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SELECT U.S. PATENT DEVELOPMENTS

CROSS-BORDER APPLICATION OF U.S. PATENTS

by

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I. INTRODUCTION

The patent laws of the United States are intended to protect against infringement occurring within the United States. Normally, this concept is easy to apply. A U.S. patent is infringed if the patented invention, whether it is a product, system, composition, article of manufacture or process[1], is made, used, offered for sale or sold within the U.S., or imported into the U.S., and such conduct occurs without the patent holder's consent.[2] If the conduct occurs outside the U.S., then the U.S. patent is not infringed. A U.S. patent also may be indirectly infringed: by inducing infringement[3] or by contributory infringement[4].

In 1972, the U.S. Supreme Court in *Deepsouth Packing Co. v. Laitram Corp*. held that an operable whole is required to infringe and thus found that the already enjoined manufacturer was still permitted to manufacture the parts of the patented invention and export those parts for assembly outside the U.S. [5] In 1984, twelve years later, the U.S. patent laws were expanded to close this *loophole*.[6]

In 1988, the U.S. patent laws were further expanded to make unlawful the importation of a product manufactured outside the U.S. in a manner covered by a U.S. patent.[7]

The U.S. Court of Appeals for the Federal Circuit ("CAFC") has recently decided several cases pertaining to how the U.S. patent laws, particularly these expansions, apply to software and computer-related patented inventions that entail activity both within and outside the United States. These cases are discussed below.

II. NTP, INC. V. RESEARCH IN MOTION, LTD.

NTP, Inc. ("NTP") had commenced an action against Research In Motion, LTD ("RIM") in the U.S. District Court for the Eastern District of Virginia. [8] NTP alleged that RIM's BlackBerry system infringed U.S. Patents Nos. 5,436,960; 5,625,670; 5,819,172;

[1] 35 U.S.C. §101
[2] 35 U.S.C. §271(a)
[3] 35 U.S.C. §271(b)
[4] 35 U.S.C. §271(c). Contributory infringement essentially covers sellers of components and items that have only one practical purpose -- to be used to infringe a patent.
[5] 406 U.S. 518 (1972)
[6] By the enactment of 35 U.S.C. §271(f)
[7] By the enactment of 35 U.S.C. §271(g)
[8] *NTP, Inc. v. Research in Motion, Ltd*., 270 F. Supp. 2d 751 (ED VA 2003)

6,067,451; and 6,317,592, all of which relate to particular improvements in electronic mail technology.

In traditional e-mail delivery systems, e-mail is created and forwarded from the sender's personal (computer) system to the sender's internet service provider ("ISP"), which in turn forwards the e-mail to the ISP identified in the e-mail's destination address. The intended recipient's ISP then stores the e-mail in the recipient's "mailbox" until the recipient initiates a connection with his/her ISP at which point the e-mail is downloaded to the recipient's personal system. This configuration is commonly referred to as a "pull" system since the e-mail cannot be supplied to the recipient until after the recipient initiates the communication with the ISP.

The NTP patents address various problems and limitations associated with traditional e-mail delivery systems and present the innovation of integrating existing e-mail systems with RF wireless communication networks. In simplified terms, the innovation pertains to supplying the e-mail to the recipient via an RF wireless communication. In particular, the e-mail is supplied to and stored in the recipient's mobile RF receiver, where the recipient can view the e-mail and, if desired, later connect the RF receiver to his/her computer system for transfer of the e-mail thereto. This sort of system often is referred to as a "push" system since the e-mail is transferred to the recipient's RF receiving device at the initiation of the sender.

RIM, a Canadian Corporation located in Waterloo, Ontario, sells the accused BlackBerry system. The BlackBerry system operates by the use of portable wireless devices (i.e., the BlackBerry devices) and software ("e-mail redirector software") installed on BlackBerry users' computer systems or organizations' mail servers. When new mail is detected, the e-mail redirector software retrieves the e-mail from the mail server and forwards the e-mail to a "Relay" component of RIM's wireless network. The Relay component, located in Canada, translates the e-mail to a suitable form for forwarding to a wireless network, which in turn delivers the e-mail to the intended recipient's BlackBerry device. The BlackBerry devices also allow users to generate and send e-mail, but this feature was not at issue since the NTP patents did not cover such functionality.

In District Court, RIM sought summary judgment of non-infringement and invalidity of the patents in issue, and NTP sought partial summary judgment of infringement of four (4) of the claims set forth in its patents. The principal issues on summary judgment involved construction of various claim terms and whether the physical location (in Canada) of RIM's "Relay" component placed RIM outside the reach of section 271 of the U.S. patent statute.[9] The District Court granted summary judgment for NTP, holding that RIM's BlackBerry devices infringed three of the claims.

[9] 35 U.S.C. §271

After trial, the jury found in favor of NTP, finding that RIM directly infringed all of the asserted claims. The jury further found that RIM also was liable for both inducement and contributory infringement of the patents in issue. The District Court further held RIM liable for willful infringement and entered final judgment in favor of NTP and awarded monetary damages in the amount of around $53.7 million, which included compensatory damages of $33 million, prejudgment interest of $2 million, attorneys' fees of $4 million, and enhanced damages of $14 million. NTP was further awarded a permanent injunction against RIM. RIM appealed, and the injunction was stayed pending the appeal.

Several issues were considered on appeal including (1) the district court's construction of various claim terms; (2) the district court's finding of infringement notwithstanding the fact that RIM's Relay component is located outside the United States; and (3) the district court's denial of RIM's motion for judgment as a matter of law; and (4) various evidentiary rulings by the district court.[10]

The claim terms in dispute were "electronic mail server," "gateway switch," "originating process" and "originated information," "dual pathways," "separate and distinct [RF receiver and destination process]," and "additional processor outside an electronic mail system." The CAFC affirmed the district court's construction of various terms and held other constructions faulty, remanding to the district court for resolution of a finding of infringement of claims containing such terms. As for the third (3) and fourth (4) issues identified above, the CAFC affirmed the district court's rulings.

As for the issue of whether RIM is liable for patent infringement despite the fact that its Relay component is located outside the United States, the CAFC construed the relevant sub-sections of section 271 of the patent statute.

Section 271(a) of the U.S. patent statute states:

> Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States, or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.[11]

In its decision, the CAFC recognized the complexities of applying the facts presented.

> "Ordinarily, whether an infringing activity under section 271(a) occurs within the United States can be determined without difficulty. This case presents an added degree of complexity, however, in that: (1) the "patented invention" is not one single device, but rather a system comprising multiple distinct

[10] *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282 (Fed. Cir. 2005). An earlier CAFC opinion, reported at 392 F.3d 1336 (Fed. Cir. 2004) was withdrawn. *See* NTP 418 F.3d 1282 fn 1

[11] 35 U.S.C. §271(a)

> components or a method with multiple distinct steps; and (2) the nature of those components or steps permits their function and use to be separated from their physical location."[12]

RIM argued that for section 271(a) to apply "the entire accused system and method must be contained or conducted within the territorial bounds of the United States." In its analysis, the Court turned to *Decca Ltd. v. United States*[13] for assistance. In *Decca*, the claimed radio navigation system required stations that transmitted signals which were received and processed by a receiver. One of the claims called for three transmitting stations, but only two of the three transmitters being used at the time were located in the United States. While the *Decca* court did not reach a clear resolution as to whether the accused system was "made" within the United States, the court concluded that from the standpoint of usage, "a navigator employing signals from that station [located outside the United States] is, in fact, 'using' that station and such use occurs wherever the signals are received and used in the manner claimed."[14]

The CAFC further noted that "the [Decca] court found particularly significant 'the ownership of the equipment by the United States, the control of the equipment from the United States and … the actual beneficial use of the system within the United States.'"[15] Accordingly, the CAFC interpreted that "[t]he use of a claimed system under section 271(a) is the place at which the system as a whole is put into service, i.e., the place where control of the system is exercised and beneficial use of the system obtained."[16] Consistent with this interpretation, the CAFC found that use of RIM's relay occurred within the United States.

The Court rejected RIM's position that *Decca* was distinguishable from the facts at hand since the RIM Relay is a necessary component for the other components, located in the United States, to operate properly. Instead, the CAFC found that while the RIM Relay and the transmitter in *Decca* are technically different, *Decca* still applies since location of the use of the system "as a whole occurs in the United States."[17]

Although the CAFC held the patents' systems claims infringed, the CAFC held the method claims not infringed, "Under section 271(a), the concept of 'use' of a patented method or process is fundamentally different from the use of a patented system or device."[18] Quoting *Roberts Dairy Co. v. United States*[19], "[I]t is well established that a patent for a

[12] *Id.* at 1313
[13] 544 F.2d 1070 (Ct. Cl. 1976)
[14] *NTP,* 418 F.3d at 1316, citing *Decca*, 544 F.2d at 1083
[15] *Id.*
[16] *Id.* at 1317
[17] *Id.*
[18] *Id.*
[19] 530 F.2d 1342, 1354 (Ct. Cl. 1976)

method or process is not infringed unless all steps or stages of the claimed process are utilized."[20]

Moreover, the CAFC held that neither the "offers to sell" nor the "sells" nor the "imports into the United States" prongs of section 271(a) is applicable. After considering the legislative history of the statute and assessing that the term "sale" should be construed in a manner consistent with the ordinary concept of a transfer of title or property, the CAFC concluded that method claims could only be infringed by use.[21]

The CAFC further held that RIM was not liable under section 271(f)[22], but directed its finding solely to the asserted method claims since the system claims were already found to have been infringed under section 271(a).

Section 271(f) recites,

> "(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.
>
> (2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer."[23]

After considering various cases, including *Eolas Technologies Inc. v. Microsoft Corp.*, discussed below, the CAFC concluded that "[b]y merely supplying products to its customers in the United States, RIM is not supplying or causing to be supplied in this country any steps of a patented process invention for combination outside the United States and [thus] cannot infringe NTP's asserted method claims under section 271(f) as a matter of law."[24]

[20] *NTP,* 418 F.3d at 1318
[21] *Id*. at 1319-21
[22] 35 U.S.C. §271(f)
[23] 35 U.S.C. §271(f)
[24] *NTP,* 418 F.3d at 1321-23

The CAFC further considered liability under section 271(g), which states:

> "Whoever without authority imports into the United States or offers to sell, sells, or uses within the United States a product which is made by a process patented in the United States shall be liable as an infringer, if the importation, offer to sell, sale, or use of the product occurs during the term of such process patent. In an action for infringement of a process patent, no remedy may be granted for infringement on account of the noncommercial use or retail sale of a product unless there is no adequate remedy under this title for infringement on account of the importation or other use, offer to sell, or sale of that product. A product which is made by a patented process will, for purposes of this title, not be considered to be so made after -
>
> (1) it is materially changed by subsequent processes; or
>
> (2) it becomes a trivial and nonessential component of another product." [25]

The principal question addressed was whether the data created by RIM's Relay, located outside the United States, which was delivered into the United States, is a "product" under section 271(g).[26] RIM argued that only data or information was created and that under *Bayer AG v. Housey Pharmaceuticals*[27], section 271(g) does not cover intangible items. NTP countered that *Bayer* is applicable only to "information in the abstract," but that the e-mail flowing from RIM's relay to the RF receivers have a "tangible" structure. The CAFC agreed with RIM, holding that section 271(g) applies only to the manufacture of a physical product. In its analysis, the CAFC also rejected NTP's position that section 271(g) should be applicable since it has been established that transformation of data can produce a tangible result[28]. The Court stated that "sections 101 [relating to patentable subject matter] and 271(g) are not coextensive in their coverage of process invention."[29]

[25] 35 U.S.C. §271(g)

[26] *NTP,* 418 F.3d at 1323

[27] 340 F.3d 1367 (Fed. Cir. 2003)

[28] *NTP,* 418 F.3d at 1323, citing *AT&T Corp. v. Excel Communications, Inc*. 172, F.3d 1352 (Fed. Cir. 1999); *State Street Bank & Trust Co. v. Signature Financial Group*, 149 F.3d 1368 (Fed Cir. 1998); and *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994)

[29] *Id.* at 1323-24

III. EOLAS TECHNOLOGIES INC. AND THE REGENTS OF THE UNIVERSITY OF CALIFORNIA V. MICROSOFT CORP.

On February 2, 1999, Eolas Technologies brought an action against Microsoft Corp. in the Northern District of Illinois for infringement of U.S. Patent No. 5,838,906. The jury found that Microsoft infringed claims 1 and 6 of the patent, and actively induced United States users of Microsoft's Internet Explorer to infringe claim 1.[30]

The patented invention pertains generally to allowing use of a web browser in a fully interactive environment, such as by enabling the user to view news clips or play games across the Internet. Specifically, the invention calls for a browser located in a "distributed hypermedia environment." The claimed browser locates a web page, or distributed hypermedia document, with a uniform resource locator (URL), and parses the text of the web page including an "embed text format" specifying an object external to the web page that has "type information associated with it" (i.e., spreadsheets, databases). The type of information is finally utilized to identify and locate an executable application that automatically enables interactive viewing of the object.

Infringed product claim 6, which embodies infringed method claim 1, is repeated below.

> A computer program product for use in a system having at least one client workstation and one network server coupled to said network environment, wherein said network environment is a distributed hypermedia environment, the computer program product comprising:
>
> a computer usable medium having computer readable program code physically embodied therein, said computer program product further comprising:
>
> computer readable program code for causing said client workstation to execute a browser application to parse a first distributed hypermedia document to identify text formats included in said distributed hypermedia document and to respond to predetermined text formats to initiate processes specified by said text formats;
>
> computer readable program code for causing said client workstation to utilize said browser to display, on said client workstation, at least a portion of a first hypermedia document received over said network from said server, wherein the portion of said first hypermedia document is displayed within a first browser-controlled window on said client workstation, wherein said first distributed hypermedia document includes an embed text format, located at a first location in said first distributed hypermedia document, that specifies the

[30] *Eolas Techs., Inc. v. Microsoft Corp.,* 274 F. Supp. 2d 972 (N.D. Ill., 2003)

> location of at least a portion of an object external to the first distributed hypermedia document, wherein said object has type information associated with it utilized by said browser to identify and locate an executable application external to the first distributed hypermedia document, and wherein said embed text format is parsed by said browser to automatically invoke said executable application to execute on said client workstation in order to display said object and enable interactive processing of said object within a display area created at said first location within the portion of said first distributed hypermedia document being displayed in said first browser-controlled window.

In assessing the amount of royalty to be paid to Eolas, the district court took into account both domestic and foreign sales of the Windows Operating System containing Internet Explorer. With respect to foreign sales, the district court held that Microsoft's exporting of a number of *golden master* disks containing its Windows operating system for duplication and installation by original equipment manufacturers (OEMs) onto computers for sale outside the U.S. violated 35 U.S.C. §271(f). Microsoft appealed the district court's finding of infringement under section 271(f), as well as various other findings by the district court pertaining to claim construction and Microsoft's invalidity and inequitable conduct defenses.

In March, 2005, the CAFC affirmed the district court's claim construction finding[31] as well as a jury instruction, but vacated the district court's findings with respect to Microsoft's invalidity and inequitable conduct defenses, and remanded for a new trial on these issues.[32]

The CAFC further addressed Microsoft's liability under section 271(f), and section (1) is repeated below:

> "(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion <u>of the components of a patented invention</u>, 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."

(emphasis added).[33] In assessing Microsoft's liability under section 271(f), the CAFC assessed whether Microsoft's golden master disks containing its Windows operating system that included Internet Explorer constituted a "component of a patented invention." In its determination, the CAFC initially found that the software code embodied on a disk qualifies as an invention eligible for patenting under 35 U.S.C. §101 and that "patented invention" as set forth in section 271(f) should be construed no differently than under §101.[34] The CAFC

[31] of the term "executable application"
[32] *Eolas Techs. Inc. v. Microsoft Corp*., 399 F.3d 1325 (Fed. Cir. 2005).
[33] 35 U.S.C. §271(f)
[34] *Eolas Techs.,* 399 F.3d at 1338-39

then concluded that software code on a golden master disk is a "component" (i.e., the "computer readable program code" in claim 6) of the patented invention, and held Microsoft liable under section 271(f).[35] The CAFC explicitly rejected Microsoft's position that a "component" under section 271(f) must be a tangible (i.e., physical) element.[36]

IV. AT&T CORP. V. MICROSOFT CORP.

Eolas Technologies addressed whether the exportation of software invokes 35 U.S.C. §271(f). *AT&T Corp. v. Microsoft Corp*. considered this issue further, assessing the extent to which section 271(f) is to be invoked.

In *AT&T*, the district court held that Microsoft infringed AT&T's U.S. Reissue Patent No. 32,580 under 35 U.S.C. §271(f) by the replication outside the United States of Microsoft's golden master disks containing its Windows operating system.[37] On July 13, 2005, the CAFC considered the sole issue of whether the district court properly construed section 271(f) when it imposed liability.[38]

In the appeal, Microsoft presented the following principal arguments: (1) that software is intangible information and thus can not be a "component" of a patented invention under section 271(f); and (2) that, even if the Windows software were a "component," no actual component was "supplied" from the United States as required by the statute.[39] Microsoft specifically argued that the actual copies of the software that were installed on the foreign-assembled computer had all been made outside the United States.[40]

The CAFC quickly dispensed with the first issue as to whether software may be a "component" of a patented invention under section 271(f). Referring to its recent holding in *Eolas Techs. Inc. v. Microsoft Corp*., the CAFC reaffirmed that software may indeed be a "component" of a patented invention under section 271(f).[41] Thus, the bulk of the CAFC's analysis is directed to the remaining question of whether those copies of Windows software replicated outside the U.S. from Microsoft's exported golden master disks are deemed "supplied" from the U.S. for purposes of assessing infringement under section 271(f).

In its analysis, the CAFC considered the unique nature of software technology, concluding that software is "supplied" usually by generating a copy, as in the case of when a user downloads software from a server an exact copy is transmitted to the user.[42] The CAFC

[35] *Id*. at 1339-41
[36] *Id*. at 1340
[37] *AT&T Corp. v. Microsoft Corp*., 71 U.S.P.Q.2D (SD NY 2004)
[38] *AT&T Corp. v. Microsoft Corp*., 414 F.3d 1366 (Fed. Cir. 2005)
[39] *Id*. at 1368-69
[40] *Id*.
[41] *Id*. at 1369
[42] *Id*. at 1369-1371

in turn held "for software 'components,' the act of copying is subsumed in the act of 'supplying,' such that sending a single copy abroad with the intent that it be replicated invokes section §271(f) liability for those foreign-made copies."[43] Legislative history leading to the enactment of section 271(f) was relevant to the CAFC's analysis.

> "In 1984, Congress enacted § 271(f) in response to the Supreme Court's ruling in *Deepsouth Packing Co. v. Laitram Corp*., 406 U.S. 518 (1972), that exposed a loophole in § 271 that allowed potential infringers to avoid liability by manufacturing the components of patented products in the United States and then shipping them abroad for assembly. As explained in the Congressional Record:
>
> > [Section 271(f)] will prevent copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad. This proposal responds to the United States Supreme Court decision in *Deepsouth Packing Co. v. Laitram Corp*., 406 U.S. 518 (1972), concerning the need for a legislative solution to close a loophole in patent law.
>
> H.R. 6286, Patent Law Amendments Act of 1984, 130 Cong. Rec. 28069 (Oct. 1, 1984). At the time of its enactment, § 271(f) was touted as a 'housekeeping-oriented' measure, without which 'the patent system would not be responsive to the challenges of a changing world and the public would not benefit from the release of creative genius.' Id. However, it is clear from the legislative history that § 271(f), which 'close[d] a loophole,' was remedial in nature, such that it 'should be construed broadly to effectuate its purposes.' *Tcherepnin v. Knight*, 389 U.S. 332, 336 (1967). Congress obviously intended the statute to have an extraterritorial effect to the extent that the exportation was facilitated by acts in the United States, and the acts at issue here originating from the United States can be understood to be similarly within the meaning of the statute." [44]

In addition to holding that the foreign copies invoke liability under section 271(f), the CAFC further held that liability "does not depend on the medium used for exportation" in rejecting Microsoft's argument that software sent by electronic transmission must be treated differently from software shipped on disks. [45]

Judge Rader, in his dissent, fervently propositioned that the Court's extension of section 271(f) to cover extraterritorial copying contravenes the Supreme Court's expressed

[43] *Id.* at 1371
[44] *Id.*
[45] *Id.* at 1370-71

confinement of U.S. patent rights to the United States and its territories.[46] Judge Rader stated,

> "copying and supplying are separate acts with different consequences -- particularly when the 'supplying' occurs in the United States and the copyright occurs in Düsseldorf or Tokyo. … The only true difference between making and supplying software components and physical components is that copies of software components are easier to make and transport. The ease of copying a patented component is not the proper basis for making distinctions under §271(f).
>
> ***
>
> Nothing in § 271(f) or its enacting documents expresses an intent to attach liability to manufacturing activities occurring wholly abroad. This court's ruling, however, does exactly that: It holds Microsoft liable for the activities of foreign manufacturers making copies of the patented component abroad.
>
> ***
>
> This court reinforces one point several times, namely that its judgment reaches a just result by imposing liability for multiple infringing acts by foreign manufacturers on a U.S. 'supplier' of a single patented component. This emphasis suggests that AT&T might otherwise have no remedy for infringement occurring wholly outside the United States. AT&T, however, is not left without remedy. AT&T can protect its foreign markets from foreign competitors by obtaining and enforcing foreign patents. Section 271(f) protects foreign markets from domestic competitors. Section 271(f) does not, or at least did not until today, protect foreign markets from foreign competitors."[47]

One obvious flaw in Judge Rader's dissent is that, in certain non-U.S. markets -- at least to date, patent protection is not obtainable for various computer and software-related inventions.[48] On the other hand, Judge Rader's dissent makes clear that there is a certain sense of unjust to hold a wrongdoer of a single act (i.e., the export of a single copy) liable for potentially countless foreign acts.

[46] *Id.* at 1372

[47] *Id.* at 1373-76

[48] Certain countries/jurisdictions, notably Europe, currently do not deem such subject matter appropriate for patent protection.

V. UNION CARBIDE CHEMICALS & PLASTICS TECH. V. SHELL OIL CO.

The CAFC in *Union Carbide Chemicals & Plastics Technology Corp. v. Shell Oil Company,* decided October 3, 2005, apparently has further expanded the application of section 271(f) to process claims.[49] Although not a software case, *Union Carbide* will likely have strong implications with respect to whether exporting software could lead to infringement of software process claims.

U.S. Patent 4,916,243 is directed to a process for manufacturing ethylene oxide as well as a catalyst for the process. Shell sold the catalyst, among other products, in the United States and also sold the catalyst to companies outside the United States. Shell was held liable for patent infringement within the United States. The District Court, however, excluded Shell's exportation of its catalysts in the damages calculation. In particular, the district court held that Shell Oil's foreign sales were not relevant since it found, in light of *NTP v. Research In Motion*, that 35 U.S.C. §271(f) does not apply to processes.[50]

On appeal, the CAFC held the district court's prohibition to be in error. The Court noted the factual similarities with those in *Eolas v. Microsoft*, but further assessed the relevance of its prior decisions in *NTP v. Research in Motion* and *AT&T v. Microsoft*. The CAFC found one fact particularly pertinent, that Shell supplied the catalyst from the United States directly to its foreign affiliates. Accordingly, the Court found *Eolas v. Microsoft* more factually analogous than *NTP v. Research in Motion.*

The CAFC held "because §271(f) governs method/process inventions, Shell's exportation of catalysts may result in liability under §271(f). … This court remands this case to the district court for additional findings on Shell's potential liability under 35 U.S.C. §271(f)."[51]

VI. CONCLUSION

As demonstrated by the recent Federal Circuit cases discussed above, concepts of U.S. patent infringement have evolved to now cover certain forms of non-physical extraterritorial activity. But, it is clear that the U.S. patent laws have not yet been sufficiently interpreted to provide companies with a definite sense of what extraterritorial conduct invokes, and what conduct does not invoke, the U.S. patent infringement statutes.

In the confusion, the CAFC has applied the various patent infringement statutes inconsistently with respect to their application to physical and non-physical activities. In particular, under section 271(f), an exported "component" can be intangible or non-physical, as held in *Eolas*. However, an imported "product" under section 271(g) must be tangible, as

[49] *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co*., 2005 U.S. App. LEXIS 21425 (Fed. Cir. 2005)
[50] *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co* , 2004 U.S. Dist. LEXIS 10730 (D. De 2004)
[51] *Union Carbide*, 2005 U.S. App. LEXIS 21425 (Fed. Cir. 2005)

held in *NTP*. Although different terms are used in the two sections, to some these opposing results seem wrong. As another example, *Union Carbide Chemicals* has confused the issue as to whether the export of software or other intangible invokes section 271(f) for patented processes, despite the fact that the prior *NTP* decision seemed to make clear that section 271(f) does not apply to processes.

In 1998, software and other types of computer-related inventions (beyond the hardware), as well as business processes, became proper subject matter for patent protection in the United States.[52] Seven years later, the Court of Appeals for the Federal Circuit has now only begun to construe patent infringement of such types of inventions that involve cross-border activity. Hopefully, future decisions or legislation will clarify and/or correct the issues remaining.

[52] *see State Street Bank and Trust Co. v. Signature Financial Group Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999); *also see AT&T v. Excel*, 385 F.3d 1352 (Fed. Cir. 1999), *cert. denied*, 120 S. Ct. 368 (1999), *on remand*, 52 U.S.P.Q.2d 1865 (D. Del. 1999).