

**UNDAMPENED OSCILLATIONS IN THE CIRCUIT: COMBINING THE COMPONENTS
OF 271(F) DOCTRINE SUPPLIED BY THE FEDERAL CIRCUIT**

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Abstract:

Recent Federal Circuit interpretations of patent infringement laws that control cross-border activities appear to be tangled and conflicting because they are not based upon any underlying doctrine. In this note I attempt to unravel and synthesize current case law into a cogent set of principles. I demonstrate that, although the case law delineates a coherent doctrine, this doctrine is by no means ideal or well-settled due primarily to the fact that method claims are included in the purview of a statute not originally enacted to regulate such inventions. This over breadth causes many tensions that require complex rules, such as the detailed doctrine necessary to properly determine component status of tangible products in relation to a process invention. In some cases, these rules reinforce the underlying doctrine by correctly excluding certain situations from the creation of § 271(f) liability. This is done, however, at the great cost of complexity and awkwardness. These problems have not only increased the inherent tension in § 271(f) doctrine, but have also unsettled the Federal Circuit itself, resulting in the issuance of contentious dissenting opinions acknowledging the shortcomings of the current majority. This paper shows that although it is possible to coherently synthesize current C.A.F.C. § 271(f) case law, the resulting rules leave the doctrine in a precarious position that will not stabilize as long as § 271(f) governs process inventions.

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INTRODUCTION

Today's world economy allows for the practical and profitable cross-border development, manufacture and use of commercial products at a scale that is no longer dominated by purely domestic activities. Wireless email services, like that of Blackberry, depend on a system spread over multiple countries with a subscriber base that has passed 5 million users who depend on its services for personal, business and governmental functions.² Software giants distribute software by shipping golden-master discs to customers abroad with licenses to copy, helping to create single-company revenues approaching \$40 billion and net incomes of over \$12 billion.³ At this scale, cross-border activities no longer take a back seat in the control of national economic environments. As such, nations' intellectual property regimes must adapt and properly regulate these cross-border business models to effectively facilitate both business and intellectual development.

This framework, like all ideal legal frameworks, must provide clear answers that can be understood by those the framework is intended to regulate. Recent Court of Appeals for the Federal Circuit (C.A.F.C.) interpretations of patent infringement laws that control cross-border activities, however, appear to be tangled and conflicting based upon the absence of an underlining doctrine. The existing insufficient doctrine, like all court-created doctrines, was created in reaction to a series of independent cases. As a result, the doctrine created does not have an obvious underlying coherency that can be easily understood. An understanding of the law is essential to businesses and practitioners that are attempting to function beneath this framework.

² *Research In Motion Reports Fourth Quarter and Year-End Results for Fiscal 2006*, (June 4, 2006), http://www.rim.net/news/press/2006/pr-06_04_2006-01.shtml.

³ *Id.*

At this time, secondary sources have only partially addressed this problem. That is, they have either dealt only with the results of individual cases or narrow factual situations. For example, several authors have written on the propriety of individual Federal Circuit decisions such as *Eolas* and *RIM*. Further, others have focused on the effect of C.A.F.C. doctrine on specific industries such as software. Still, other secondary sources simply do not address the latest C.A.F.C. decisions. As such, secondary sources do not provide the needed presentation of the current doctrine as it generally applies, limited only by that which has been announced by the Federal Circuit.⁴ Through this note I attempt to unravel and synthesize current case law into a cogent set of principles that can be applied by both patent practitioners and businesses operating in environments heavily dependent on intellectual property.

Part I begins by introducing the traditional patent protection, with a focus on the reach that territorial restrictions have on such protection. Next, the disassembled-exportation loophole that results from these traditional territorial restrictions is discussed. Part I then explores the judicial and legislative responses to that loophole. That is, the Supreme Court case *Deepsouth v. Laitram*, which acknowledged the validity of the loophole, and Congress's ultimate closing of the loophole with § 271(f) are explored.

⁴ 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 (2004); Daniel P. Homiller, *From Deepsouth to the Great White North: The Extraterritorial Reach of United States Patent Law After Research In Motion*, 2005 DUKE L. & TECH. REV. 17 (2005); Andrew F. Knight, *Software, Components, and Bad Logic: Recent Interpretations Of Section 271(f)*, 87 J. PAT. & TRADEMARK OFF. SOC'Y 493 (2005); Mark A. Lemley, David O'Brien, Ryan M. Kent, Ashok Ramani & Robert Van Nest, *Divided Infringement Claims*, 6 SEDONA CONF. J. 117 (Fall 2005); Elizabeth M. N. Morris, Comment, *Territorial Impact Factors: An Argument for Determining Patent Infringement Based upon Impact on the U.S. Market*, 22 SANTA CLARA COMPUTER & HIGH TECH. L.J. 351 (2006); Jefferson Perkins, "System" Travels Abroad, "Method" Gets Grounded: Transnational Reach and Acts of Infringement of Different U.S. Patent Claim Types after *NTP v. RIM* (Fed. Cir.), 18 DCBA Brief 22 (2005); Henry Su, *Patent Infringement Under § 271(f) and the Export of Software: Living in a Material World*, 22 NO. 10 COMPUTER & INTERNET LAWYER 16 (October 2005); William R. Thornewell II, *Patent Infringement Prevention and the Advancement of Technology: Application of 35 U.S.C. § 271(f) to Software and "Virtual Components"*, 73 FORDHAM L. REV. 2815 (2005); Steven C. Tietsworth, *Exporting Software Components--Finding a Role for Software in 35 U.S.C. § 271(f) Extraterritorial Patent Infringement*, 42 SAN DIEGO L. REV. 405 (2005); Virginia Zaunbrecher, *Eolas, AT&T, & Union Carbide: The New Extraterritoriality of U.S. Patent Law*, 21 BERKELEY TECH. L.J. 33 (2006).

Part II sequentially presents the interpretation of § 271(f) by the Federal Circuit, the highest court to interpret the new statute. This section begins by analyzing early Federal Circuit interpretation, which occurred before the court began to directly address the two critical requirements of § 271(f): “supply” and “component statutes.” Part II then introduces the modern case law that forms current § 271(f) doctrine. This detailed analysis highlights the changing and disparate positions various benches of the Federal Circuit have on the interpretation of § 271(f).

Part III critically analyzes, sorts and synthesizes this case law into a cogent set of principles that form the current rule. Part III begins by sifting the common law limitations applicable to “component status” from other limitations that may be present. These “component status” limitations are dealt with through an analysis of the distinctions the court relies upon, such as a possible product-process distinction and one based around tangibility. Part III then conducts a similarly organized analysis of limitations applicable to the interpretation of the “supply” requirement of § 271(f). Finally, Part III presents the rules that result from this complete case law synthesis. These rules show that when determining whether something is a component, the analysis differs for product and process claims, while when determining whether there has been a “supply,” the analysis does not vary according to the type of invention at issue.

Part IV applies these rules to various situations in order to flesh the doctrine out to facilitate a full understanding of the repercussions the case law of the Federal Circuit has caused. For example, Part IV first applies the current rules to activities that may infringe a patented product. Part IV then applies the rules to activities that may infringe a patented method of making a product and a patented method of using a product. Part IV concludes by exploring the current rule’s complex, and sometimes unwieldy, effect on traditional patent law doctrine and the loopholes that remain. As such, through this note I demonstrate that although it may be possible

to understand the current rule of law through coherent synthesis of § 271(f) case law, because of the Federal Circuit’s unnecessarily broad interpretation of § 271(f) that is not fully accepted, even within the C.A.F.C. itself, the current rule is by no means settled.

I. BACKGROUND

A. Traditional Patent Protection

The patent system is the means Congress chose to “promote the Progress of Science and useful Arts” under the Constitution.⁵ This system confers upon an inventor a limited monopoly covering new,⁶ useful,⁷ non-obvious⁸ inventions by means of an issued patent. Such a patent grants to that inventor the right to exclude others from various activities by defining those activities as patent infringement.⁹

The most straightforward form of patent infringement is direct infringement. Direct infringement is the unauthorized making, using, offering to sell or selling of the patented invention during the term of a patent.¹⁰ In addition to direct infringement, liability is also imposed upon those who indirectly infringe a patent through secondary infringement doctrines such as active inducement.¹¹ In the context of secondary liability doctrines, a direct infringer is always required.¹² Further, both direct and indirect infringement generally do not control

⁵ U.S. CONST. art. I, § 8, cl. 8.

⁶ See 35 U.S.C. § 102 (2000).

⁷ *Id.* § 101.

⁸ *Id.* § 103.

⁹ *Id.* § 271.

¹⁰ *Id.* § 271(a).

¹¹ *Id.* § 271(b).

¹² Direct infringement is a prerequisite to a finding of induced infringement. See, e.g., *Met-Coil Sys. Corp. v. Korners Unlimited, Inc.*, 803 F.2d 684, 687 (Fed. Cir. 1986).

extraterritorial behaviors, such as foreign copying.¹³ Thus, one who encourages such activities abroad is traditionally not liable as either a direct or indirect infringer.

B. The Disassembled-Exportation Loop Hole

With the ever increasing globalization of business, foreign and domestic activities begin to blend together creating a need to increase the reach of patents to include a number of activities that would not traditionally be considered infringement. Without such a modification to the patent doctrine, the decreasing cost of conducting business across national boundaries has increased the ease of “gaming” the patent system. For instance, a company conducting activities both inside and outside of the United States might adjust which activities are conducted domestically and which are conducted extraterritorially in order to avoid infringement. As the ease of such adjustments increased, large loopholes in traditional patent scope began to form.

Under traditional United States patent law, if a company produced a product patented by another under a United States patent, some of the company’s activities would be proscribed. For example, if the company sold the product in the United States, such behavior would infringe the patent.¹⁴ Such infringement would not depend on where the product was initially produced. On the other hand, if the company sold the product in foreign countries, those sales would not necessarily infringe the patent. For instance, if the product was designed, produced and then sold entirely within Canada, U.S. patent law would not be implicated. On the other hand, if the company produces the product within the United States while still selling it only in Canada, the domestic production would infringe the patent under § 271(a).¹⁵

¹³ Direct infringement requires that the copying be executed domestically. 35 U.S.C. § 271(a) (2000). As such, there is no direct infringement in instances of foreign copying, and therefore no indirect infringement either. *Id.*

¹⁴ *Id.*

¹⁵ Production is a sufficient condition for direct infringement. *Id.*

Infringement under § 271(a) requires each element of a patented invention to be present in the infringing product. Thus, in the domestic production with foreign sale example, if the company only produced part of the patented invention, there would be no infringement. That is, if the patented product consisted of two combined components, part A combined with part B, infringement would require either the sale or production of a product consisting of precisely that: part A combined with part B. Thus, the domestic production of only part A or only part B would not infringe the patent. Further, the production of both components would not infringe so long as the combination consisting of part A and part B is not itself produced.

A company may thus seek to produce both part A and part B and sell them in a kit that contains directions explaining how the end customer may combine part A with part B. Here, the company is not itself manufacturing the patented product, but rather is actively inducing the customer to manufacture the patented product by including directions for executing the patented combination. By actively inducing another to infringe, the company has now avoided liability under § 271(a). Section 271(b), however, broadens the definition of infringement to include those who actively induce others to infringe a patent.

The next step the company may take to distance itself from infringement would be to sell only the individual components, rather than a kit that included directions for combination. This may be profitable if the company knows that there is no other real use for either part A or B other than in this combination. As such, the directions for combination may therefore be unnecessary. In this case, the company is no longer actively inducing the combination and would therefore avoid liability under both § 271(a) and § 271(b). Yet, the company has again failed to avoid

liability. Under § 271(c) the sale alone would constitute contributory infringement and the company would again be liable.¹⁶

For the company in our example to be liable under both active inducement and contributory infringement theories, there must, however, be a final infringer.¹⁷ That is, if the final customer does not infringe the patent, there can be no active inducement or contributory infringement. This creates a large loophole for those who sell the product abroad. That is, a customer located outside of the United States who combines parts A and B to manufacture the patented invention does not infringe the patent because under § 271(a) such manufacture must be within the United States. As such, the foreign sale of the kit, with or without the instructions, would not be an infringement and liability is completely avoided. Our hypothetical company may take advantage of this gap in definition of patent infringement and profit from the domestic production and foreign sale, so long as it is in an uncombined component form of the patented invention.

C. Deepsouth v. Laitram

As is to be expected, suit was filed against a company for the domestic manufacture and foreign sale of the components of a patented invention, much as described in the hypothetical company of above. In 1969, Deepsouth Packing Co. was accused of infringing Laitram Corp.'s patented shrimp-deveining machine.¹⁸ As the court noted,

Deepsouth in all respects save final assembly of the parts 'makes' the invention. It [did] so with the intent of having the foreign user effect the combination without [the patent owner's] permission. Deepsouth [sold] these components as though they were the machines themselves; the act of assembly [was] regarded, indeed advertised, as of no importance.¹⁹

¹⁶ *Id.* § 271(c).

¹⁷ *Met-Coil*, 803 F.2d at 687.

¹⁸ *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 519 (1972).

¹⁹ *Id.* at 524.

Latiram argued that making a patented invention under § 271(a) should be construed to include “the substantial manufacture of the constituent parts of a machine”²⁰ rather than basing construction of the statute “upon a hypertechnical reading of the patent code that, if tolerated, will deprive it of its right to the fruits of the inventive genius of its assignors.”²¹ In effect, Latiram considered the fact that the final machine was assembled abroad by the end user (rather than domestically) to be of no legal importance. The court, however, was not convinced that such a distinction based upon whether the activity was foreign or domestic was irrelevant.

The traditional “patent system makes no claim to extraterritorial effect.”²² As such, the court was hesitant to extend the reach of patent law to regulate activities in other countries. In *Deepsouth*, although Latiram argued the case as one of strict statutory construction, the court decided that what was “at stake here [was] the right of American companies to compete with an American patent holder in foreign markets.”²³ The court, therefore, refused to extend the territorial reach of U.S. patent law absent “a clear and certain signal from Congress.”²⁴

D. Enactment of Section § 271(f)

The signal that the *Deepsouth* court required came 12 years later in the Patent Law Amendments of 1984.²⁵ Although the legislative history of the amendment is sparse, the congressional record stated that the amendment was intended to 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

²⁰ *Id.* at 528.

²¹ *Id.* at 524.

²² *Id.* at 531.

²³ *Id.*

²⁴ *Deepsouth*, 406 U.S. at 531 (“We would require a clear and certain signal from Congress before approving the position of a litigant who, as respondent here, argues that the beachhead of privilege is wider, and the area of public use narrower, than courts had previously thought.”).

²⁵ 35 U.S.C. § 271(f) (2000).

Supreme Court decision in *Deepsouth Packing Co. v. Laitram Corp* concerning the need for a legislative solution to close a loophole in patent law.²⁶

Amongst other amendments, to address this loophole the Act included the introduction of § 271(f). This new provision contained two subsections: § 271(f)(1)²⁷ and § 271(f)(2).²⁸ Each subsection contained two principle requirements of that which is supplied: “supply” and “component” status. The specific language of these subsections is similar to other “statutory infringement provisions for induced and contributory infringement, but, unlike these provisions, neither requires a direct infringement to impose liability.” Thus, § 271(f) closed the disassembled-exportation loophole.²⁹

Section 271(f)(1) controls situations, such as that of *Deepsouth*, by imposing liability on someone who supplies from the United States uncombined components of a patented invention. This supply must actively induce a combination of the components outside of the United States in a manner that would infringe the patent if the combination occurred within the United States. Further, all or substantially all of the components must be supplied under § 271(f)(1).

Section 271(f)(2), on the other hand, creates liability for those who supply any component (rather than all or substantially all of the components) of a patented invention that is especially adapted for use in the patented invention and does not have substantial non-infringing uses. This section, however, requires knowledge. The potential infringer must know that such

²⁶ Tietsworth, *supra* note 3, at 427.

²⁷ 35 U.S.C. § 271(f)(1) (2000) (“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.”).

²⁸ 35 U.S.C. § 271(f)(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.”).

²⁹ Tietsworth, *supra* note 3, at 427.

component is made and intended for the component to be combined outside the United States in a manner that would infringe the patent if the combination occurred within the United States.

II. APPELLATE INTERPRETATION

As both provisions contain two significant limitations, “supply” and “component” status, common law is needed to flesh out the metes and bounds of § 271(f) infringement. Although § 271(f) has been in place for over 20 years, the United States Supreme Court has yet to decide a case constructing it. As such, current C.A.F.C. doctrine controls as the highest level of authority on the section.

A. Early Federal Circuit Interpretation

C.A.F.C. case law begins with *Rotec Industries, Inc. v. Mitsubishi Corp.* where the C.A.F.C. first addressed § 271(f).³⁰ In *Rotec*, the defendant *offered* to supply components of a patented invention, but did not in fact supply the components.³¹ Based on a straight forward interpretation of the provision, the court held that “§ 271(f)(2) imposes liability only on those who ‘supply’ or ‘cause to supply’ any component of a patented invention” rather than simply “on those who ‘offer to supply’ any component of a patented invention.”³²

Following *Rotec*, the court further fleshed out § 271(f) in *Waymark Corp. v. Porta Systems Corp.*³³ There, the defendant argued that liability should not be found because there was no evidence of actual assembly. This is similar to an argument that may be raised to defend against a charge of secondary liability where a direct infringer is required. Section 271(f), on the

³⁰ *Rotec Indus., Inc. v. Mitsubishi Corp.*, 215 F.3d 1246 (Fed. Cir. 2000).

³¹ *Id.* at 1257.

³² *Id.*

³³ *See Waymark Corp. v. Porta Sys. Corp.*, 245 F.3d 1364 (Fed. Cir. 2001).

other hand, requires no such direct infringer. As such, *Waymark* held that “[t]he statute does not require actual assembly,” only the supply of components.³⁴

Following *Waymark*, the C.A.F.C. heard *Southwest Software, Inc. v. Harlequin Inc.*³⁵ In *Southwest Software*, the alleged infringer argued that § 271(f) should be constructed such that a “component” cannot be a part of a method claim, and as such, method claims could not be infringed under § 271(f).³⁶ Rather than address such a construction due to a technicality,³⁷ the C.A.F.C. never reached the merits of the argument. In fact, such a question would not be answered conclusively for several years.

B. Recent Federal Circuit Interpretation

1. *Standard Havens v. Gencor*

Standard Havens Products, Inc. v. Gencor Industries, Inc. was the first time the C.A.F.C. directly confronted construction of the principle requirements of “supply” and “component” status found in § 271(f).³⁸ Here, the patent in suit was directed to a method of producing asphalt compositions.³⁹ *Standard Havens* argued that *Gencor* contributorily infringed its patent through ten sales of asphalt production facilities, one of the sales being to a foreign customer located in England.⁴⁰ Regarding that sale, there was no evidence of the plant’s use in the United States.⁴¹ With no evidence of a direct infringer, there could be no indirect infringement under §§ 271(b)

³⁴ *Id.* at 1368.

³⁵ *Southwest Software, Inc. v. Harlequin Inc.*, 226 F.3d 1280 (Fed. Cir. 2000).

³⁶ *Id.* at 1290.

³⁷ *Id.* (“*Harlequin's* and *ECRM's* argument concerning the application of § 271 to method claims was raised for the first time on appeal; for that reason, we will not consider it.”).

³⁸ *Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360 (Fed. Cir. 1991).

³⁹ *Id.* at 1363.

⁴⁰ *Id.* at 1374.

⁴¹ *Id.*

or (c).⁴² Standard Havens, however, argued that this sale violated § 271(f). In response, Gencor argued that “the sale of a product to be used in a patented process outside the United States is not within this provision.”⁴³ Agreeing with Gencor, the C.A.F.C. “[did] not find the provisions of 35 U.S.C. § 271(f) implicated” by the sale in the United States of an unclaimed apparatus.⁴⁴

2. Bayer v. Housey

For more than a decade, the C.A.F.C. did not again address interpretation of the supply and component requirements. In 2003, the C.A.F.C. was called on to interpret § 271(g) and in doing so, looked to § 271(f).⁴⁵ Housey argued that Bayer infringed its patent regarding its method of screening substances in order to identify and characterize drugs.⁴⁶ Practicing the method of this patent would yield information regarding the effectiveness of specific substances for the treatment of diseases.⁴⁷ Housey alleged that Bayer practiced this method abroad, resulting in information regarding the identification of a particular drug being made available to those interested.⁴⁸ This information was then used within the United States by Bayer to develop a pharmaceutical product.

Section 271(g) prohibits importing into the United States a “product which is made by a process patented in the United States.”⁴⁹ Housey argued that when Bayer domestically used the information gained abroad through the execution of the patented method, Bayer imported a

⁴² *Id.* (“[B]ecause a contributorily infringing counterflow plant was not actually sold in those three instances, there was no direct infringement of the ‘938 patent . . .”).

⁴³ Brief of Appellant at 19, *Standard Havens* (No. 90-1048).

⁴⁴ *Standard Havens*, 953 F.2d at 1374.

⁴⁵ *Bayer AG v. Housey Pharm., Inc.*, 340 F.3d 1367 (Fed. Cir. 2003).

⁴⁶ *Id.* at 1369.

⁴⁷ *Id.*

⁴⁸ *Id.* (“Housey requested the defendants to identify the methods used in its facilities but the [sic] Bayer failed to do so” leading to a presumption of use.).

⁴⁹ 35 U.S.C. § 271(g) (2000).

product made by a patented process and thus infringed its patent under § 271(g).⁵⁰ That is, the information was a component of the patented method. Bayer, on the other hand, argued that § 271(g) applies only to methods of manufacture rather than a method that yields information.⁵¹

Addressing these arguments, the C.A.F.C. was called on to interpret the meaning of a “product of a patented invention” under § 271(g); specifically, whether § 271(g) addressed only physical articles of manufacture or both physical products and intangible processes. Examining the text of the statute, the court noted that the “second exception to § 271(g), which provides that there is no infringement where the accused product ‘becomes a trivial and nonessential *component* of another product,’ also appears to contemplate a physical product.”⁵² The court also examined the legislative history of § 271(g). As part of an earlier bill, along with the precursor to § 271(g), the provision that later became § 271(f) was proposed. The C.A.F.C. found that § 271(f) also applied only to physical manufacture and that “together the two new statutory acts of infringement were intended to avoid encouraging manufacturing outside the United States” rather than a method that yielded only information.⁵³ It is worth noting that this interpretation of § 271(f) was used only as a tool to assist in the interpretation of its sister section, § 271(g), and not binding precedent as to § 271(f) interpretation.

3. *Pellegrini v. Analog Devices*

Less than a year after *Bayer*, the C.A.F.C. decided *Pellegrini*.⁵⁴ Pellegrini was the sole inventor and owner of a patent directed to a brushless motor drive circuit.⁵⁵ Analog, an integrated circuit designer and manufacturer, produced a line of integrated circuit chips that, in

⁵⁰ *Bayer*, 340 F.3d at 1369.

⁵¹ *Id.* at 1370.

⁵² *Id.* at 1373 (emphasis added).

⁵³ *Id.* at 1374.

⁵⁴ *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113 (Fed. Cir. 2004).

⁵⁵ *Id.* at 1114.

combination with other support circuitry, allegedly infringed upon Pellegrini's drive circuit patent.⁵⁶ The development of the infringing drive circuit was conducted entirely within the United States.⁵⁷ After development, the final design and instructions for manufacture were transmitted abroad where the chips were subsequently manufactured.⁵⁸

Pellegrini argued that the design and instructions for manufacture were a component of a patented invention and that their transmission constituted a supply from the United States, and thus, Analog infringed upon its patent under § 271(f).⁵⁹ Analog, on the other hand, argued that "§ 271(f) is simply inapplicable to products manufactured outside the United States and never shipped to or from the United States."⁶⁰ Holding in Analog's favor, the C.A.F.C. agreed that "§ 271(f) clearly refers to *physical* supply of components, not simply to the supply of instruction or corporate oversight."⁶¹ Although the court held that there was "no physical supply of components," it did not make clear whether this was the result because only information was transmitted and there was thus *no supply*, or because the instructions and corporate oversight were *not a component* of the drive circuit patent.

4. *Eolas v. Microsoft*

After this series of narrow interpretations of § 271(f) in the year following *Bayer*, the C.A.F.C. decided *Eolas*,⁶² signaling a turning point in § 271(f) interpretation. *Eolas* was the owner of a patent, the '906 patent, involving both a method and device that allowed "a user to use a web browser in a fully interactive environment."⁶³ *Eolas* alleged that Microsoft's Internet

⁵⁶ *Id.*

⁵⁷ *Id.* at 1115.

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ Pellegrini, 375 F.3d at 1116.

⁶¹ *Id.* at 1118.

⁶² *Eolas Techs. Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005).

⁶³ *Id.* at 1328.

Explorer infringed upon Claims 1 and 6 of the patent.⁶⁴ Claim 1 of the '906 patent was a method claim that recited, *inter alia*, "a method for running an application program in a computer network environment"⁶⁵ while Claim 6 was a product claim that recites, *inter alia*, "a computer usable medium having computer readable program code physically embodied therein."⁶⁶ The C.A.F.C. analyzed whether Microsoft's exportation infringed upon Claim 6 under § 271(f) and as such, needed to "decide whether software code made in the United States and exported abroad is a 'component[] of a patented invention' under section 271(f)(1)."⁶⁷

In its analysis, the court, rather than limiting the section's application to only product claims or only method claims, determined that "every form of invention eligible for patenting falls within the protection of section 271(f)."⁶⁸ The court then went on to construe the meaning of "component," stating that "a 'component' of a process invention... encompass[es] method steps or acts (citation omitted). A 'component' of an article of manufacture invention... encompass[es] a part of that construct."⁶⁹ The court then applied this definition to the facts of the case and concluded that "the 'computer readable program code' claimed in Claim 6 of the '906 patent is a part or component of that patented invention."⁷⁰

Although the court offered a general definition of what constituted a component, it immediately carved an exception. As the court explained, generally speaking, method steps or acts are the components of a process claim. However, in situations where the differences between a process claim and a product claim are not well defined, what would be a component of

⁶⁴ *Id.*

⁶⁵ U.S. Patent No. 5,838,906 (issued Nov. 17 1998).

⁶⁶ *Id.*

⁶⁷ *Eolas*, 399 F.3d at 1338.

⁶⁸ *Id.* at 1339.

⁶⁹ *Id.*

⁷⁰ *Id.*

one claim might also be a component of another.⁷¹ For example, in this case the invention at issue was computer software claimed as both a product and a process.

[A]s the district court pointed out, process and product--software and hardware--are practically interchangeable in the field of computer technology (citation omitted). On a functioning computer, software morphs into hardware and vice versa at the touch of a button Thus, sound policy again counsels against varying the definition of "component of a patented invention" according to the particular form of the part under consideration, particularly when those parts change form during operation of the invention as occurs with software code."⁷²

As a result, the court expressly held that components of a patented invention, claimed as either a product or process, could be non-physical parts of the invention such as software.

Through this holding, the court clarified that *Pellegrini* addressed the meaning of "supply" rather than of "component."⁷³ Although the court expressly stated that the *Pellegrini* decision did not depend upon the fact that the instructions and oversight were not tangible, *Eolas* offered no guidance as to the proper basis for the *Pellegrini* holding of non-infringement.

5. AT&T v. Microsoft

Four months after *Eolas*, the C.A.F.C. decided another case in which Microsoft was a defendant.⁷⁴ Here, again, Microsoft allegedly infringed upon another's patent (in this case AT&T's patent) under § 271(f) by shipping a golden-master disc⁷⁵ abroad with the intent that it be replicated.⁷⁶ AT&T not only argued that Microsoft was liable for damages for the exportation

⁷¹ *Id.*

⁷² *Id.* at 1339-40.

⁷³ *Eolas*, 399 F.3d at 1340 (the court in *Pellegrini* did not address the meaning of the "components" language in section 271(f)) "Thus, *Pellegrini* requires only that components are physically supplied from the United States." *Id.* at 1341.

⁷⁴ *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366 (Fed. Cir. 2005).

⁷⁵ A golden-master is the original disc containing software from which individual copies are made for end users. *Zomax Optical Media, Inc. v. United States*, 366 F. Supp. 2d 1326, 1338 (Ct. Int'l Trade 2005).

⁷⁶ *AT&T*, 414 F.3d at 1368.

of the golden master disc, but also that Microsoft was liable for the copies made abroad.⁷⁷ In this case, the court relied on *Eolas* to determine that the software was a component of an invention.⁷⁸

Next, the court analyzed whether the term "supply" in § 271(f) may be deemed to include "software replicated abroad from a master version exported from the United States-with the intent that it be replicated."⁷⁹ The court answered this question affirmatively by pegging the construction of "supply" to the manner in which such components are typically supplied.⁸⁰

Finding that due to

the nature of the technology, the 'supplying' of software commonly involves generating a copy.... Accordingly, for software 'components,' the acts 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.⁸¹

As these foreign-made copies did not originate in the United States, Microsoft argued that under *Pellegrini* such copies were not physically supplied from the United States.⁸² In response, the C.A.F.C. stated that *Pellegrini* construed the word "component" rather than the word "supply."⁸³ That is, in response to Microsoft's argument, the C.A.F.C. stated that "*Pellegrini* held that liability under § 271(f) may exist only where *a component itself*—as opposed to instructions for manufacturing the component or management oversight—has been supplied."⁸⁴ Through this interpretation, the C.A.F.C. re-interpreted *Pellegrini* to draw a distinction based upon the definition of "component" that did not include instructions and oversight, rather than a distinction based upon a construction of the word "supply."

⁷⁷ *Id.*

⁷⁸ *Id.* at 1369 (“[W]hether software may be a ‘component’ of a patented invention under § 271(f), was answered in the affirmative in *Eolas* . . .”).

⁷⁹ *Id.*

⁸⁰ *Id.* (“[In] order for us to properly construe the ‘supplied or caused to be supplied in or from the United States’ requirement, we must look at the way software is typically ‘supplied.’”).

⁸¹ *Id.* at 1370.

⁸² See *AT&T*, 414 F.3d at 1370.

⁸³ See *Id.*

⁸⁴ *Id.* (emphasis added).

This expansive view of the term supply was not shared by all members of the court. In a dissenting opinion, Judge Rader expressed his apprehension for increasing the extraterritorial effects of United States patent law by finding liability for copies made wholly abroad. Such an expansion, as Judge Rader explained, is in conflict with *Pellegrini* which "holds that there can be no liability under § 271(f) unless components are shipped from the United States for assembly."⁸⁵

6. *NTP v. RIM*

Also, before the Federal Circuit was *NTP v. RIM*.⁸⁶ NTP was the owner of a patent directed towards an email system that provided wireless email delivery features. RIM, a Canadian Corporation with its principle place of business in Canada,⁸⁷ sold the allegedly infringing BlackBerry wireless email system. The BlackBerry system functioned through the use of three primary components: (1) a BlackBerry handheld unit which displayed emails to a user, (2) an email relay that was used to route emails to the BlackBerry handheld unit, and (3) a wireless network that coupled the relay to the BlackBerry handheld unit.⁸⁸ RIM built such a wireless network and relay in Canada⁸⁹ and sold handheld units within the United States to be used in Canada by customers.⁹⁰ NTP asserted that such behavior constituted infringement under § 271(a).⁹¹ Furthermore, NTP argued that if even if subsection (a) was not applicable, patent infringement had nevertheless occurred under subsections (f) or (g).⁹²

⁸⁵ *Id.* at 1374 (Rader, J., dissenting).

⁸⁶ *NTP, Inc. v. Research In Motion, Ltd.*, 418 F.3d 1282 (Fed. Cir. 2005) [hereinafter *RIM II*].

⁸⁷ *NTP, Inc. v. Research In Motion, Ltd.*, 392 F.3d 1336, 1341-42 (Fed. Cir. 2004) [hereinafter *RIM I*].

⁸⁸ *RIM II*, 418 F.3d at 1289.

⁸⁹ *Id.* at 1290.

⁹⁰ *Id.* at 1322.

⁹¹ *RIM I*, 392 F.3d at 1368.

⁹² *Id.*

In a first, and later withdrawn, opinion the C.A.F.C. examined potential liability under § 271(a). RIM argued that “an action for infringement under section 271(a) may lie only if all allegedly infringing activity occurs within the United States.”⁹³ In this case, because the relay was located in Canada, RIM argued that standard was not met.⁹⁴ Relying on the “control and beneficial use standard,” the C.A.F.C. originally held that because “all of the other components of RIM’s system are located in the United States, and the control and beneficial use of RIM’s system occurred in the United States,” the RIM system infringed upon NTP’s system under § 271(a).⁹⁵ Finding liability under § 271(a), the court never considered arguments raised under other provisions of § 271.

Following this opinion, RIM filed motions for rehearing and rehearing en Banc. Although denying the motion for rehearing en Banc, “the original three-member panel (Judges Michel, Schall, and Linn) granted the petition for rehearing and revised portions of the opinion that discussed Section 271 — and thus withdrawing the December 14 opinion.”⁹⁶

In the second opinion, the court narrowed the control and beneficial use test of § 271(a). In this opinion, the court held that “a process cannot be used ‘within’ the United States as required by section 271(a) unless each of the steps is performed within this country”⁹⁷ while a system claim must only meet the control and beneficial use test.⁹⁸ Since the asserted claims were method claims, in which no liability could be found under § 271(a), the C.A.F.C. was able to reach arguments made under § 271(f).

⁹³ *Id.* at 1367.

⁹⁴ *Id.*

⁹⁵ *Id.* at 1370.

⁹⁶ Dennis Crouch, *Blackberry Case Makes Major Precedential Changes*, PATENTLY O, Aug. 3, 2005, http://patentlaw.typepad.com/patent/2005/08/blackberry_case.html.

⁹⁷ *RIM II*, 418 F.3d at 1318.

⁹⁸ *Id.* at 1317.

NTP argued that RIM's domestic sale of handheld units, which were brought into Canada by end users for use on RIM's Canadian network, constituted a supply of a component of a patented invention.⁹⁹ In evaluating the method claims at issue, the C.A.F.C. first differentiated, and then narrowed, the recent *Eolas* decision. The court first noted that the *Eolas* decision found liability based on infringement of Claim 6, the product claim, stating that "*Eolas* held that software code—even if intangible—is a component of a patented *product* within the meaning of § 271(f)."¹⁰⁰ The court went on to state that "the holding does not impact the application of § 271(f) to the *method* claims of the present appeal."¹⁰¹ The court, as such, narrowed the application of *Eolas* to product, rather than process, claims. The court found that in general:

[I]t is difficult to conceive of how one might supply or cause to be supplied all or a substantial portion of the steps of a patented method...it is clear that RIM's supply of the BlackBerry handheld devices and Redirector products to its customers in the United States is not the statutory 'supply' of any 'component' steps for combination into NTP's patented methods.¹⁰²

To support this statement, the court relied upon *Standard Havens* and *Joy Tech*, stating that both cases held the sale of a product to perform a process did not infringe the process.¹⁰³

7. *Union Carbide v. Shell*

At the time of this writing, the most recent interpretation of § 271(f) by the C.A.F.C. 271(f) is *Union Carbide v. Shell*.¹⁰⁴ Like *RIM*, the plaintiff in this case, Union Carbide, alleged its method patent was infringed under § 271(f). Union Carbide was the assignee of a patent

⁹⁹ *Id.* at 1321.

¹⁰⁰ *Id.* at 1322.

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *RIM II*, 418 F.3d at 1322.

¹⁰⁴ *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 425 F.3d 1366 (Fed. Cir. 2005).

directed to a process for producing ethylene oxide (EO).¹⁰⁵ The production of EO required the use of a catalyst to increase the efficiency of production. The Union Carbide patent teaches a process of EO production using an improved silver catalyst to increase reaction efficiency. Here, Shell produced an equivalent silver catalyst.¹⁰⁶ In addition to Shell's domestic use of the catalysts, Shell exported the catalyst to be used abroad in the production of EO gas.¹⁰⁷ Union Carbide argued that this exportation infringed their process patent under § 271(f).¹⁰⁸

The C.A.F.C. was asked to determine whether the phrase "any component of a patented invention" of § 271(f) included components used in the performance of patented processes. In making this determination, the court again looked to *Eolas*. Although *RIM* expressly interpreted *Eolas* to apply only to product claims, here, the C.A.F.C. stated that *Eolas* featured the exportation of a component used in the performance of a patented process.¹⁰⁹ That is, the software on the disc was a component used in the performance of a patented method. The court then equated the situation presented in *Union Carbide* to *Eolas* in order to determine that the catalyst was a component used in the performance of a patented method.¹¹⁰

As in *RIM*, following the rendering of this opinion, a petition for rehearing and rehearing en Banc was promptly filed.¹¹¹ Although the petition was denied, a dissent was filed by Judge Lourie (with whom Judge Michel, the Chief Judge, and Judge Linn joined¹¹²) that sheds light on the contentious nature of the grounds upon which *Union Carbide* stands. Through this dissent,

¹⁰⁵ *Id.* at 1369-70 ("EO gas is used primarily in the industrial production of ethylene glycol, which is used, in turn, to produce polyester fiber, resin and film.").

¹⁰⁶ *Id.* (finding infringement of the '243 patent when Shell used their catalyst in the production of ethylene oxide (EO) gas).

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

¹⁰⁹ *Id.* at 1379.

¹¹⁰ Union Carbide, 425 F.3d at 1380.

¹¹¹ See Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co., 434 F.3d 1357 (Fed. Cir. 2006).

¹¹² *Id.* at 1358 (Lourie, J., dissenting). Judge Dyk also dissented from the denial without the filing of a separate opinion. *Id.*

several key points of the *Union Carbide* analysis were disputed. The dissent disagreed with any application of § 271(f) to method claims, stating that the “whole tenor of that provision relates to physical inventions, i.e., apparatus or compositions, not methods.”¹¹³ This position was supported by an interpretation of prior case law alternative to that of the majority. The dissent interpreted *Eolas* and *AT&T* to apply only to apparatuses and systems, not to methods - as held by the majority.¹¹⁴

The dissent further interpreted *RIM*'s finding of an absence of infringement to depend upon a lack of component status, rather than upon a lack of supply.¹¹⁵ That is, rather than interpreting *Standard Havens* to depend upon niceties, such as the nature of the machine exported,¹¹⁶ it was interpreted to simply hold that the provisions of § 271(f) were not implicated in a situation where an apparatus for use in a patented process was sent abroad. Thus, as this dissent exemplifies, although it may be possible to understand the current rule of law through the coherent synthesis of § 271(f) case law, the current rule is by no means well-settled.

III. CASE LAW SYNTHESIS

Although the current law is by no means settled, before an analysis into the current Federal Circuit doctrine's propriety is attempted, one must first understand that doctrine's implications. A synthesis of C.A.F.C. case law can be used to tease out the resulting rules that are being expressed—those rules that are both natural and logical, and other rules that are more

¹¹³ *Id.* (Lourie, J., dissenting).

¹¹⁴ *Id.* (“We recently extended the meaning of 'component' to include what traditionally would be physical components, but which, in an electronic world, supplied electronically, are the equivalent of physical components. See *Eolas Techs. v. Microsoft Corp.*, 399 F.3d 1325, 1338 (Fed. Cir. 2005); *AT & T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1368 (Fed. Cir. 2005). But the inventions in those cases were apparatus or systems, not methods or process.”)

¹¹⁵ *Id.* at 1358 (“And in *RIM*, we distinguished method claims, holding that, while a system claim could be infringed even though one of its components was outside of the United States, that was not true for the method claim. *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1322 (Fed. Cir. 2005) (declining to find infringement under § 271(f) with regard to a method claim).”).

¹¹⁶ See *infra* Part III.A.2.a.ii.

convoluted and may be less intended. In order to better understand the varying outcomes of these decisions, it is helpful to separate this analysis into the component and supply requirements of § 271(f). The two separate requirements may be used as a natural division for this analysis. That is, it is helpful to separate the analysis of the first requirement, that of being “a *component* of a patented invention” from the second requirement, that of being “supplied...from the United States.” Since these are separate and distinct requirements, close attention must be paid to determine which the C.A.F.C. is proscribing in each of its various holdings.

A. Interpretation of Component

Looking first to the construction of the phrase “component of a patented invention,” there are several possible distinctions that § 271(f) case law may have used to determine whether something is properly a component. A first distinction that may have been relied upon is a product-process distinction. This involves examining the type of invention, whether product or process, to assist in determining whether something is a component of a patented invention. Another possible distinction that the court may have relied upon is a distinction drawn between tangible and intangible aspects of an invention. Further still, the C.A.F.C. may have considered whether the possible component is incorporated into the final product. A detailed look at the history of § 271(f) case law is needed to determine the propriety and usefulness of these possible distinctions.

1. Product-Process Distinction

The product-process distinction has lingered in the background throughout nearly all of the Federal Circuit’s § 271(f) cases law. For example, in *Standard Havens* the court stated that the sale of a product to be used in a patented process did not implicate the provisions of §

271(f),¹¹⁷ thus suggesting that process claims did not have components. The C.A.F.C. directly addressed the product-process distinction in *Eolas* where the court expressly stated that “every form of invention deserves the protection of section 271(f).”¹¹⁸ Therefore, *Eolas* conclusively stated that the product-process distinction was not dispositive in deciding whether an invention could have components.

The product-process distinction, although no longer directly dispositive as to whether an invention is capable of possessing components after *Eolas*, may still be used to indirectly arrive at the same result that limits the application of § 271(f) to only one invention type. The definition of “component” may vary with the form of the invention. For example, one may argue that a “component” of a process must encompass method steps or acts while a “component” of “an article of manufacture invention” must encompass a part of that construct. In fact, such a definition of component was expressed by the C.A.F.C. in both *Eolas*¹¹⁹ and *RIM*.¹²⁰ As it is difficult to conceive a way to supply a method step,¹²¹ if a method step is all that may be a component of a patented method, under this framework, patented methods would receive no protection under § 271(f). As such, the product-process distinction may be used to define components of patented products that are supplyable, while defining components of a patented process that are not supplyable. As a result, this creates the functional equivalent of a product-process distinction that limits the application of § 271(f) to only product inventions.

While *Eolas* clearly stated that sound policy counsels against such a variable definition,¹²² later cases muddied the waters. For example, *RIM* narrowed *Eolas*’s application to

¹¹⁷ *Standard Havens Prods., Inc. v. Gencor Indus. Inc.*, 953 F.2d 1360, 1374 (Fed. Cir. 1991).

¹¹⁸ *Eolas*, 399 F.3d at 1339.

¹¹⁹ *Id.*

¹²⁰ *RIM II*, 418 F.3d at 1332.

¹²¹ *Id.* (“[I]t is difficult to conceive of how one might supply . . . the steps of a patented method in the sense contemplated by the phrase ‘components of a patented invention’ in section 271(f) . . .”) and *see infra* Part III.B.2.

¹²² *Eolas*, 399 F.3d at 1339-40.

device claims only, stating that because “[the claim [of *Eolas*] was directed to a software product...the holding does not impact the application of section 271(f) to the method claims in the present appeal.”¹²³ This interpretation relies on the fact that *Eolas*’s finding of infringement might have relied upon infringement of either a product or process claim. Under this narrow interpretation, *Eolas* gives no binding construction of components of patented methods. This positioned the *RIM* court to freely construe the meaning of “component” of a patented method.

Unlike *Eolas*, for which it was possible to interpret the holding to be non-binding upon method claims, the facts of *RIM* required a holding to apply to method claims, thus positioning the C.A.F.C. to concretely construe § 271(f)’s application to method claims. NTP argued that *RIM*’s sale of pager units to customers who later brought the pager units abroad infringed upon their patented method under § 271(f).¹²⁴ The C.A.F.C. held “that *RIM*’s supply of the BlackBerry handheld devices and Redirector products to its customers in the United States is not the statutory ‘supply’ of any ‘component’ steps for combination into NTP’s patented methods.”¹²⁵ Although, unlike *Eolas*, this holding applies to method claims rather than product claims, it brings with it an additional ambiguity. The holding here does not necessarily proscribe components of a patented invention but may also proscribe their supply. It is therefore difficult to determine whether the verdict of non-infringement was dependent upon the handheld unit not being a component of the patented method, or dependent upon the handheld unit simply not being supplied.

In order to determine which term the *RIM* opinion construes, an examination of the citations given for the holding is useful. The court relies on citations to *Standard Havens* and *Joy Tech*, both of which relate to the definition of “component.” *Standard Havens*, for example,

¹²³ *RIM II*, 418 F.3d at 1322 (emphasis added).

¹²⁴ *Id.* at 1321.

¹²⁵ *Id.* at 1322.

was the first case to imply that a product-process distinction is dispositive with regard to component status.¹²⁶ Further, the summary of the principle each case stands for, in both cases defines “component” and make no mention of “supply.”¹²⁷ *RIM* therefore likely held that the handheld units were not components of a patented invention. But, as the facts and the opinion of the case were both ambiguous, later case law must be examined to conclusively determine which term *RIM* in fact construed.

This ambiguity was immediately clarified in the C.A.F.C.'s next § 271(f) case, *Union Carbide*. *Union Carbide* interpreted the holding of *RIM* to rely on a construction of the term “supply”, rather than “component”, stating that “[u]nder the facts of *NTP*, this court declined to apply § 271(f) when *RIM* itself did not supply any component to a foreign affiliate” which “is different from [that] case because Shell supplies catalysts from the United States directly to foreign customers.”¹²⁸ In addition to clarifying the facts relevant to the holding of *RIM*, the C.A.F.C. re-broadened the scope of *Eolas* to again apply to both method and process inventions, reaffirming that “the statute makes no distinction between patentable method/process inventions and other forms of patentable inventions.”¹²⁹ Although this seems to be simply a restatement of the rule of law enunciated in *Eolas*, the facts of *Union Carbide* solidified the statement in a way the facts of *Eolas* could not. Now resting on solid ground, current C.A.F.C. case law expresses that both process claims and method claims are covered by the provisions of § 271(f), thereby eliminating the product-process distinction.

¹²⁶ See *supra* Part II.B.1.

¹²⁷ *RIM II*, 418 F.3d at 1322 (citing *Standard Havens Prods., Inc. v. Gencor Indus. Inc.*, 953 F.2d 1360, 1374 (Fed. Cir. 1991)) (noting “that the sale in the United States of an apparatus for carrying out a claimed process did not infringe the process claim under section 271(f) where the customer practiced the process abroad.”) *RIM II*, 418 F.3d at 1322 (citing *Joy Techs., Inc. v. Flakt, Inc.*, 6 F.3d 770, 773 (Fed. Cir. 1991)) (noting ““that the law is unequivocal that the sale of equipment to perform a process is not a sale of the process within the meaning of section 271(a).””).

¹²⁸ *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 425 F.3d 1366, 1380 (Fed. Cir. 2005), *reh'g denied*, 434 F.3d 1357 (Fed. Cir. 2006).

¹²⁹ *Id.* at 1379.

2. Other Distinctions

Although the product-process distinction is not fully dispositive of the component status of a part of an invention, it is still useful as a tool of analysis because of the many inherent differences between the two invention types. That is, the usefulness of other possible distinctions may vary based upon whether an invention is a product or a process. This section of the paper separately addresses product and process claims, pointing out the similarities and distinctions as they arise.

a. Products

i. Tangibility

When analyzing whether an element is a “component” of a product invention there has often been argued a distinction based upon tangibility.¹³⁰ The appropriateness of relying on this distinction to determine whether something may be a “component” was unclear throughout early case law, beginning with *Bayer*. In *Bayer*, the court considered whether something was a “component” under § 271(g).¹³¹ Although not a decision directly involving § 271(f), because § 271(g) also used similar “component” language, the court looked to the use of the term “component” in § 271(f) to assist in interpreting § 271(g).¹³² “In dicta, the Federal Circuit stated that the term “component” in section 271(g) appears to contemplate a physical product.”¹³³ As such, after *Bayer*, there appeared to be a general tangibility requirement for the components of a patented invention in § 271(f).

After *Bayer*, *Pellegrini* again dealt with a possible tangibility requirement. In holding that general instructions, oversight and management were not components because “§ 271(f)(1)

¹³⁰ See *supra* Parts II.B.4, II.B.5, II.B.6.

¹³¹ See *supra* Part II.B.2; *Bayer v. Housey*, 340 F.3d 1367, 1374 (Fed. Cir. 2003).

¹³² *Bayer*, 340 F.3d at 1374.

¹³³ *AT & T v. Microsoft Corp.*, No. 01 Civ 4872(WHP), 2004 WL 406640, at *6 (S.D.N.Y. Mar. 5, 2004), *aff'd*, 2005 U.S. App. LEXIS 14082 (Fed. Cir. 2005) (internal quotations omitted).

clearly refers to physical supply of components, not simply to the supply of instructions or corporate oversight,” the court seemed to reinforce the physicality requirement first suggested in *Bayer*.¹³⁴ The later interpretation of *Pellegrini*, however, caused much confusion as the court struggled to determine whether the *Pellegrini* physicality requirement attached to the term “component” or “supply.” A reading of *Pellegrini* alone does not reveal precisely where this physicality requirement attaches.

The C.A.F.C.’s first interpretation of *Pellegrini* came in *Eolas* where the court stated that *Pellegrini* “did not address the meaning of the ‘components’ language in section 271(f).”¹³⁵ As such, “*Pellegrini* requires only that components are physically supplied from the United States. *Pellegrini* does not impose on section 271(f) a tangibility requirement that does not appear anywhere in the language of that section.”¹³⁶ Interpreting *Pellegrini* and § 271(f) not to attach a tangibility requirement to components of an invention was later affirmed in *Union Carbide*, thus making clear there is no tangibility requirement in “component” under § 271(f).¹³⁷

ii. Incorporation

Although, when interpreting *Pellegrini* in *Eolas* the C.A.F.C expressly disavowed a possible tangibility requirement imposed on “components” of a patented invention, the *Eolas* court was less clear as to whether *Pellegrini* announced a requirement involving “supply”; and if not, on what alternative grounds then did the *Pellegrini* decision rest? One possible distinction the C.A.F.C. may be relying upon in determining whether an element is a component of a product is the incorporation of that element into the final product.

¹³⁴ *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113, 1118 (Fed. Cir. 2004) (emphasis added).

¹³⁵ *Eolas Techs. v. Microsoft Corp.*, 399 F.3d 1325, 1340 (Fed. Cir. 2005), *cert. denied*, 126 S. Ct. 568 (2005).

¹³⁶ *Id.* at 1341.

¹³⁷ *See Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 425 F.3d 1366, 1380 (Fed. Cir. 2005), *reh'g denied*, 434 F.3d 1357 (Fed. Cir. 2006).

Though not directly expounded in *Pellegrini*, a logical analysis of the facts of the case, as well as later case law, reveals that incorporation may have been relied upon. Beginning first with an examination of the plain text of the opinion reveals little. Although *Pellegrini* expressly held that instructions and management were not a “supplied component”,¹³⁸ no specific distinctions were announced. At first blush, it does not appear that this holding rested on a lack of tangibility of instructions and management; but as discussed above,¹³⁹ later case law dictates that *Pellegrini* did not rely on a tangibility distinction.

A second possible distinction upon which the holding of *Pellegrini* may rest, is the distinction drawn between physical and non-physical forms of “supplying.” As explained below,¹⁴⁰ later C.A.F.C. opinions express that this is not a proper distinction either. Another distinction, one neither currently foreclosed by logic nor *stare decisis*, is the whether instructions and management, as the alleged components, are incorporated into the claimed product. A lack of other factual distinctions further evidence that this may be the proper interpretation of *Pellegrini*.

The propriety of this interpretation is buttressed by *Eolas*. In determining whether computer code was a component of a patented invention, *Eolas* relied upon an incorporation distinction by looking to the fact that the computer code was “incorporated as an operating element of the ultimate device.”¹⁴¹ In fact, the court went on to state that “this operating element in effect drives the functional nucleus of the finished computer product,”¹⁴² suggesting that for an element to qualify as a “component” of a patented product it must not only be incorporated into the ultimate device, but it must also be incorporated in a non-trivial way. Although a

¹³⁸ *Pellegrini*, 375 F.3d at 1118.

¹³⁹ *See supra* Part III.A.2.a.i.

¹⁴⁰ *See infra* Part III.B.1.a.

¹⁴¹ *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir. 2005), *cert. denied*, 126 S. Ct. 568 (2005).

¹⁴² *Id.* (internal quotes and citation omitted).

requirement for a threshold level of importance that an incorporated component must have in the claimed product is not clear, *Pellegrini* and *Eolas* together demonstrate that there is an incorporation requirement for components of a product claim. As a result, elements such as instructions and management that are not incorporated into a final product are not elements of the patented product.¹⁴³

b. Processes

In addition to examining possible distinctions the C.A.F.C. may use to determine the metes and bounds of product claims, a similar analysis is also relevant to method claims. This analysis should be conducted separately from that of product claims because distinctions that may not have been relevant to the proscription of components of product claims may in fact be relevant for the proscription of components of method claims.

i. Tangibility

In some cases, however, commonalities are present between the process and product doctrines. For example, the C.A.F.C. rulings regarding the relevance of a tangibility distinction of method claims have followed closely to rulings of product claims. The first case to consider the language "component of a patented method" construed it to include only intangible elements, stating that "a 'component' of a process invention would encompass method steps or acts," while "a 'component' of an article of manufacture invention would encompass a part of that

¹⁴³ This distinction, however, applies only to product claims. Later cases, such as *Union Carbine*, have held that unintegrated catalysts used in the execution of a patented method, which are not integrated into the patented invention, are in fact components. Though this paper argues that this is not an issue because *Eolas* and *Pellegrini* apply only to product claims, one may argue that there is strong evidence that this variance in the definition of "component" between different types of inventions goes directly against other court doctrine, even in *Eolas* itself, which argues claims should be protected irrespective of their form of invention. This argument must fail because giving method claims such treatment would be protecting the product produced through the execution of the method rather than protecting the claimed method itself. See *supra* Part II.B.7.

construct.”¹⁴⁴ Steps and acts are both abstract processes rather than tangible products, suggesting that tangibility is a relevant distinction.

Later cases construed “component” to include additional tangible elements. Although even later cases, including *RIM*, attempted to rein-in the definition of “component” to include only method steps or acts,¹⁴⁵ *Union Carbide* recently reaffirmed *Eolas*. In doing so, *Union Carbide* stated that intangible computer software was in fact a component of the patented method.¹⁴⁶ This affirmation, however, was granted in a case where the alleged components at issue were tangible. Accordingly, there may be freedom left for courts to modify this holding by refusing to follow *Union Carbide*’s non-binding dicta. Until such time, *Union Carbide* remains strong authority explaining that there is no tangibility requirement to components of method claims.

ii. Method: Method-Step Distinction

While it is commonly accepted that components of method inventions may include intangible method steps or acts, it is less clear whether components of method claims could contain tangible components. That is, whether a component of a process invention must be a method step. Such determination depends in part on whether the examples in *Eolas* were intended as an exhaustive list.¹⁴⁷ In *Eolas*, the court implied that the list was meant to be merely

¹⁴⁴ *Eolas*, 399 F.3d at 1339.

¹⁴⁵ *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1322 (Fed. Cir. 2005), *cert. denied*, 126 S. Ct. 1174 (2006) (“The holding [of *Eolas*] does not impact the application of section 271(f) to the method claims in the present appeal.”).

¹⁴⁶ *Union Carbide*, 425 F.3d at 1378-79.

¹⁴⁷ It is also worth noting some of the implications of construing the term “component” of a patented process to include only method steps or acts. Such a construction would lead to a wholesale exclusion of process inventions from the protection of § 271(f) as “it is difficult to conceive of how one might supply or cause to be supplied all or a substantial portion of the steps of a patented method in the sense contemplated by the phrase ‘components of a patented invention’ in section 271(f).” *RIM II*, 418 F.3d at 1322. Thus, if such a construction is accepted, the proposition that Congress intended to exclude method claims from § 271(f) protection must also be accepted.

illustrative, explaining that it “cannot construct a principled reason for treating process inventions different than structural products.”¹⁴⁸ This suggests that components of an invention claimed as a product would be also be components of the same invention when claimed as a process, “particularly when those parts change form during operation of the invention as occurs with software code,” and that neither invention type should differentiate based on tangibility.¹⁴⁹ Although such a broad sweeping definition may not be proper,¹⁵⁰ it suggests that the court did not intend for the list of possible components of a process invention to be exhaustive.

The next case to construe the meaning of “component” and interpret *Eolas* was *RIM*. *RIM* strongly favored a narrow interpretation of *Eolas*, explaining that “[a] method, by its very nature, is nothing more than the steps of which it is comprised. The invention recited in a method claim is the performance of the recited steps.”¹⁵¹ As discussed above,¹⁵² however, *RIM* did not necessarily turn on an interpretation of “component” and this portion of the opinion may be interpreted as dicta.

Neither *Eolas* nor *RIM* clearly established whether components of method claims could contain tangible components.. The answer to this question was finally made clear in *Union Carbide*. There, the court explicitly held that a physical element used in the execution of the claimed method, rather than simply a method step, is a component of the invention.¹⁵³ As the holding of this case required this interpretation of “component,” this portion of *Union Carbide* is binding authority.

iii. *The Union Carbide Definition*

¹⁴⁸ See *Eolas*, 399 F.3d at 1339 (where the C.A.F.C. later implicitly required such inventions to be treated differently).

¹⁴⁹ *Id.*

¹⁵⁰ See *infra* Part III.B.3.

¹⁵¹ *RIM II*, 418 F.3d at 1322 (internal citation omitted).

¹⁵² See *supra* Part III.A.1.

¹⁵³ See *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 425 F.3d 1366, 1379 (Fed. Cir. 2005), *reh'g denied*, 434 F.3d 1357 (Fed. Cir. 2006).

In addition to conclusively choosing a broad interpretation of "component" through its ultimate holding, *Union Carbide* affirmatively provided a definition of a "component of a patented method" stating that:

both this case and *Eolas* feature the exportation of a component (i.e., a computer disc with program code in *Eolas* and a catalyst in this case) used in the performance of a patented process or method (i.e., the method steps executed by the computer in response to the computer readable program code in *Eolas* and the commercial production of EO in this case). In that setting, *Eolas* applied § 271(f) to Microsoft's exported component. Similarly, § 271(f) applies to Shell's exportation of catalysts (i.e., a "component") used in the commercial production of EO abroad (i.e., a "patented invention").¹⁵⁴

Thus, under *Union Carbide* a "component" of a patented method includes not only method steps or acts, but also any "component used in the execution of the patented method."¹⁵⁵ This definition, however, contains two limitations dictated by both logic and precedent.

The express language of this definition provides that the definition applies only to method claims. For example, an application of this definition to the product at issue in *Pellegrini* would be in direct conflict with the holding. This becomes clear if one attempts to compare the product claim holdings of *Pellegrini* with the process claim holdings of *Eolas*. *Pellegrini* held that the instructions for the manufacture of a patented device were not a component of a patented invention,¹⁵⁶ while *Eolas* held that the instructions for the execution of a patented method were a component.¹⁵⁷ An application of the rule of *Eolas* to the facts of *Pellegrini* would require such instructions to be considered a "component" of the invention. In addition, an application of this

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113, 1118 (Fed. Cir. 2004).

¹⁵⁷ *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1341 (Fed. Cir. 2005), *cert. denied*, 126 S. Ct. 568 (2005).

definition to product claims would violate the aforementioned incorporation requirement¹⁵⁸ of product claims. As such, the rule described in *Union Carbide* is directly bound by precedent to apply only to method claims.

A second limitation of the *Union Carbide* definition is that the term "component" only includes *components* used in the performance of the patented method, rather than *entire devices*. That is, a "component" is not an entire device that completely and entirely executes a patented method. Such a limitation is required by *Standard Havens*, which held that a machine that executed a patented method was not a component.¹⁵⁹ A textual hook for such a limitation is in the definition of the word "component." American Heritage defines "component" as "[a] constituent element, as of a system" in contrast to the actual system in itself.¹⁶⁰ Thus, Congress' choice of the word "component" suggests an intended distinction between a component and an entire device.

1. Constituent Element v. Complete System

In order to understand the metes and bounds of this limitation, one must first understand what constitutes an "entire system" that is needed to practice a patented method. The entire system may be thought of as being comprised of two constituents. First, a physical device to enable the execution of the method is necessary. Second, information to instruct the device to execute the specific method is needed. These two constituents may be present as a single, assembled system, or instead, may be present as separate components.

¹⁵⁸ See *supra* Part III.A.2.a.ii.

¹⁵⁹ *Standard Havens Prods., Inc. v. Gencor Indus. Inc.*, 953 F.2d 1360, 1374 (Fed. Cir. 1991).

¹⁶⁰ THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 378 (4th ed. 2000).

One may consider the various classes of integrated circuits (IC) that are produced as an analogue to the “entire system” concept. One class of ICs available are CPUs. A CPU is a general purpose IC that may be programmed to execute any number of different programs, such as the CPU of a personal computer that can execute any software loaded onto the personal computer. If someone were to implement a patented method through the use of a properly programmed CPU, the two constituents of our hypothetical system are separated. That is, the CPU itself is the physical device that enables the execution of the method. Also necessary is the programming to instruct the CPU to implement the specific method. Thus, the CPU is the physical device constituent and the software is the information constituent of the entire system.

A second class of ICs available are application specific integrated circuits (ASIC). ASIC devices are capable of performing only a single, specific function. An example would be a device controlling a child's toy that plays the same sound each time the toy is squeezed. If someone were to use an ASIC device to practice a patented method, the two constituents of our hypothetical system would be one and the same. The ASIC chip itself would be the physical device that enables the execution of the method. Additionally, the information necessary to instruct the ASIC device to implement the method would be hard-wired into the device itself.

In reality, this distinction between components and entire systems is not black and white. There are few systems that require absolutely no extrinsic information. For example, even an ASIC chip has specific inputs without which it will not operate, such as signals as basic as power or a trigger. As such, a continuum exists between components and entire systems based on the level of extrinsic information needed, and a line must be drawn between them. A logical place to make this division would be tied to the underlying behavior that § 271(f) seeks to address. Section 271(f) seeks to limit exportation of devices that infringe a patent, rather than limit

exportation of general raw materials.¹⁶¹ As such, one may look to whether a possible component has significant non-infringing uses. A product that has significant non-infringing uses requires extrinsic information before the invention is practiced. A product that has no significant non-infringing uses may be used to practice the patented invention without the use of significant extrinsic information. Accordingly, the presence of significant non-infringing uses may be used to determine whether something is a component or an entire system, and, in turn, whether it is a “component.”

2. Alternative Exportation Arrangements

In addition to exportation arrangements where the entire system is divided into two pieces, the device portion of the system may also be broken into multiple pieces. However, such variation in the method of exportation does not affect the component status. Consider the variation relevant in *Deepsouth*.¹⁶² In *Deepsouth*, a shrimp-deveining machine was sold in several large pieces that could be assembled in a manner that would infringe upon a product patent covering the machine if executed within the United States.¹⁶³ In a situation where the patent was not in the form of a patented machine, but rather of a patented process of deveining shrimp, whether the exported pieces of the machine would be components of the machine is less clear. The patent holder may argue that because the machine was exported in pieces, no individual piece constituted the entire system. As such, each would be a component of the patented method. Further, because the pieces had no substantial non-infringing uses, their exportation would infringe § 271(f)(2).

This argument not only confuses the underlying differences between product and process inventions but also wholly fails to appreciate the underlying purpose of § 271(f). The addition of

¹⁶¹ See 35 U.S.C. § 271(f) (2000).

¹⁶² Homiller, *supra* note 3.

¹⁶³ *Id.*

§ 271(f) to the Patent Act shows that Congress intended for the exportation of a disassembled machine to be the functional equivalent of the exportation of the assembled machine, where it would be reassembled abroad,. Accordingly, it is proper to consider the totality of what was exported in determining its component status. The exportation of a physical device broken into pieces is the functional equivalent of exporting the assembled machine when determining component status. Therefore, to determine whether the exported disassembled machine comprises the entire system, the totality of what was exported should be examined. Where, as here, the totality of what was exported would comprise the entire system needed to execute the patented method, the exported products would not be a component of the patented method.

3. Distinction Propriety

The propriety of the constituent-total system distinction is not only evidenced, but is demanded by C.A.F.C. precedent. The machine at issue in *Standard Havens* was a plant to produce asphalt by executing a patented method.¹⁶⁴ As such, this plant, like an ASIC device, included both the physical device and information elements of the system. As there were no significant non-infringing uses for this machine, the level of external information required to implement the patented method was insignificant. This insignificant external information likely included basic operational inputs only. Therefore, the plant was not a "component" of the patented method and thus did not infringe under § 271(f).¹⁶⁵

Eolas, on the other hand, provides an example of an element that is a "component" of a patented method.¹⁶⁶ At issue in *Eolas* was "a method for running an application program in a

¹⁶⁴ *Standard Havens Prods., Inc. v. Gencor Indus. Inc.*, 953 F.2d 1360, 1363 (Fed. Cir. 1991).

¹⁶⁵ *Id.* at 1371.

¹⁶⁶ *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1338-41 (Fed. Cir. 2005), *cert. denied*, 126 S. Ct. 568 (2005).

computer network environment.”¹⁶⁷ The alleged "component" was a golden-master disc containing computer code that would instruct a computer to execute the patented method.¹⁶⁸ Here, the two principle constituents of the system needed to execute the method were separate elements. The first element, the physical device to enable the execution of the method, is the computer. The second element, information to instruct the device to execute the specific method, is the software code contained on the golden-master.¹⁶⁹ As both elements were needed to execute the invention – neither alone constituted the entire system. For example, the golden-master disc could not alone execute the invention without a physical device. Similarly, the computer could not execute the patented method without the external input of the software. As there were significant non-infringing uses for the computer, the required information was significant. Thus, the computer was also a "component" of the patented method.¹⁷⁰ The consistency of the outcomes of an application of this definition to C.A.F.C. cases demonstrates that a "component" of a patented method is not only method steps or acts, but is also any component used in the execution of the patented method.¹⁷¹

This illustrates a variance in the scope of components of patented processes and products. A method inherently consists of only method steps or acts, while the definition of its components is broader. As such, a physical component of a patented method would not necessarily be incorporated in the final product, as is required of components of patented products. The final

¹⁶⁷ U.S. Patent No. 5,838,906 (issued Nov. 17, 1998).

¹⁶⁸ *Eolas*, 399 F.3d at 1339.

¹⁶⁹ *See id.* at 1339-40. Though the software, imprinted on a CD, was a physical object, it is properly considered to be the informational part of the system, as that was its main purpose. The computer is what would actually execute the method. The CD would execute nothing, but rather was a storage device to hold information.

¹⁷⁰ *See id.* Though, clearly, the exportation of the computer would not be infringement under § 271(f) due to additional limitations contained within the section. *See infra* Part IV.

¹⁷¹ As a further corollary, an application of this definition to the devices at issue in *RIM*, the BlackBerry pagers, demonstrates that such pagers were likely components of the patented method. This, in addition to the dissent filed in the denial of *Union Carbide*'s rehearing, evidences that the *Union Carbide* interpretation of *RIM* was likely not that which was intended by the *RIM* court. *See supra* Parts II(b)(6), II(b)(7).

product of a patented method is less obvious than that of a patented product, where the final product is obviously the patented product itself. The final product of a patent method may be the complete method itself – that is, the executed combination of all method steps. Alternately, the final product of a patent method may be something else, as in the case of a method of manufacture where the final product of a patent method would be the physical device produced by the method. In either case, a physical component of a patent method is not necessarily incorporated into the final product.

Consider for example the component catalyst of the patented method in *Union Carbide*. If the complete method is considered the final product, a catalyst (not being a method step) is not incorporated. Further, if the final product is considered to be the physical product produced by the method, a catalyst (by definition not consumed in the process) is not incorporated in the final product.¹⁷² Therefore, this broad definition of component of a patented method illustrates a variance in the breadth of the definition of “component” based upon the type of invention.

B. Interpretation of Supply

In addition to determining whether an element is indeed a "component," one must also determine whether it has been "supplied." Throughout C.A.F.C. case law, the construction of "supply" has been intertwined with, and sometimes seemingly collapsed into, the construction of "component." However, a thorough analysis of § 271(f) and its respective C.A.F.C. case law shows that the requirements must be delicately parsed and considered individually. Such an analysis reveals that in determining whether there has been a supply, the C.A.F.C. looks to two aspects of supply: manner of supply and what has been supplied. The manner of supply was a

¹⁷² THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 291 (4th ed. 2000) (“A substance, usually used in small amount relative to the reactants, that modifies and increases the rate of reaction without being consumed in the process.”).

distinction often argued by advocates, but ultimately not adopted by the C.A.F.C. The second distinction, what was supplied, must be delicately separated from the component requirement. Authority has found that some elements, though technically possess "components," are inherently incapable of being "supplied."

1. Manner of Supply

a. No Physicality Requirement

The relevance of the manner of supply was first examined in *Pellegrini*. There, the C.A.F.C. began to draw a distinction as to whether something had been physically supplied.¹⁷³ As explained above,¹⁷⁴ the applicability of this distinction was quickly shaken off from either § 271(f) requirement in a clever two-step process. First, *Eolas* "clarified" that this physicality requirement attached only to the term "supply" rather than "component,"¹⁷⁵ thus allowing non-tangible elements to be components. Second, *AT&T* re-interpreted *Pellegrini's* physicality requirement to not attach to "supply," stating that *Pellegrini's* holding was dependent on the scope of the term "components."¹⁷⁶ *AT&T* gave no discussion of, and made no attempt to distinguish, the opposite interpretation of *Eolas* – thus ignoring the principle of *stare decisis* and further obfuscating an already confusing area of law. In this way, each case effectively pointed the finger at the other requirement, ultimately leaving little of the *Pellegrini* physicality requirement. Accordingly, if the component at issue is software, whether it is "sent abroad via

¹⁷³ *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113, 1118 (Fed. Cir. 2004).

¹⁷⁴ *See supra* Part III.A.2.a.i.

¹⁷⁵ *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1341 (Fed. Cir. 2005), *cert. denied*, 126 S. Ct. 568 (2005) ("*Pellegrini* requires only that components are physically supplied from the United States.>").

¹⁷⁶ *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1370 (Fed. Cir. 2005) ("*Pellegrini* held that liability under § 271(f) may exist only where a component itself--as opposed to instructions for manufacturing the component or management oversight--has been 'supplied or caused to be supplied. . .'" (quoting *Pellegrini*, 375 F.3d at 1118)).

electronic transmission or shipped abroad on a ‘golden master’ disk is a distinction without a difference for the purposes of § 271(f) liability.”¹⁷⁷

Components such as software may be supplied through either physical delivery on a disc or through an intangible electronic transmission. As the *AT&T* court explained, the key distinction is whether something has been supplied abroad or only domestically.¹⁷⁸ As actual exportation is a separate requirement of § 271(f), the court strongly suggested that the physicality of the mode of supply indicated in *Pellegrini* is completely irrelevant.¹⁷⁹

b. Directness of Supply

As soon as the *AT&T* court rejected the physicality requirements of mode of supply, another distinction regarding mode of supply was announced. In *RIM*, the court held that physical devices, sold domestically and brought by customers abroad, that were used to practice a patented invention did not infringe § 271(f).¹⁸⁰ As explained above, a reading of *RIM* on its face does not reveal whether *RIM* was construing the term "component" or "supply." Later, *Union Carbide* made clear that *RIM* was not based upon component status, and was instead based upon a lack of supply.¹⁸¹ The holding of *RIM*, as dictated later by *Union Carbide*, shows that a component sold domestically for domestic use is not supplied abroad under § 271(f), even if it is later carried abroad by purchasers of the component.¹⁸² Therefore, although the manner of

¹⁷⁷ *Id.* at 1371.

¹⁷⁸ *Id.* at 1369.

¹⁷⁹ *See id.* at 1370.

¹⁸⁰ *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1322 (Fed. Cir. 2005), *cert. denied*, 126 S. Ct. 1174 (2006) (“it is clear that RIM’s supply of the BlackBerry handheld devices and Redirector products to its customers in the United States is not the statutory ‘supply’ of any ‘component’ steps for combination into NTP’s patented methods.”).

¹⁸¹ *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 425 F.3d 1366, 1380 (Fed. Cir. 2005), *reh’g denied*, 434 F.3d 1357 (Fed. Cir. 2006) (“Under the facts of *NTP*, this court declined to apply § 271(f) when RIM itself did not supply any component to a foreign affiliate.”).

¹⁸² *Id.* at 1379-80.

supply may not depend on its physicality, it does depend on the directness of the connection between the component leaving the United States and the supplier's actions.¹⁸³

c. Context of Supply

In addition to the directness of supply, the context of the invention is also a relevant factor when examining the manner of supply. The activities that may be considered part of the supply depend upon the nature of the specific component being supplied. These activities are those that are typically involved in the supply of other similar components.¹⁸⁴ For example, in *AT&T* the supply of software was at issue.¹⁸⁵ The C.A.F.C. began by examining the manner in which software was typically supplied to determine which activities were parts of the supply.¹⁸⁶ Because the supplying of software commonly involves generating a copy, “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.”¹⁸⁷ Thus, in the case of software, acts committed by the recipient of supplied components may be included as part of the initial “supply” under § 271(f). Accordingly, to determine the extent and presence of supply, one must also consider the context of the component being supplied.

2. What Was Supplied

¹⁸³ *See id.* In an alternative, more simplified, analytical framework that relies on other requirements of § 271(f) renders this directness of supply requirement as mere surplusage. Where a component is brought abroad by indirect actions of end users who obtained the component through a domestic purchase for domestic use, other requirements of § 271(f) are not met. For example, under § 271(f)(1), the supply must “actively induce the combination of such components outside of the United States.” A domestic sale for domestic use does not actively induce extraterritorial combination as required to infringe under § 271(f)(1). Further, under § 271(f)(2) a supplier must intend “that such component will be combined outside of the United States.” One who domestically sells a product for domestic use again does not likely have the requisite intent for extraterritorial combination to infringe under § 271(f)(2). In combination, §§ 271(f)(1) and (2) create a similar directness of supply requirement thus avoiding the necessity of including such limitations as part of the inherent construction of the term “supply.”

¹⁸⁴ *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1369 (Fed. Cir. 2005).

¹⁸⁵ *Id.* at 1368-69.

¹⁸⁶ *Id.* at 1370 (“Given the nature of the technology, the ‘supplying’ of software commonly involves generating a copy.”).

¹⁸⁷ *Id.*

While the manner in which components are supplied broadens the activities that are included as part of "supply," limitations as to what is capable of being supplied must also be considered. As discussed above,¹⁸⁸ a component of process invention may be either a method step or a component used in the patented method. Though the C.A.F.C. has clearly held that both types of elements are components, the possibility of their being supplied differs. A method step is an abstract process of conducting an activity, and is thus not typically "supplied". As the *RIM* court expressly announced, "it is difficult to conceive of how one might supply or cause to be supplied all or a substantial portion of the steps of a patented method."¹⁸⁹ Although a method step may be a component of an invention, the typical context of such components suggest that it may not be possible to supply method steps under § 271(f).

To fully understand the inappropriateness of the application of § 271(f) to the supply of a method step, one need only consider the basic situation in which it arises. For example, consider a situation where a patented method of manufacturing a coffee mug is executed by conducting some of the method steps domestically and other steps extraterritorially. If this transnational execution is conducted where no physical components are exported in a manner that infringes § 271(f), all that remains is an argument that because individual method steps are conducted abroad there has been a supply of those method steps.¹⁹⁰ In this case, the method steps are not actually "supplied" from within the United States but rather are simply conducted abroad. The execution of a method step does not originate from any specific location or transport to a final destination. These method steps are simply executed in a single location and thus cannot be supplied. Although § 271(f), which requires supply, is an unnatural fit for such a situation, this

¹⁸⁸ See *supra* Part III.A.1.

¹⁸⁹ *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1322 (Fed. Cir. 2005), *cert. denied*, 126 S. Ct. 1174 (2006).

¹⁹⁰ See *infra* Part IV.B.

behavior can be analyzed naturally under other sections.¹⁹¹ Thus, to fully understand whether and to what extent a component has been supplied, one must look to the method of supply as well as what is allegedly being supplied.

C. Resulting Rules

Several basic rules emerge from the Federal Circuit's construction of "component" and "supply." When determining whether something is a component, the rules differ slightly for product and process claims. A component of a product claim can be either tangible or intangible with no requirement of physicality. The component, however, must be incorporated into the final product. Although not addressed by case law, a component must also only be a constituent of the final product rather than the entire system. This simply results from the fact that the production and sale of an entire system would quite clearly fall under § 271(a) rather than § 271(f), as well as from the definition of "component."¹⁹²

A component of a patented process invention can similarly be either tangible or intangible. That is, such components need not be method steps or acts, but can also be tangible devices used in the execution of a patented method. Due to the nature of method claims, however, such components need not be integrated into any final device. The chief limitation of such components is that they must be constituent components used in the process, rather than an entire system that executes the patented process independently.

The interpretation of "supply," on the other hand, does not vary with the type of invention at issue. As such, separate analyses of product and process inventions are not needed. The two chief limitations of supply are the manner of supply and what is allegedly being supplied. The

¹⁹¹ See, e.g., Lemley, *supra* note 3, at 122.

¹⁹² THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 378 (4th ed. 2000) ("A constituent element, as of a system.").

manner of supply is not limited to supply by physical means, however it must possess a requisite directness. Additionally, to determine which activities are parts of the supply, the context of the invention must be considered. In addition to the manner of supply, to determine whether there has been a supply, there are also limitations as to what components are supplyable. Specifically, although they may possess component status, method steps and acts are not capable of being supplied.

IV. RAMIFICATIONS OF THE CURRENT RULE

To better understand which activities are delineated by current § 271(f) doctrine, it is instructive to consider three independent invention types and actions taken that may infringe each of those inventions. This section will consider (1) a patented product, (2) a patented method of making an unpatented product and (3) a patented method of using an unpatented product. Each of these inventions has different characteristics and components, and thus different activities will infringe each type of patented invention.

A. Patented Product

1. Actions

When examining a patented product invention, although not patented as a method, it is still prudent to examine whether such an invention may be infringed by the execution of actions related to the product. For example, domestically conducted actions that constitute use of the patented product infringe the patented product under § 271(a). Where domestically conducted actions are merely tangential to, or in preparation for, use of the patented product (that is, actions that are related to, but are not themselves an actual use), and the actual direct use of the patented

product is conducted abroad, there is no domestic use to infringe under § 271(a). For example, suppose a device is patented that creates copies of a floppy disk using a two-step process. If a user purchases the machine with a limited license that only allows a single use, each additional domestic use would constitute an infringement under § 271(a).

To avoid such infringement the user may situate the machine such that the first step of the copying process is conducted domestically while the second step of the process is conducted in Canada. The first use, as partial and incomplete, is not a use of the product under § 271(a).¹⁹³ There is also no liability under § 271(f), as the second step of the copying process is not a component of the patented machine. Further, executing a method step abroad is not a “supply” of a component of the patented product. As such, territorially divided actions do not infringe a patented product under either § 271(a) or (f).

2. Products

A more common form of infringing a patented product is through the manufacture or production of related products. This production can be analyzed throughout the production process, beginning with raw physical materials, continuing to the partially manufactured product and through to the completed product. It is helpful to analyze the infringing nature of the production of various products present in each step of this process independently.

The analysis of the production of the complete patented product--that is, complete production without an intermediate transfer--is quite simple. When the production process is conducted to completion domestically, and the patented product is produced, the patent has been infringed under § 271(a). On the other hand, when the product is produced entirely abroad, there is no infringement.

¹⁹³ *RIM II*, 418 F.3d at 1318 (“[A] process cannot be used ‘within’ the United States as required by section 271(a) unless each of the steps is performed within this country.”).

When something other than the complete final product is produced, the analysis becomes more complicated. Although there is no infringement under § 271(a), other provisions of § 271 may be violated based upon what is next done with the product. Two choices remain: the product may be held or it may be transferred. Holding the product results in no further transaction and thus no part of § 271 is violated. If the product, on the other hand, is transferred, it may be done so domestically or abroad. It is these transfers that implicate many of the other provisions of § 271.

a. Domestic Transfer of Products

Domestic transfer of an intermediate product may indirectly infringe a patented final product. For example, a transfer to a domestic company (along with some other action) may actively induce the transferee to infringe. This active inducement infringes the patent under § 271(b).¹⁹⁴ If there is no active inducement, domestic sale of the patented product may still infringe § 271(c) if it is done with knowledge that the intermediary is especially made or adapted for use in a patented product and does not have substantial noninfringing uses.¹⁹⁵

b. Foreign Transfer of Products

Foreign transfer of an intermediate product must be examined separately from that of domestic transfer, as the basis for liability differs substantially. Both §§ 271(b) and (c) require a direct infringer, a situation that is not present in an extraterritorial transfer.¹⁹⁶ For example, when a product is transferred abroad where it is later used to form the patented product, there is no direct infringement. Direct infringement includes activities only so far as they are executed

¹⁹⁴ 35 U.S.C. § 271(b) (2000).

¹⁹⁵ *Id.* § 271(c).

¹⁹⁶ *See, e.g., Met-Coil Sys. Corp. v. Korners Unlimited, Inc.*, 803 F.2d 684, 687 (Fed. Cir. 1986).

domestically.¹⁹⁷ As such, although liability may be found under either §§ 271(b) or (c) for similar domestic transfers, no such liability is present for foreign transfers of an intermediate product.

Although there is no violation of §§ 271(a)-(c) for the foreign transfer of these products, such activities may infringe § 271(f). Liability for § 271(f) infringement depends upon the nature of the product transferred. It is therefore helpful to separately consider products that are integrated into a final product and those that are not. As such, a first category may be defined to include those products that are constituents of the final product. This may include basic raw materials and larger products that are both intermediary constituents of a final product. A second category may also be established that includes those physical products that do not become integrated into a final product. This category may include products such as catalysts and machines used in the manufacture of a final product. Each category is dealt with in turn.

i. Integrated Constituents

1. Raw Materials

Raw materials include any materials that are not especially adapted for use in the patented product, and are staple articles or commodities of commerce suitable for substantial non-infringing use. Raw materials may be “components” of a patented product as they are incorporated into the final product as constituent ingredients. Further, extraterritorial transfer of raw materials constitutes a “supply,” as they have been directly exported and are not method steps. Although raw materials meet both the “component” and “supply” limitations of § 271(f), other textual limitations must be examined. For example, § 271(f)(1) may be infringed under a very narrow set of circumstances for raw materials. A substantial portion of the components of a

¹⁹⁷ 35 U.S.C. § 271(a).

patented invention must be supplied along with another step (such as the inclusion of instructions) that actively induces others to combine them. Raw materials are often the basic building blocks of any product. Thus, only through the limited circumstance where a substantial amount and variety of raw materials are supplied, will § 271(f)(1) be violated.

Section 271(f)(2) on the other hand may not be infringed upon through the foreign supply of raw materials. Raw materials, by definition, are not especially made or adapted for use in the invention as is required under § 271(f)(2), but rather are staple articles of commerce suitable for substantial non-infringing use. This limitation is independent of whether there is intent that they be combined outside of the United States. As such, the foreign sale of raw material components of a patented product may not infringe § 271(f)(2).

2. Larger Intermediate Products

Larger intermediate products are the group of products that essentially have no substantial uses other than to be combined to form the patented product. Similar to that of raw products, larger intermediate products that are exported may be “components” of a patented product that have been “supplied.” The other requirements of sections §§ 271(f)(1) and (2) are met more easily than for that of raw materials. For example, as outlined above with regard to raw materials, § 271(f)(1) may be infringed if the supplied intermediate products constitute a substantial portion of a patented product and there is active inducement to combine (such as the inclusion of instructions). The exportation of larger intermediate products also infringes § 271(f)(2) so long as it is intended that they be put in combination outside of the United States. As such, if there is either active inducement or intent to combine, the exportation of larger intermediate products infringes a patented product.

c. Non-Integrated Products

The limitations imposed by the definition of “component of a patented invention” greatly simplify the handling of non-integrated intermediate products that are exported. As discussed above, a component of a patented product must be integrated. Thus, non-integrated products are not components and their exportation does not infringe § 271(f). As such, the exportation of catalysts that are used in the manufacture of the patented product, or machines used to produce the patented product, does not implicate § 271(f).

B. Patented Method of Making a Product

Similar to that of patented products themselves, a patented method of making a product may be infringed through the execution of actions related to the invention and through the creation, use or transfer of products. Current C.A.F.C. doctrines may be examined to determine which behaviors infringe such a patent, and which provision of § 271 is infringed in each example. This section first discusses actions and then discusses the creation, use or transfer of products.

1. Actions

The simplest form of infringement of a patented method of making a product is the execution of the claimed method. Section 271(a) controls such actions. Domestically executing each step in the patented method is an infringement of the patent under § 271(a). If, however, less than the complete method is executed domestically, there is no infringement of 271(a). For example, domestically executing the first half of the method and extraterritorially executing the second half does not infringe § 271(a).

In a situation with such divided execution, § 271(f) is also left un-infringed. Although the extraterritorially executed method steps may in fact be components of the patented method,

they have not been supplied. Foreign execution of a method step is not considered extraterritorial supply of a component of a patented method. Section 271(f) is therefore not infringed. This behavior not proscribed anywhere else in § 271. Thus, territorially divided execution of a patented method does not infringe the patent.

2. Products

In addition to executing the steps of the patented method, producing or exporting products related to the patented method may also be an infringement. Due to the nature of the invention, these actions are not a direct infringement. That is, actions other than the complete domestic execution of the patented method do not directly infringe the patent under § 271(a).¹⁹⁸ Though not direct infringement, such actions may infringe upon other parts of § 271. As outlined above, actions involving the production of related products, or the exportation thereof, may be analyzed throughout the production process. In this case however, the categorical divisions discussed in relation to patented products are no longer useful. For example, whether the entire product is manufactured, rather than only a part thereof, is no longer the most relevant distinction. In this case, a distinction based upon whether the entire method has been executed is more appropriate. Further, as no products are integrated into the patented method, a division based upon integration is no longer needed. As such, it is more useful to divide behaviors into the following three categories: (1) intermediate products created during the execution of patented methods, (2) catalysts used to facilitate the execution of patented methods, and (3) machines used to facilitate the execution of patented methods.

a. Intermediary Products Created During the Execution of Patented Methods

¹⁹⁸ See, e.g., Lemley, *supra* note 3 (providing a more detailed analysis of domestically divided claims).

Intermediary products are the products that result from partial execution of the patented method. For example, if one patents a two-step method for manufacturing a mug that consists of (1) creating a handleless mug, followed by (2) attaching a handle to the handleless mug. The initial handleless mug is an intermediate product created during the execution of the patented method of mug manufacture. When such intermediate products are produced, different provisions of § 271 are implicated based upon where the activities are executed. As such, this section first discusses domestic activities and then discusses exportation.

i. Domestic Activities

In general, domestic activities involving intermediate products do not infringe patented methods of manufacture. For example, the production of an intermediate product, by definition, does not require the complete execution of the patented method. As such, there is no direct infringement under § 271(a). Further, the domestic transfer of such products does not cause others to execute the complete method; since the method has already been partially executed, the purchasers of the intermediate product need not completely execute the patented method themselves. Thus, the sale of such a product is not an inducement of others to infringe under § 271(b). Further, as § 271(c) also requires a direct infringer, domestic transfer does not contributorily infringe the patent.¹⁹⁹

ii. Exportation

Although domestic transfer of intermediate products is not an infringement because a direct infringer is not present, their exportation is controlled by § 271(f) – which does not require the presence of a direct infringer. Such products must therefore both be a “component” of the invention and be “supplied.” Though not directly addressed by case law, intermediate products created by the execution of the patented method are components of a patented method that may

¹⁹⁹ *Id.*

be exported. For example, patented methods of manufacture are often a series of steps that cumulatively create the article of manufacture. Each step acts on the product of the previous step. As such, the product of the previous step is needed to execute each subsequent step. Further, as these components are physical, their exportation may constitute a “supply” so long as it is sufficiently direct. Each intermediate product is therefore a component (as opposed to the complete system) supplied for use in the execution of the patented method, and may thus infringe § 271(f). Similar to that of components of a patented product, exportation of components of a patented method must meet the remaining requirements of §§ 271(f)(1) and (2). As such, it is instructive to consider some of the same categories discussed above.

1. Raw Materials

As defined above, raw materials are fungible commodities that have substantial non-infringing uses. The initial requirements of § 271(f)(1) are met under a very narrow set of circumstances for raw materials. Just as described above,²⁰⁰ § 271(f)(1) may be infringed only if a substantial portion of the components of a patented invention are supplied along with another step (such as the inclusion of instructions) that actively induces others to combine the components in a manner that would be a direct infringement if done in the United States. As such, nearly all of the raw materials needed to execute the patented method, along with instructions that teach the use of the patented method, must be supplied. Section 271(f)(2), on the other hand, is not infringed through the foreign supply of raw materials. Raw materials, by definition, are not especially made or adapted for use in the invention as is required under § 271(f)(2), but rather are staple articles of commerce suitable for substantial non-infringing use, independent of whether it is intended that they be combined outside of the United States. As such, the foreign sale of raw material components of a patented method of making a product

²⁰⁰ See *supra* Part IV.A.2.b.i.1 (discussing raw materials in relation to components of a patented product).

does not infringe § 271(f) unless a company is effectively selling a kit to infringe another's patent.

2. Larger Intermediate Products

As defined above, larger intermediate products are the group of products that, by definition, have no substantial uses other than to be combined to form the patented product. In contrast to that of raw products, the other requirements of §§ 271(f)(1) and (2) are more easily met. For example, as outlined above,²⁰¹ § 271(f)(1) may be infringed if the larger intermediate product constitutes a substantial portion of a patented product and there is active inducement to combine (such as the inclusion of instructions). The exportation of larger intermediate products infringes § 271(f)(2) so long as it is intended that they be combined outside of the United States. As such, if there is either active inducement or intent to combine, the exportation of larger intermediate products infringes a patented method of manufacture.

b. Non-Integrated Products

In addition to intermediate products, the second major category of products of which transfer may infringe a patented method are catalysts used to facilitate the execution of patented methods. Although transfers of such products may not directly infringe a patent, some transfers may secondarily infringe. For example, the transfer of a catalyst may cause others to infringe. That is, the purchaser of a catalyst may use it to facilitate the execution of the patented method. As such, the domestic transfer of such non-integrated products may infringe under §§ 271(b) and (c). Further, because such catalysts are a component of the patented method,²⁰² their exportation

²⁰¹ See *supra* Part IV.A.2.b.i.2 (discussing larger non-integrated products in relation to components of a patented product).

²⁰² *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 425 F.3d 1366, 1379 (Fed. Cir. 2005), *reh'g denied*, 434 F.3d 1357 (Fed. Cir. 2006) (“§ 271(f) applies to Shell's exportation of catalysts....”).

may constitute the improper supply of a component of a patented method under § 271(f). As such, so long as the remaining requirements of substantiality or intent are satisfied, exportation of catalysts used to facilitate the execution of patented methods may be an infringement of the patented method under §§ 271(f)(1) and (2).

c. Machines Used to Facilitate the Execution of the Patented Method

The final category of products that may infringe a patented method are machines used to facilitate the execution of a patented method. Similar to that of catalysts, the domestic transfer of such machines may cause or encourage others to infringe. As such, their domestic transfer may be active inducement or contributory infringement under §§ 271(b) or (c). Further, a machine, or part thereof, may be a component of the patented method of manufacture. The exportation of such machines thus may be an infringement of § 271(f), depending primarily upon whether the exported product is a “component.”

It may be recalled that a product used to execute a patented method is a component of a patented invention so long as it does not comprise the entire system needed. As previously discussed, there are two principle elements of the entire system: the device to enable the execution of the method and the information needed to instruct the device to execute the specific method. The supply of either element of the entire system infringes under § 271(f)(1) so long as there is some active inducement to combine the components abroad.

This analytical framework, however, chiefly eliminates the possibility of infringement under § 271(f)(2) through the exportation of the device portion of the machine. The component requirements for devices that enable the execution of the method and the other § 271(f)(2) requirements are mutually exclusive. In order to obtain component status, devices that enable

the execution of the method must not solely execute the patented method without need for the second element – significant external information to instruct the device. To determine the level of external information that rises to significant, it is necessary to examine whether the device is capable of substantial non-infringing uses. Only devices with substantial non-infringing uses may be considered to require significant external information. As such, only devices with substantial non-infringing uses may be components of a patented method. Section 271(f), however, specifically excludes from infringement the exportation of any device that is suitable for non-infringing uses. Therefore, the exportation of devices used to execute a patented invention may not infringe under § 271(f)(2).

This conflict is by no means improper. In general, it is undesirable to use the patent monopoly to limit the production, sale or exportation of an invention unless that invention is expressly claimed. For example, process patents generally should not limit the production of devices, so long as the claimed process was not executed in that production. Thus, doctrinal tension should be expected when one attempts to use § 271(f) to limit the exportation of a device when only a process is claimed. As such, it is entirely proper that § 271(f)(2) does not limit the exportation of devices used to execute a patented method.

Unlike a device, the second element of the entire system – information – often has no significant non-infringing uses. As such, the exportation of this element may be infringement under § 271(f)(2). Returning to the method for using the Internet example, exportation of the needed computer program would satisfy both the component and remaining § 271(f)(2) requirements. This is, in fact, precisely the situation present in *Eolas* and *AT&T*. Thus, although exportation of a device will not infringe under § 271(f)(2), exportation of the information needed to instruct the device often will.

C. Patented Method, in General

The analysis applicable to patented methods in general²⁰³ is a simplified version of the analysis used for dealing with infringement involving patented methods of making a product. The principle difference here is that a patented method, in general, does not necessarily produce a final, tangible product. This eliminates two categories of possible components: intermediate products created during the execution patented method, and non-integrated products. As such, the only components that must be analyzed under the § 271(f) doctrine are machines used to facilitate the execution of the patented method. One may therefore apply the analysis from above – less the two eliminated component categories. In short, so long as there is not a direct or indirect infringement under §§ 271(a)-(c),²⁰⁴ one must simply determine whether a machine used to facilitate the execution of the patented method is both a “component” and is “supplied” abroad. As such, infringement under § 271(f) occurs in a similar, though much more limited, set of circumstances as that of a patented method of manufacturing a product.

D. The Current Rule’s Effect on Traditional Patent Doctrine

As can be seen, exportation of unpatented inventions may be proscribed by § 271(f). This new reach of patents broadens patent protection beyond that traditionally offered. One may wish to consider whether it was the C.A.F.C. or Congress that is responsible for this broadening. Such a conclusion, however, is nothing more than a direct comment on the propriety of the C.A.F.C. rulings. Concluding that the broadening was done by the courts, for example, is effectively concluding that the C.A.F.C. construed the statute to be broader than Congress intended. This would thus be a conclusion that the current C.A.F.C. construction is fallacious.

²⁰³ That is, those that are not necessarily methods of manufacture.

²⁰⁴ See *supra* Part IV.B (providing an analysis under §§ 271(a)-(c) that does not vary from that given above).

Rather than engaging in an exercise of statutory interpretation to determine whether the court's construction is correct, a more instructive analysis is one into the propriety of the broadening itself. That is, whether the broadening of traditional patent law, done by either Congress or the C.A.F.C., is congruent to the underlying justification for the patent monopoly.

The initial loophole that § 271(f) was established to close should first be considered. This amendment was enacted in response to the unnatural result of *Deepsouth*. It was determined by Congress that one should not be allowed to profit from the exportation of a patented invention simply by distributing the invention piecemeal rather than as an assembled whole. This problem does not encompass the sale of a patented method. Methods may not themselves be separated into pieces and supplied. The C.A.F.C. has implicitly acknowledged this very fact through their doctrine that excludes method steps from being supplyable. This principle was also expressly endorsed by several members of the C.A.F.C. in the dissent to the denial for rehearing of *Union Carbide*.²⁰⁵ A statute, whether initially written or later constructed, to protect a method invention in response to a problem effecting only product inventions is an unnecessary broadening of patent protection.

E. Loop Holes Left By Current Doctrine

In addition to broadening the traditional scope of patent law, in some areas the C.A.F.C.'s recent interpretations of § 271(f) also carve out at specific holes. For example, although steps of a patented method are a component of a patented invention, a company may move one of those steps abroad and avoid liability under § 271(f) as steps of a patented invention cannot be supplied. That is, infringement of a patented method can still be avoided by the foreign execution of part of a patented method.

²⁰⁵ *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 434 F.3d 1357, 1358 (Fed. Cir. 2006).

Consideration of a simple example is helpful in understanding the limits to this loophole. For example, a specific method of producing a decorated coffee mug may be patented. Assume for this example that all prior decorated coffee mugs are produced by first attaching a handle to a mug and then decorating the mug. A new invention may be a less expensive method of producing a decorated coffee mug by partially decorating the coffee mug, attaching a handle, then completing decoration. In this case, a competing low-cost mug manufacturer who had reduced overhead by not investing in R&D may desire to use this new method to manufacture their mugs. Further, in keeping with their low cost strategy, they may wish to avoid paying licensing fees.

In order to avoid liability, this manufacturer may off-shore the middle step of the process to avoid liability. First, partially decorating mugs in the United States and then exporting the mugs to Canada for handle attachment may do this.²⁰⁶ Following the attachment, the mug may then be imported back into the United States for completion of decoration.²⁰⁷ In total, only two of the three steps were executed in the United States. In such a situation there is no direct liability where less than every step of a method claim is completed in the United States. Further, there is no § 271(f) liability for the extraterritorially executed step of handle attachment, as such steps are not supplyable.

This example involving the physical shipment of intermediate products may not always be taken advantage of. In many methods of manufacture it may be cost prohibitive to ship such products. Further, in many cases the shipment of the intermediate product may meet the

²⁰⁶ As explained above, such intermediate products are components of the patented method. In this situation, however, the production has been arranged such that the additional requirements of § 271(f) have not been met. For example, the partially decorated mugs may be similar to any other mug at this point in production, and would thus be raw materials or staple articles of commerce. As such, as explained above, it is not likely that they would comprise a substantial portion of the components of a patented invention. Their exportation thus would not violate § 271(f)(1). Further, as raw materials or staple articles of commerce, their exportation would not violate § 271(f)(2).

²⁰⁷ At this point, only the prior art process of decorating and then attaching the handle has been implemented and thus there is no liability under § 271(g).

additional requirements of § 271(f). That is, they may constitute a substantial portion of the components of a patented invention or not be capable of substantial non-infringing use. In that case, the export of the partially manufactured product would infringe the patented method.

These limitations are lessened in other arrangements however. Consider as another example a variation on the patented method at issue in *Diamond v. Diehr*.²⁰⁸ There, a new method of molding rubber was patented that included the steps of “installing rubber in a press, closing the mold, constantly determining the temperature of the mold, constantly recalculating the appropriate cure time through the use of the formula and a digital computer, and automatically opening the press at the proper time.”²⁰⁹ A company could avoid infringing this patent by simply locating the needed computer abroad, rather than in the domestic factory. That is, the only differences between an infringing machine and a non-infringing machine would be in the length of wires that connect the mold to the computer and the computer location.

In such an example, the computation step would be conducted abroad, and thus there would be no liability under § 271(a). Although the computation steps are components of this invention, they cannot be exported. All that is exported abroad is temperature measurements which, as abstract numbers, have many non-infringing uses and likely do not comprise a substantial portion of the components of a patented invention, thus avoiding § 271(f) liability;²¹⁰ and as above, the recalculated cure time that is imported does not infringe under § 271(g). This example, which involves only the transfer of information, is also much less expensive to

²⁰⁸ *Diamond v. Diehr*, 450 U.S. 175 (1981).

²⁰⁹ *Id.* at 187.

²¹⁰ One may argue on the other hand, that precise temperature readings have no other non-infringing uses because there is no use for such data outside of the context of the specific process for which each generation was intended for. That is, there is no use for such data beyond the use it was intended for upon generation: as information needed to complete the manufacturing process.

implement. As such, § 271(f) case law leaves this very large hole in the protection of patented methods.

One may view this result not as an undesirable error in the § 271(f) doctrine, but rather as a situation that should fall outside of the provisions of domestic patent law. Section § 271(f) is an amendment to U.S. patent law enacted in response to a problem that arose out of the exportation of products and as such, the solutions the statute provides need fit only those problems in which something can be supplied abroad. Method steps, being un-supplyable, fall outside of the bounds of § 271(f) and into the provision of § 271(a). Section 271(a), on the other hand, is a statute that through its very language proscribes only domestic activities. Thus, rather than the aforementioned loophole being considered a mistake, it is properly considered simply the C.A.F.C.'s correct acknowledgement of the limits of § 271(f)'s reach. This construction, if adopted by all nations, leads to requiring jurisdictionally divided execution of patented methods to be proscribed only by international treaties.

CONCLUSION

In general, as has been shown, current C.A.F.C. § 271(f) case law has delineated a coherent doctrine. This current doctrine, however, is by no means ideal or well-settled due primarily to the inclusion of method claims into the provisions of a statute that was not originally enacted to regulate such inventions. This over-breadth causes many tensions that require complex rules to untangle, such as the detailed doctrine necessary to properly determine component status of tangible products in relation to a process invention. In some cases, these rules reinforce the underlying doctrine by correctly excluding certain situations from the creation of § 271(f) liability. This is, however, at the great cost of complexity and awkwardness.

These problems have not only increased the inherent tension in the § 271(f) doctrine, but have also unsettled the Federal Circuit itself, resulting in the issuance of contentious dissenting opinions acknowledging these shortcomings of the current majority. As such, although it is possible to coherently synthesize current C.A.F.C. § 271(f) case law, the resulting rules leave the doctrine in a precarious position that will not stabilize so long as § 271(f) is used to govern process inventions.