under § 271(f) for software inventions patented as apparatuses, the precautions necessary to avoid infringement liability may be trivial. It seems that a would-be infringer need only transmit the software electronically or duplicate it abroad to be installed on individual computers. *Cardiac Pacemakers* arguably precludes

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211. See H.R. 6286, 98th Cong. § 101 (1984).

212. See, e.g., *AT&T II*, 550 U.S. 437; *Cardiac Pacemakers*, 576 F.3d 1348.

213. *Quanta*, 128 S.Ct. at 2117–18 (“By characterizing their claims as method instead of apparatus claims, or including a method claim for the machine’s patented method of performing its task, a patent drafter could shield practically any patented item from exhaustion.”).

214. Farrand, *supra* note 106 at 1291.

liability for software inventions patented as processes, as well as any other process invention.<sup>215</sup>

The resulting situation is one strikingly similar to that following the *Deepsouth* decision: An American competitor can find a commercially successful software product, recreate the software from the patent disclosure using an educated American workforce working in the United States, and sell the software in countries where a patent has not been filed or is not worth pursuing. The economic significance of this state of affairs is evidenced by the enormous damages ruling in *Eolas*: a total of \$521 million, \$333 million of which were based on foreign sales.<sup>216</sup>

## **B. Should § 271 be Amended?**

The judicial controversy surrounding the appropriate application of § 271(f) and the high stakes involved in the software export market give rise to an obvious question: should Congress amend § 271? Further, if a Congressional response is appropriate, what should that response be? If Congress feels that an inequitable gap similar to the one created by *Deepsouth* now exists with respect to software inventions, they could add a provision that would extend protection to software inventions similar to that granted to other patents by § 271(f). The alternative would be to repeal § 271(f) to eliminate the special protection given to machine patents and balance the protections afforded to tangible and intangible inventions.<sup>217</sup>

### *1. Should Congress Add a Provision to § 271 to Extend Protection to Software?*

The state of the law following *AT&T II* and *Cardiac Pacemakers* is similar to the state of the law after *Deepsouth*: the courts have left an opening in the patent law for American companies to profit by copying the patented products of other American companies and selling them abroad. There is one difference, however. Ratification of the TRIPs agreement, which sets forth standards for minimum patent protection in member countries, has led to the creation of patent protection in foreign countries that was not available at the

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215. See *Cardiac Pacemakers*, 576 F.3d at 1365 (“Section 271(f) does not apply to method patents.”); and Sheldon, *supra* note 65 at § 14:14.2[B] (describing the format for claiming software inventions using process claims).

216. See Morico, *supra* note 109 at 23.

217. See Farrand, *supra* note 106 at 1215.

time of *Deepsouth*.<sup>218</sup> For example, with regard to patented products, TRIPs states that member nations must “prevent third parties not having the owner’s consent from the acts of: making, using, offering for sale, selling, or importing for these purposes that product;”<sup>219</sup> and, for patented processes, “prevent third parties not having the owner’s consent from the act of using the process, and from the acts of: using, offering for sale, selling, or importing for these purposes at least the product obtained directly by that process.”<sup>220</sup> Nevertheless, in scenarios like the ones leading up to *AT&T II* and *Cardiac Pacemakers*, an American patentee wishing to enforce its patents against an American competitor may be forced to bring legal action in a foreign court, and quite possibly many foreign courts.<sup>221</sup>

Congress could close this gap by amending § 271(f) to replace the broad but ambiguous phrase “patented invention” with the equally broad but more explicit language from § 271(c): “patented machine, manufacture, combination, or composition, or a material or apparatus for use in practicing a patented process.” In addition, language could be added to extend the language in § 271(f)(2) that protects a component “that is especially made or especially adapted for use in the invention” to include not just a computer disk containing software code, but the software code itself, which Justice Stevens’ referred to as “the most important ingredient of that component.”<sup>222</sup> Based on industry opposition to expanding the protections of § 271(f),<sup>223</sup>

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218. See Wegner, *supra* note 105 at 667.

219. TRIPs Art. 28 (1)(a) (footnote omitted).

220. *Id.* at § (1)(b).

221. While the TRIPs agreement calls for restrictions on unauthorized *importation* of patented products or the products of patent processes, TRIPs does not require any restrictions on *exportation*. See TRIPs Art. 28.

222. *AT&T II*, 550 U.S. at 464 (Stevens, J., dissenting).

223. See, e.g., Brief for Cisco Sys., Inc., et al. as Amici Curiae Supporting Cross-Appellants, *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, Nos. 2007-1296, 2007-1347 at 1-3 (April 15, 2009) (arguing that applying § 271(f) to process inventions would create worldwide infringement liability for U.S. companies who export anything that could properly be considered a process step or something that could be configured to perform processes abroad, while foreign competitors face no such liability); Brief for the Business Software Alliance as Amici Curiae Supporting Petitioner, *Microsoft Corp. v. AT&T Corp.*, No. 05-1056 at 5 (Dec 15, 2006) (arguing that the indefinite liability under an interpretation of § 271(f) that includes software puts American inventors at a disadvantage relative to foreign inventors); Brief for the Software and Information Indus. Ass’n. as Amicus Curiae Supporting Petitioner, *Microsoft Corp. v. AT&T Corp.*, No. 05-1056 at (Dec 15, 2006) (stating that the decision of the Federal Circuit to apply 271(f) to software master disks upset investments and plans made in reasonable reliance on previously settled law that limited extraterritorial application of United States Patent law to the narrow exception created by § 271(f)).

however, expanding the application of § 271(f) to include software seems unlikely.

## 2. *Should Congress Repeal § 271(f)?*

If consistency in protection across different patent categories and technologies is desired, an alternative to amending § 271(f) is to repeal it altogether.<sup>224</sup> While one could say that § 271(f) prevents inequitable conduct by American companies, the provision arguably disadvantages American companies because it does not and cannot prevent the same conduct on the part of foreign companies.<sup>225</sup> Furthermore, since the passage of § 271(f) in 1984, an arguably better vehicle for the protection of intellectual property abroad is strong enforcement of the TRIPs agreement.<sup>226</sup>

Since any legislative action would be driven by its intended beneficiaries, it is important to gauge the effect of any proposed amendment on American technology companies. Based on the amicus briefs filed in the *Cardiac Pacemakers* and *AT&T II* cases, American software companies and high-tech manufacturers seem to oppose expansion of § 271(f).<sup>227</sup> Indeed, all but one amicus brief filed in *Cardiac Pacemakers* were against extension of § 271(f) protection

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224. For a persuasive argument, see Farrand, *supra* note 106 at 1215.

225. *See id.* at 1266.

226. *See* Wegner, *supra* note 105 at 670.

227. *See, e.g.*, Brief for Cisco Sys., Inc., et al. as Amici Curiae Supporting Cross-Appellants, *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, Nos. 2007-1296, 2007-1347 at 1–3 (April 15, 2009) (arguing that applying § 271(f) to process inventions would create worldwide infringement liability for U.S. companies who export anything that could properly be considered a process step or something that could be configured to perform processes abroad, while foreign competitors face no such liability); Brief for the Business Software Alliance as Amici Curiae Supporting Petitioner, *Microsoft Corp. v. AT&T Corp.*, No. 05-1056 at 5 (Dec 15, 2006) (arguing that the indefinite liability under an interpretation of § 271(f) that includes software puts American inventors at a disadvantage relative to foreign inventors); Brief for the Software and Information Indus. Ass'n. as Amicus Curiae Supporting Petitioner, *Microsoft Corp. v. AT&T Corp.*, No. 05-1056 at (Dec 15, 2006) (stating that the decision of the Federal Circuit to apply 271(f) to software master disks upset investments and plans made in reasonable reliance on previously settled law that limited extraterritorial application of United States Patent law to the narrow exception created by § 271(f)); *but see* Brief for Philips Corporation and Philips Electronics North America Corporation as Amici Curiae in Support of Respondent, *Microsoft Corp. v. AT&T Corp.*, No. 05-1056 at 7–9 (Jan. 23, 2007) (arguing that withholding application § 271(f) to software code hurts domestic electronics manufacturers because of the trend for hardware to become more and more generic and multiuse, while their specialized functions are embodied in software. For such products, liability for exportation can be avoided by installing the software abroad, since exportation of the generic hardware cannot trigger § 271(f)).

to process patents.<sup>228</sup> In *AT&T II*, eleven amicus briefs favored Microsoft's position that § 271(f) should not apply to software master disks, three briefs favored AT&T's position that software in any form should be protected, and four briefs supported neither party.<sup>229</sup> Only one of the parties supporting AT&T was a manufacturer, the rest were universities, a venture capital firm, and a think tank. Parties supporting Microsoft included the United States, Intel Corp., Amazon.com, Yahoo! Inc., Eli Lilly, Autodesk, and several software industry associations.<sup>230</sup>

Several of the briefs supporting Microsoft described the harm to American economic interests that would result from extending § 271(f) to software in any form.<sup>231</sup> A brief filed by the American Intellectual Property Law Association in favor of neither party further highlighted the economic ramifications of an expansive reading of § 271(f):

Under the Federal Circuit's interpretation of section 271(f), once a company creates software in the United States, it could not send the software to a foreign country for replication without potentially incurring liability for infringement of a United States patent. This would create a strong incentive for software companies to relocate development facilities – and jobs – outside of the United States.<sup>232</sup>

On the other hand, the amicus brief for Philips Corporation argued that limiting § 271(f) favors software companies over

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228. See *Cardiac Pacemakers*, 576 F.3d at 1363.

229. See *AT&T II*, 550 U.S. 437.

230. *Id.*

231. See, e.g., Brief for the Business Software Alliance as Amici Curiae Supporting Petitioner, *Microsoft Corp. v. AT&T Corp.*, No. 05-1056 at 10 (Dec 15, 2006) (“At the extreme, the decision below threatens to recalibrate the decisions of American companies on where they do their research and innovation by attaching substantial and unpredictable risk of liability to research done at home in the United States, while excluding from all such risks innovation done outside of United States territory.”); Brief for the Software and Information Indus. Ass’n. as Amicus Curiae Supporting Petitioner, *Microsoft Corp. v. AT&T Corp.*, No. 05-1056 at 18 (Dec 15, 2006) (“By generating immediate, yet congressionally unintended, legal exposure for United States companies, the decision may dissuade information-based companies from maintaining their operations in the United States, as doing so will burden them with risks and a competitive disadvantage relative to foreign companies.”).

232. Brief for the Am. Intellectual Prop. Law Ass’n as Amicus Curiae in Support of Neither Party, *Microsoft Corp. v. AT&T Corp.*, No. 05-1056 at 18 (Dec 15, 2006).

electronics manufacturers.<sup>233</sup> Philips noted that the marginal cost for producing software is zero, while software becomes more valuable the more widely it is used, even if the greater use is the result of piracy.<sup>234</sup> The disadvantage to electronics manufacturers results from the trend of electronics hardware becoming more and more generic, while functionality is controlled by specialized software. In such a case, it is quite easy to build the hardware here or abroad and safely avoid infringement by installing the specialized software outside of the United States.<sup>235</sup> If § 271(f) were to be repealed outright, it would eliminate the disadvantage of electronics manufacturers relative to software companies as well as eliminate the incentive for American manufacturers of all types to move their R&D and operations abroad. However, Congress passed § 271(f) to protect the interests of American manufacturers and it cannot be assumed that American manufacturers of tangible goods would today wish to give up those special protections.<sup>236</sup>

## V. Conclusion

Courts' varying application of § 271(f) to patented inventions of different types has led to protections that are inconsistent across different technologies. However, differing treatments for different kinds of technology may be appropriate in light of their distinct business realities,<sup>237</sup> and in fact, if the balance of amicus briefs in *AT&T II* and *Cardiac Pacemakers* is any indication, it seems as though the weight of commercial industry is against expanding the protections of § 271(f). Furthermore, the business landscape today

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233. Brief for Philips Corporation and Philips Electronics North America Corporation as Amici Curiae in Support of Respondent, *Microsoft Corp. v. AT&T Corp.*, No. 05-1056 at 7–9 (Jan. 23, 2007).

234. *Id.* at 22–25.

235. *Id.* at 7–9.

236. *See id.*

237. For example, software companies may actually benefit from piracy due to the network effect, which results in software becoming more valuable as it attracts more users, even if many of those users do not pay. *See* Richard A. Posner, *Antitrust in the New Economy*, 68 ANTITRUST L.J. 925, 928 (2001) (“[C]omputer programs tend to be more valuable the more people use them because training, support by IT personnel, and standardization of equipment and procedures are facilitated.”); Richard A. Posner, *Do We Have Too Many Intellectual Property Rights?*, 9 MARQ. INTELL. PROP. L. REV. 173, 179 (2005) (“If only a few of the people who copied the [operating system] would have bought it, the producer actually benefits from the piracy because the more people who use the operating system the greater the market for applications programs that work with it, and he may produce such programs as well as the operating system.”).

versus 1984 when § 271(f) was passed may be quite different for all companies. Large companies are perhaps more fearful of litigation and enormous infringement verdicts than they are of infringing competitors.<sup>238</sup> Given the alternative solutions of either amending § 271(f) to level the playing field among different industries, or repealing it altogether in light of much improved international patent protections, the best course may in fact be the one that courts have chosen: a conservative and narrow reading of the statute that excludes processes, and offers only limited protection to software.

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238. The median patent damages award for years 1982–1989 was about \$800,000. The median award for years 2000–2006 was \$3.8 million. While this data does not include settlements, settlement amounts are based on expected damages awards, thus they can be expected to roughly follow the same trend. Shawn McGrath and Kathleen M. Kedrowski, *Trends in Patent Damages*, AMERICAN BAR ASSOCIATION SECTION OF LITIGATION, (Nov. 2007), available at <http://www.docs.piausa.org/ABA/07-06-01-ABA-Report-On-Patent-Damages.pdf> at 5.