

NOTES

WHAT'S ALL THE FUSS? THE "PARADE OF HORRIBLES" WHEN APPLYING 35 U.S.C. § 271(f) TO SOFTWARE PATENTS

Paul Margulies

I. INTRODUCTION

The second half of the twentieth century saw a fantastic rate of technological innovation, including the rise of the software industry and the development of the biotechnology field. Innovation was in the air; there was a tangible appreciation of the importance of advanced technology.¹ Intellectual property, the bundle of rights providing a means of capitalizing on such innovation, accordingly expanded to become "the bedrock of commercial wealth, especially in international trade."² In fact, one commentator suggests that intellectual property law will become solely an "instrumentality" to further trade.³ Despite the obvious economic importance, domestic entities seeking to enforce their intellectual property rights outside the United States are presented with numerous challenges.

Historically, courts in the United States have always been guided by a strong presumption of territoriality in interpreting federal laws, refusing to construe a statute as governing conduct abroad absent clear congressional intent.⁴ Technically, if a device manufactured abroad infringes on a U.S. patent, for example, the laws of the United States offer no recourse to the patent holder. Instead, the patent holder must take legal action under the laws of

¹ Rochelle Cooper Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. REV. 1, 27 (1989).

² Michael H. Davis, *Patent Politics*, 56 S.C. L. REV. 337, 338 (2004).

³ Graeme W. Austin, *The Role of National Courts: Valuing "Domestic Self-Determination" in International Intellectual Property Jurisprudence*, 77 CHI.-KENT L. REV. 1155, 1190 (2002) ("David Nimmer prophesized that [U.S.] copyright law was about to be transformed into an instrumentality for serving the interests of international trade, rather than the goals of domestic copyright law.").

⁴ See, e.g., *Foley Bros. v. Filardo*, 336 U.S. 281, 285 (1949) ("[L]egislation of Congress, unless a contrary intent appears, is meant to apply only within the territorial jurisdiction of the United States . . .").

the country where the infringement occurs.⁵ Unfortunately for the patent holder, the standards of protection vary considerably across national boundaries⁶ and costs of litigating in foreign courts are tremendous.⁷ There is currently no universal corpus of patent law, though supranational bodies have made progress toward harmonizing intellectual property protection across national boundaries.⁸ However, even within the context of international treaties, protections are still nationally based; the agreements usually require a standard minimum treatment of intellectual property rights.⁹ Patent law, in particular, faces difficult barriers to international harmonization. While copyright, for example, requires little more than an act of authorship for a right to obtain,¹⁰ every country offering patent protection has its own unique requirements and standards regarding the issuing of patents in order to maintain the quality of those patents.¹¹ So long as differences exist across national borders, the main recourse for a patent holder challenging infringement is in the courts of the country where the infringement occurs.¹²

A relatively recent exception to the doctrine of territoriality, 35 U.S.C. § 271(f),¹³ created the opportunity for U.S. patent holders to enforce certain rights in U.S. courts, even though the infringing activities occurred abroad. If components of an invention are shipped from the United States to a foreign country where they are

⁵ Assuming, that is, the foreign country has also granted a patent to the inventor. Foreign recognition of domestic patents is beyond the scope of this note.

⁶ See Davis, *supra* note , at 379-80.

⁷ U.S. GEN. ACCT. OFF., REPORT TO CONGRESSIONAL REQUESTERS, INTERNATIONAL TRADE: FEDERAL ACTION NEEDED TO HELP SMALL BUSINESSES ADDRESS FOREIGN PATENT CHALLENGES (JULY 17, 2002), <http://www.gao.gov/new.items/d02789.pdf>.

⁸ See discussion *infra* Part IV.A.

⁹ Curtis A. Bradley, *Territorial Intellectual Property Rights in an Age of Globalism*, 37 VA. J. INT'L L. 505, 547 (1997) [hereinafter Bradley, *Globalism*] (“[T]he public international law regime concerning intellectual property rights is founded on two central principles: (1) the ‘national treatment’ principle; and (2) the ‘minimum rights’ principle.”).

¹⁰ ROBERT A. GORMAN & JANE C. GINSBURG, COPYRIGHT 39 (Robert C. Clark et al. eds., Foundation Press 6th ed. 2002) (noting the low standards for the three statutory requirements of originality, authorship, and fixation).

¹¹ Fernando Piera, *IPR Protection of Computer Programs and Computer Software in the Global Market*, 12 CURRENTS: INT'L TRADE L.J. 15, 19 (2003).

¹² See generally Bradley, *Globalism*, *supra* note 9, at 569-70.

¹³ This provision was enacted in 1984. Patent Law Amendments Act of 1984, Pub. L. No. 98-622, § 101, 1984 U.S.C.C.A.N. (98 Stat. 3383) 5827 (codified at 35 U.S.C. § 271(f) (2005)).

subsequently combined into that invention, § 271(f) provides recourse.

The case which prompted the enactment of § 271(f)¹⁴ involved a shrimp deveiner.¹⁵ Laitram patented a device in the United States which could devein shrimp in preparation for their commercial use. Under domestic patent law, a patented invention may not be duplicated in the United States without giving rise to infringement.¹⁶ To circumvent this law, Deepsouth copied the individual components of the shrimp deveiner. The company then shipped those manufactured pieces abroad where they were assembled into Laitram's shrimp deveiner. Since the final product that would be infringing was created outside of the United States, no liability arises under traditional patent law.¹⁷ Section 271(f), however, would allow for damages in such a situation, even though only unassembled components, which individually are not infringing, were manufactured in the country.

A recent illustration of applying § 271(f) involved a patent held by an American corporation on a specific type of C-Fold mailer. These devices are commonly used to send bills to clients and include a detachable pay stub and a self-addressed envelope for remitting payment.¹⁸ The district court easily found that when paper, glue, and blueprints were brought from the United States to Switzerland by a competing company and assembled in Switzerland into C-Fold mailers, liability for infringement arose under § 271(f).¹⁹

Mechanical devices with concrete components are far simpler to construe in terms of § 271(f) than less tangible inventions. Section 271(f) cases become substantially more difficult when the patented invention involves computer software. Indeed, software stands out in the general patent scheme because of its long exclu-

¹⁴ See *infra* Part II.

¹⁵ *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972).

¹⁶ 35 U.S.C. § 271(a) (2006) (“[W]hoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.”).

¹⁷ *Deepsouth*, 406 U.S. at 518.

¹⁸ *Moore U.S.A., Inc. v. The Standard Register Co.*, 144 F. Supp. 2d 188, 189 (W.D.N.Y. 2001).

¹⁹ *Id.* at 195. The actions in this case occurred before liability for importation was added to § 271(a). Liability was predicated entirely under § 271(f), based only on the fact that the components of the invention were taken from the United States and reassembled abroad. *Id.*

sion from patentability. The Supreme Court broadly declared that “Congress intended statutory subject matter to ‘include anything under the sun that is made by man.’”²⁰ The breadth of the Patent Act has been hailed as a great strength.²¹ A single corpus of law is intended to be flexible enough to allow new technologies, as they develop, to fit within the same basic framework.²² Despite this, courts continually struggle to shoehorn software into the confines of the law. Applying § 271(f) to software, as opposed to mechanical devices, calls into question the meaning of basic terms of the statute like “supplies” and “component.” Many questions have yet to be satisfactorily answered. Does the electronic transfer of software constitute supplying it? Is copying equivalent to supplying? Is software a component of the patented computer-software combination on which it is installed, or merely an accessory required to perform certain operations? The Court of Appeals for the Federal Circuit (“CAFC”) has only recently decided cases applying § 271(f) to software, including a vociferous dissent by Judge Rader in *AT&T*²³ warning of grave consequences to international protection schema.

The application of § 271(f) to software, an easily transported and duplicated invention, presents interesting questions of territoriality. The United States seemingly allows patent holders to seek damages for actions that completely occur abroad,²⁴ outside of the reach of traditional applications of domestic law. Is this statute

²⁰ *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (citing S. REP. NO. 82-1979, at 5 (1952) and H.R. REP. NO. 82-1923, at 6 (1952)).

²¹ Robert Greene Sterne & Lawrence B. Bugaisky, *The Expansion of Statutory Subject Matter Under the 1952 Patent Act*, 37 AKRON L. REV. 217, 225 (2004):

The Patent Act has served admirably well in permitting the continued expansion of statutory subject matter over the last 50 years and will presumably continue to do so without the need for significant change in the future. The strength of the Patent Act has been its lack of specific exclusionary limitations, thereby permitting broad discretion in judicial interpretation.

Id.

²² *But see* Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575 (2003) (noting the existence of a vocal opposition that points to the advantages of industry-specific patent standards, and finding that some patent decisions already seem split along industry lines).

²³ *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1372 (Fed. Cir. 2005) (Rader, J., dissenting) (predicting “potential consequences beyond a ‘parade of horrors [in] the domestic software industry’”).

²⁴ The actions in *Deepsouth*, the conduct giving rise to § 271(f), occurred first in the United States and then abroad. *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972).

overstepping the traditional limitation of territoriality? Is § 271(f) a cheaper substitute for litigation that really should be taking place in a foreign venue under foreign laws? Does enforcement of this provision violate any international agreements on intellectual property protection?

Part II of this note will thoroughly examine the history of § 271(f) to help understand the motivation and meaning of the statute. Part III will focus on software, looking first to comprehend the position of software within the patent system generally, and then to specifically examine the application of § 271(f) to software as seen through two recent Federal Circuit cases.²⁵ This section will include a thorough examination of Judge Rader's thoughtful dissent in *AT&T*.

Part IV of this note will examine the consequences of applying § 271(f) to software, and seek to uncover the impetus behind Judge Rader's dissenting opinion. Part IV.A will look in depth at the longstanding presumption of extraterritoriality and look at other practical and miscellaneous problems that may be part of Judge Rader's concern. Part IV.B takes the opposite approach and describes justifications for extraterritorial application of § 271(f), including avoiding interference with future international harmonization efforts. Part IV.C examines the presently available alternatives to extraterritorial application of the statute, including domestic litigation, which applies foreign law and litigation in foreign courts. Finally, after weighing the previously examined issues of applying § 271(f), this note will conclude that the statute should not be applied extraterritorially; rather, U.S. courts should apply foreign law so that domestic interests are protected, pitfalls are avoided, and international patent harmonization can occur.

II. THE HISTORY OF § 271(F)

The Supreme Court in 1856 stated that the patent laws “do not, and were not intended to, operate beyond the limits of the United States. . . .”²⁶ Absent clear congressional intent, there is a presumption of territoriality and a law is construed to apply only to the United States; patents laws are no exception.²⁷ The CAFC re-

²⁵ *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005), *cert. denied*, 126 S. Ct. 568 (2005); *AT&T*, 414 F.3d at 1366.

²⁶ *Brown v. Duchesne*, 60 U.S. 183, 195-96 (1856).

²⁷ *See, e.g., Smith v. United States*, 507 U.S. 197, 204 (1993) (“It is a longstanding principle of American law that legislation of Congress, unless a contrary intent appears, is

cently reiterated that “the right conferred by a patent under our law is confined to the United States and its territories, and infringement of this right cannot be predicated on acts wholly done in a foreign country.”²⁸

The Supreme Court decided *Deepsouth Packing v. Laitram*²⁹ in light of this longstanding doctrine. Laitram held patents on a device³⁰ that deveined shrimp, a necessary step prior to their commercial consumption. Deepsouth Packing, barred from making its own device in the United States because of Laitram’s patents, manufactured the separate components of Laitram’s shrimp deveiner in the United States and shipped them abroad where they could be easily reassembled by buyers.³¹ 35 U.S.C. § 271(a) requires that infringement occurs “within the United States,” and by implication so too must contributory infringement.³² Deepsouth relied on an arguably “hypertechnical” reading of patent law, reasoning that since both the “making” and “use” of their devices occurred abroad, the conduct was beyond the reach of U.S. law.³³ Deepsouth’s arrangement did not support a finding of liability. Justice White, writing for the narrow majority, reversed the Court of Appeals finding of infringement against Deepsouth³⁴ and decided in accordance with the longstanding presumption of territoriality.³⁵ Deepsouth’s actions could not give rise to infringement under the

meant to apply only within the territorial jurisdiction of the United States.” (quoting *Foley Bros., Inc. v. Filardo*, 336 U.S. at 285 (1949)).

²⁸ *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113, 1118 (Fed. Cir. 2004) (citing *Dowagiac Mfg. v. Minn. Moline Plow Co.*, 235 U.S. 641, 650 (1915)). *But see* Bradley, *Globalism*, *supra* note 9, at 507 (“[T]he general rules governing the extraterritorial application of federal statutes are in a state of uncertainty.”).

²⁹ *Deepsouth*, 406 U.S. at 518.

³⁰ Two patents covered this device, U.S. Patent No. 2,694,218 (filed Nov. 16, 1954) and U.S. Patent No. 2,825,927 (filed Mar. 11, 1958). *Laitram Corp. v. Deepsouth Packing Co.*, 443 F.2d 928, 931 (5th Cir. 1971).

³¹ *Deepsouth*, 406 U.S. at 524.

³² *Id.* at 526. Contributory infringement refers to “inducing or contributing” others to infringe, primarily under the acts set forth in 35 U.S.C. § 271(a). 5-17 DONALD S. CHISUM, *CHISUM ON PATENTS*, § 17.01 (Mark H. Wasserman et al. eds., Matthew Bender 2005) (1978).

³³ Either “making” or “use” of a patented invention can give rise to infringement under 35 U.S.C. §271(a) (2005). *Deepsouth*, 406 U.S. at 524.

³⁴ *Deepsouth*, 406 U.S. at 532.

³⁵ *Id.* at 531 (“Our patent system makes no claim to extraterritorial effect . . .”).

existing patent law. The text of the statute required infringement to occur within the United States, a condition that did not occur.³⁶

In light of this ruling, a clever infringer could copy a patented invention and successfully sell it outside this country by merely postponing a few steps in the assembly process until the components had been exported. Indeed, Justice White noted that “what is at stake here is the right of American companies to compete with an American patent holder in foreign markets.”³⁷ Such an economic concern spurred Congress to quickly patch this “loophole,” by enacting 35 U.S.C. § 271(f) in 1984.³⁸ Congress passed this law specifically “to avoid encouraging manufacturing outside the United States.”³⁹ When President Reagan signed the bill into law, he too stated that the amendment “closes a loophole in existing law which permitted copiers to export jobs and avoid liability by arranging for final assembly of patented machines to occur offshore.”⁴⁰

35 U.S.C. § 271(f) provides:

(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

(2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that

³⁶ 35 U.S.C. § 271(a) (“[W]hoever without authority makes, uses, offers to sell, or sells any patented invention, *within the United States* . . . infringes the patent.” (emphasis added)).

³⁷ *Deepsouth*, 406 U.S. at 531.

³⁸ 35 U.S.C. § 271(f).

³⁹ Patent Law Amendments Act of 1984, Pub. L. No. 98-622, § 101, 1984 U.S.C.C.A.N. (98 Stat. 3383) 5827 (codified at 35 U.S.C. § 271(f) (2005)) (“Section 101 [of the bill] makes two major changes in the patent law to avoid encouraging manufacturing outside the United States The second major change 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.”).

⁴⁰ *Statement on Signing H.R. 6286 Into Law*, 20 WKLY. COMP. PRES. DOC. 1818 (1984).

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.⁴¹

Subsection (1) imposes liability on someone who “supplies” multiple “components” of a patented invention to a foreign country so as to “actively induce” the combination of those parts into what would be an infringing device in the United States.⁴² This is exactly what happened in *Deepsouth*. Under § 271(f)(2), one who supplies any single “component” that is not normally an article of commerce may be liable for infringement if it is reconstituted abroad into a device protected by a U.S. patent.⁴³ Subsection (2) prevents an arrangement whereby one unique component is supplied from the United States and additional components of an invention are manufactured abroad. Subsection (2) also requires an infringer to have knowledge that the component is specific to the patented invention and intent that it be incorporated into an infringing invention abroad,⁴⁴ though this need not actually occur.⁴⁵

Though there are differences between the two subsections of § 271(f), the “underlying goal [is] to guard against specific extraterritorial acts of infringement”⁴⁶

III. SOFTWARE

(A) *The Unique Case of Software Patents*

Despite widespread acceptance that software can be patented, software patents defy definition. One commentator explains that “pure” software patents “specifically disclose and claim software technology without referring to hardware, other than a computer

⁴¹ 35 U.S.C. § 271(f)(1), (2).

⁴² Kirk T. Bradley, *One Size Fits Most: The Rise of a Loophole in Extraterritorial Patent Legislation and a Proposal for Change*, 4 WAKE FOREST INTELL. PROP. L.J. 25, 35 (2003), available at http://www.law.wfu.edu/prebuilt/IPLJ_4_1_Bradley.pdf [hereinafter Bradley, *Loophole*].

⁴³ AT&T Corp. v. Microsoft Corp., 01 Civ. 4872, 2004 U.S. Dist. LEXIS 3340, at *10 (S.D.N.Y. 2004).

⁴⁴ Trustees of Columbia Univ. v. Roche Diagnostics GmbH, 150 F. Supp. 2d 191, 204 n.34 (D. Mass. 2001).

⁴⁵ Waymark Corp. v. Porta Sys. Corp., 334 F.3d 1358, 1361 (Fed. Cir. 2003).

⁴⁶ Bradley, *Loophole*, *supra* note 42, at 37.

and typical peripheral devices.”⁴⁷ Software patents regularly include some reference to basic computer components, otherwise they risk being considered too abstract to be patented.⁴⁸

What makes an invention patentable under 35 U.S.C. § 101, that is, what constitutes statutory subject matter under the Patent Act, is the threshold question that confronted and challenged software patent applications early in the development of the software industry.⁴⁹ Though the Supreme Court declared in 1952 that “Congress intended statutory subject matter to ‘include anything under the sun that is made by man,’”⁵⁰ software presented a problem. Software boils down to a collection of algorithms, which ultimately control mathematical and logical operations performed deep in computer hardware to manipulate data and carry out desired functions.⁵¹ The earliest confrontations with patentability accordingly focused on whether software is a legitimate patentable creation, or merely a collection of unprotectable mathematical algorithms.

The Court has long relied on the principle that “an idea of itself is not patentable.”⁵² Abstract ideas and theories, the base of software, were considered “manifestations of laws of nature, free to all men and reserved exclusively to none”⁵³ This concept is known as the “mental steps” doctrine,⁵⁴ and was frequently invoked to reject patents on inventions amounting to expressions of unpatentable ideas. However, once an abstract law was applied to

⁴⁷ Charles R. McManis, *Taking Trips on the Information Superhighway: International Intellectual Property Protection and Emerging Computer Technology*, 41 VILL. L. REV. 207, 288 n.164 (1996).

⁴⁸ Julie Cohen & Mark Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CALIF. L. REV. 1, 12 (2001).

⁴⁹ After meeting the requirements of this section, an invention must still meet the requirements of 35 U.S.C. §§ 102, 103, and 112 to be patentable.

⁵⁰ *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (citing S. REP. NO. 82-1979, at 5 (1952) and H.R. REP. NO. 82-1923, at 6 (1952)).

⁵¹ For the definitions of software given by the World Intellectual Property Organization (WIPO) and U.S. copyright law, see Piero, *supra* note 11, at 15.

⁵² *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. 498 (1874).

⁵³ *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

⁵⁴ “Under the ‘mental steps’ doctrine, processes involving mental operations were considered unpatentable. The mental-steps doctrine was based upon the familiar principle that a scientific concept or mere idea cannot be the subject of a valid patent.” *Diamond v. Diehr*, 450 U.S. 175, 195 (1981) (internal citations omitted).

some end, the Court would not rule out patentability.⁵⁵ Applying these principles, software was considered unpatentable.⁵⁶

In the 1982 case *Diamond v. Diehr*,⁵⁷ the Supreme Court decided that a patent should not be rejected merely because it implements some nonstatutory subject matter; essentially, an invention is patentable if it produces some physical process. This decision was applied by lower courts to allow software patents so long as the programs have some useful, concrete, and tangible result. Even a program saved on a floppy disk and running on a computer could meet these guidelines because it was a tangible manifestation of the underlying software.⁵⁸ In 1988 the CAFC decided *State St. Bank v. Signature*, unambiguously declaring that mathematical subject matter represents mere abstract ideas only “until reduced to some type of practical application, i.e., ‘a useful, concrete and tangible result.’”⁵⁹ The “mental steps” doctrine was officially dead, no longer constricting the patentability of software.

The spectrum of acceptable software patents continuously shifts; the trend in the United States is to allow patenting of more abstract concepts in this area.⁶⁰ As a result, a range of inventions fall under the broad heading of software patents.⁶¹ The long-running difficulty of even patenting software foretold the future problems of fitting software within the recently developed contours of patent law.

(B) *Section 271(f) as Applied to Software*

The provisions of § 271(f) are applied with ease to mechanical inventions. A court simply must construe the statutory terms “supplies” and “components” to determine if parts of an infringing article have been shipped abroad impermissibly. If an entity

⁵⁵ *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86, 94 (1939).

⁵⁶ *See Gottschalk v. Benson*, 409 U.S. 63 (1972).

⁵⁷ *Diehr*, 450 U.S. at 175.

⁵⁸ *In re Beauregard*, 53 F.3d 1583, 1584 (Fed. Cir. 1995).

⁵⁹ *State St. Bank & Trust Co. v. Signature Fin. Group*, 149 F.3d 1368, 1373 (Fed. Cir. 1998) (quoting *In re Alappat*, 33 F.3d 1526, 1554 (Fed. Cir. 1994)).

⁶⁰ *See, e.g.*, Gregory J. Kirsch, *The Changing Roles of Patent and Copyright Protection for Software* (Apr. 2000), <http://www.gigalaw.com/articles/2000-all/kirsch-2000-04-all.html> (“[T]he allowable scope for software-related patents has enlarged in recent years.”).

⁶¹ *See* Stuart J.H. Graham & David C. Mowery, *Intellectual Property Protection in the U.S. Software Industry*, in *PATENTS IN THE KNOWLEDGE-BASED ECONOMY* 219, 231-32 (Wesley M. Cohen & Stephen A. Merrill eds., National Academies Press 2003) (finding eleven main categories of software patents after looking through recent data).

“supplies” “components” abroad to be assembled, there is infringement.⁶² The analysis of § 271(f) becomes substantially more complicated when the patented invention involves computer software. Applying § 271(f) to software calls into question the otherwise straightforward meaning of both “supplies” and “component.” Does the electronic transfer of software constitute supplying it? Is copying equivalent to supplying? Is software a component of the patented computer-software combination on which it is installed, or merely an accessory required to perform certain operations?

Interestingly, the Supreme Court has yet to deal with any § 271(f) issues. Lower federal courts have had notable difficulty in applying the statute to software.⁶³ The CAFC, however, has recently decided two important cases involving the application of § 271(f) to software patents.⁶⁴ Both deal with Microsoft's export of software on golden masters. One district court explains, “Microsoft conceives, writes, compiles, tests, debugs and creates a master version of its Windows operating system software in Redmond, Washington. Microsoft makes a limited number of ‘golden master’ disks in the United States on which the machine-readable object code for the Windows operating system software is stored.”⁶⁵ The golden masters in question are shipped abroad⁶⁶ where foreign companies copy the disks and subsequently install the copies on computers. The golden master itself never ends up as part of the infringing product,⁶⁷ that is, the patented software on a

⁶² The *Deepsouth* case provides useful facts to follow this analysis. *Deepsouth* “supplied” the “components” of the shrimp deveiner abroad. Of course, since § 271(f) did not yet exist, the outcome of the actual case was no finding of infringement. See discussion *supra* Part II.

⁶³ Bradley, *Loophole*, *supra* note 42, at 35. In contrast, in light of the nature of the invention at issue in *Deepsouth*, the “application of [§] 271(f) in the context of mechanical devices seems relatively straightforward.” 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).

⁶⁴ *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366 (Fed. Cir. 2005), and *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005).

⁶⁵ *AT&T Corp. v. Microsoft Corp.*, No. 01 Civ.4872, 2004 U.S. Dist. LEXIS 3340, at *2-3 (S.D.N.Y. 2004).

⁶⁶ Secure electronic transmission is also used to transfer the golden master code, though this does not change the analysis. See, e.g., *id.*

⁶⁷ *Eolas Techs. v. Microsoft Corp.*, 399 F.3d 1325, 1331 (Fed. Cir. 2005).

machine.⁶⁸ Both the copying and installation in this arrangement occur outside of the United States.

In *Eolas Technologies v. Microsoft*, part of Microsoft's Internet Explorer software was found to infringe Eolas' patent on a method for "automatically invoking external application[s] providing interaction and display of embedded objects" on a web page.⁶⁹ The district court allowed the damage award to account for Microsoft's foreign sales of Internet Explorer by invoking § 271(f). Essentially, the judge ruled that the source code on the golden master that Microsoft used to transfer Internet Explorer abroad was a "component," giving rise to infringement under the statute.⁷⁰

The CAFC, reviewing the district court's initial finding on this point, noted that § 271(f) was intended to cover all inventions that were patented; Congress did not limit the statute "to 'machine' components or 'structural or physical' components. Rather, every component of every form of invention deserves the protection of [§] 271(f)."⁷¹ The CAFC reasoned that the software code contained on a golden master "drives the 'functional nucleus of the finished computer product.'"⁷² Therefore, the software surely constitutes a "component," if not the "key part," of the patented invention, namely a computer running software.⁷³ This "component," produced in the U.S. but shipped abroad where it was copied and installed on computer hardware, gives rise to infringement under § 271(f).

In ruling this way, the CAFC treated software like any other hardware apparatus⁷⁴ even though the software code is intangible and is copied from the golden master into a new medium before being incorporated in an invention. The court essentially held that the code itself is a component of the patented invention of a computer running software, just like a piece of sheet metal might be a

⁶⁸ The infringing product must have a useful, concrete, and tangible result which is accomplished when the software is installed on a computer. Otherwise, the software alone might be too abstract to be patented. See discussion *supra* Part III.A.

⁶⁹ *Eolas*, 399 F.3d at 1329.

⁷⁰ *Id.* at 1328.

⁷¹ *Id.* at 1339.

⁷² *Id.* (quoting *Imagexpo v. Microsoft Corp.*, 299 F. Supp. 2d 550, 553 (E.D. Va. 2003)).

⁷³ *Id.*

⁷⁴ John LaBarre & Xavier Gomez-Velasco, *Ready, Set, Mark Your Patented Software!*, 12 RICH. J.L. & TECH. 1, Part IV.C (2005) ("Ultimately, the court found that source code and master CD-ROM software constituted a component of a patented invention and could be used in calculating damages.").

component of a shrimp deveiner.⁷⁵ *Eolas* clearly stands for the proposition that software is a component in terms of the statute. However, does copying software from a golden master really have no legal significance in terms of supplying software abroad? *Eolas* did not directly address this point. Does software really compare so easily with the components of a traditional mechanical invention?

The CAFC soon addressed these issues in *AT&T v. Microsoft*.⁷⁶ AT&T held a patent on a speech codec,⁷⁷ which was incorporated into the Windows operating system on golden master disks which were shipped abroad. As in *Eolas*, these disks were then copied and the software was installed on a computer, at which point the alleged infringement of AT&T's patent occurred. The court dealt with two issues: whether the golden masters constitute "components" and whether the process of creating copies abroad from the golden masters which are then installed abroad can be characterized as "supplied" from the United States in terms of § 271(f). The court quickly decided the first issue. Citing its opinion in *Eolas*, the court sums up its reasoning in one sentence: "[W]e held that 'without question, software code alone qualifies as an invention eligible for patenting,' and that the 'statutory language did not limit [§] 271(f) to patented 'machines' or patented 'physical structures,'" such that software could very well be a 'component' of a patented invention for the purposes of § 271(f)."⁷⁸ *Eolas*, decided only several months earlier, is the quoted authority on the issue.

The court next turned to consider whether the software was "supplied" in terms of the statute, an issue *Eolas* glossed over. Microsoft asserted that the "foreign-replicated" disk copied from the golden master should be construed as a whole new device that has been manufactured abroad, not created from any U.S. supplied components.⁷⁹ The argument is based on the technical realities of

⁷⁵ "*Eolas* held that software code—even if intangible—is a component of a patented product within the meaning of § 271(f)." *NTP v. Research in Motion*, 418 F.3d 1282, 1322 (Fed. Cir. 2005).

⁷⁶ *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366 (Fed. Cir. 2005).

⁷⁷ The court defines a speech codec as "a software program that codes a speech signal into a more compact form, and decodes it back into a signal that sounds like the original." *Id.* at 1368 n.1 (Fed. Cir. 2005) (original citation omitted). Essentially a codec serves a compression function.

⁷⁸ *Id.* at 1369 (citing *Eolas Techs v. Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir. 2005)).

⁷⁹ *AT&T*, 414 F.3d at 1369.

software. The golden master contains the Windows software, encoded onto the disk in collections of ones and zeros.⁸⁰ When the disk arrives abroad, that information is copied to a new disk. The ones and zeros of the master do not become part of the new disk, rather the pattern of ones and zeros from the master is duplicated on the new disk. In this way, Microsoft argued, the new disk is manufactured entirely from components abroad.⁸¹ The master disk simply serves as a sort of blueprint⁸² for the process.

In *AT&T*, the court looked to the text of the statute and sought to give the term “supplied” its “common meaning.”⁸³ Since the present case dealt with software, the court looked to the ordinary meaning of the term in the context of software: how is software “typically ‘supplied?’”⁸⁴ The court concluded that “the act of copying is subsumed in the act of ‘supplying’” in this realm.⁸⁵ In other words, the majority ruled that Microsoft satisfied the statutory requirement of supplying by transferring the golden master for the purpose of copying. This may not necessarily be technologically true, as the dissent indicates.⁸⁶ There are circumstances when supplying can occur without copying. For example, a disk that is shipped abroad and installed on a computer would clearly give rise to infringement under the literal terms of § 271(f). However, the court rejected this point as “failing to account for the realities of software distribution” where the golden master model, and not individual shipment of disks, was used.⁸⁷

Microsoft tangentially argued that since the nature of the master disk is really a blueprint rather than a component, the issue should fall under *Pellegrini*,⁸⁸ which held that liability under § 271(f) will not arise when only instructions for manufacturing a

⁸⁰ Petition for Writ of Certiorari at 6, *Eolas v. Microsoft Corp.*, 126 S.Ct. 568 (2005) (No. 05-288).

⁸¹ *AT&T*, 414 F.3d at 1369-70.

⁸² Microsoft actually formulates an argument based on this theory alone. See discussion *infra* accompanying notes 88-89.

⁸³ *AT&T*, 414 F.3d at 1369.

⁸⁴ *Id.*

⁸⁵ *Id.* at 1370.

⁸⁶ *Id.* at 1373 (“To the contrary, copying and supplying are separate acts with different consequences . . .”).

⁸⁷ *Id.* at 1370. The court further cites maxims of statutory construction to support its position. “Where there are competing interpretations of a statute that imposes liability for certain acts, an interpretation that allows liability to attach only when a party acts in an unrealistic manner is unlikely to be correct.” *Id.* at 1370.

⁸⁸ *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113 (Fed. Cir. 2004).

component are supplied.⁸⁹ The court rejected this argument,⁹⁰ reasoning that the golden master Microsoft supplied is an actual component⁹¹ “that is ready for installation on a computer to form an infringing apparatus.”⁹² Apparently, the court deemed unimportant the fact that the golden master is not actually used in such a fashion, without copying.

The majority blurs the distinction between “supplying” and “copying,” a stance challenged by Judge Rader’s dissent. He writes, “The act of supplying is separate and distinct from copying,”⁹³ and takes issue with the majority’s disregard for the technical reality of first supplying and then copying the golden masters. Supplying, in terms of the statute, means transporting a component of the invention from the United States to another country; here this refers to the transfer of the golden master abroad. Copying, on the other hand, is the duplication of the data contained on the golden master, a process which occurs entirely outside of the United States. The court, Judge Rader continues, construes § 271(f) to prohibit the activity of copying, even when it occurs entirely abroad. Such a reading constitutes an unwarranted extraterritorial expansion of U.S. law.⁹⁴ Rather, the remedy for such copying should be found under the law of the nation where it occurred.⁹⁵ Rader senses a disruption in the entire balance of intellectual property law. He states, “[T]his judgment disregards the existing international scheme of patent law with potential consequences beyond a ‘parade of horrors [in] the domestic software industry.’”⁹⁶ Judge Rader predicted dire consequences in follow-

⁸⁹ *Id.* at 1118.

⁹⁰ *AT&T*, 414 F.3d at 1370 (“Accordingly, 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.”)

⁹¹ An interesting argument could be made that since AT&T’s codec was entitled to patent protection on its own, and the entirety of that invention consisted of the software in tangible form, then the codec could not possibly have been a component in terms of the statute. Microsoft supplied the entire invention, not merely a component. See *Trustees of Columbia Univ. v. Roche Diagnostics*, 150 F. Supp. 2d 191, 204-05 (D. Mass. 2001).

⁹² *AT&T*, 414 F.3d at 1370.

⁹³ *Id.* at 1373.

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ *Id.* at 1372 (correction in original). The “parade of horrors” Rader alludes to was repeatedly argued by Microsoft in various litigations:

U.S. companies. . . that design their products domestically, but manufacture and sell all or many units of their products abroad, will find themselves at risk of patent infringement liability not only for domestic sales, but also for sales the

ing the CAFC's interpretation of § 271(f) in the context of software. Though he speaks mainly of extraterritoriality, could he be imagining other potential problems?

IV. CONSEQUENCES OF § 271(F)

(A) *Problems Applying § 271(f)*

(I) *Extraterritoriality*

“It is a longstanding principle of American law ‘that legislation of Congress, unless a contrary intent appears, is meant to apply only within the territorial jurisdiction of the United States.’”⁹⁷ This presumption is merely a well-established canon of statutory interpretation, because Congress, in general, possesses the power to regulate conduct abroad.⁹⁸ Commentators have identified several important reasons why the courts continue to invoke the presumption when interpreting statutes in which Congress has not explicitly decided, after assumedly careful deliberation, to take the major step of regulating foreign conduct.

One reason is that general principles of “customary international law”⁹⁹ informally limit one nation's ability to apply its laws extraterritorially. Another canon of statutory construction holds that “statutes are to be construed, where fairly possible, so as not to violate international law.”¹⁰⁰ The reason for this, and perhaps independent justification for the presumption itself, is international comity. Comity, here, is refraining from extraterritorial application of laws in an act of “altruistic deference . . . [to] a superior foreign interest.”¹⁰¹ Given the importance of intellectual property in do-

world over. This creates a powerful incentive for such companies to move their research and development operations overseas to avoid the potentially crippling liability . . . by ensuring that the design information they produce is never “supplied” from the United States. *Petition for Writ of Certiorari* at 10-11, *Eolas v. Microsoft*, 126 S.Ct. 568 (2005) (No. 05-288).

⁹⁷ *Equal Employment Opportunity Comm'n v. Arabian Am. Oil Co.*, 499 U.S. 244, 248 (1991) (quoting *Foley Bros., Inc. v. Filardo*, 336 U.S. 281, 285 (1949)).

⁹⁸ Bradley, *Loophole*, *supra* note 42, at 28 (“[T]he Constitution is understood as specifically granting Congress broad power to regulate commerce with foreign nations. A fairly natural component of that grant is the power to regulate conduct that occurs outside of the United States.” (internal citation omitted)).

⁹⁹ “Customary international law is the law of the international community that ‘results from a general and consistent practice of states followed by them from a sense of legal obligation.’” Bradley, *Globalism*, *supra* note 9, at 514 n.39 (citing RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES § 102(2) (1987)).

¹⁰⁰ *Id.* at 514-15.

¹⁰¹ *Id.* at 515.

mestic economies, jurisdiction sometimes should not exist over issues “so closely tied to foreign sovereignty interests.”¹⁰² Clearly a benefit of invoking the presumption is that the United States can expect and benefit from the same treatment in return.¹⁰³

Another articulated justification for the presumption is a desire that choice of law rules be consistent. Generally, to reflect domestic choice of law rules,¹⁰⁴ determinations are made “wholly by the law of the country where the act is done.”¹⁰⁵ A greater concern is at issue in international choice of law cases. Forsaking choice of law principles, which would require applying “laws that have been developed in and for the territory in which infringements take place” in favor of extraterritorial application of domestic law “may be difficult to reconcile with the value of domestic self-determination.”¹⁰⁶ Essentially, applying foreign law undermines the unique nature of the domestic patent laws which were domestically developed to meet the unique conditions and realities of each nation.¹⁰⁷

A particularly poignant justification for the presumption against extraterritoriality concerns which branch of the federal government has the capacity to articulate when laws should be applied extraterritorially. “[T]he Supreme Court has expressed the view that the determination of whether and how to apply federal legislation to conduct abroad raises difficult and sensitive policy questions that tend to fall outside both the institutional competence and constitutional prerogatives of the judiciary.”¹⁰⁸ Microsoft was similarly concerned about the propriety of the judiciary articulating how § 271(f) should apply to software abroad.¹⁰⁹ Without clear congressional intent directing extraterritorial application, there is a real loss of “democratic accountability.”¹¹⁰ The judiciary would be free to shape far-reaching laws. Though judicial

¹⁰² Austin, *supra* note 3, at 1179.

¹⁰³ See generally Michael Traynor, *Conflict of Laws, Comparative Law, and the American Law Institute*, 49 AM. J. COMP. L. 391 (2001).

¹⁰⁴ The traditional rule domestically was *lex loci delicti*. Bradley, *Globalism, supra* note 9, at 515.

¹⁰⁵ *Am. Banana Co. v. United Fruit Co.*, 213 U.S. 347, 356 (1909) (citing *Slater v. Mexican Nat'l R.R. Co.*, 194 U.S. 120, 126 (1904)).

¹⁰⁶ Austin, *supra* note 3, at 1164.

¹⁰⁷ See generally *id.* at 1158-64.

¹⁰⁸ Bradley, *Globalism, supra* note 9, at 516.

¹⁰⁹ Petition for Writ of Certiorari at 10, *Eolas v. Microsoft Corp.*, 126 S.Ct. 568 (2005) (No. 05-288) (“Such a sea change in the scope of U.S. patent law is not properly the subject of creative judicial interpretation of the patent statute.”).

¹¹⁰ Austin, *supra* note 3, at 1159.

legislating is a concern in many areas of law,¹¹¹ the potentially severe international consequences of § 271(f) raise greater concerns and mandate that such a law be implemented by a clear act of Congress articulating reasoned policy.

Beyond the general presumption for all legislation, the CAFC recently declared in *Pelligrini*¹¹² when considering the reach of § 271(f) that “U.S. patent laws ‘do not, and were not intended to, operate beyond the limits of the United States.’”¹¹³ The CAFC concluded that § 271(f) applies only where the components of the patented invention in question are physically within the United States and then exported; the existence of a company’s headquarters within the United States will not give rise to liability when the manufacturing occurs entirely abroad. The court clearly upheld the presumption against extraterritoriality. A second recent decision, authored by Judge Rader, also specifically avoided giving § 271(f) extraterritorial effect. In *Waymark*, the CAFC ruled that § 271(f)(2) merely requires that an infringer intend that his or her components will be reassembled abroad, not that they actually are.¹¹⁴ “[I]f actual combination of components in a foreign country were required for infringement, this would create the problem of obtaining proof of infringement in a foreign country and pose the appearance of ‘giving extraterritorial effect to United States patent protection.’”¹¹⁵ To avoid this outcome, the court construed § 271(f) in accordance with the presumption. In the context of software, however, the CAFC’s ruling in *AT&T* did not follow the presumption. The *Waymark* court specifically gave extraterritorial effect to the law and seemingly ignored the reasoning of these other cases. Judge Rader, in his dissent, takes issue with this inconsistency.¹¹⁶

Some commentators, however, have argued that the presumption against extraterritoriality is out of date because national

¹¹¹ See, e.g., Carl Hulse & David D. Kirkpatrick, *DeLay Says Federal Judiciary Has ‘Run Amok,’ Adding Congress Is Partly to Blame*, N.Y. TIMES, Apr. 8, 2005, at A21.

¹¹² *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113 (Fed. Cir. 2004).

¹¹³ *Id.* at 1117 (quoting *Brown v. Duchesne*, 60 U.S. 183, 195 (1857)).

¹¹⁴ *Waymark Corp. v. Porta Sys.*, 245 F.3d 1364 (Fed. Cir. 2001).

¹¹⁵ *Cases and Recent Developments*, 11 FED. CIR. B.J. 457, 504 (2001) (quoting *Waymark*, 245 F.3d at 1368).

¹¹⁶ *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1372 (Fed. Cir. 2005) (Rader, J., dissenting).

boundaries are no longer as significant as they once were.¹¹⁷ In a world of instant communications, the presumption's entrenched place in patent law may merely be a "quaint relic[] of the nineteenth century."¹¹⁸ When searching the prior art in the course of preparing a patent application, for example, certain items are excluded from consideration if they occur outside the United States; the underlying thinking is that an inventor could not be expected to expeditiously make use of inaccessible foreign prior art in the course of making her invention. Nowadays, with enhanced communication, such a rule may more accurately be described as a "mercantilist provision[] calculated to benefit American inventors."¹¹⁹ That Congress is considering altering this provision in the pending Patent Reform Act speaks to the lessened importance of geographic borders in patent law.¹²⁰ Indeed, numerous commentators predict that international harmonization, and a lessening of domestically-based rights, will continue.¹²¹ The pending Patent Reform Act evidences the continuing harmonization efforts by proposing a radical change from the United States' traditional first-to-invent rule of granting patents, to the more widely used first-to-file system.¹²²

Further undermining the presumption against extraterritoriality is its inconsistent application. The presumption is ignored in antitrust law.¹²³ In intellectual property, U.S. law gives trademarks extraterritorial effect to a far greater extent than copyrights and patents.¹²⁴ Courts may abandon the presumption when convenient, illustrating the decline of its importance.

¹¹⁷ See Margo A. Bagley, *Patently Unconstitutional: The Geographical Limitation of Prior Art in a Small World*, 87 MINN. L. REV. 679, 740 (2005) ("[T]he world is too small for the continued exclusion of evidence of foreign public knowledge or use from patentability analyses.").

¹¹⁸ Dan L. Burk & Mark A. Lemley, *Inherency*, 47 WM. & MARY L. REV. 371, 409 (2005).

¹¹⁹ *Id.* By ignoring foreign prior art, even though modern technology makes awareness of it simple, patents and their accompanying economic benefits can be granted for inventions in the United States that presumably already exist. See Bagley, *supra* note 117, at 680-83 (explaining this occurrence through the example of the neem tree).

¹²⁰ Patent Reform Act of 2005, H.R. 2795, 109th Cong. (2005).

¹²¹ See, e.g., Gerald J. Mossinghoff & Vivian S. Kuo, *World Patent System Circa 20XX, A.D.*, 80 J. PAT. & TRADEMARK OFF. SOC'Y 523 (1998) (concluding that a world patent system will be established in the twenty-first century).

¹²² H.R. 2795.

¹²³ Bradley, *Globalism*, *supra* note 9, at 507.

¹²⁴ *Id.* at 508.

The longstanding presumption against extraterritorial application of patent law continues to be reasonable. Though exceptions that account for the realities of modern communications make sense, the basic justifications for the presumption, such as international comity, become increasingly important in an interconnected world. Overall, the presumption may help improve international cooperation on intellectual property issues.

(II) *Practical Problems Applying § 271(f)*

There are additional problems that may arise as a consequence of applying § 271(f). The United States has a “historical antipathy to monopoly,”¹²⁵ yet § 271(f) distinctly interferes with that natural functioning of the marketplace. The statute’s very purpose is anticompetitive: to avoid encouraging manufacturing abroad.¹²⁶ Microsoft’s dire prediction of software companies moving their entire operations overseas to avoid potentially crippling liability under § 271(f) may be exaggerated, but certainly the provision raises the cost of conducting business in the United States.¹²⁷ Some software companies may even determine that limiting their domestic operations is cost effective. This is exactly the opposite result from what Congress sought to achieve in enacting the legislation.¹²⁸

Judge Rader notes that § 271(f) “protects foreign markets from domestic competitors,” but he worries that the majority’s interpretation of “supplied” will protect foreign markets from foreign competitors too.¹²⁹ According to Judge Rader’s view of the majority’s reasoning, a software company, under U.S. law, would be able to stop competitors abroad from copying software in the manner of Microsoft in *AT&T* and *Eolas*. Such interference in the global marketplace seems misplaced in patent legislation, especially when Congress did not specifically articulate it. Indeed, separate trade legislation¹³⁰ was passed subsequent to the enactment of § 271(f) that sanctioned countries whose intellectual property

¹²⁵ *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 530 (1972).

¹²⁶ See *supra* text accompanying note 39.

¹²⁷ Petition for Writ of Certiorari at 6, *Eolas v. Microsoft*, 126 S.Ct. 568 (2005) (No. 05-288). See also Fisch & Allen, *supra* note 63, at 557 n.150 (showing that other companies predict similar consequences).

¹²⁸ See *supra* Part II.

¹²⁹ *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1376 (Fed. Cir. 2005) (dissenting opinion).

¹³⁰ Omnibus Trade and Competitiveness Act of 1988, Pub. L. No. 100-418, § 1303, 102 Stat. 1179-80 (codified as amended at 19 U.S.C. §§ 2241-2242 (2005)).

protection was not on par with U.S. standards.¹³¹ Regardless, the “extraterritorial control and enforcement of intellectual property rights [under § 271(f)] have been viewed as trade barriers by the international community,” even before the CAFC’s recent rulings on software.¹³²

In light of the extraterritoriality inherent in the *AT&T* decision, foreign nations’ perceptions that § 271(f) is a trade barrier only increased. This may be setting back the cause of internationally harmonized intellectual property rights. “The WTO and the WIPO are the two major entities working to develop international patent law,”¹³³ though, at present, the responsibility of patent protection rests on each individual nation.¹³⁴ To obtain protection, an inventor must specifically file and enforce her patents in each country where it is sought.¹³⁵ The TRIPS agreement mandates that: “[P]atents shall be available and patent rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced.”¹³⁶ Judge Rader reasons that applying § 271(f) differently to software than to other varieties of inventions violates this mandate.¹³⁷ Furthermore, if the U.S. government reaches so far to protect domestic industry, it may find other nations respond in kind. U.S. patent holders could find themselves liable in foreign courts for infringing domestic conduct and international negotiations could break down.¹³⁸ At a more basic level, U.S. patent holders will not propel

¹³¹ A. Samuel Oddi, *Beyond Obviousness: Invention Protection in the Twenty-First Century*, 38 AM. U. L. REV. 1097, 1143-44 (1989).

¹³² Anthony D. Sabatelli & J.C. Rasser, *Impediments to Global Patent Law Harmonization*, 22 N. KY. L. REV. 579, 584 (1995).

¹³³ Bradley Condon & Tapen Sinha, *Global Diseases, Global Patents and Differential Treatment in WTO: Criteria for Suspending Patent Obligations in Developing Countries*, 26 NW. J. INT’L L. & BUS. 1, 2 (2005).

¹³⁴ Timothy R. Holbrook, *The Treaty Power and the Patent Clause: Are there Limits on the United States’ Ability to Harmonize?*, 22 CARDOZO ARTS & ENT. L.J. 1, 14 (2004).

¹³⁵ Some regional patent offices, as well as the Patent Cooperation Treaty, facilitate filing for patents in multiple countries, but the rights obtained are still nationally based. WIPO, Frequently Asked Questions, http://www.wipo.int/patentscope/en/patents_faq.html#worldwide_patent (last visited Mar. 1, 2006).

¹³⁶ Agreement on Trade-Related Aspects of Intellectual Property Rights art. 27, Apr. 15, 1994, 108 Stat. 4809, 33 I.L.M. 81 (1994) [hereinafter TRIPS].

¹³⁷ *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1374 (Fed. Cir. 2005) (dissenting opinion).

¹³⁸ Bradley, *Globalism*, *supra* note 9, at 562 (“[I]t is problematic for the judiciary to be applying U.S. intellectual property laws to conduct in foreign countries. Extraterritorial application may offend foreign governments and thus interfere with the negotiation of international agreements.”).

the expansion of international rights if they can more easily litigate foreign infringement domestically.

Not everyone agrees, however, that such extraterritorial reaching violates the spirit of international harmonization. There may be benefit from a nonconsensual development of international patent law if each nation is free to adjust its law "in order to respond more rapidly to technological and other challenges."¹³⁹ Indeed, it may be consistent with the current scheme to strike a balance between international harmonization and each nation's ability to tailor patent law to its own circumstances.¹⁴⁰ Section 271(f) is reasonably construed as the United States' attempt to tailor its own laws to its unique circumstances.¹⁴¹ A stronger view supports the disruption of international harmonization altogether because patent law is used as a weapon to exert "frightening" power on third world countries.¹⁴² Some nations "rejected the notion that any one firm or individual should monopolize such chemicals, drugs, or foodstuffs" and refused to honor foreign patents.¹⁴³ From these perspectives, perhaps such an application of § 271(f) is positive because it disrupts the harmful consequences of international harmonization. However, these extreme views also leave § 271(f) as the only possibility for U.S. patent holders to enforce intellectual property rights in certain nations. Even though the laws of a given country may not protect an invention, the laws of the U.S. might.

A final problem with applying § 271(f) is that the law itself may be flawed. Section 271(f)(1) requires that "all or a substantial portion" of components of a patented invention be supplied abroad for infringement to occur. Courts have variably construed "substantial" to mean "a 'majority' of the components, all but one of the components, and components that contribute more than minimally."¹⁴⁴ Such differing constructions of the statute result in vastly disparate protections being awarded in different circumstances, with the potential result of permissible articles of commerce being unnecessarily burdened by the possibility of

¹³⁹ Austin, *supra* note 3, at 1172.

¹⁴⁰ *Id.* at 1156-57.

¹⁴¹ The circumstances in the United States are a well developed economy seeking immediate and dependable intellectual property protection on a global scale. *See generally id.*

¹⁴² Davis, *supra* note 2, at 378.

¹⁴³ *Id.* at 380.

¹⁴⁴ Bradley, *Loophole*, *supra* note 42, at 40 (internal citations omitted).

infringement suits. Similarly, courts have strictly construed the statutory term “components” in § 271(f)(1) as requiring *per se* more than one part.¹⁴⁵ If a primary component is supplied from the United States and a secondary component is supplied from abroad, the U.S. supplier would escape liability. These results may not have been the intent of Congress,¹⁴⁶ as the situation is not substantially different from the circumstances of *Deepsouth*. At the very least, this shows further how the application of § 271(f) is unsettled. For software, the decision in *AT&T* only added to the confusion in this area.

(B) *Reasons to Apply § 271(f)*

A majority of the CAFC holds that § 271(f) applies to software copying and, indeed, that is the precedent.¹⁴⁷ There are some tangible benefits to applying § 271(f) rather than resorting to foreign courts as Judge Rader suggests. U.S. patent holders likely are already well situated to litigate in domestic courts. Litigating abroad, in contrast, would obviously be “unduly burdensome” and costly.¹⁴⁸ Particularly in the field of software, the laws of foreign nations may not be as favorable to patent holders.¹⁴⁹

Current international intellectual property agreements only call for a nation to implement a minimum level of protection.¹⁵⁰ The level of protection in the United States is significantly higher than in many other countries;¹⁵¹ using trade sanctions, the United

¹⁴⁵ See, e.g., *Fieldturf, Inc. v. Southwest Recreational Indus.*, 235 F. Supp. 2d 708 (D. Ky. 2002).

¹⁴⁶ Bradley, *Loophole*, *supra* note 42, at 44-48 (suggesting that the language of the statute should be extended to “any material component” in accordance with congressional intent).

¹⁴⁷ This is the holding of *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366 (Fed. Cir. 2005).

¹⁴⁸ Bradley, *Globalism*, *supra* note 9, at 569-70 (explaining that litigating foreign infringement actions in the countries where they take place is often not a reasonable alternative).

¹⁴⁹ See, e.g., Fisch & Allen, *supra* note 63, at 557 n.150 (noting “the European Union’s recent moves to codify stringent standards . . .”).

¹⁵⁰ Holbrook, *supra* note 134, at 5.

¹⁵¹ Maria Julia Oliva, *Intellectual Property in the FTAA: Little Opportunity and Much Risk*, 19 AM. U. INT’L L. REV. 45, 47 (2003) (“These negotiations have resulted in agreements that take intellectual property protection standards beyond the levels established at the multilateral sphere and seriously threaten countries’ ability to tailor intellectual property laws to correspond to their public policy objectives.”).

States attempts to force wide compliance with its own standards.¹⁵² Trade agreements and sanctions to enhance levels of protection may be detrimental to foreign nations.¹⁵³ If foreign acts of infringement are litigated in the United States, however, the pressure for compliance on foreign nations will lessen. Those desired international rights would be enforced domestically instead.

(I) *Constitutionality of § 271(f)*

As the overarching guide of U.S. law,¹⁵⁴ the constitutional ramifications of applying § 271(f) extraterritorially must be considered. The U.S. Constitution not only establishes the foundation of patent protection, but also explains its purpose in the Patent and Copyright Clause (“patent clause”) which provides, “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.”¹⁵⁵ In order to encourage technological advancement and discovery for the benefit of society as a whole, monopolistic control is granted to an inventor over her inventions for a finite period. In a system of enumerated powers, Congress is constrained by the internal limitations of the patent clause when legislating in the area.¹⁵⁶ In one well known limitation, for example, the clause requires that patents only be granted for “limited Times.”¹⁵⁷ The Supreme Court recently interpreted this phrase as preventing an infinite term for a copyright, and presumably for a patent as well.¹⁵⁸ However, Congress likely has the power to extend patent terms,¹⁵⁹ and international harmonization of patent law may require such extensions.¹⁶⁰

¹⁵² Omnibus Trade and Competitiveness Act of 1988, Pub. L. No. 100-418, § 1303, 102 Stat. 1179-80 (codified as amended at 19 U.S.C. §§ 2241-2242 (2005)).

¹⁵³ See *supra* text accompanying notes 142-43.

¹⁵⁴ U.S. CONST. art. VI, cl. 2.

¹⁵⁵ *Id.* art. I, § 8, cl. 8.

¹⁵⁶ *Graham v. John Deere Co.*, 383 U.S. 1, 5 (1966) (“The clause is both a grant of power and a limitation. This qualified authority . . . is limited to the promotion of advances in the ‘useful arts.’”).

¹⁵⁷ U.S. CONST. art. I, § 8, cl. 8.

¹⁵⁸ *Eldred v. Ashcroft*, 537 U.S. 186, 199-204 (2003) (discussing the historical and current interpretation of this phrase in terms of copyrights and patents).

¹⁵⁹ *But see* *Holbrook*, *supra* note 134, at 5 (“[T]he Court’s conclusion seems to be incorrect.”).

¹⁶⁰ Indeed, implementation of the TRIPS agreement required the United States to adjust patent terms from seventeen years from the date of issuance to twenty years from the date of filing. Uruguay Round Agreements Act, Pub. L. No. 103-465, § 532(a)(1), 108 Stat. 4809, 4983-84 (1994) (codified as amended 35 U.S.C. § 154 (2005)).

A more significant instance of constitutional limitation that may potentially affect the application of § 271(f) is the phrase “useful Arts.”¹⁶¹ Though interpretations have changed, courts have long held an “expansive” view of patentable subject matter.¹⁶² This phrase, however, seems to imply some restriction on the types of technologies which are afforded patent protection; perhaps software, for example, is not “useful” in the constitutional sense.¹⁶³ This would create a conflict with the current state of domestic patent law.

On the other hand, in the international arena, Europe maintained its stance against the patentability of software far longer than the United States and in fact still maintains that “its technicity requirement bars inventions without at least some physical effect”¹⁶⁴ The European equivalent of “useful” may be having “industrial applicability.”¹⁶⁵ If the definition of “useful arts” includes software, then patent protection of software is constitutionally mandated in the United States. By applying § 271(f) to conduct abroad, the United States could be imposing its own standard on foreign nations resulting in international tension in this area.

Any international harmonization of intellectual property law would occur using the treaty power, an amorphous and debated constitutional grant to the executive branch.¹⁶⁶ If international harmonization required a broadening of what constitutes “useful arts,” a constitutional problem might exist. Assuming “useful arts” is mandated by the Constitution, can the constraints of the patent clause be bypassed by the treaty power to allow greater international harmonization? The Supreme Court’s decision in *Holland*¹⁶⁷ held that “Congress may enact legislation via a treaty that it may not have had the authority to pass acting alone.”¹⁶⁸ If treaties are not constrained by Congress’ enumerated powers, like the patent clause, then international harmonization may proceed. However, Professor Timothy Holbrook suggests that there is reason to be-

¹⁶¹ U.S. CONST. art I, § 8, cl 8.

¹⁶² Holbrook, *supra* note 134, at 4.

¹⁶³ See Alan L. Durham, “Useful Arts” in the Information Age, 1999 BYU L. REV. 1419, 1456 (1999) (suggesting the adoption of a conservative definition of the term “useful arts”).

¹⁶⁴ Michael Guntersdorfer, *Software Patent Law: United States and Europe Compared*, 2003 DUKE L. & TECH. REV. 6 (2003) (internal citation omitted).

¹⁶⁵ Holbrook, *supra* note 134, at 4.

¹⁶⁶ U.S. CONST. art. II, § 2.

¹⁶⁷ *Missouri v. Holland*, 252 U.S. 416 (1920).

¹⁶⁸ Holbrook, *supra* note 134, at 12.

lieve the patent clause is different and might limit the treaty power, thus rendering some international patent agreements unenforceable, such as TRIPS, where rights are still nationally based.¹⁶⁹ The only international agreement that would be free of this concern, according to Holbrook, is a supranational system of patents that “transcends national boundaries” because such a system would not be implemented in connection with the patent clause.¹⁷⁰ Any such arrangement would materialize significantly in the future; present harmonization efforts are still subject to such a concern. If Holbrook is correct, to avoid constitutional questions while still allowing the United States to regulate intellectual property abroad, the extraterritorial application of § 271(f) should be used, at least until a true international body of patent law is created.

Furthermore, applying § 271(f) to extraterritorial conduct may very well accord with Congress’ constitutional charge “[t]o promote the Progress of Science and useful Arts.”¹⁷¹ As the dissent noted in *Deepsouth*, “If this Constitutional [patent] protection is to be fully effectuated, it must extend to an infringer who manufactures in the United States and then captures the foreign markets from the patentee. The Constitutional mandate cannot be limited to just manufacturing and selling within the United States.”¹⁷²

Given these concerns, present and future constitutional problems may be avoided by the extraterritorial application of § 271(f).

(C) *Alternatives to Applying § 271(f) Extraterritorially*

(I) *Litigate in the United States Applying Foreign Law*

Increasingly, domestic courts are undertaking the burden of applying foreign law.¹⁷³ Even in the context of intellectual property, long considered a collection of nationally-based rights, some courts are taking this step. In the United States, copyright law provides the clearest example, where a Second Circuit case “antici-

¹⁶⁹ *Id.* at 14 (arguing that in the case of a treaty granting intellectual property rights in the United States, those domestic rights would still fall within the constraints of the patent clause).

¹⁷⁰ *Id.* at 15.

¹⁷¹ U.S. CONST. art. I, § 8, cl. 8.

¹⁷² *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 534 (1972) (Blackmun, J. dissenting) (quoting *Laitram*, 443 F.2d 936, 939 (5th Cir. 1971)).

¹⁷³ Austin, *supra* note 3, at 1179-80 (noting this trend in the United Kingdom and United States).

pated that the district court might ascertain and apply the copyright laws of at least eighteen foreign countries.”¹⁷⁴ The same evolution has been slower in the patent context because patent rights are considered more important to national sovereignty so as to render a foreign court’s jurisdiction inappropriate.¹⁷⁵ Still, the progression has begun. Devices are in place to simplify such litigation.¹⁷⁶ International agreements like TRIPS obligate U.S. courts to treat inventions fairly regardless of the citizenship of the patent holder.¹⁷⁷ U.S. courts, even when applying foreign laws, may actually be more attractive to plaintiffs than foreign courts because of extra protective laws, “broad discovery rules and high damage awards.”¹⁷⁸ This must be tempered with the concern that “American courts, and American juries in particular, exhibit xenophobic bias.”¹⁷⁹ However, in the case of an American litigating her foreign rights in a domestic court, as AT&T could have done in lieu of the extraterritorial application of § 271(f), this concern disappears.

(II) *Litigate Abroad*

As an alternative to litigating a § 271(f) issue in the United States, litigating infringement in a foreign country is surely a costly endeavor.¹⁸⁰ In addition to the practical problems of high legal and transportation costs, a plaintiff would have to hold a patent on her invention in the forum nation. The costs of prosecuting patents in a range of foreign countries, as would be necessary for a patent holder seeking to protect its property worldwide, is staggering.¹⁸¹ Foreign countries often have lower levels of intellectual property protection,¹⁸² and they too may have a bias against foreign patent

¹⁷⁴ *Id.* at 1180 (referring to *Boosey & Hawkes v. Walt Disney Co.*, 145 F.3d 481 (2d Cir. 1998)).

¹⁷⁵ *Id.* at 1181.

¹⁷⁶ *Id.*

¹⁷⁷ TRIPS, *supra* note 136.

¹⁷⁸ Bradley, *Globalism*, *supra* note 9, at 507.

¹⁷⁹ Kimberly A. Moore, *Xenophobia in American Courts*, 97 Nw. U. L. REV. 1497, 1504 (2003). The findings presented in this article specifically involve patent litigation.

¹⁸⁰ See generally Donald S. Chisum, *Normative and Empirical Territoriality in Intellectual Property: Lessons from Patent Law*, 37 VA. J. INT’L L. 603, 611-14 (1997).

¹⁸¹ See, e.g., U.S. GEN. ACCOUNTING OFFICE, REPORT TO CONGRESSIONAL REQUESTERS, INTERNATIONAL TRADE: FEDERAL ACTION NEEDED TO HELP SMALL BUSINESS ADDRESS FOREIGN PATENT CHALLENGES, at 2, July 17, 2002, available at <http://www.gao.gov/new.items/d02789.pdf> (finding that a small business can spend up to \$330,000 to prosecute a simple patent in nine industrialized foreign countries).

¹⁸² See, e.g., Fisch & Allen, *supra* note 63 and accompanying text.

holders. Furthermore, when litigating in different countries, one should consider preclusion rules. An inadequate or unsuccessful attempt at litigation abroad may interfere with future efforts in the United States or abroad.¹⁸³ The upside of foreign litigation is a showing of respect for national sovereignty and the creation of good will toward international harmonization of intellectual property. For the individual patent holder, however, practical consideration will surely override these policy ones. A desire to use § 271(f) as a proxy for foreign litigation seems reasonable in contrast.

V. CONCLUSION

The various benefits and drawbacks of applying § 271(f) to software identified above¹⁸⁴ highlight the incredible tension between the United States enforcing broad patent rights using an expansive interpretation of § 271(f) and a narrower, territorial reading of the statute. On the one hand § 271(f), especially with software, provides U.S. patent holders a tool to enforce their patents abroad without the hassle and expense of foreign litigation or the risk of lesser protections under foreign patent law schema. At the same time, this tool potentially hurts U.S. companies, like Microsoft, who export their software abroad. It also tarnishes the United States' international image in the intellectual property arena and damages efforts at international patent harmonization.

In the field of software, as opposed to mechanical devices, there is no clear consensus that a given invention even deserves patent protection.¹⁸⁵ While *Deepsouth* clearly usurped Laitram's shrimp deveining innovation¹⁸⁶ to a degree that many sensed was intrinsically wrong,¹⁸⁷ it is less clear that Microsoft's attempt to reap the efforts of AT&T's software innovation was inherently unfair. Maybe Microsoft really usurped AT&T's invention and deserves to be penalized. Given the current state of the United States economy and law, not to mention the massive resources of the two corporate behemoths involved, this result may be correct.

¹⁸³ See generally Philip L. McGarrigle, *The Role of Foreign Judgments in Patent Litigation: A Perspective and Strategic Overview*, 39 IDEA 107 (1998).

¹⁸⁴ See *supra* Part IV.

¹⁸⁵ See *supra* Part III.A.

¹⁸⁶ See *supra* text accompanying note 23.

¹⁸⁷ Congress reacted swiftly to the *Deepsouth* decision. *Supra* Part II.

Perhaps other nations reasonably could reach the opposite result and choose not to grant a patent on AT&T's invention for domestic policy reasons. Patent law grants a monopoly over an invention as an incentive for the inventor to contribute to the corpus of human knowledge. If a patent is too broad, however, it unnecessarily restrains other actors in the market. For instance, AT&T's patent¹⁸⁸ was adopted by the International Telecommunications Union as a necessary component of a technology standard for transmitting voice data electronically.¹⁸⁹ In developing economies, desirable high-tech innovators may not have the resources to pay AT&T royalties for the use of its codec. Yet, without using this codec, such a company may have difficulty meeting international standards and competing in the global market. Even smaller entities of any economy are disadvantaged when they must expend precious resources on royalty fees. From this perspective, perhaps Microsoft fairly took advantage of national differences in patent law; where there is an intentional gap in patent protection, this should be its right.

This issue boils down to whether the United States should apply its patent laws extraterritorially by applying § 271(f) to foreign software copying, despite Judge Rader's warning,¹⁹⁰ in accordance with the majority decision in *AT&T*,¹⁹¹ or whether the negative consequences of such application of § 271(f) demand that it not be applied. Theoretically, the dangers of applying § 271(f) extraterritorially should outweigh any domestic benefits to such application. The United States should lead by example to further the development of truly international intellectual property law. Any domestic entity operating in a foreign nation would benefit from such a system. Ideally, § 271(f) should not be applied extraterritorially.

Unfortunately, real-world concerns reduce the desirability of a limited application of § 271(f). The alternatives to patent holders seeking to enforce foreign rights are uncertain, poorly developed, and expensive.¹⁹² Therefore, not applying the statute to infringing action abroad may very well give carte blanche to infringing, or at

¹⁸⁸ U.S. Reissue Patent No. 32,580 (filed Jan. 19, 1988).

¹⁸⁹ *AT&T Corp. v. Microsoft Corp.*, 01 Civ. 4872, 2003 U.S. Dist. LEXIS 10716, at *4 (S.D.N.Y. 2003) (construing disputed claims of AT&T's '580 Patent on the speech codec).

¹⁹⁰ See *supra* note 82.

¹⁹¹ *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366 (Fed. Cir. 2005) (holding that section 271(f) governs even foreign copying of software).

¹⁹² See *supra* Part IV.C.

the very least, to unfair, business practices. However, perhaps such a hole in U.S. law will force an alternative, such as litigating domestically but applying foreign law, to develop more rapidly so as to allow recourse for patent holders like AT&T.

The recent decisions of the CAFC create troubling concerns that applying 35 U.S.C. § 271(f) to software exported abroad will have ramifications beyond the pocketbooks of the litigants who pay damages and legal fees. This law, applied extraterritorially, raises concerns of international law and may be setting back the development of an international intellectual property system. Despite the present lack of suitable alternatives, the law should not be applied to activities that occur entirely outside the borders of the United States.

As globalization increases over the coming years, it would be unwise for the United States' unilateral approach to reaching foreign conduct by implementing § 271(f) extraterritorially to stand in the way of international harmonization of patent law by angering and undermining foreign nations. Such harmonization is desirable but requires faith in other nations' commitments to intellectual property protections before it can arise to facilitate the creation of a truly global economy.

Until this occurs, the United States should consider applying foreign law in U.S. courts. This would allow patent holders to have the security, familiarity, and benefit of the domestic legal system without undermining any foreign patent systems or international harmonization efforts. AT&T may not have wanted to rely on litigating each case of infringement in the country where it occurred. However, it could still consolidate each foreign infringement action in a single U.S. court applying the laws of the nations where the infringing conduct took place. This way, the gradual creation of global intellectual property rights may proceed unfettered.