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NO REFILLS: THE INTELLECTUAL PROPERTY HIGH COURT DECISION IN *CANON V. RECYCLE ASSIST* WILL NEGATIVELY IMPACT THE PRINTER INK CARTRIDGE RECYCLING INDUSTRY IN JAPAN

Scott M. Tobias[†]

Abstract: In its decision in *Canon v. Recycle Assist*, the Japanese Intellectual Property High Court held that Recycle Assist had infringed on Canon's patent for a printer ink cartridge by importing used Canon cartridges that had been cleaned and refilled with ink by a third party. The court found that the third party had modified essential elements of Canon's patented ink cartridge, and therefore the modifications constituted not permissible repair, but infringing and impermissible remanufacture. The court defined essential elements as those intended to solve the technical problems present in similar, prior inventions. Unfortunately, the court failed to define clearly how to identify the technical problems that an invention is intended to overcome. This lack of clarity will have a chilling effect on businesses that recycle used ink cartridges. Such companies will now have no way of knowing for certain whether a Japanese court will find they have infringed on the patents of original equipment manufacturers.

Because the availability of recycled cartridges benefits consumers by lowering cartridge prices and benefits the environment by promoting reuse, the court should revisit its decision and reformulate its rule for repair in order to encourage cartridge recycling. The court should modify its rule for permissible repair by removing the technical problem test entirely and adopting the broader United States standard that allows repair so long as the useful lifetime of the patented product has not expired. If the court retains the essential element test, it should create an exception and permit repair when the essential element modified is a staple good. Alternatively, the court could adopt the United States patent misuse doctrine, giving an accused infringer a defense when it can show that the patent holder unfairly tied its patented product to an unpatented, staple good in order to gain a market advantage.

I. INTRODUCTION

Imagine you have saved money to buy a new car, and one day you see an advertisement for a new model of car from a well-known, respected automobile manufacturer. The car is perfect—it has everything you have dreamed that you want in a car, at a price so low that you can hardly believe it. You ask yourself, “How can anyone sell a new car so cheaply?” The next day you go to the local dealership to look at the car. It does not disappoint, and after a short conversation (involving suspiciously little haggling) you drive away excited in your brand-new car. Over the next week you drive it everywhere, showing it to friends, family, co-workers, casual acquaintances,

[†] The author thanks Professor Toshiko Takenaka, Professor Veronica Taylor, Robert Britt, Takamori Ueta, and the editors of the *Pacific Rim Law & Policy Journal* for their invaluable insight and help in the development of this Comment.

and strangers who you wish to make envious. With so much driving you soon run out of gas and make your way to a gas station. To your amazement you cannot find the opening to the gas tank. You dig out the owner's manual and it tells you something strange: your new car runs on a specially formulated, high-performance fuel that is only available from the dealership. For a fee, the dealership will happily replace your fuel tank (because the fuel is only sold as part of a replacement tank), and any attempt by you the owner to otherwise refuel the car will infringe the manufacturer's patent and open you up to a lawsuit. Suddenly, you realize how the car company is able to sell their new cars so cheaply. The manufacturer makes its margins on the replacement gas tanks.

While this hypothetical is far-fetched, it illustrates a key business strategy employed by printer manufacturers. They sell the printer at a low price and then make money by selling replacement ink cartridges.¹ The difference between the car hypothetical and this business practice is largely in the perception of consumers. If a car maker tried to treat a car's gas tank the way printer makers treat the ink cartridge, consumers would be shocked and outraged. However, we have become accustomed to buying printer cartridges from the printer maker and from no other source. Recently, certain companies have tried to give consumers another option by refilling and reselling used ink cartridges to consumers at a lower price than that of a new ink cartridge.²

On January 31, 2006, a court in Japan frustrated the business plan of one such cartridge reseller. In *Canon v. Recycle Assist*,³ the Japanese Intellectual Property High Court ("IP High Court"), sitting in Grand Panel,⁴ held that defendant Recycle Assist had infringed on patents owned by printer manufacturer Canon by reconditioning, refilling, and reselling used ink cartridges.⁵ The court rejected Recycle Assist's defense that its activities constituted repair and were permissible because Canon's patent rights were exhausted by the sale of cartridges to consumers.⁶

¹ Tom Spring, *Why Do Ink Cartridges Cost So Much?*, PCWORLD.COM, Aug. 28, 2003, <http://www.pcworld.com/article/id,112199-page,1/article.html>.

² Damon Darlin, *New Printer Cartridge or a Refill? Either Way, Ink is Getting Cheaper*, THE NEW YORK TIMES, Feb. 4, 2006.

³ Canon K.K. v. Recycle Assist K.K., 1200 HANREI TAIMUZU 90 (IP High Ct., Jan. 31, 2006), English summary available at http://www.ip.courts.go.jp/eng/documents/pdf/g_panel/decision_summary.pdf, Japanese holding available at http://www.courts.go.jp/search/jhsp0030?action_id=dspDetail&hanreiSrchKbn=07&hanreiNo=9168&hanreiKbn=06 [hereinafter Canon Decision].

⁴ See *infra* Part IV.D.

⁵ Canon Decision, *supra* note 3.

⁶ *Id.*

Exhaustion is a feature of the patent systems of Japan and the United States.⁷ Under this doctrine, the first sale of a patented product exhausts or limits the patent holder's rights in the product.⁸ The purchaser of a product may then use or resell the product without permission of the patent holder.⁹ The purchaser also has the right to repair the product, but this right to repair does not include the right to construct a new article in place of the original.¹⁰

In its ruling in *Canon*, the IP High Court failed to provide a clear test to distinguish between repair and infringing reconstruction. The court stated that repair of a patented product is not allowed if the elements being repaired are "essential" elements of the invention described in the product patent.¹¹ The court defined an "essential element" as one designed to solve a "technical problem" present in previous inventions.¹² However, the court did not give any guidance to help future courts determine the "technical problem" that an invention is designed to overcome.

Given this lack of guidance, the *Canon* decision will negatively impact consumers and the environment. Because the IP High Court failed to provide a clear standard defining when repair of a patented cartridge is permissible, Japanese courts deciding similar cases in the future may apply the ruling so broadly as to find any act of cartridge reconditioning to be not permissible repair, but impermissible, infringing remanufacture. The ruling will therefore have a chilling effect on cartridge recycling companies such as Recycle Assist, who will have to "reevaluate their business models" to make sure their recycling activities do not infringe on a manufacturer's patent rights.¹³ Such companies provide a lower cost, though possibly lower quality, alternative to consumers who want to save money on replacement ink cartridges.¹⁴ The companies also help the environment by allowing reuse of cartridges that would otherwise be destroyed or placed in landfills.¹⁵

⁷ See Darren E. Donnelly, *Parallel Trade and International Harmonization of the Exhaustion of Rights Doctrine*, 13 SANTA CLARA COMPUTER & HIGH TECH. L. J. 445, 450, 484 (1997).

⁸ See DONALD CHISUM, CHISUM ON PATENTS, § 16.03[2] (2005). Patent exhaustion doctrine is also known as "first sale" doctrine. See *id.*

⁹ See *id.*

¹⁰ See *id.* § 16.03[3].

¹¹ Canon Decision, *supra* note 3.

¹² See Canon Inc. v. Recycle Assist Co., Ltd., 31 AIPPIJ. 234, 236 (2006).

¹³ *Id.* at 237. The ruling will also impact the way manufacturers draft their patent claims to try and achieve the greatest possible patent coverage if their product is one which might be recyclable. *Id.*

¹⁴ *Off-Brand Printer Inks: False Economy*, CONSUMER REPORTS, May, 2004, at 31, 31-32.

¹⁵ Brief for International Imaging Technology Council as Amici Curiae Supporting Defendants, *Lexmark International, Inc. v. Static Control Components, Inc.*, 253 F. Supp. 2d 943 (E.D.Ky 2003), available at http://www.eff.org/legal/cases/Lexmark_v_Static_Control/Intl_IITCInternationalImagingTechnical.pdf [hereinafter IITC amicus brief]. IITC is a trade organization of printer cartridge reconditioning companies.

Given the benefits provided by the cartridge recycling industry, the court should revisit the ruling and clarify its test for permissible repair.

This comment argues that Japanese courts should modify the rule laid down by the IP High Court in *Canon*. Part II surveys the policy concerns underlying patent law, patent right exhaustion, and repair doctrine. Part III provides a review of patent exhaustion and repair doctrine in Japanese patent law prior to the *Canon* case. Part IV examines the *Canon* case, and describes the IP High Court's decision, its test for permissible repair, and the importance of the case. Part V discusses the court's failure to define a clear test to distinguish repair from reconstruction. Part VI analyzes the impact that the decision will have on consumer interests and the environment. Part VII recommends that Japanese courts revisit the *Canon* ruling and suggests ways in which a court might modify the test for permissible repair. Finally, Part VIII recommends that Japanese courts allow a defense to infringement if the patent holder is misusing its patent to create an anticompetitive tying arrangement.

II. PATENT LAW REFLECTS A BALANCE BETWEEN THE INTERESTS OF PATENT HOLDERS AND CONSUMERS

At the heart of both Japanese and United States patent laws lies a tension between the rights of the patent holder and the rights of consumers. In both legal systems, patent rights provide an incentive to encourage invention and thereby further the public good.¹⁶ However, consumers bear the cost of this incentive in the form of reduced competition that may lead to higher prices.¹⁷ Therefore, the scope of a patent right must reflect a balance between the interests of the patent holder and those of consumers.¹⁸

Under both Japanese and United States law, patent rights serve as an incentive to encourage companies and individuals to further the public good by developing new technologies. The stated purpose of the Patent Law of Japan is to "encourage inventions by promoting their protection and utilization and thereby, to contribute [to] the development of industry."¹⁹ U.S. patent law similarly aims "[t]o promote the Progress of Science and useful Arts . . ."²⁰ A patent rewards the patent holder by granting a limited,

¹⁶ U.S. CONST. art. I, § 8, cl. 8; Tokkyo Hō [Patent Law], Law No. 121 of 1959, art. 1, translated in 6 EHS LAW BULL. SER. no. 6850A (2002).

¹⁷ See Mark. A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 996 (1997).

¹⁸ See *id.* at 995-97.

¹⁹ Tokkyo Hō [Patent Law], Law No. 121 of 1959, art. 1, translated in 6 EHS LAW BULL. SER. no. 6850A (2002).

²⁰ U.S. CONST. art. I, § 8, cl. 8.

legal monopoly in the form of an exclusive right to manufacture and sell the patented invention.²¹ However, as the United States Supreme Court has stated, this reward is a “secondary consideration.”²² The exclusive right of the patent is justified because “it is the best way to advance public welfare through the talents of . . . inventors . . .” advancing the state of the art.²³ Innovation often requires substantial initial investment and inventors are more likely to risk such investment if they know they will have the exclusive right to use and sell their invention if it turns out to be useful and marketable.²⁴

Unfortunately, the incentive comes with costs that are borne by the public. Because only the patent holder or its licensee can practice the patent, the patent prevents competition in the sale of the patented product.²⁵ This lack of competition allows the patent holder to charge consumers a higher price for the patented product than could be charged if the product was unpatented.²⁶ Another cost may be found in the slowed development of improved versions of the patented product.²⁷ In some cases, creation of a new product requires access to an old product, access that an existing patent may block.²⁸ The patent right may therefore suppress competition in the development of improved versions of patented products to the detriment of consumers who might benefit from the improvements.²⁹

When determining the scope of a patent holder’s exclusive right, a court must balance the incentive for innovation against the interests of consumers.³⁰ If the scope of the patent right is too narrow, potential inventors may not have sufficient incentive to invest the necessary time and resources to create new inventions.³¹ If the patent holder has too extensive an exclusive right, competitors might be prevented from entering the market

²¹ BLACK’S LAW DICTIONARY 1156 (8th ed. 2004).

²² *Mazer v. Stein*, 347 U.S. 201, 219 (1954).

²³ *Id.*; see also *Transparent-Wrap Machine Corp. v. Stokes & Smith Co.*, 329 U.S. 637, 646 (1947) (“Since the primary aim of the patent laws is to promote the progress of science and the useful arts . . . an arrangement which diminishes the incentive is said to be against the public interest.”).

²⁴ See Lemley, *supra* note 17, at 994.

²⁵ See *id.* at 996.

²⁶ See *id.*

²⁷ See *id.* at 997-98.

²⁸ See *id.* This is particularly true if the patent holder refuses to manufacture the patented product or license the patent for use by another. Such a refusal is legal in the United States. See 35 U.S.C. 271(d)(4); *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405, 424 (1908).

²⁹ See Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 908 (1990).

³⁰ See Lemley, *supra* note 17, at 995-97.

³¹ See *id.* at 994.

and consumers might be deprived of the lower prices or improved products that such competitors might provide.³²

The doctrine of patent right exhaustion weighs in favor of consumer interests. Both Japanese and United States patent laws define exhaustion as the extinguishment of patent rights after the first sale of the patented product.³³ If the sale does not include any restriction on use, the purchaser can use, resell, and repair the product without infringing the patent.³⁴ Exhaustion doctrine therefore ensures that the consumers can make full use their purchases, and also prevents the patent holder from profiting twice from the sale of a patented product by exacting additional licensing fees after the initial sale.³⁵

Like exhaustion, the doctrine of permissible repair helps balance the interests of consumers and patent holders. The purchaser of a patented product may repair the product without infringing the patent,³⁶ but the law must determine what activities constitute repair.³⁷ Among the policy considerations underlying this determination is an idea sometimes described as the rule against double profits.³⁸ A patent holder should rightly profit from its patent through the sale of the patented product, but it should only profit once per product sold.³⁹ To allow the patent holder to collect a license fee for the purchaser's repair of the same product would be unfair, as the patent holder gains its rightful compensation for public disclosure of the

³² See *id.* at 995-97.

³³ See Donnelly, *supra* note 7, at 447; CHISUM, *supra* note 8.

³⁴ Canon Decision, *supra* note 3. The idea of patent right exhaustion is often described as an implied license. If the seller did not impose any condition on the sale, the buyer is said to have an implied license to freely use, resell, or repair the item. See Michael J. Swope, *Recent Developments in Patent Law: Implied License – An Emerging Threat to Contributory Infringement Protection*, 68 TEMP. L. REV. 281, 287-91 (1995).

³⁵ Toshiko Takenaka, *Reconditioning a Disposable Camera is Infringement*, CASRIP NEWSLETTER, Autumn 2000, available at <http://www.law.washington.edu/Casrip/Newsletter/vol7/newsv7i3jp2.pdf>. See also *Keeler v. Standard Folding Bed Co.*, 157 U.S. 659, 661, 666 (1895) (holding that the buyer of a patented product may resell it without the patent holder's permission, because once the patent holders receive "satisfactory compensation" for the patented product, they have received all rights conferred by law).

³⁶ See CHISUM, *supra* note 8.

³⁷ See *Wilson v. Simpson*, 50 U.S. 109, 123-26 (1850) (the earliest United States Supreme Court case addressing the question of repair of a patented product). See generally Mark D. Janis, *A Tale of the Apocryphal Axe: Repair, Reconstruction, and the Implied License in Intellectual Property Law*, 58 MD. L. REV. 423, 424-25 (1999) (discussing the "mischief that ensues" when courts seek to distinguish repair from reconstruction).

³⁸ See Teruo Doi, *The Territoriality Principle of Patent Protection and Conflict of Laws: A Review of the Japanese Court Decisions*, 26 FORDHAM INT'L L.J. 377, 390 (2003).

³⁹ *Id.*; see also *Cyrix Corp. v. Intel Corp.*, 846 F. Supp. 522, 539 (E.D. Tex. 1994) (stating that "[t]he purpose of the patent exhaustion doctrine, e.g. preventing patentees from extracting double recoveries for an invention, is defeated if the patent owner can 'invent' a noninfringing use by licensing systems.").

patented invention by the first sale of the product embodying the invention.⁴⁰ On the other hand, if the purchaser's activities in repairing the product are too extensive, then those activities may constitute remanufacture of the product.⁴¹ Such remanufacture would effectively remove demand for the patent owner's product from the marketplace and would deny the patent owner the chance to benefit from its investment.⁴² Therefore, a court deciding how much repair to allow must carefully balance the interests of consumers and the patent holder.

Courts have struggled with the distinction between permissible repair and impermissible reconstruction or remanufacture. The author of a United States district court ruling illustrated the problem by imagining an "apocryphal axe, of which the owner brags: 'This is my great-grandfather's original axe, although the handle has been replaced five times, and the head twice.'"⁴³ Writing for the Federal Circuit Court of Appeals, Judge Pauline Newman stated that "[i]t is readily apparent that there is a continuum between these two concepts" and that "litigated cases rarely reside at the poles wherein 'repair' is readily distinguished from 'reconstruction.'"⁴⁴

III. PRIOR TO THE CANON CASE, JAPANESE COURTS HAD ADDRESSED PATENT EXHAUSTION AND REPAIR DOCTRINE

Patent right exhaustion doctrine in Japan is not described in statute, but in Japanese case law.⁴⁵ The leading Japanese case on patent right exhaustion is *Jap Auto Products, K.K. v. BBS Kraftfahrzeug Technique AG* ("Aluminum Wheel").⁴⁶ There, the Japanese Supreme Court found that the first sale in Germany of a wheel covered by a Japanese patent exhausted patent rights so that the wheel could be resold.⁴⁷ Consequently, the

⁴⁰ See Doi, *supra* note 38, at 390.

⁴¹ See Arthur J. Gajarsa, Evelyn Mary Aswad & Joseph S. Cianfrani, *How Much Fuel To Add To The Fire Of Genius? Some Questions About The Repair/Reconstruction Distinction In Patent Law*, 48 AM. U.L. REV. 1205, 1207 (1999).

⁴² See A. Samuel Oddi, *Un-Unified Economic Theories of Patents – The Not-Quite-Holy Grail*, 71 NOTRE DAME L. REV. 267, 275-77 (1996) (describing the "reward theory" justifying patent rights and summarizing various criticisms of that theory).

⁴³ *FMC Corp. v. Up-Right, Inc.*, 816 F. Supp. 1455, 1464 n. 15 (N.D. Cal. 1993).

⁴⁴ *Jazz Photo Corp. v. Int'l Trade Comm'n*, 264 F.3d 1094, 1102 (Fed. Cir. 2001).

⁴⁵ Etsuo Doi, *IP High Court Renders Decision On Application of Exhaustion Theory To Recycled Products*, PATENTS & LICENSING, Feb., 2006, at 12.

⁴⁶ *Jap Auto Products, K.K. v. BBS Kraftfahrzeug Technique AG*, 51 SAIBANSHŪ MINJI 2299 (Sup. Ct., July 1, 1997), *English summary available at* <http://database.ijp.or.jp/cases/TOTALFILE/1995%28O%291988.html>, *Japanese holding available at* http://www.courts.go.jp/search/jhsp0030?action_id=dspDetail&hanreiSrchKbn=01&hanreiNo=25502&hanreiKbn=01.

⁴⁷ *Id.*

importation into Japan of the wheel sold in Germany did not constitute infringement.⁴⁸ However, the court stated that it would have barred the import as infringing if the original sale carried a clearly noted restriction prohibiting importation into Japan.⁴⁹

Prior to the *Canon* case the IP High Court had not addressed the extent to which repair of a patented product is permitted after the product has been sold. However, a lower Japanese court had tackled the issue in *Fuji Shashin Film K.K. v. K & J K.K. and K.K. Batori Non Non* (“*Fuji Film*”).⁵⁰ There, the Tokyo District Court laid out the rule for permissible repair that would later be applied by the IP High Court in *Canon*. In *Fuji Film*, the defendants purchased used Fuji disposable cameras from film developers, replaced the film and imported the reconditioned disposable cameras to sell in Japan.⁵¹ Fuji asserted this activity infringed their patent on the manufacture of the disposable cameras.⁵² The defendants countered that Fuji’s patent rights were exhausted by the initial sale of the cameras, and that the defendant’s activity was therefore noninfringing, permissible repair.⁵³ The court found in favor of Fuji.⁵⁴

In its judgment in *Fuji Film*, the Tokyo District Court sought to define the distinction between repair and reconstruction.⁵⁵ The court held that the camera recycling activities of the defendant constituted infringement even though the patent holder Fuji had not explicitly claimed the film in their patent.⁵⁶ The court rejected the defendant’s exhaustion defense for three reasons. First, the exhaustion defense was not available because the camera’s functionality was completely spent.⁵⁷ Second, Fuji’s compensation for the sale of the product covered the period of time until the product is spent.⁵⁸ Therefore, Fuji was not receiving double compensation through enforcement of this patent because sale of the reconditioned camera was taking away demand for new cameras.⁵⁹ Third, after the defendant replaced an essential element of the product, that modified product no longer

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ *Fuji Shashin Film K.K. v. K & J K.K. and K.K. Batori Non Non*, Heisei 8 (Wa) 16782 (Tokyo D. Ct., Aug. 31, 2000); *see also* Takenaka, *supra* note 35 (summarizing the Tokyo District Court’s holding).

⁵¹ Takenaka, *supra* note 35.

⁵² *Id.*

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.*

constituted the same product originally sold.⁶⁰ Therefore, such replacement was effectively an act of remanufacture, not repair.⁶¹ The court emphasized that repair is not allowed after a product has been completely spent.⁶² If the product is not spent, repair is allowed only if the part replaced is not an essential element.⁶³

IV. THE INTELLECTUAL PROPERTY HIGH COURT ADDRESSED REPAIR FOR THE FIRST TIME IN *CANON V. RECYCLE ASSIST*

Japanese courts revisited the question of permissible repair of a patented product in *Canon v. Recycle Assist*.⁶⁴ In *Canon*, a Grand Panel of the IP High Court tried to refine the rule for permissible repair given by the Tokyo District Court in *Fuji Film*. Despite its efforts, the court failed to provide a clear rule defining the distinction between permissible repair and impermissible reconstruction.

A. *Canon Alleged its Patent Had Been Infringed by Recycle Assist's Sale of Reconditioned Cartridges*

Where the *Fuji Film* case involved recycled disposable cameras, *Canon* involved used printer ink cartridges.⁶⁵ In *Canon*, defendant Recycle Assist imported and sold used Canon printer ink cartridges in Japan that had been reconditioned by a third party Chinese corporation.⁶⁶ This Chinese corporation collected spent cartridges from North America, Europe, and Asia, cleaned the cartridges, and refilled them with ink.⁶⁷ Recycle Assist then imported the refilled cartridges and sold them to consumers in Japan.⁶⁸ In 2005, Recycle Assist grossed sales exceeding ten billion Japanese Yen, approximately ninety million U.S. Dollars.⁶⁹

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.* This is a narrower view of permissible repair than that applied by courts in the United States. See *infra* Part VII.A.

⁶⁴ See Canon Decision, *supra* note 3.

⁶⁵ Canon Inc. v. Recycle Assist Co., Ltd., *supra* note 12, at 234.

⁶⁶ Doi, *supra* note 45, at 9.

⁶⁷ Canon Inc. v. Recycle Assist Co., Ltd., *supra* note 12, at 234.

⁶⁸ *Id.*

⁶⁹ John A. Tessensohn & Shusaku Yamamoto, *Recycling Not Permissible Repair Under Japanese Patent Law*, INTELLECTUAL PROPERTY TODAY, May, 2006.

Canon, the plaintiff in the case, designed and manufactured an ink cartridge for use in its printers.⁷⁰ Canon obtained a Japanese patent covering the cartridge and a method for its manufacture.⁷¹ The cartridge contains two chambers.⁷² The first chamber stores ink, and the second chamber supplies the ink to be printed to a page via an aperture.⁷³ The second chamber is at a lower pressure than the first chamber.⁷⁴ This two-chamber design provides a stable ink supply to the page.⁷⁵ Previous versions of this design had a problem with ink overflow from the first chamber into the second chamber.⁷⁶ Canon's patented cartridge design solved this overflow problem by including negative-pressure generating members that maintain a constant capillary pressure between the two chambers.⁷⁷

B. The Tokyo District Court Found Cartridge Refilling to be Permissible Repair

In April 2004, Canon filed a lawsuit in the Tokyo District Court claiming that Recycle Assist was infringing Canon's patent by importing and selling the reconditioned Canon ink cartridges.⁷⁸ Canon alleged that Recycle Assist had infringed claims 1 and 10 of their patent.⁷⁹ Claim 1 describes the

⁷⁰ Osamu Suzuki & Tomoko Date, *IPHC Affirmed Canon's Success to Enforce Their Ink Cartridge Patent (Patent Infringement by Importing and Selling Recycled Products)*, YUASA AND HARA INTELLECTUAL PROPERTY NEWS, May, 2006, at 1.

⁷¹ Japanese Patent No. 3278410, available at <http://www4.ipdl.inpit.go.jp/Tokujitu/tjsogodben.ipdl?N0000=115> (search for document kind code B and number 3278410).

⁷² See Suzuki & Date, *supra* note 70, at 1.

⁷³ See *id.*

⁷⁴ See *id.*

⁷⁵ See *id.*

⁷⁶ See *id.*

⁷⁷ See *id.* at 1-2.

⁷⁸ Doi, *supra* note 45, at 9; *Utec Supports Tokyo Court Ruling in Recycle Assist Case*, RECHARGER MAGAZINE, Feb. 1, 2005, available at <http://www.rechargermag.com/articles/36294> (last visited Apr. 8, 2007).

⁷⁹ See Canon Inc. v. Recycle Assist Co., Ltd., *supra* note 12, at 237-38 (providing a clearer translation of the claims than the translation available from the Japanese Patent Office). Claim 1, describing the ink cartridge product itself, reads:

A liquid-holding container . . . comprising:

(a) a chamber containing negative-pressure-generating members . . . that contains first and second negative-pressure-generating members . . . in pressure contact with each other and that has a liquid supply portion . . . and an atmosphere communication portion . . . ;

(b) a liquid storage chamber . . . that has a communication portion . . . communicating with the chamber containing negative-pressure-generating members . . . and that forms a substantially sealed space and stores liquid to be supplied to the negative-pressure-generating members . . . ; and

ink cartridge product itself, and claim 10 describes the manufacturing process used to create the ink cartridge. Canon alleged that the refilling of ink constituted infringing manufacture of their product as defined by claim 1, and that the refilling step itself infringed on the manufacturing process described in claim 10.⁸⁰

Recycle Assist admitted that its product contains every feature of the invention described in claim 1, and that their process for manufacturing their product contains every feature of claim 10.⁸¹ However, Recycle Assist defended itself against the charge of infringement by asserting patent exhaustion.⁸² Citing the *Aluminum Wheel* case,⁸³ Recycle Assist argued that Canon's patent rights were exhausted by the sale of their ink cartridges to the original consumers, and that their actions constituted permissible repair to extend the lifespan of the cartridges.⁸⁴ Additionally, Recycle Assist asserted that a ruling for Canon would harm the environmentally beneficial recycling

(c) a partition wall . . . that partitions the liquid storage chamber . . . from the chamber containing negative-pressure-generating members . . . and forms the communication portion . . . ;

(d) in said liquid-holding container . . . ,

(e) an interface in the pressure contact portion . . . between the first and second negative-pressure-generating members . . . intersects with the partition wall . . . ;

(f) the first negative-pressure-generating member . . . is in communication with the communication portion . . . and may be in communication with the atmosphere communication portion . . . only through the interface of the pressure contact portion . . . ;

(g) the second negative pressure generating member . . . is in communication with the communication portion . . . only through the interface of the pressure contact portion . . . ;

(h) capillary forces at the interface of the pressure contact portion . . . are higher than capillary forces in the first and second negative-pressure-generating members . . . ; and

(k) liquid is filled in the chamber containing the negative-pressure-generating members . . . with an amount that makes it possible for liquid to be held by the entire interface of the pressure contact portion . . . regardless of a posture of the liquid-holding container

Claim 10, describing the manufacturing process used to create the ink cartridge, reads:

A method for manufacturing a liquid-holding container, comprising:

. . . a first filling step of filling the liquid storage chamber with liquid; and

a second filling step of filling the chamber containing the negative-pressure-generating members with liquid in an amount that makes it possible for the liquid to be held by the entire interface of the pressure contact portion regardless of a posture of the liquid-holding container.

⁸⁰ Canon Decision, *supra* note 3.

⁸¹ *Id.*

⁸² *Id.*

⁸³ See *supra* Part III.

⁸⁴ Doi, *supra* note 45, at 9.

industry, and would harm consumers by keeping lower-priced, recycled cartridges off the market.⁸⁵

The Tokyo District Court ruled that the modifications to the cartridges were repair, not reconstruction, and that consequently Recycle Assist had not infringed.⁸⁶ The District Court followed the rule in the *Fuji Film* case that repair is permissible if the product is not spent, and if repair does not involve the replacement or alteration of an essential element of the product.⁸⁷ The court found that the ink cartridge was not spent because it still contained a small amount of ink when it stopped functioning.⁸⁸ Additionally, the court found that cleaning the cartridge and refilling it with ink was not replacement of an essential element.⁸⁹ For these reasons, the District Court held that the reconditioning of the cartridges was an act of repair and not of manufacture.⁹⁰ Additionally, the District Court emphasized the importance of recycling as a policy motivating its ruling.⁹¹

C. *The Intellectual Property High Court Found Cartridge Refilling to be Infringing Remanufacture*

On Canon's appeal, the Japanese Intellectual Property High Court reversed the Tokyo District Court.⁹² The IP High Court found that the cartridges had been remanufactured not repaired, and that Recycle Assist had therefore infringed Canon's product patent by selling the remanufactured cartridges in Japan.⁹³ The IP High Court considered two issues.⁹⁴ First, the court considered whether claim 1 (the product claim) could be enforced against the recycled product made from used Canon cartridges and sold by Recycle Assist.⁹⁵ Second, the court considered whether claim 10 (the

⁸⁵ Canon Decision, *supra* note 3.

⁸⁶ See Canon Inc. v. Recycle Assist Co., Ltd., *supra* note 12, at 234. The court found that claim 10 (the manufacturing method claim) had not been exhausted. See *id.*

⁸⁷ Toshiko Takenaka, *Japan's IP High Court Finds Infringement For Refilling of Ink in Recycled Cartridges*, CASRIP NEWSLETTER, Winter 2006, available at <http://www.law.washington.edu/Casrip/Newsletter/Vol13/newsv13i1Jp1.html>.

⁸⁸ *Id.*

⁸⁹ *Id.* The District Court distinguished the act in *Fuji Film*, where the court determined that the film in a disposable camera was an "essential element" and that replacement of the film was therefore infringing reconstruction of the camera. See *supra* Part III.

⁹⁰ Doi, *supra* note 45, at 9.

⁹¹ Tessensohn & Yamamoto, *supra* note 69.

⁹² Takenaka, *supra* note 87.

⁹³ *Id.* Recycle Assist filed an appeal of the IP High Court's ruling to the Japanese Supreme Court on February 13, 2006. The Supreme Court has not opted to take the case. See Doi, *supra* note 45.

⁹⁴ Canon Decision, *supra* note 3.

⁹⁵ *Id.*

manufacturing process claim) could be enforced against the ink-refilling process used to recycle the cartridges.⁹⁶

The court acknowledged that patent rights may be exhausted by the sale of the patented product,⁹⁷ and that repair is generally allowed once rights are exhausted.⁹⁸ However, the court noted two exceptions when repair of a patented product is not allowed.⁹⁹ Under the first exception, which the court called a “Type 1 Condition,” repair is not allowed after the utility of the product has been used up due to “normal wear and tear.”¹⁰⁰ The court found the “Type 1 Condition” had not been met in this case, because Canon’s ink cartridges had not “spent their life even if the initial ink [supply] has been used up.”¹⁰¹ The court found that ink was an “interchangeable part” that could be replaced, and therefore that the ink cartridge remained usable even after the initial ink supply has been used up.¹⁰²

Defining the second, “Type 2 Condition,” the court stated that repair is not allowed if the parts replaced or modified are “essential.”¹⁰³ The IP High Court laid out a test to determine whether a part is essential.¹⁰⁴ A court making such a determination must decide what constitutes the “[p]reviously unsolved technical problems that the invention solves.”¹⁰⁵ The essential parts of an invention are those which embody the “characteristic features . . . central to the technical idea that forms a basis for the solution” of these previously unsolved technical problems.¹⁰⁶ The court did not, however, state clearly how to determine what technical problem the invention solves.¹⁰⁷

Applying the test to the facts in *Canon*, the IP High Court found the “Type 2 Condition” had been met and therefore Recycle Assist’s activities were not permissible repair.¹⁰⁸ The court found that two features in claim 1, those describing the capillary forces at the interface of the chambers and the

⁹⁶ *Id.* Regarding a third issue, the court held that Canon’s patent rights can be enforced against the reconditioned ink cartridges imported into Japan, even if the cartridges were originally sold outside Japan.

⁹⁷ See *Canon Inc. v. Recycle Assist Co., Ltd.*, *supra* note 12, at 235-36. The IP High Court acknowledged the Japanese Supreme Court ruling in *Aluminum Wheel*. See *supra* Part III.

⁹⁸ Canon Decision, *supra* note 3.

⁹⁹ *Id.*

¹⁰⁰ See *Canon Inc. v. Recycle Assist Co., Ltd.*, *supra* note 12, at 235. This is analogous to the “spentness” test used by courts in the United States. See *infra* Part VII.A.

¹⁰¹ Canon Decision, *supra* note 3.

¹⁰² *Id.*

¹⁰³ See *Canon Inc. v. Recycle Assist Co., Ltd.*, *supra* note 12, at 236.

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

¹⁰⁶ *Id.*

¹⁰⁷ See *Suzuki & Date*, *supra* note 70.

¹⁰⁸ Canon Decision, *supra* note 3.

pressure differential created by the ink-filled chamber, were no longer present after the ink had been used up.¹⁰⁹ Therefore, refilling the ink was equivalent to recreating those two features.¹¹⁰ The court also determined that these features were “essential” because they solved problems present in previous cartridges.¹¹¹ Consequently, the refilling of the cartridges constituted remanufacture, and Recycle Assist had infringed Canon’s patent.¹¹²

Regarding the second issue, the IP High Court held that Recycle Assist had also infringed process claim 10.¹¹³ Such a process claim can be enforced under Japanese law if the claim for the product that results from the process can be enforced.¹¹⁴ Because the product claim could be enforced against Recycle Assist, given their modification of an essential element, the court found that the process claim could also be enforced.¹¹⁵

The court dismissed Recycle Assist’s environmental policy argument that the recycling and reuse of ink cartridges should be encouraged.¹¹⁶ The court acknowledged that “the fundamental philosophy of conservation of the environment must also be respected . . . in construing the provisions of the Patent Law.”¹¹⁷ However, the court pointed out that Canon collected its used cartridges and allowed them to be used as a component in the manufacture of cement.¹¹⁸ Therefore, Canon’s behavior was “consistent with the philosophy of conservation of the environment.”¹¹⁹

The court also dismissed the argument raised by Recycle Assist that Canon is earning unfair profits by selling printers at a low price and forcing the consumer to buy only new replacement ink cartridges at a high price.¹²⁰ The court found no evidence that Canon practiced this business model as described by Recycle Assist.¹²¹ The court went on to state that the patent holder is free to set prices of their product so long as such pricing is not against the public interest or in violation of anti-trust laws.¹²² The court also noted that if Canon is unfairly charging 1000 yen for the new ink cartridge,

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ *Id.*

¹¹² *Id.*

¹¹³ *Id.*

¹¹⁴ *Id.*

¹¹⁵ *Id.*

¹¹⁶ *Id.*

¹¹⁷ *Id.*

¹¹⁸ *Id.*

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² *Id.*

Recycle Assist are almost as unfairly charging 600 yen for the reconditioned cartridge.¹²³

D. The Ruling of the Intellectual Property High Court Will Influence Lower Courts in Japan

The IP High Court was created in April 2005 in order to clarify lower court rulings in cases arising from intellectual property law.¹²⁴ Japanese patent cases generally originate in the Osaka or Tokyo District Court.¹²⁵ The IP High Court hears appeals of patent cases from these lower courts.¹²⁶ Normally, the IP High Court sits in a panel of three judges when it hears a case on appeal from one of these courts of first instance.¹²⁷ However, the court has discretion to convene a Grand Panel of five judges to hear cases “where critical legal questions are involved or whose outcome might have significant impact on corporate activities.”¹²⁸

Even though courts in Japan’s civil law system are not formally bound by precedent, the IP High Court’s ruling in *Canon* sets an example that lower courts are likely to follow in similar circumstances.¹²⁹ It is significant that a Grand Panel of the IP High Court heard *Canon v. Recycle Assist* directly on appeal from the lower court. This case is only the third Grand Panel decision from the IP High Court since its creation in 2005.¹³⁰ Given the complexity of the repair issue, it is likely that the IP High Court intended this ruling to be the final answer on the issue of permissible repair of

¹²³ *Id.*

¹²⁴ See Shinohara Katsumi, *A Retrospective and a Prospective Look at the First Year of the Intellectual Property High Court*, 31 AIPPIJ. 195, 196-98 (2006).

¹²⁵ See Intellectual Property High Court, <http://www.ip.courts.go.jp/eng/aboutus/jurisdiction.html>. The IP High Court also hears appeals from decisions made by the Japan Patent Office.

¹²⁶ See Katsumi, *supra* note 124, at 202.

¹²⁷ *Id.* at 210.

¹²⁸ *Id.*; see also Yoshimi Ohara, *Japan’s IP High Court: A Proactive Judiciary*, ASIALAW, July 2006, available at <http://www.asialaw.com/default.asp?Page=20&PUB=68&ISS0=22451&SID=649616> (describing the purpose of the IP High Court and its Grand Panel); see also Kazuo Ohtake, *The IP High Court One Year On*, MANAGING INTELLECTUAL PROPERTY, 2006, available at <http://www.managingip.com/?ISS=22151&PUBID=199&Page=17&SID=639388> (describing the IP High Court and its discretion to convene a Grand Panel) (last visited Apr. 8, 2007). The Grand Panel differs from an en banc panel of the United States Court of Appeals for the Federal Circuit. Though both seek to provide definitive answers to contentious questions of patent law, an en banc panel of the Federal Circuit includes all the judges of the Federal Circuit, whereas the Grand Panel comprises only five judges out of the nineteen on the IP High Court. See Katsumi, *supra* note 124, at 210.

¹²⁹ Generally, in a civil law system such as that of Japan, decisions of higher courts do not bind the lower courts as “precedents” as they would in a common law system. However, high courts in Japan can be influential. For example, decisions of the Japanese Supreme Court are “influential as interpretations of laws,” and failure of a lower court to follow Supreme Court precedent may “constitute grounds for appeal to the Supreme Court.” ZENTARO KITAGAWA, 1-1 DOING BUSINESS IN JAPAN § 1.01[1][g] (2005).

¹³⁰ See Katsumi, *supra* note 124, at 210-11.

patented products.¹³¹ Therefore, lower courts will be looking to this decision to clarify the law regarding what constitutes permissible repair of a patented product.¹³²

V. THE INTELLECTUAL PROPERTY HIGH COURT FAILED TO ESTABLISH A CLEAR TEST FOR PERMISSIBLE REPAIR

In its ruling in *Canon*, the IP High Court failed to create a clear test for the permissible repair of a patented product. The court described two situations when repair is not allowed. While the court's "Type 1 Condition" is reasonable, its "Type 2 Condition" is ambiguous because it does not provide a clear method by which a court should determine the technical problem an invention is meant to solve.

The IP High Court's "Type 1 Condition" is reasonable and capable of consistent application. Under the "Type 1 Condition," repair is not allowed if the product's useful lifetime has been spent.¹³³ To otherwise allow repair of a product that has been fully spent would effectively allow remanufacture of the product, because the owner in that case would simply be building a new product over the spent shell of the old product. The "Type 1 Condition" exception is reasonable because such remanufacture would remove market demand for the product, deprive the patent holder of the opportunity to sell a new item, and therefore deprive the patent holder of its rightful profit.

The second exception, however, is ambiguous and not helpful as precedent. Under the "Type 2 Condition," repair is not allowed if it involves the replacement of essential elements,¹³⁴ where an essential element is one that implements the invention's solution of a technical problem.¹³⁵ Unfortunately, the court did not give an explicit method by which to determine what technical problem an invention solves.¹³⁶ By not giving such a method, the court failed to define fully the essential element of the invention and thus failed to clearly state when repair is allowed.

¹³¹ Canon Inc. v. Recycle Assist Co., Ltd., *supra* note 12, at 236-37.

¹³² As of March 26, 2007, there have been no subsequent rulings in lower courts on the issue of permissible repair. A similar case, *Seiko Epson Co. v. Ecorica Inc.*, was heard in Tokyo District Court. On October 18, 2006, the Court ruled in favor of defendant Ecorica, a company that recycles Seiko printer ink cartridges. However, the court ruled for the defendant only because Epson's patent was found to be invalid. The court did not reach the question of exhaustion. See *Recycle the Patent First*, JAPANESE IP NEWS, October 30, 2006, available at <http://www.shinju.com/japaneseipnews/main.html#october302006> (last visited Apr. 8, 2007).

¹³³ See *supra* Part IV.C.

¹³⁴ See *id.*

¹³⁵ See *id.*

¹³⁶ See Suzuki & Date, *supra* note 70.

Faced with a lack of guidance from the IP High Court, there are at least two methods a Japanese court could employ to define the technical problem that an invention solves. Neither is particularly helpful in creating uniformity of decision and *ex ante* clarity. The first method is a subjective standard, under which a court would identify the technical problem based on the inventor's description of the invention in the patent. However, such a standard would allow the inventor to define the technical problem in whatever way is most advantageous to limit the extent of allowed repair of the invention. The inventor already has considerable control over the scope of the patent through the drafting of claims. A court's adoption of this subjective standard would give the inventor even more control over the patent scope.

A second unsavory possibility is that a court will adopt an objective standard. Under this standard, the court itself would determine the technical problem solved by the invention. A court applying this objective standard would effectively have to reexamine the patent, searching the prior art and comparing it to the invention to determine what technical problem is being solved. Therefore, the court's determination of the technical problem would strongly depend on what prior art was used to make the comparison. This would lead to unpredictability of results in similar, future cases.

VI. THE CANON RULING WILL HAVE NEGATIVE IMPLICATIONS FOR JAPANESE CONSUMERS AND THE ENVIRONMENT

Because it failed to lay down a clear test for permissible repair, the IP High Court's decision in *Canon* will adversely impact Japanese ink cartridge purchasers and the environment. Without an unambiguous rule, Japanese courts deciding similar cases in the future may apply the *Canon* ruling so broadly as to find infringement in any repair of a printer ink cartridge. This will harm cartridge recyclers such as Recycle Assist, who will have to "reevaluate their business models" to make sure their recycling activities do not infringe on a manufacturer's patent rights.¹³⁷ Because the cartridge recycling industry benefits consumers by lowering the price of cartridges and benefits the environment by reusing cartridges, any chilling effect on the cartridge recycling industry will result in harm to consumers and the environment. In light of these negative effects, the Japanese courts should

¹³⁷ See *Canon Inc. v. Recycle Assist Co., Ltd.*, *supra* note 12, at 237. The ruling will also impact the way manufacturers draft their patent claims to try and achieve the greatest possible patent coverage if their product is one which might be recyclable. *Id.*

revisit the *Canon* decision to provide a more clearly defined rule for permissible repair.

A. *The Unavailability of Recycled Cartridges Will Harm Consumers*

The absence of reconditioned ink cartridges on the market will allow printer manufacturers to charge a higher price for new cartridges, placing a burden on consumers. Printer manufacturers already charge a high price for their cartridges,¹³⁸ and the availability of reconditioned cartridges prevents the manufacturers from holding a monopoly on printer supplies.¹³⁹ Without competition from the aftermarket of reconditioned cartridges, prices of printer cartridges would likely increase.¹⁴⁰

Even with reconditioned ink cartridges available in many countries, new cartridges are expensive.¹⁴¹ Printer owners currently pay more for printer supplies than they do for the printer itself.¹⁴² Printer manufacturers may even artificially inflate the price of cartridges by reducing the amount of ink in a cartridge.¹⁴³ An older generation Hewlett-Packard (“HP”) cartridge cost \$29.99 and contained 42 milliliters of ink, whereas a comparable newer generation cartridge costs the same but contains only 21 milliliters of ink.¹⁴⁴

Cartridge prices are high in part because printer companies have adopted the pricing practice idea made famous by razor manufacturers in the past—charge a low price for the initial equipment, then make a profit by selling the additionally needed components.¹⁴⁵ Manufacturers sell their printers for “little or no margin,” then make their margin on sales of ink in cartridges.¹⁴⁶ Printer makers HP and Epson sell printers at as much as a 20% loss, but earn a 60% gross margin on ink jet and toner cartridges.¹⁴⁷ The *Financial Times* reported that during a period in 2002 when most other divisions of HP were losing money, its printer and imaging division posted

¹³⁸ Mike Himovitz, *Set Priorities When Buying Next Printer*, THE BALTIMORE SUN, Sept. 11, 2000.

¹³⁹ See IITC amicus brief, *supra* note 15, at 3.

¹⁴⁰ *Id.*

¹⁴¹ The ink itself is expensive as well. Costing nearly \$8,000 per gallon, one variety of Hewlett-Packard printer ink may be among the most expensive liquids on the planet. See Scott Morrison, *HP finds formula to turn ink into gold: US group is making a radical move, says Scott Morrison*, FINANCIAL TIMES, Sept. 2, 2004.

¹⁴² See IITC amicus brief, *supra* note 15, at 7.

¹⁴³ Pui-Wing Tam, *A Cheaper Way to Refill Your Printer – Big Retailers Start Services To Fill Up Ink Cartridges at Half The Cost of Buying New Ones*, THE WALL STREET JOURNAL, Jan. 26, 2006.

¹⁴⁴ *Id.*

¹⁴⁵ Spring, *supra* note 1.

¹⁴⁶ *Court Rejects Patent Suit Filed by Hewlett-Packard*, THE OREGONIAN, Aug. 14, 1997.

¹⁴⁷ See Spring, *supra* note 1.

profits of \$768 million, with more than half of that division's sales coming from supplies, including ink cartridges.¹⁴⁸ The Wall Street Journal reported that HP makes over two-thirds of its profits from printer cartridges.¹⁴⁹

Consumers in the United States have taken advantage of the availability of reconditioned ink cartridges, and cartridge prices may be dropping as a result. In early 2006, market analysts at Lyra Research estimated that reconditioned cartridges made up approximately 18% of the ink cartridge market in the United States.¹⁵⁰ The market share of reconditioned cartridges in North America is projected to reach nearly 29% by 2009.¹⁵¹ The top three cartridge-refilling franchises in the United States nearly doubled the number of their stores over the course of the year ending February 1, 2006.¹⁵² Certain retailers even provide cartridge-refilling services in their stores, charging half the price of a new cartridge.¹⁵³ Possibly as a result of competition from reconditioned and refilled cartridges, new cartridge prices have decreased in the United States.¹⁵⁴

Printer manufacturers assert that refilled cartridges produce lower quality prints and thus provide less value to consumers. HP has stated that because its printers and cartridges are designed to work together, a refilled cartridge may be unreliable and create poor quality printouts.¹⁵⁵ In a 2003 study, QualityLogic, Inc. found that 54% of tested remanufactured cartridges showed problems, compared with just 1% of new HP color-ink cartridges and 6% of new HP black-ink cartridges.¹⁵⁶ In 2004, Consumer Reports found that use of reconditioned cartridges did not necessarily lead to a lower printing cost per page for color prints, due to lower quality, fading, and clogging of the print head.¹⁵⁷ However, the same study showed that reconditioned ink cartridges were likely to lead to a cost savings for black text printing.¹⁵⁸

¹⁴⁸ Paul Abrahams & Francesco Guerrera, *HP Faces Probe Into Printer Market*, FINANCIAL TIMES, May 16, 2002.

¹⁴⁹ Tam, *supra* note 143.

¹⁵⁰ Darlin, *supra* note 2.

¹⁵¹ Tam, *supra* note 143.

¹⁵² Craig Berosh, *U.S. Franchises Experienced Impressive Growth in 2005*, RECHARGER MAGAZINE, Feb. 1, 2006, available at <http://www.rechargermag.com/articles/37407?issueTopic=17> (last visited Apr. 8, 2007).

¹⁵³ Tam, *supra* note 143.

¹⁵⁴ Darlin, *supra* note 2.

¹⁵⁵ Tam, *supra* note 143.

¹⁵⁶ *Id.*

¹⁵⁷ See *Off-Brand Printer Inks: False Economy*, *supra* note 14.

¹⁵⁸ *Id.* According to analysts, cartridge recyclers are implementing testing standards to improve the quality of reconditioned ink cartridges. See Jana Sellers, *Are We on the Verge of a "Pricing War" with Printer Cartridges?*, CURRENT ANALYSIS, available at <http://www.currentanalysis.com/news/detail.asp?id=10040> (last visited Apr. 8, 2007).

Even if reconditioned cartridges are of lower quality than new cartridges, it is still reasonable to provide the consumer this lower-priced alternative. Consumers benefit from simply having the reconditioned cartridges on the market.¹⁵⁹ Once the cartridges are available, consumers can decide whether the cost savings are worth the risk of printer damage or low print quality. If consumers choose not to buy the reconditioned cartridges, then there is little harm to the cartridge manufacturers. If some consumers do choose to buy the reconditioned cartridges, then those consumers must have decided that it was in their interest to buy those cartridges. In a situation such as this, consumers can police their own interests.

B. Prevention of Cartridge Reuse Will Harm the Environment

The *Canon* decision will discourage ink cartridge reuse and will therefore harm the environment. In an amicus brief for an American ink cartridge case, *Lexmark Int'l, Inc. v. Static Control Components, Inc.*,¹⁶⁰ the International Imaging Technology Council (“IITC”) described cartridge reconditioning as the “highest form of recycling, as it affords reuse” and does not require large amounts of energy to melt down the plastic of the cartridges.¹⁶¹ If the plastic cartridges were placed in a landfill, they would take over a thousand years to degrade.¹⁶² IITC also states that the typical cartridge reconditioner restores “338 cartridges per month, and is therefore saving 264 gallons of oil and 845 pounds of solid waste from landfills each month.”¹⁶³ Many environmental advocacy groups, including the World Land Trust, use ink cartridge recycling as a way of raising money.¹⁶⁴

Recycle Assist raised similar environmental concerns that were dismissed by the IP High Court.¹⁶⁵ The court acknowledged that Patent Law should be applied in a way that is mindful of environmental concerns.¹⁶⁶ However, the court found that Canon’s behavior was actually

¹⁵⁹ See Mary L. Azcuenaga, *Address to Boston University School of Law: Recent Issues in Antitrust and Intellectual Property*, 7 B.U. J. SCI. & TECH. L. 1, 4 (2001).

¹⁶⁰ 387 F.3d 522 (6th Cir. 2004).

¹⁶¹ See IITC amicus brief, *supra* note 15, at 2.

¹⁶² See *id.*

¹⁶³ See *id.*, at 3.

¹⁶⁴ See Sam Bond, *Court Case Tightens Company’s Grip on Its Ink Cartridges*, EDIE.NET, Feb. 2, 2006, http://www.edie.net/news/news_story.asp?id=11035&channel=0 (last visited Apr. 8, 2007).

¹⁶⁵ Canon Decision, *supra* note 3.

¹⁶⁶ *Id.*

environmentally sound because Canon collected discarded cartridges and sold them for use as a heat source in cement manufacture.¹⁶⁷

This reasoning is specious, given that this method of “reuse” comes nowhere close to recouping the large amounts of energy, time, and labor needed to manufacture the ink cartridge. Those expenditures are most efficiently recouped by reusing the ink cartridge as an ink cartridge and not simply as fuel for making concrete.

VII. THE INTELLECTUAL PROPERTY HIGH COURT SHOULD MODIFY THE REPAIR TEST

Given the possible negative effects of the *Canon* ruling on consumers and the environment, and the uncertainty it will likely cause for ink cartridge recyclers, the IP High Court should revisit and clarify the essential element test.¹⁶⁸ There are two ways in which the court might clarify the test. Preferably, the court should adopt the less ambiguous, though broader, test for permissible repair applied by courts in the United States. Alternatively, the court should modify the essential element test and allow a finding of permissible repair when the essential element being replaced is a staple good.

A. *The Intellectual Property High Court Should Adopt a Broader Repair Test from United States Patent Law*

The IP High Court should look to the United States for guidance in formulating a more precise rule to distinguish repair from reconstruction. United States courts have a broader but more definite rule regarding repair, and allow much more extensive repair to a patented product than Japanese courts.¹⁶⁹ The United States Federal Circuit Court of Appeals has applied

¹⁶⁷ *Id.*

¹⁶⁸ Alternatively, the Japanese Supreme Court could overrule the IP High Court and define a new standard for repair.

¹⁶⁹ Differing exhaustion and repair doctrines create a barrier to commerce between nations, and recently there have been efforts to reduce this barrier through harmonization of the intellectual property laws of the major industrial countries including the United States and Japan. The most important of these efforts has been the Agreement on Trade-Related Aspects of Intellectual Property Rights, December 15, 1993, 33 I.L.M. 81 (1994) [hereinafter TRIPs]. However, TRIPs failed to address the issue of exhaustion. Article 6 states that nothing in the agreement “shall be used to address the issue of the exhaustion of intellectual property rights.” *Id.* art. 6. This omission has been criticized by various commentators. See Donnelly, *supra* note 7, at 497; Vincent Chiappetta, *The Desirability of Agreeing to Disagree: The WTO, TRIPs, International IPR Exhaustion and a Few Other Things*, 21 MICH. J. INT’L L. 333, 345-46 (2000).

this broader test to find that modifications to render new ink cartridges reusable are noninfringing acts of repair, not reconstruction.¹⁷⁰

Although the United States courts have a broader definition of permissible repair, there are some commonalities between the repair doctrines as applied in the two countries. As in Japan, the right to repair in the United States does not extend to complete reconstruction of the product.¹⁷¹ Courts in the United States use the idea of spentness of the product to distinguish repair from reconstruction.¹⁷² Repair of a patented product is not allowed if the useful life of the product has expired, or if the product as a whole is “spent.”¹⁷³ This spentness test is analogous to the “Type 1 Condition” described by the IP High Court in *Canon*.¹⁷⁴ Under United States case law, an element of an invention is spent when it is impractical or not feasible to continue using it.¹⁷⁵ A finding of spentness does not require that it is impossible to continue using the product.¹⁷⁶

However, unlike Japanese courts, United States courts have explicitly rejected the IP High Court’s “Type 2 Condition,” under which repair is distinguished from reconstruction based on whether the replaced component is an essential part of the product.¹⁷⁷ Under United States law, the size or importance of the replaced part is “not relevant when determining whether conduct constitutes repair or replacement.”¹⁷⁸ Furthermore, the patentee’s intent regarding whether the product should be reused “does not bar reuse of the patented article, or convert repair into reconstruction.”¹⁷⁹

The Federal Circuit Court of Appeals has applied this broader standard of permissible repair to find that ink cartridges can be modified and

¹⁷⁰ See *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 123 F.3d 1445, 1454-55 (Fed. Cir. 1997).

¹⁷¹ See *FMC Corp. v. Up-Right, Inc.*, 21 F.3d 1073, 1077 (Fed. Cir. 1994).

¹⁷² *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 346 (1961).

¹⁷³ *Id.*

¹⁷⁴ See *supra* Part IV.C.

¹⁷⁵ *Sage Products, Inc. v. Devon Industries, Inc.*, 45 F.3d 1575, 1578 (Fed. Cir. 1995).

¹⁷⁶ *Id.*

¹⁷⁷ *Dawson Chem. Co. v. Rohm & Haas Co.*, 448 U.S. 176, 217 (1980).

¹⁷⁸ *Sage Products, Inc.*, 45 F.3d at 1578.

¹⁷⁹ *Jazz Photo Corp. v. Int’l Trade Comm’n*, 264 F.3d 1094, 1106 (Fed. Cir. 2001); see also *Kendall Co. v. Progressive Medical Tech., Inc.*, 85 F.3d 1570, 1575 (Fed. Cir. 1996) (holding that a “purchaser may repair or replace any unpatented component that wears out or otherwise becomes ‘spent,’ whether or not the patentee believed . . . that it would be necessary to do so.”). Generally, U.S. courts have held that the patent holder’s intent to restrict repair is not controlling unless it is accompanied by some contractual agreement between the patent holder and the purchaser. See *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 707-708 (Fed. Cir. 1992). But see *Sandvik Aktiebolag v. E.J. Co.*, 121 F.3d 669, 674 (Fed. Cir. 1997) (holding that “although the repair . . . issue does not turn on the intention of the patentee alone,” the fact that the patentee itself did not sell replacement parts supports a finding that supply of replacement parts by another party is reconstruction and not repair).

resold without infringing on the patent rights of the manufacturer. In *Hewlett-Packard Co. v. Repeat-O-Type Stencil Manufacturing Corp.*, the Federal Circuit addressed an issue similar to that in *Canon* but found no infringement in the defendant's modification of HP cartridges to make them refillable.¹⁸⁰ Even though HP intended the cartridges to be discarded after their ink was expended, that intent alone did not limit the scope of the purchaser's ability to use, resell, or repair the cartridges.¹⁸¹ The court acknowledged that there was no bright-line rule distinguishing repair from reconstruction, but stated that the defendant's modification was allowed.¹⁸² Because Repeat-O-Type had modified cartridges that were not yet spent, its activities were "more akin to permissible 'repair' than to impermissible 'reconstruction.'"¹⁸³ In so ruling, the Federal Circuit expressed a much broader idea of permissible repair than the Japanese courts, permitting the modification of the brand new ink cartridge even before its use.¹⁸⁴

Given the potential negative effects of the *Canon* ruling, the IP High Court should clarify its test for permissible repair by adopting the United States rule. Under American repair doctrine, a court must consider the spentness of the invention as a whole when deciding whether repair is permissible, and should not consider the essential nature of the modified elements. The Japanese courts' adoption of this rule would effectively keep the "Type 1 Condition" of the *Canon* ruling and eliminate the "Type 2 Condition."¹⁸⁵ Such an adoption would give Japanese courts a much clearer rule to apply when deciding whether repair of a patented product is allowed, and would remove the uncertainty created by the *Canon* decision.

B. Alternately, Japanese Courts Should Modify the Repair Test by Creating an Exception when the Essential Element is a Staple Good

If the IP High Court refuses to adopt a broader rule for permissible repair, it should carve out an exception to its essential element rule and allow repair when the modified essential element of the product is a staple good. A staple good is defined as a commonly used object or a substance "that is a

¹⁸⁰ *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 123 F.3d 1445, 1455 (Fed. Cir. 1997).

¹⁸¹ *Id.* at 1454.

¹⁸² *Id.* at 1452.

¹⁸³ *Id.*

¹⁸⁴ HP also claimed that the act of refilling the cartridge with ink was itself an infringing act, but the court rejected that claim because the ink itself was "not within the scope of the asserted claims." *Id.* at 1454. See also Elaine Stracker, *Hewlett-Packard Co. v. Repeat-O-Type Stencil Manufacturing Corp.*, 13 BERKELEY TECH. L.J. 175, 184-96 (1998) (criticizing the Federal Circuit's decision for both legal and policy-based reasons).

¹⁸⁵ See *supra* Part VI.C.

component of a patented product . . . but also has other practical uses.”¹⁸⁶ Creating an exception for staple goods would bring the *Canon* repair test into line with Japanese law regarding contributory infringement.¹⁸⁷ Under this modified repair test, the activities of Recycle Assist would likely have been found to be permissible repair and not infringing reconstruction.

There is a close relationship in patent law between repair doctrine and contributory infringement. Under the doctrine of contributory infringement, a party who supplies a particular component of a patented invention can be liable if the component is used to practice the patented invention and if the supplier knew that it would be so used.¹⁸⁸ Often a party accused of contributory infringement will argue that the component being supplied was merely used for repair of the patented product and not for reconstruction.¹⁸⁹

It is likely the Japanese courts formulated the essential element test for permissible repair based on the definition of contributory infringement in Japanese law. The essential element language used by the *Canon* court¹⁹⁰ is very similar to the language in the Japanese Patent Act that defines contributory infringement.¹⁹¹ The Act defines contributory infringement as the supply of an article used to make a patented product, where the article is “indispensable for solving the problems through the invention concerned.”¹⁹² In other words, it is infringement to supply a component if that component is one that solves the technical problem addressed by the invention. This is essentially the same rule as the “Type 2 Condition” applied by the *Canon* court. However, under the Act there is no contributory infringement if the article supplied is one which is “generally distributed in Japan,” in other words a staple good.¹⁹³ If the Japanese courts created their repair test by

¹⁸⁶ BLACK’S LAW DICTIONARY 1442 (8th ed. 2004). The concept of staple good plays an important role in antitrust law related to acts of “tying.” See *infra* Part VIII A.

¹⁸⁷ See Tokkyo Hō [Patent Law], Law No. 121 of 1959, art. 101(2), translated in 6 EHS LAW BULL. SER. no. 6850A (2002) (defining contributory infringement as knowingly supplying a component to be used in an infringing manufacturer, if that component is not a staple good “generally distributed in Japan”).

¹⁸⁸ See *id.*; see also 35 U.S.C. § 271(c) (2006) (defining contributory infringement in United States patent law).

¹⁸⁹ See *Husky Injection Molding Sys. Ltd. v. R & D Tool & Eng'g Co.*, 291 F.3d 780, 784 (Fed. Cir. 2002) (stating that “[b]oth an alleged direct infringer and an alleged contributory infringer benefit from the permissible repair exception.”); *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 483 (1964) (holding that sale of parts to be used in repair of a patented product constituted contributory infringement); see also James C. Bageman, *Contributory Infringement and the “Repair Doctrine”*, 38 S. Cal. L. Rev. 363, 368-71 (1965) (discussing the interplay between repair and contributory infringement in the *Aro Manufacturing* cases).

¹⁹⁰ See *supra* Part IV.C.

¹⁹¹ Tokkyo Hō [Patent Law], Law No. 121 of 1959, art. 101(2), translated in 6 EHS LAW BULL. SER. no. 6850A (2002).

¹⁹² *Id.*

¹⁹³ *Id.*

borrowing language from the definition of contributory infringement, it seems reasonable that they might return to the definition and borrow its last provision to find permissible repair when the essential element being repaired is a staple good.

If the IP High Court had applied a modified essential element test that included an exception for staple goods, it is possible the court would have found the activities of Recycle Assist to be permissible repair. The court found two features that were essential elements of Canon's invention: the capillary forces at the interface of the chambers and the pressure differential created by the ink-filled chamber.¹⁹⁴ Those elements were no longer present after the ink had been used up and were recreated by refilling the cartridge with ink.¹⁹⁵ These essential elements of the invention are dependent on the presence of ink. Therefore, if ink is a staple good, a court might find under the proposed modified test that the essential elements are so closely dependent on the ink itself that the replacement of ink is repair and not reconstruction.

VIII. JAPAN SHOULD ADOPT THE PATENT MISUSE DEFENSE FROM UNITED STATES LAW

Finally, Japanese courts should adopt the United States doctrine of patent misuse by tying to provide a defense to accused infringers. Certain provisions in the Civil Code of Japan¹⁹⁶ could allow Japanese courts to fashion legal doctrines even when they are not based on acts of legislation, so long as those doctrines are meant to further the public welfare or policy goals. A court could rely on these provisions to recognize a defense of patent misuse asserted by an accused infringing recycling company, particularly if the assertion was based on such public welfare concerns as consumer or environmental benefits. Had the defense of patent misuse by tying been available at the time of the *Canon* case, Recycle Assist could have successfully asserted it.

A. *Patent Misuse Provides a Defense to Infringement under United States Law*

In the United States, an accused infringer may avoid liability by asserting the defense of patent misuse. Under this court-created, equitable doctrine, a patent holder improperly exploits its patent by impermissibly

¹⁹⁴ Canon Decision, *supra* note 3.

¹⁹⁵ *Id.*

¹⁹⁶ See Minpō, arts. 1 and 90, *translated in* 2 EHS LAW BULL. SER. no. 2100 (2002).

broadening the scope of its patent protection with anticompetitive effect.¹⁹⁷ Patent misuse operates as an affirmative defense to an accusation of infringement.¹⁹⁸ If an accused infringer can establish such misuse, then the court will not allow the patent holder to pursue any remedy for the infringement.¹⁹⁹ One way in which a patent holder can improperly exploit its patent is through “tying,” where the patent holder conditions the license of a patented product on the purchase of a separate, unpatented staple good.²⁰⁰

There are four conditions that an accused infringer must show to establish patent misuse through tying. In 1986, the Federal Circuit Court of Appeals sanctioned a test laying out the first three elements.²⁰¹ First, a finding of misuse by tying requires that the patented product can be sold separately from the unpatented product.²⁰² Second, the unpatented product must be a staple good in commerce.²⁰³ In this context, a staple good is a common good “that is a component of a patented product . . . but also has other practical uses.”²⁰⁴ Third, the patented and unpatented products must be tied so that a consumer is forced to buy the unpatented staple good in order to use the patented product.²⁰⁵

In 1988, Congress added one final requirement that the patented product must have market power.²⁰⁶ Market power is generally defined as the ability to raise prices without losing sales.²⁰⁷ Even if the patent owner conditions the license or sale of a patented product on the purchase of a separate product, this does not constitute misuse unless “the patent owner has market power in the relevant market for the . . . patented product.”²⁰⁸ The party asserting patent misuse through tying must show this requisite market power.²⁰⁹

¹⁹⁷ *Virginia Panel Corp. v. MAC Panel Co.*, 133 F.3d 860, 868 (Fed. Cir. 1997).

¹⁹⁸ *Id.*

¹⁹⁹ CHISUM, *supra* note 8, at § 19.04.

²⁰⁰ *Virginia Panel Corp.*, 133 F.3d at 869.

²⁰¹ *Senza-Gel Corp. v. Seiffhart*, 803 F.2d 661, 665 (Fed. Cir. 1986).

²⁰² *Id.* at 664, 670.

²⁰³ *Id.* at 664.

²⁰⁴ BLACK'S LAW DICTIONARY 1442 (8th ed. 2004).

²⁰⁵ *See Senza-Gel Corp.*, 803 F.2d at 664.

²⁰⁶ 35 U.S.C. § 271(d)(5) (2006).

²⁰⁷ *See* 54 AM. JUR. 2D, *Monopolies, Restraints of Trade, and Unfair Trade Practices* § 49 (2006); *see also* *Jefferson Parish Hospital Dist. No. 2 v. Hyde*, 466 U.S. 2, 17 (1984) (stating that the presence of market power is likely when a product's market share is high).

²⁰⁸ 35 U.S.C. § 271(d)(5) (2006).

²⁰⁹ *Illinois Tool Works Inc. v. Independent Ink, Inc.*, 547 U.S. 28, 41 (2006) (holding that the existence of a patent per se does not create a presumption that the patented product has market power sufficient to establish an antitrust claim). This decision overturned previous U.S. Supreme Court decisions relying on the presumption that a patent confers market power. *See* *Morton Salt Co. v. G. S. Suppiger Co.*,

The doctrine of patent misuse through tying is a product of the same pro-competition policy aims that give rise to statutory anti-trust law in the United States. A patent itself is a limited monopoly, but the patent right does not give the patent holder *carte blanche* to engage in anticompetitive activity.²¹⁰ When a patent holder attempts to create a tying arrangement to leverage its patent monopoly into another market, it may be subject to claims under the Sherman Act,²¹¹ the Clayton Act,²¹² and the Federal Trade Commission Act.²¹³ The same act of tying may serve as the basis of a statutory antitrust complaint as well as the basis of the accused infringer's patent misuse defense.²¹⁴

B. Japanese Courts Could Allow an Accused Infringer to Assert Patent Misuse as a Defense

Unlike United States law, Japanese statutory law provides no opportunity for statutory antitrust counterclaims to be brought against a patent holder by an accused patent infringer. The Japanese government enacted the Antimonopoly Act in 1947 to prohibit private monopolies and other unfair business practices.²¹⁵ However, the Act explicitly states that its provisions do not apply to activities recognized as valid under the Patent Law of Japan.²¹⁶

Although lacking statutory relief, an accused infringer in Japan may be able to successfully assert something similar to a common law, non-statutory defense. Courts in Japan can apply legal doctrine in the interests of public welfare or public policy, even if the doctrine is not based on any legislation.²¹⁷ Two provisions of the Civil Code of Japan give courts this ability. Article 1 of the Civil Code dictates that “[a]ll private rights shall conform to the public welfare.”²¹⁸ Article 90 of the Civil Code provides that “[a] juristic act which has for its object such matters as are contrary to public

314 U.S. 488, 491-92 (1942); *Mercoid Corp. v. Mid-Continent Inv. Co.*, 320 U.S. 661, 664-65 (1944); *Carbice Corp. of Am. v. American Patents Dev. Corp.*, 283 U.S. 27, 31 (1931).

²¹⁰ See Louis Kaplow, *The Patent-Antitrust Intersection: A Reappraisal*, 97 HARV. L. REV. 1813, 1817 (1984) (analyzing the conflict between patent law and antitrust law).

²¹¹ 15 U.S.C. §§ 1-7 (2006); see e.g. *id.* § 1 (prohibiting contracts in restraint of trade).

²¹² *Id.* §§ 12-27; 29 U.S.C. §§ 52-53 (2006); see, e.g., 15 U.S.C. § 13(a) (prohibiting contracts tending to create a monopoly).

²¹³ *Id.* §§ 41-58; see, e.g., *id.* § 45 (prohibiting unfair methods of competition).

²¹⁴ *Senza-Gel Corp. v. Seiffhart*, 803 F.2d 661, 668 (Fed. Cir. 1986).

²¹⁵ *Shiteki Dokusen no Kinshi Oyobi Kosei Torihiki no Kakuho ni Kansuru Horitsu* [Act Concerning Prohibition of Private Monopolization and Maintenance of Fair Trade], Law No. 54 of 1947, art. 1, translated in 2 EHS LAW BULL. SER. no. 2270 (2002).

²¹⁶ *Id.* art. 23.

²¹⁷ See Minpō, arts. 1 and 90, translated in 2 EHS LAW BULL. SER. no. 2100 (2002).

²¹⁸ *Id.* art. 1.

policy or policy of the law is null and void.”²¹⁹ A Japanese court has discretion under these provisions to carve out a rule similar to an equitable, judicially created doctrine in a common law legal system.²²⁰ Therefore, an accused infringer could assert a defense of patent misuse in a Japanese court. A court might recognize such a defense if the accused infringer based it on public welfare concerns, such as the consumer and environmental benefits of cartridge recycling.

Had the patent misuse doctrine been available in Japanese law at the time of the *Canon* case, Recycle Assist might have successfully asserted patent misuse as a defense to Canon’s infringement charge. In this hypothetical case, Recycle Assist would have to prove four elements: 1) that the patented Canon cartridge is a tying product whose reuse is only possible through the purchase of ink; 2) that the ink could be sold separately from the cartridge; 3) that the ink is a staple good not claimed in Canon’s patent; and 4) that Canon has market power in the cartridge market. If Recycle Assist were able to prove these four elements, it could show that Canon was misusing its patent to gain an advantage in the ink market and in effect broaden the scope of its cartridge patent to cover the unpatented ink.²²¹

However, Canon may be able to successfully rebut Recycle Assist’s assertion of patent misuse in this hypothetical. Recycle Assist’s defense would fail if Canon could prove that its ink is not a staple good because it is specifically designed for use in its printer cartridges. To do so, Canon would need to demonstrate that the quality of its ink is far greater than commonly available, staple ink.

IX. CONCLUSION

The IP High Court’s decision in *Canon v. Recycle Assist* failed to provide the clarity that Japan sought when establishing the IP High Court.

²¹⁹ *Id.* art. 90.

²²⁰ See Toshiko Takenaka, *Harmonizing the Japanese Patent System with its U.S. Counterpart Through Judge-made Law: Interaction Between Japanese and U.S. Case Law Developments*, 7 PAC. RIM L. & POL’Y J. 249, 277 (1998) (describing a “clear trend” in recent cases showing the “eagerness of Japanese courts to adopt U.S. patent law doctrines.”); see also Kenneth L. Port, *Japanese Intellectual Property Law in Translation: Representative Cases and Commentary*, 34 VAND. J. TRANSNAT’L L. 847, 895 (2001) (discussing an instance when a Japanese court took a “surprisingly U.S.-approach” and extended statutory law to sanction inappropriate conduct by the defendant in a trademark case).

²²¹ The question of anticompetitive practices by printer manufacturers has arisen in Europe. In 2002, the European Union Commission announced it would launch an investigation into whether printer manufacturers used illegal, anticompetitive tactics to force consumers to buy the manufacturers’ ink cartridges instead of cheaper alternatives. Abrahams & Guerrero, *supra* note 148. As of 2004, the investigation had stalled. See *EU Considers Lexmark Ink Cartridge Probe*, RECYCLING TODAY, January 15, 2004, available at <http://www.recyclingtoday.com/news/news.asp?ID=5197&SubCatID=20&CatID=8>.

The court failed to issue a clear opinion and regardless of the particular outcome, its precedent will not be helpful to courts trying to decide when to allow repair of a patented item. The court should reconsider its opinion, discard the essential element test, and apply the American doctrine that allows repair if the product is not spent. If the IP High Court chooses to retain its essential element test, it should modify the test to allow repair when the element replaced is a staple good. Finally, the court should also allow an accused infringer to assert a defense of patent misuse when the patent holder is attempting to use its patent rights to tie the purchase of the patented good to the purchase of an unpatented, staple good. These proposals will provide greater ex ante clarity to cartridge recyclers, whose business models require certainty that their activities do not infringe the patent rights of printer cartridge manufacturers.

The *Canon* decision as it stands will also have a negative effect on the larger equipment recycling industry in Japan. *Canon v. Recycle Assist* was the second case in recent years, after the *Fuji Film* case, in which a Japanese court considered whether the reconditioning of a single-use piece of equipment constituted infringement. Given the prevalence of single-use products in industrialized societies such as Japan, it is likely that more such cases will come before the courts as companies look for ways to recondition and reuse equipment intended for single use. Japanese courts deciding such cases will look to the IP High Court rule to decide what constitutes permissible repair of a patented product. Therefore, the court should revisit the *Canon* decision in order to put the Japanese recycling industry on firmer footing and mitigate the environmental impact of a disposable culture.