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Note

**Building A Mystery: Repair, Reconstruction, Implied Licenses,
and *Hewlett-Packard Co. v. Repeat-O-Type Stencil
Manufacturing Corp.***

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Building A Mystery: Repair, Reconstruction, Implied Licenses, and *Hewlett-Packard Co. v. Repeat-O-Type Stencil Manufacturing Corp.*[†]

Christina M. Sperry*

I. INTRODUCTION

1. Technological innovations and pressure within companies to invent are increasing.¹ Companies continue to use patents to protect their innovations, and the number of U.S. patents issued continues to increase. In addition to obtaining patents, companies also use licensing to control the use and infringement of their patented technologies.² Still, disputes over permissible uses of a patented product can easily arise between a patentee and purchaser of a patented product when the purchaser uses the product commercially without an express license.³

2. *Hewlett-Packard Co. v. Repeat-O-Type Stencil Manufacturing Corp.*, a case decided by the United States Court of Appeals for the Federal Circuit (“the Federal Circuit”), involves these problems.⁴ The case addressed whether the lawful purchase of ink jet printer cartridges and their subsequent alteration, making them refillable, constituted a permissible repair or an impermissible reconstruction. The Federal Circuit held that the alteration was a repair, but overlooked previous case law and the implications of its decision, setting a dangerous precedent.

3. This Note argues that when a patentee sells a patented product with an implied license, such as a single-use-only restriction,⁵ and the purchaser modifies the unused product and resells it, the purchaser has made an impermissible

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* B.S.E.E., 1996, The University of Texas at Austin; J.D. (anticipated), 1999, Boston University School of Law.

¹ See R. Trevor Carter, Note, *Legalizing Patent Infringement: Application of the Patent Exhaustion Doctrine to Foundry Agreements*, 28 IND. L. REV. 689, 694 (1995) (stating that the financial importance of intellectual property to companies is causing “a more aggressive approach to building patent portfolios”).

² See Michael J. Swope, Comment, *Recent Developments in Patent Law: Implied License – An Emerging Threat to Contributory Infringement Protection*, 68 TEMP. L. REV. 281, 281 (1995).

³ An express license is a written or oral contract between a patentee and the purchaser of a patented product. See *id.* Without such a concrete agreement between buyer and seller, ambiguity about lawful uses are more likely to arise. See *id.*

⁴ 123 F.3d 1445 (Fed. Cir. 1997), *petition for cert. filed*, 66 U.S.L.W. 3509 (U.S. Jan. 23, 1998) (No. 97-1226).

⁵ A single use only restriction is typically imposed by conspicuously labeling the patented product or its instructions with a phrase such as “For Single Use Only.”

reconstruction. Because muddled case law governs patent protection and strictly defines the reconstruction doctrine, purchasers can circumvent patentees' rights and undermine the repair and reconstruction doctrine's goals. This Note concludes that this gap is inequitable and courts can avoid it by the relaxing and clarifying the term "spent."

4. Part II.A of this Note reviews the U.S. patent system's goals in light of new technologies and the issues raised in *Hewlett-Packard*, both of which challenge the system's goals. Part II.B provides an overview of the complex repair and reconstruction doctrine, including the leading cases that developed the doctrine. Next, Part III summarizes the *Hewlett-Packard* case and decision. Finally, Part IV of this Note analyzes the Federal Circuit's opinion in *Hewlett-Packard*, focusing on: (i) implied licenses as a tool for limiting a purchaser's rights; (ii) factors courts must consider in determining whether a repair or reconstruction occurred; and (iii) various interpretations for concluding when a part is spent.⁶

II. BACKGROUND

A. Benefits of the Patent System

5. The patent system recognizes and balances a variety of policy goals, including the free flow of ideas in the market and the stimulation of innovation.⁷ Article I of the U.S. Constitution grants Congress the authority to give a patent monopoly.⁸ It states that "Congress shall have the power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."⁹ Congress devised the patent system to create a contract between the government and the inventor: The government grants the patentee twenty years of protection against infringers in exchange for the inventor's new and useful contribution to society's knowledge.¹⁰

6. The patent system confers many benefits upon inventors to encourage full disclosure of the invention. It also provides inventors an incentive to research,

⁶ "Spent" is a term of art that generally means unusable (broken or worn out). See discussion *infra* Part IV.B.2. (explaining the various interpretations of when a part is "spent").

⁷ See Thomas A. Polcyn, *FMC Corporation v. Up-Right, Inc.: Sequential Replacement of Parts Does not Turn Permissible Repairs Into Impermissible Reconstruction*, 14 ST. LOUIS U. PUB. L. REV. 269, 271 (1994).

⁸ U.S. CONST. art. I, § 8, cl. 8.

⁹ *Id.*

¹⁰ See 35 U.S.C. § 154(a)(2) (1994). A patentee's protection lasts for twenty years starting upon the patent's U.S. application filing date. See *id.*

develop, and innovate useful and novel products and processes for public use.¹¹ Without this exclusive protection, innovators may not expend as much time and effort developing new technologies.¹² The patent system also secures early public disclosure of new technological information.¹³ Inventors that file a patent application reserve all patent rights as of the day of filing, thereby encouraging early filing and disclosure.¹⁴ The public benefits from this early disclosure because it discourages duplicative efforts and inventors from keeping technological advances secret, allowing others to build on their knowledge.¹⁵

7. The patent system also provides a variety of economic benefits. It gives inventor and inventors' supporters an incentive to invest in potentially patentable inventions because the reward of exclusivity outweighs the risks involved.¹⁶ Further, the patent system stimulates future capital investment in improvements on patented technology.¹⁷ For corporate patentees, patents provide financial security because they give companies the exclusive right to manufacture, use, and sell the patented invention.¹⁸ Indeed, "the existence and worth of most high

¹¹ See 35 U.S.C. § 154 (1994) (offering "the right to exclude others from making, using, offering for sale, or selling the invention" and providing an incentive to innovate); see also ADVISORY COMM'N ON PAT. L. REFORM, A REPORT TO THE SECRETARY OF COMMERCE 3 (1992) (naming the patent system as a means to foster research and development); Carter, *supra* note 1, at 690-91 (expressing the patent system's wide variety of benefits).

¹² The Advisory Commission on Patent Law Reform included the incentive to innovate as a benefit of the patent system. See ADVISORY COMM'N ON PAT. L. REFORM, *supra* note 11, at 3.

¹³ See *id.* at 3, 47.

¹⁴ See *id.* at 3. The patent law changed from a seventeen-year monopoly beginning on the date of issuance of the patent to a twenty-year monopoly beginning on the date of application, reflecting this benefit. 35 U.S.C. § 154(a)(2)'s alteration "enhances the ability of the applicant to exclude competition in the market for the invention . . . often for a period much longer than the initial seventeen year term." ROBERT PATRICK MERGES, PATENT LAW AND POLICY 43-44 (2d ed. 1997). If the United States switches from a first to invent system to a first to file system, which most major foreign patent systems have, then this incentive will gain importance for inventors. See *id.* at 37; see also ADVISORY COMM'N ON PAT. L. REFORM, *supra* note 11, at 12, 43, 53 (suggesting that the first to file system encourages early filing, disclosure, and unnecessary research).

¹⁵ See ADVISORY COMM'N ON PAT. L. REFORM, *supra* note 11, at 53.

¹⁶ See Carter, *supra* note 1, at 690; see also *Biological Diversity*, UN MONTHLY CHRON., June 22, 1997, at 17-18 (explaining that profits from biological and genetic resources are guaranteed with exclusive patent rights); Leslie E. Davis & Edmund R. Pitcher, *Patent Due Diligence Helps Ensure Exclusivity*, NAT'L L.J., June 16, 1997, at C21 ("In the biopharmaceutical industry, the high costs and risks of development are justified by the potential for high profits arising from exclusive rights to large-market drugs.").

¹⁷ See ADVISORY COMM'N ON PAT. L. REFORM, *supra* note 11, at 3.

¹⁸ See Harry Schwartz, *Patents - Whose Rights Do They Serve?*, PHARM. EXECUTIVE, Sept. 1, 1997, at 26, available in 1997 WL 9141539 ("Without patent protection, companies would be unable to

technology business entities are based, in large part, on the quality and quantity of intellectual property that they own.”¹⁹ Patentees rely on their patents to create short term monopolies that earn prospectively large and exclusive profits.²⁰

8. Perhaps most importantly, the patent system gives patentees the right to exclude others from making, using, or selling patented inventions.²¹ This privilege exists to protect the “commercially valuable use which the patentee would or could avail himself of in exploiting his invention.”²² This right includes the right to sell the patent to others.²³ These rights are only valuable, however, to the extent they can be enforced.²⁴ Thus, if a patentee does not consent to a use of the invention, the patentee’s remedy is to sue for infringement.²⁵ For infringement to occur, all of the invention’s claims²⁶ must be evident in the accused product or process.²⁷

9. Section 271 of the Patent Act recognizes three types of patent infringement:²⁸ direct infringement, induced infringement, and contributory infringement.²⁹ Direct infringement occurs when a party uses or practices all of a

support [their] huge research laboratories”); *see also Biological Diversity*, *supra* note 16, at 18 (“Companies are guaranteed profits on their investments only if they have exclusive intellectual property rights”). A patent’s benefits, however, last only as long as the patented technology has public worth. *See* Casey P. August & Michael J. Buchenhorner, *Strategies for Developing Intellectual Property Portfolios in the Global Environment: Protection of Intellectual Property in Hostile Environments*, 21 CAN.-U.S. L.J. 261, 262 (1995).

¹⁹ Carter, *supra* note 1, at 694.

²⁰ *See* Thomas Arno, Comment, *Use Restrictions and the Retention of Property Interests in Chattels Through Intellectual Property Rights*, 31 SAN DIEGO L. REV. 279, 280 (1994).

²¹ *See* 35 U.S.C. § 154(a)(1) (1994); *see also* Carter, *supra* note 1, at 691 (basing the patent system’s success on these exclusive rights).

²² *Kaz Mfg. Co. v. Chesebrough-Ponds, Inc.*, 211 F. Supp. 815, 818 (S.D.N.Y. 1962), *aff’d*, 317 F.2d 679 (2d Cir. 1963).

²³ *See id.*

²⁴ *See* ADVISORY COMM’N ON PAT. L. REFORM, *supra* note 11, at 13, 75.

²⁵ *See* 35 U.S.C. § 281 (1994) (“A patentee shall have remedy by civil action for infringement of his patent.”); *see also* Polcyn, *supra* note 7, at 271 (“The patentee may prevent all others from [making, using, and selling the patented item] without consent by means of an infringement action.”).

²⁶ A “claim” is the part of the patent which “point[s] out and distinctly claim[s] the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112 (1994).

²⁷ *See* Carter, *supra* note 1, at 691; Polcyn, *supra* note 7, at 271-72.

²⁸ 35 U.S.C. §§ 101-294 (1994).

²⁹ 35 U.S.C. § 271(a)-(c).

patent's claims without the patentee's permission.³⁰ Induced infringement occurs if a seller induces another to commit the infringement through active aiding or abetting.³¹ A contributory infringer is one who sells "a component of a patented machine, manufacture, combination or composition or a material or apparatus for use in practicing a patented process, constituting a material part of the invention."³² This Note explores direct and contributory infringement in the context of repair and reconstruction.³³

B. Repair and Reconstruction

10. Alleged infringers can defend against an infringement claim by raising one of four limitations on a patentee's exclusivity: experimental or nonprofit use, implied license, repair but not reconstruction, and any number of recognized defenses.³⁴ This Note focuses on the repair and reconstruction doctrine. When a patentee sells its patented product, the patentee implies the right to use and maintain the product.³⁵ Buyers may use, sell, and repair that product, but they

³⁰ See 35 U.S.C. § 271(a) ("[W]hoever without authority makes, uses, offers to sell, or sells any patented invention . . . during the term of the patent therefor, infringes the patent."); see also Mark A. Farley, *Infringement Questions Stemming From the Repair or Reconstruction of Patented Combinations*, 68 J. PAT. & TRADEMARK OFF. SOC'Y 149, 150-51 (1986) (stating that all of the elements in a patent's claim must be practiced for direct infringement).

³¹ See 35 U.S.C. § 271(b) ("Whoever actively induces infringement of a patent shall be liable as an infringer."); see also Farley, *supra* note 30, at 151 (noting that the seller must aid and abet the infringement, which is a higher standard than knowledge of possible infringement).

³² 35 U.S.C. § 271(c); see also Farley, *supra* note 30, at 151 (expressing that a patentee must prove direct infringement before any other parties are joined in the suit). The product or process sold must not be "a staple article or commodity of commerce suitable for substantial noninfringing use." 35 U.S.C. § 271(c). This doctrine is akin to joint tort-feasor rules. See *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 500-01 (1964). When two or more persons commit related wrongs against the same person they may both be sued in one action at law as joint tort-feasors. See *W. PAGE KEETON ET AL., PROSSER AND KEETON ON THE LAW OF TORTS* § 47, at 324-25 (5th ed. 1984). Each tort-feasor can be responsible for all damages caused even though others contributed to them. See *id.* at 327-28. Similarly, the direct infringer who sells the patented item and the contributory infringer who buys it can both be liable for patent infringement. See Farley, *supra* note 30, at 151-52.

³³ In *Hewlett-Packard Co. v. Repeat-O-Type Stencil Manufacturing Corp.*, 123 F.3d 1445 (Fed. Cir. 1997), *petition for cert. filed*, 66 U.S.L.W. 3509 (U.S. Jan. 23, 1998) (No. 97-1226), the Federal Circuit focused on Repeat-O-Type's direct infringement. The Federal Circuit was not concerned with Repeat-O-Type's contributory infringement, made possible by the purchasers who refilled the ink in Repeat-O-Type's modified cartridges. See *id.*

³⁴ See 5 DONALD S. CHISUM, *CHISUM ON PATENTS* § 16.03 (1997); see also Carter, *supra* note 1, at 695 (outlining these limitations).

³⁵ See *Mitchell v. Hawley*, 83 U.S. (16 Wall.) 544, 548 (1872), *construed in Hewlett-Packard*, 123 F.3d

cannot reconstruct it without infringing the patent.³⁶ A “repair” is necessary to keep a product in good working order,³⁷ in contrast to a “reconstruction,” which is the re-creation of a patented device so “as to ‘in fact make a new article,’ after the entity, viewed as a whole, has become spent.”³⁸ Disputes, therefore, may arise about whether a modification is a permissible repair or an impermissible reconstruction.³⁹ Interpretation of an implied license⁴⁰ to use and maintain a product can be ambiguous, though, because patentees often restrict the scope of permissible repairs and these restrictions may conflict with the implied license inherent in the sale of the patented product.⁴¹

11. The Supreme Court first addressed the repair and reconstruction issue in *Wilson v. Simpson*.⁴² In *Wilson*, a patented wood planing machine used replaceable cutting knives that lasted sixty to ninety days while the machine’s frame lasted many years.⁴³ The Court held that the user could replace worn out knives, which was a permissible repair because the replacement “[did] not alter the identity of the

at 1451; *see also* Polcyn, *supra* note 7, at 274 (explaining generally a patented product’s permissible uses).

³⁶ *See* CHISUM, *supra* note 34, § 16.03[3]; *see also* Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 346 (1961) [hereinafter “*Aro I*”] (stating the distinction between repair and reconstruction).

³⁷ *See* CHISUM, *supra* note 34, § 16.03[3]; *see also* Aro Mfg. Co. v. Convertible Top Replacement Co., 377 U.S. 476, 479-80 (1964) [hereinafter “*Aro II*”] (stating allowable circumstances for a repair).

³⁸ *Aro Mfg. Co.*, 365 U.S. at 346 (citation omitted) (quoting *United States v. Aluminum Co. of America*, 148 F.2d 416, 425 (2d Cir. 1945)).

³⁹ *See, e.g., id.* at 342; *see also, e.g., Hewlett-Packard*, 123 F.3d at 1451-52.

⁴⁰ An implied license is a restriction by a patentee on its patented product created by virtue of its sale as a “component designed to be used to construct the [patented] device or carry out the [patented] process.” CHISUM, *supra* note 34, § 16.03[2][b]. *See generally* Swope, *supra* note 2 (discussing current interpretations of implied licenses). Implied licenses are evaluated as contracts. *See id.* at 286. *See infra* Part IV.A. for further discussion of implied licenses and their relation to repair and reconstruction.

⁴¹ “The repair-reconstruction distinction is decisive, however, only when the replacement is made in a structure whose original manufacture and sale have been licensed by the patentee . . . ; when the structure is unlicensed . . . the traditional rule is that even repair constitutes infringement” CHISUM, *supra* note 34, § 16.03[3], n.6; *see also, e.g., Cotton-Tie Co. v. Simmons*, 106 U.S. 89, 91, 94 (1882) (considering the plaintiff’s “one use only” restriction as limiting the life of a cotton bale band); *Hewlett-Packard*, 123 F.3d at 1451 (noting that product restrictions in implied licenses help determine a product’s uses); *Kendall Co. v. Progressive Med. Tech. Inc.*, 85 F.3d 1570, 1573-76 (Fed. Cir. 1996) (discussing the plaintiff’s implied license as including the right to repair). An express license, a written or oral contract between the patentee and purchaser, may also accompany the product, rendering a modification a reconstruction. *See* Swope, *supra* note 2, at 281.

⁴² 50 U.S. (9 How.) 109 (1850).

⁴³ *See Wilson*, 50 U.S. at 125.

machine, but preserve[d] it.”⁴⁴ The Court refused to establish a bright-line test for distinguishing a repair from a reconstruction, but it did place heavy emphasis on the replaced part’s durability and the patentee’s intent.⁴⁵

12. The next significant repair and reconstruction decision was *Aro Manufacturing Co. v. Convertible Top Replacement Co.* (“*Aro I*”).⁴⁶ In *Aro I*, the plaintiff, Aro, owned a patent on a convertible, folding automobile top, including a flexible fabric top, the support structures, and a sealing mechanism.⁴⁷ The fabric portion’s useful life was about three years, whereas the other components usually lasted the lifetime of the automobile.⁴⁸ The defendant manufactured and sold replacement fabric tops for use exclusively with Aro’s patented combination.⁴⁹ In holding that no contributory infringement occurred because there was not a reconstruction,⁵⁰ the Supreme Court rejected the factors that lower courts had used to distinguish repair from reconstruction, such as the relative life, cost, and importance of the individual parts.⁵¹

13. Under *Aro I*, regardless of a part’s importance in a patented combination, if the part was not separately patented, its replacement is permissible.⁵² “[M]aintenance of the ‘use of the whole’ of the patented combination through

⁴⁴ *Id.* at 126.

⁴⁵ *See id.* at 125; *see also* Farley, *supra* note 30, at 153 & n.21 (assessing *Aro I*’s great emphasis on a part’s durability due to *Wilson*); Polcyn, *supra* note 7, at 275 (recognizing *Aro I*’s refusal to establish a bright-line test based on *Wilson*). *See infra* Part IV.B for an explanation of why there is no bright-line test.

⁴⁶ 365 U.S. 336 (1961).

⁴⁷ *See id.* at 337. At the time of this case, Aro was a national leader in the replacement convertible top industry. *See id.* at 338. Aro’s patent, No. 2,569,724, covered all of the elements collectively and was deemed a combination. *See id.* at 337. Hence, the patent was a combination patent. *See id.*

⁴⁸ *See id.* at 337-38.

⁴⁹ *See id.* at 338. The defendant knew “that the purchasers intend to use the fabric for replacement purposes on automobile convertible tops which are covered by the claims of [Aro’s] combination patent” *Id.* at 341.

⁵⁰ *See id.* at 341-42, 346. The Supreme Court’s resolution of this dispute became the leading case in repair and reconstruction doctrine.

⁵¹ *See Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 344-45 (1961). Combination patents like Aro’s cover “only the totality of the elements in the [patent’s] claim” *Id.* at 344. Individual parts cannot be separately evaluated for any purpose without their own patent. *See id.* at 344-45.

⁵² *See id.* at 345. This replacement right is not limited by a part’s extreme cost or difficulty of replacement. *See id.*

replacement of a spent, unpatented element does not constitute reconstruction.”⁵³ Relying on its prior decisions,⁵⁴ the Court concluded that “reconstruction of a patented entity, comprised of unpatented elements, is limited to such a true reconstruction of the entity as to ‘in fact make a new article,’ after the entity, viewed as a whole, has become spent.”⁵⁵ In addition, “[m]ere replacement of individual unpatented parts, one at a time, whether of the same part repeatedly or different parts successively, is no more than the lawful right of the owner to repair his property.”⁵⁶

14. Generally, *Aro I* broadened the definition of “repair,” encompassing more actions as permissible repair.⁵⁷ At the same time, *Aro I*’s cursory analysis and broad language created substantial ambiguity in subsequent cases concerning repair and reconstruction.⁵⁸ The minority’s test in *Aro I*, however, may be better adapted to lessen court confusion and provide a framework for consistent analysis.⁵⁹ The minority outlined instructive factors for courts to use when classifying a defendant’s actions as repair or reconstruction.⁶⁰

15. The first factor in the *Aro I* minority test was “the life of the part replaced in relation to the useful life of the whole combination.”⁶¹ All of the Justices in *Aro I* agreed on this factor’s relevance. Reemphasizing the ideas first introduced in *Wilson v. Simpson*,⁶² *Aro I* stressed that lawful purchasers buy “the use of the

⁵³ *Id.* at 346.

⁵⁴ The Court relied primarily on *Mercoid Corp. v. Mid-Continent Co.*, 320 U.S. 661 (1944), *Mercoid Corp. v. Minneapolis-Honeywell Co.*, 320 U.S. 680 (1944), *Heyer v. Duplicator Manufacturing Co.*, 263 U.S. 100 (1923), *Leeds & Catlin Co. v. Victor Talking Machine Co.*, 213 U.S. 325 (1909), and *Wilson v. Simpson*, 50 U.S. (9 How.) 109 (1850).

⁵⁵ *Aro Mfg. Co.*, 365 U.S. at 346 (citation omitted) (quoting *United States v. Aluminum Co. of America*, 148 F.2d 416, 425 (2d Cir. 1945)).

⁵⁶ *Id.* See also *FMC Corp. v. Up-Right, Inc.*, 21 F.3d 1073, 1077-78 (Fed. Cir. 1994) (concluding that the sequential replacement of various parts, where each replacement is a repair, merely constitutes permissible repair).

⁵⁷ See *Aktiebolag v. E.J. Co.*, 121 F.3d 669, 672 (Fed. Cir. 1997), *cert. denied*, 140 L. Ed. 2d 499 (1998); see also Polcyn, *supra* note 7, at 278 (“Generally, the sweeping language of *Aro I* has had the effect of broadening what the lower courts have considered to be permissible repair.”).

⁵⁸ See Polcyn, *supra* note 7, at 278-79; see also Farley, *supra* note 30, at 162-63 (noting the confusion *Aro I* created in the lower federal courts).

⁵⁹ This minority test, signed by four justices in two opinions, has been described as a clearer and more workable test. See Farley, *supra* note 30, at 160-61.

⁶⁰ See *Aro Mfg. Co.*, 365 U.S. at 362-68 (Brennan, J., concurring in the result).

⁶¹ *Id.* at 363.

⁶² 50 U.S. (9 How.) 109 (1850).

whole”⁶³ patented combination, which includes the right to repair any worn out or broken parts.⁶⁴ This right, however, should be tempered by the part’s expected life span, as compared to the product’s other components.⁶⁵ If the part repaired or replaced has a much shorter life span than the other components, the purchaser should be able to repair it.⁶⁶

16. The second factor of *Aro Is* minority test was the importance of the replaced element to the inventive concept of the patented combination.⁶⁷ This factor relates to whether the part is essential to or is the heart of an invention.⁶⁸ Although the minority considered this factor extremely important in determining whether a repair or reconstruction occurred,⁶⁹ subsequent decisions have properly held that this factor is not controlling.⁷⁰ The primary reason to reject this factor is that “the combination patent covers only the totality of the elements in the claim and that no element, separately viewed, is within the grant.”⁷¹ Because a combination patent does not grant patent rights in the individual components, the repair and reconstruction doctrine should not be construed in a manner that grants patent rights over the individual parts.

17. Similarly, the third factor was the modified part’s dominance in the patented combination, and it is effectively moot because courts have been very reluctant to use it.⁷² The minority also considered “whether the new component

⁶³ *Id.* at 123.

⁶⁴ *See Aro Mfg. Co.*, 365 U.S. at 342-43; *Wilson*, 50 U.S. at 123.

⁶⁵ *See Aro Mfg. Co.*, 365 U.S. at 367-68 (Brennan, J., concurring in the result); *see also Wilson*, 50 U.S. at 125-26; *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 270 F.2d 200, 205 (1st Cir. 1959).

⁶⁶ *See Wilson*, 50 U.S. at 125-26; *see also Aro*, 270 F.2d at 205.

⁶⁷ *See Aro Mfg. Co.*, 365 U.S. at 363-64 (Brennan, J., concurring in the result); *see also Farley*, *supra* note 30, at 161 (discussing the replaced element’s importance to the inventive concept factor).

⁶⁸ *See Aro Mfg. Co.*, 365 U.S. at 344.

⁶⁹ *See id.* at 368 (Brennan, J., concurring in the result) (“The shape of the fabric was thus not the essence of the device and in all the circumstances it seems reasonable and sensible to treat the replacement of the top as ‘repair.’”).

⁷⁰ *See, e.g., Aro Mfg. Co.*, 365 U.S. at 345; *Dawson Chem. Co. v. Rohm & Haas Co.*, 448 U.S. 176, 217; *See Aktiebolag v. E.J. Co.*, 121 F.3d 669, 672 (Fed. Cir. 1997), *cert. denied*, 140 L. Ed. 2d 499 (1998); *Sage Prods., Inc. v. Devon Indus., Inc.*, 45 F.3d 1575, 1577 (Fed. Cir. 1995). The subsequent decisions are based on the *Mercoïd* cases. *See Mercoïd Corp. v. Mid-Continent Co.*, 320 U.S. 661, 667 (1944); *Mercoïd Corp. v. Minneapolis-Honeywell Co.*, 320 U.S. 680, 684 (1944). “However worthy it may be, however essential to the patent, an unpatented part of a combination patent is no more entitled to monopolistic protection than any other unpatented device.” *Mercoïd*, 320 U.S. at 684.

⁷¹ *Aro Mfg. Co.*, 365 U.S. at 344.

⁷² *See Farley*, *supra* note 30, at 162.

ha[d] been purchased to replace a worn-out part or for some other purposes.”⁷³ In cases of contributory infringement, the crux of the analysis is whether the product sold could have had a substantial noninfringing use.⁷⁴ If it could, then there is no infringement. This factor gains increased importance when coupled with the patentee’s intent as to the replaced part’s purpose and life.⁷⁵ The final factor in *Aro I*’s minority test was the balancing of the patentee’s intent with the purchaser’s legal rights.⁷⁶ This factor should be, and usually is, controlling.⁷⁷ This Note considers a patentee’s intent in detail in Part IV.B.1.

18. *Aro I* remained the leading case governing the repair and reconstruction doctrine for decades.⁷⁸ Interpretation of the case by the courts, however, did not fully begin until the early 1980s, when the Federal Circuit was created as the sole federal appellate court to hear patent cases.⁷⁹ The first Federal Circuit decision of

⁷³ *Id.*; see *Aro Mfg. Co.*, 365 U.S. at 364 (Brennan, J., concurring in the result).

⁷⁴ See 35 U.S.C. § 271(c) (1997).

⁷⁵ See *Aro Mfg. Co.*, 365 U.S. at 367-68 (Brennan, J., concurring in the result); see also Farley, *supra* note 30, at 162 (expressing that courts after *Aro I* analyze this factor only if necessary to determine the patentee’s intent).

⁷⁶ See *Aro Mfg. Co.*, 365 U.S. at 364 (Brennan, J., concurring in the result).

⁷⁷ See *id.* at 368 (Brennan, J., concurring in the result); see also Farley, *supra* note 30, at 173 (“It has become abundantly clear that the factor which tops the list of criteria considered by the courts is the *intent of the patentee.*”).

⁷⁸ The Court supplemented *Aro I* three years later with *Aro Manufacturing Co. v. Convertible Top Replacement Co.*, 377 U.S. 476 (1964) (“*Aro II*”). *Aro II* is also leading case law, but its holding is not as relevant to this Note as *Aro I*. Based on the same facts as *Aro I*, *Aro II* first focused on the knowledge requirement of contributory infringement. See *id.* at 485-91; see also 35 U.S.C. § 271(c) (1997) (“Whoever offers to sell . . . a component of a patented machine, manufacture, combination, or composition . . . *knowing* the same to be especially adapted for use in an infringement of such patent . . . shall be liable as a contributory infringer.”) (emphasis added). The contributory infringer must have knowledge that the patented combination exists, that the part supplied exists only for use in that patented combination, and that the patent is directly infringed. See *Aro Mfg. Co.*, 377 U.S. at 487-91. This holding decreased the probability of a court finding contributory infringement of a patented combination comprised of unpatented elements. See Farley, *supra* note 30, at 166. This decreased potential “is evidenced through the heavy burden of proof required of the patentee prior to the time actual written notice of the infringement is given” *Id.* With regard to licensing, the Court ruled that repairing unlicensed patented products constitutes infringement because the repair perpetuates the infringing use. See *Aro Mfg. Co.*, 377 U.S. at 480. Since the original use was not licensed by the patentee, the Supreme Court acknowledged that the use was unauthorized by prohibiting any repair of the product that would allow for its continued unauthorized use. On the other hand, repairing a licensed, patented product could be a repair or a reconstruction, and courts must evaluate the possible infringement under the doctrines established in *Aro I*. See *id.* This requires a determination of whether there was a reconstruction of the patented product after it had become spent. See *Aro Mfg. Co.*, 365 U.S. at 346.

⁷⁹ See Federal Courts Improvement Act of 1982, 28 U.S.C. § 1295(a)(4) (1995); see also Swope, *supra*

significance involving the repair and reconstruction doctrine was *Everpure, Inc. v. Cuno, Inc.*⁸⁰ Plaintiff Everpure sold a patented combination of parts for filtration, which contained a removable filter attached to a head that directed fluid.⁸¹ It also sold entire filter cartridges to replace worn ones because the head had a longer lifetime.⁸² The combination was designed to be spent when the filter wore out, despite the head's longer lifetime.⁸³

19. Cuno sold its own cartridges that attached to Everpure's heads using a Cuno adapter.⁸⁴ The Federal Circuit decided that because the cartridge was "simply a component"⁸⁵ of the patented combination, replacement of the Everpure cartridge with a Cuno cartridge was not a reconstruction of the patented entity, despite the replacement of the cartridge's neck.⁸⁶ The decision essentially allowed for the replacement of unspent parts, which would otherwise be an impermissible reconstruction, if the spent parts had to be replaced to restore the combination to working order.⁸⁷

20. The dissenting opinion in *Everpure* illustrates a potentially adverse

note 2, at 286. The Federal Circuit is usually the final trier of patent cases because the Supreme Court's primary motivation to grant certiorari is to resolve disputes among the circuits, which do not exist in the single Federal Circuit. See *id.* at 286 n.41.

⁸⁰ 875 F.2d 300 (Fed. Cir. 1989).

⁸¹ See *id.* at 301. "The neck of the [filter] cartridge is removably inserted into the head and has channels for directing fluid to and from a filter sealed within the cartridge." *Id.*

⁸² See *id.* The filter wore out because it continuously received, filtered, and discharged fluid whereas the head is merely an attachment mechanism. See *id.* at 302. Everpure instructed purchasers to replace cartridges at least once a year. See *id.* at 303.

⁸³ See *id.* Everpure expected its customers to replace worn out filter cartridges. See *id.* at 302. Designing its cartridges as such was a "business decision to sell disposable cartridges and to render its filter irreplaceable without replacement of the entire cartridge." *Id.* at 303.

⁸⁴ See *id.* at 301. Cuno provided the adapter to its customers free of charge. See *id.*

⁸⁵ *Id.* at 302.

⁸⁶ See *id.* at 302-03. Since the neck is part of the spent cartridge and a separate patent does not cover it, its replacement is permissible. See *id.* at 303; see also *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 345-46 (1961) (noting that no matter how essential a part is to the patented combination, if it is not separately patented, the combination patent does not protect it). Cuno's decision to supply an adapter with its cartridge is akin to supplying a cartridge immediately compatible with Everpure's patented combination, a practice Everpure itself encourages. See *Everpure*, 875 F.2d at 303.

⁸⁷ This reflects *Aro*'s approval of any repair necessary for the "maintenance of the 'use of the whole' of the patented combination through replacement of a spent, unpatented element." *Aro Mfg. Co.*, 365 U.S. at 346.

impact of the majority's decision.⁸⁸ The dissent objected to Cuno's replacement of unworn, unbroken parts in the cartridge.⁸⁹ Recognizing that "repair" may be done to replace worn or broken parts, the dissent reasoned that "[t]here is no automatic right to replace unworn, unbroken parts of a patented structure simply because the unworn part is sold or used in attachment to a worn part."⁹⁰ Reconstruction is always impermissible, even when accompanied by a permissible repair.⁹¹ A contrary rule eviscerates the quintessential benefit of the patent system: the right to exclude others.⁹²

21. The Federal Circuit's next important decision was *Sage Products, Inc. v. Devon Industries, Inc.*⁹³ In holding that defendant Devon made a permissible repair, the court articulated that it "never said that an element is spent only when it is impossible to reuse it [W]hen it is neither practical nor feasible to continue using an element that is intended to be replaced, that element is effectively spent."⁹⁴ The court emphasized throughout its opinion that Sage Products's desired its medical waste disposal system's inner container to be replaceable, as evidenced by the warning "BIOHAZARD - SINGLE USE ONLY," Sage Product's campaign against reuse, and the sale of replacement inner containers.⁹⁵ Focusing on the patentee's intent, the court reasoned that when another company sold replacement inner containers to hospitals, the sale and replacement complied with Sage Products's intent and necessarily meant that the replacement was a permissible repair.⁹⁶

22. *Mallinckrodt, Inc. v. Medipart, Inc.* also focused on the patentee's intent and held that a patentee may restrict use and disposition of its patented product with an express or implied license showing its intent.⁹⁷ Further, a patentee may

⁸⁸ See *Everpure*, 875 F.2d at 304-06 (Newman, J., dissenting).

⁸⁹ See *id.* at 305-06.

⁹⁰ *Id.* at 305.

⁹¹ See *id.* at 306 ("If the asserted repair also requires reconstruction, it cannot be deemed to constitute an exception to the principles of infringement.").

⁹² See *id.*

⁹³ 45 F.3d 1575 (Fed. Cir. 1995).

⁹⁴ *Id.* at 1578.

⁹⁵ See *id.* at 1577-79.

⁹⁶ See *id.* at 1578-79. The court was also concerned that Sage Products sued merely to "keep for itself a market in parts which are intended to be periodically replaced—this is no more than an attempt to expand patent rights to an unpatented product [the inner container]." *Id.* at 1579.

⁹⁷ 976 F.2d 700, 708-09 (Fed. Cir. 1992).

charge that any unauthorized use is an infringement as long as the patentee's restrictions do not violate any other laws.⁹⁸

23. *Kendall Co. v. Progressive Medical Technology, Inc.* extended the *Sage Products* and *Mallinckrodt* holdings to situations where a patentee did not intend the patented product to be replaced.⁹⁹ Kendall labeled its patented pressure sleeves "FOR SINGLE PATIENT USE ONLY. DO NOT REUSE."¹⁰⁰ Even though "the pressure sleeves were not physically worn-out [after one use], they were effectively spent because of the risk of contamination between successive patients."¹⁰¹ Its patent specification, however, unlike the patent in *Sage Products*, did not indicate that the pressure sleeves were disposable and replaceable.¹⁰² The Federal Circuit held that this discrepancy was of no consequence because Kendall "clearly intended to permit its customers to replace the sleeves after each use."¹⁰³ Because Kendall's customers followed the single use only restriction, there was no reconstruction.¹⁰⁴ Further, whether or not the patentee intended that the part be replaced is of no consequence because "[a] purchaser may repair or replace *any* unpatented component that wears out or otherwise becomes 'spent.'"¹⁰⁵ Thus, *Kendall* helped clarify *Aro*'s "otherwise spent" ambiguity.

24. *Aktiebolag v. E.J. Co.* is one of the Federal Circuit's most recent repair and reconstruction cases.¹⁰⁶ In *Aktiebolag*, the Federal Circuit held that retipping a

⁹⁸ See *id.* at 708-09. This holding is termed the *Mallinckrodt* doctrine. Normally the laws that a restriction might violate are antitrust laws. See *id.* at 703-09; see also Richard H. Stern, *Post-Sale Patent Restrictions After Mallinckrodt - An Idea in Search of Definition*, 5 ALB. L.J. SCI. & TECH. 1, 7 (1994) (explaining that the *Mallinckrodt* doctrine is limited only by violations of positive laws).

⁹⁹ 85 F.3d 1570, 1576 (Fed. Cir. 1996).

¹⁰⁰ A pressure sleeve wraps around a patient's limb and applies pressure to it via a number of fluid pressure chambers, powered by a controller and tubing assembly. See *id.* at 1571-72. The warning was placed on the replacement sleeves' packaging. See *id.* at 1572.

¹⁰¹ *Id.* at 1576.

¹⁰² See *id.* at 1575. In *Sage Products, Inc. v. Devon Industries, Inc.*, 45 F.3d 1575, 1577 (Fed. Cir. 1995), the patent at issue indicated in the specification that the inner containers of a medical waste disposal system were for single use only. Kendall's patent specification mentioned no duration restrictions. See *Kendall*, 85 F.3d at 1575.

¹⁰³ *Kendall*, 85 F.3d at 1575.

¹⁰⁴ See *id.* at 1575-76. When a patentee's clear intent encourages or mandates replacement of used parts, it makes sense that courts will not punish purchasers who do exactly that, albeit in a form unintended and unexpected by the patentee. See *id.* at 1576 (noting that "Kendall's customers followed rather than disregarded the single-use notice").

¹⁰⁵ *Id.* at 1575.

¹⁰⁶ 121 F.3d 669 (Fed. Cir. 1997), *petition for cert. filed*, 66 U.S.L.W. 3492 (U.S. Jan. 13, 1998) (No. 97-1177).

patented drill tip¹⁰⁷ was an impermissible reconstruction because the manufacturer did not intend for the buyer to retip the drill, the buyer went through multiple steps to retip the drill, and the tip did not have a much shorter life than the rest of the patented drill.¹⁰⁸ The court specifically distinguished *Aktiebolag* from *Wilson v. Simpson*,¹⁰⁹ saying that the drill tip “was not intended or expected to have a life of temporary duration in comparison to the drill shank . . . [and] was not attached to the shank in a manner to be easily detachable.”¹¹⁰

25. The final case of relevance is *Universal Electronics, Inc. v. Zenith Electronics Corp.*¹¹¹ In this case, Zenith charged that Universal’s sale of remote controls contributorily infringed its patent on the particular method of remote control.¹¹² Owners of a Zenith receiver bought Universal remote controls in three circumstances: (i) when the Zenith remote broke, (ii) when the consumer lost the Zenith remote, or (iii) when the consumer wanted to reduce “clutter.”¹¹³ The court held that Zenith granted its customers an implied license to replace the remotes.¹¹⁴ Further, the district court considered whether replacement under the above three circumstances constituted repair or reconstruction.¹¹⁵ The court found that the

¹⁰⁷ The drill tip, also called a drill bit, cuts through the material being drilled. *See id.* at 670-71 & n.1. The drill tip here was unique because of its special grooves and cutting edges. *See id.*

¹⁰⁸ *Id.* at 673-74.

¹⁰⁹ 50 U.S. (9 How.) 109, 125-26 (1850).

¹¹⁰ *Aktiebolag v. E.J. Co.*, 121 F.3d 669, 674 (Fed. Cir. 1997), *cert. denied*, 140 L. Ed. 2d 499 (1998). In *Wilson*, the patentee designed a wood planing machine with replaceable cutting knives, which was instructive in determining that a repair occurred. *See Wilson*, 50 U.S. at 125-26.

¹¹¹ 846 F. Supp. 641 (N.D. Ill. 1994), *aff’d* 41 F.3d 1520 (Fed. Cir. 1994). Although only a district court opinion, commentators respect this case’s treatment of repair and reconstruction of lost or inferior components. *See* CHISUM, *supra* note 34, § 16.03[3][e].

¹¹² *See Universal*, 846 F. Supp. at 643. Zenith’s patent, No. 4,425,647, “claims a system and method of remote control of electrical devices such as television sets, video cassette recorders (‘VCRs’) and cable converter boxes.” *Id.* Universal actually brought this action, seeking a declaratory judgment that Zenith’s patent was invalid and, thus, unenforceable. *See id.*

¹¹³ *See id.* at 644. The court explains that reducing clutter means “consolidating several remote control units that operate a television, a VCR, a cable box and a compact disk player into one remote control unit.” *Id.* at 644 n.4.

¹¹⁴ *See id.* at 648 (“[A] license is ‘plainly implied’ by Zenith’s unrestricted sales of its remote control television sets [N]o reasonable purchaser of a Zenith transmitter/receiver would think that he or she was barred from purchasing a multibrand, multicomination remote control transmitter and using it with the Zenith receiver.”).

¹¹⁵ *See id.* at 648-50.

replacement of a broken remote was a permissible repair.¹¹⁶ The remote control was only one part of the patented transmitter-receiver combination, so a consumer could replace a broken remote to restore the combination to working order.¹¹⁷ When purchasing a new remote, a consumer did not fully recreate the patented combination; Universal merely enabled consumers to conduct a repair.¹¹⁸

26. The court also found that replacement of lost remotes was acceptable under an implied license theory.¹¹⁹ The court reasoned that purchasers of patented products may replace parts if necessary to preserve the product's fitness for use, which is an implied term of sale.¹²⁰ Recognizing that the repair and reconstruction doctrine is limited to worn or broken parts, the court refrained from applying it to lost remotes.¹²¹ Most importantly, the court held that replacing fully functional remote controls to reduce clutter can amount to a reconstruction.¹²² Customers can replace parts only to preserve a product's fitness for use, which may have deteriorated by wear or usage.¹²³ Only through usage can parts become spent.¹²⁴ Courts have relaxed this rule only when special circumstances exist,¹²⁵ none of

¹¹⁶ See *id.* at 649.

¹¹⁷ See *id.* Zenith did not separately patent the remote control.

¹¹⁸ See *id.* Universal did not put forth evidence showing that the patented combination became spent when the remote control broke. See *id.* If such evidence existed, then Universal would have infringed the patent. See *id.*

¹¹⁹ See *id.* at 650. *Universal Electronics* has been criticized as misinterpreting implied licensing. See Swope, *supra* note 2, at 301-03. "By instructing future courts that an implied license arises unless every component in a patented combination passes a 'no noninfringing use' test, the *Universal Electronics* opinion eviscerates congressional intent to protect patent owners from contributory infringement." *Id.* at 303.

¹²⁰ See *Universal*, 846 F. Supp. at 650. "[I]f there were no implied license, the doctrine of permissible repair would not allow Zenith's customers to replace non-broken remote control units." *Id.*

¹²¹ See *id.* The court's restraint acknowledges that lost remotes are not necessarily broken and nonfunctioning. See *id.*

¹²² See *id.*

¹²³ See *id.* (construing *King Instr. Corp. v. Otari Corp.*, 814 F.2d 1560, 1564 (Fed. Cir. 1987)). The district court based its analysis on *Thomas-Houston Electric Co. v. Kelsey Electric Railway Specialty Co.*, 75 F. 1005 (2d Cir. 1896). *Thomas-Houston* held that a purchaser can substitute a part in a patented combination for one that is better made, assuming that the part replaced was not separately patented. See *id.* *Universal Electronics* considered the *Thomas-Houston* decision to be based on an implied license theory. See *Universal*, 846 F. Supp. at 650.

¹²⁴ See *Universal*, 846 F. Supp. at 650.

¹²⁵ The district court used *Everpure, Inc. v. Cuno, Inc.*, 875 F.2d 300 (Fed. Cir. 1989), as an example of a rare case where special circumstances existed. See *Universal*, 846 F. Supp. at 650. The special circumstance in *Everpure* was that "the patent owner designed the system in such a way that it was

which existed in *Universal Electronics*.¹²⁶ Absent Zenith's implied license allowing customers to replace lost or broken remotes, replacing a Zenith remote with a Universal remote is an impermissible reconstruction.¹²⁷

27. These Supreme Court and Federal Circuit cases all attempt to clarify the repair and reconstruction doctrine's boundaries, as set forth in *Aro I*.¹²⁸ Under *Aro I*, a reconstruction occurs only if a user completely recreates a patented entity after it becomes spent.¹²⁹ Because the line between permissible repair and impermissible reconstruction is difficult to define, however, and various interpretations of "spent" exist, no case has drawn a bright-line or otherwise systematic test for courts to use when evaluating repair and reconstruction.¹³⁰ Consequently, the only precedent available to a court is *Aro I*'s vague, conceptual test, in which reconstruction hinges upon whether the part modified or replaced was spent.¹³¹

28. The trend, based on the *Aro I* test, has been "to expand the scope of permissible repair in order to preclude extension of the monopoly on the patented machine or combination to unpatented parts."¹³² Courts have sent conflicting signals, though, by holding that "single use only" implied license restrictions make any alterations to the spent patented product an impermissible reconstruction.¹³³

impossible to replace the expendable filter without replacing the cartridge." *Id.* (construing *Everpure*, 875 F.2d at 303).

¹²⁶ *See id.* ("[T]here is no such special circumstance in this case.").

¹²⁷ *See id.* "[I]f there were no implied license, the doctrine of permissible repair would not allow Zenith's customers to replace non-broken remote control units." *Id.*

¹²⁸ *See supra* notes 52-56 and accompanying text (detailing *Aro I*).

¹²⁹ The "reconstruction of a patented entity, comprised of unpatented elements, is limited to such a true reconstruction of the entity as to 'in fact make a new article,' after the entity, viewed as a whole, has become spent." *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 346 (1961) (citation omitted) (quoting *United States v. Aluminum Co. of America*, 148 F.2d 416, 425 (2d Cir. 1945)).

¹³⁰ *See id.*

¹³¹ *See* CHISUM, *supra* note 34, § 16.03[3] (noting that courts still must use the conceptual test established in *Aro I*); *see also infra* Part IV.B.2. (explaining the various interpretations of "spent").

¹³² CHISUM, *supra* note 34, § 16.03[3][d].

¹³³ A basic chronology of important "single use only" cases may be helpful at this point. *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 708 (Fed. Cir. 1992), enforced a "single use only" restriction and found infringement because parties can enter into contracts with implied licenses. *FMC Corp. v. Up-Right, Inc.*, 21 F.3d 1073 (Fed. Cir. 1993), distinguished *Mallinckrodt* by noting that a single use only license may render any subsequent alteration a reconstruction, but the more general implied license in that case included the right to repair after the patented part became spent. *Sage Products, Inc. v. Devon Industries, Inc.*, 45 F.3d 1575 (Fed. Cir. 1995), upheld an implied license similar to *Mallinckrodt's*. *Kendall Co. v. Progressive Medical Technology, Inc.*, 85 F.3d 1580 (Fed. Cir. 1996), also upheld a "single use only" restriction, but did not find infringement. *Kendall* distinguished

Thus, courts are left with precedent that tends to require that alterations be found to be a repair, except when some vague implied licenses restricts a buyer's right to make alterations.

III. HEWLETT-PACKARD CO. V. REPEAT-O-TYPE STENCIL MANUFACTURING CORP.

A. The Case Facts

29. The dispute between Hewlett-Packard ("HP") and Repeat-O-Type Stencil ("ROT") highlights many inconsistencies and demonstrates the negative implications of the above discussed repair and reconstruction cases.¹³⁴ HP manufactures and sells disposable ink jet printer cartridges for use with its ink jet printers.¹³⁵ HP holds a variety of patents on "ink jet printing technology, including patents on ink jet printers, cartridges, and ink formulations."¹³⁶ The cartridge's user instructions advise consumers to discard and replace used cartridges.¹³⁷ Reused cartridges, notably those employing thermal ink jet technology that propels ink onto paper, may have reduced print quality due to clogging, corroded cartridge electronics, air bubbles, or unapproved inks.¹³⁸

30. ROT bought two types of HP cartridges, the Kukla and the Stanley models.¹³⁹ It modified the new cartridge's protective plastic caps, which covered the cartridge's ink reservoirs, making the caps removable and the cartridges refillable.¹⁴⁰ ROT also replaced some of the cartridge's black ink with colored ink.¹⁴¹

Mallinckrodt by explaining that "[h]ere, unlike the facts in *Mallinckrodt*, [the patentee]'s customers followed rather than disregarded the single-use notice." *Id.* at 1576.

¹³⁴ See *Hewlett-Packard Co. v Repeat-O-Type Stencil Mfg. Corp.*, 123 F.3d 1445 (Fed. Cir. 1997), petition for cert. filed, 66 U.S.L.W. 3509 (U.S. Jan. 23, 1998) (No. 97-1226).

¹³⁵ See *id.* at 1446.

¹³⁶ *Id.* at 1447. Twelve of HP's patents were at issue in this case: one on ink formulation, two on ink cartridges, and nine on specific ink jet cartridge components. See *id.*

¹³⁷ See *id.* at 1447-48. Each cartridge prints 200 to 2000 pages, depending on the cartridge, paper, and printer. See *id.* at 1446-47.

¹³⁸ See *id.* at 1447. A product manager for HP stated that "because refilled cartridges present significant problems of resistor lifetime, nozzle clogging and air bubble formation, the cartridges are not intended to be refilled. Accordingly, the user instructions in the Kukla and Stanley cartridges advise the user to 'Discard old printer cartridge immediately.'" *Id.* at 1448.

¹³⁹ See *Hewlett-Packard*, 123 F.3d at 1448. "The Kukla cartridge is designed for color printing and contains three reservoirs which hold inks corresponding for the three primary subtractive colors." See *id.* This cartridge has a "cap that is ultrasonically welded to the . . . cartridge" and is "designed to permit small amounts of air to enter the ink reservoir." See *id.* The Stanley model only prints black ink and has a hole in the cap to fill the reservoir and let in air. See *id.*

¹⁴⁰ See *id.* at 1449. ROT alters the caps by placing the cartridge on a hard support, "prying off" the

ROT repackaged the cartridges with refill ink and ROT's own instructions in the original HP boxes and marketed them as refill kits.¹⁴² HP did not manufacture the refill inks or packages, which were labeled as ROT's.¹⁴³

B. The District and Appellate Court Decisions

31. HP filed suit in the U.S. District Court for the Northern District of California alleging trademark infringement; false designation, description and representation; unfair competition; deceptive trade practices; and patent infringement.¹⁴⁴ The district court ruled against HP on the patent claims and granted summary judgment for ROT.¹⁴⁵ Rejecting HP's argument that because ROT modified the cartridge "*before* there [were] any worn or spent parts . . . the modification [could not] be permissible 'repair' and so must be impermissible 'reconstruction,'"¹⁴⁶ the court held that HP showed no patent infringement and, thus, did not state a claim.¹⁴⁷

32. On appeal, the Federal Circuit affirmed the district court's ruling on the patent charges.¹⁴⁸ The Federal Circuit concentrated on ROT's lawful purchase of the cartridges and modification before the cartridges were spent.¹⁴⁹ ROT's purchase gave them the right, under an implied license, to use the cartridge for its intended

cap "with a sharp instrument," and using "adhesive backed pads" to reattach the cap. *See id.*

¹⁴¹ *See id.*

¹⁴² *See id.*; *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 34 U.S.P.Q.2d 1450, 1451-52 (N.D. Cal. 1995). HP's instructions are not repackaged in the kits. *See id.* at 1452.

¹⁴³ *See Hewlett-Packard*, 34 U.S.P.Q.2d at 1452. Some kits do not carry ROT's name, but are left blank for foreign marketers' names. *See id.* at 1452 & n.1.

¹⁴⁴ *See id.* at 1451. HP actually included the patent claims in its third amended complaint, filed nearly two years after the original complaint. *See id.* ROT filed a motion to impose Rule 11 sanctions on HP, but it was denied. *See id.* at 1456.

¹⁴⁵ *See id.* On the trademark claims, the District Court granted summary judgment for HP, explaining that ROT infringed HP's federally registered trademarks by using HP's logos and packaging, "thus easily misleading consumers into thinking [the cartridge] is a Hewlett-Packard product." *Id.* at 1454. The court did not award damages since HP asked for a jury trial, compensatory and punitive damages, and a permanent injunction. *See id.*

¹⁴⁶ *Id.* at 1455.

¹⁴⁷ *See id.*; *Hewlett-Packard*, 123 F.3d at 1453-54. HP argued that ROT infringed two of its patent claims: U.S. Patent 4,827,294 (Thermal Ink Jet Printhead Assembly Employing Beam Lead Interconnect Circuit) and U.S. Patent 4,931,811 (Thermal Ink Jet Pen Having A Feedtube With Improved Sizing and Operational With a Minimum of Depriming). *See id.* at 1447.

¹⁴⁸ *See id.* at 1446. HP did not appeal its other claims. *See id.*

¹⁴⁹ *See id.* at 1450-54.

use, free of HP's control.¹⁵⁰ Consequently, the Federal Circuit found ROT's modification of an unspent cartridge "more akin to permissible 'repair' than to impermissible 'reconstruction.'"¹⁵¹ The Federal Circuit rejected HP's argument that because HP intended users to discard the cartridges after one use, ROT's actions should be deemed a reconstruction and, therefore, a patent infringement.¹⁵² The Federal Circuit found that HP did not have any contractually significant agreement with lawful purchasers and to hold otherwise would let HP "use the patent laws to impose restrictions on the cartridges' use after selling them unconditionally."¹⁵³

IV. ANALYSIS

33. The Federal Circuit's decision in *Hewlett-Packard* illustrates the problems created by *Aro Is* vague repair and reconstruction test and the Federal Circuit's previous recognition of "single use only" restrictions. The *Hewlett-Packard* court did not recognize HP's "single use only" implied license as it had in previous cases. This oversight disregarded important precedent, HP's intent, and the purposes of patent law. Further, the *Hewlett-Packard* court applied a rigid definition of "spent," developed by years of case law, requiring a patented part to be worn out or broken before an impermissible reconstruction can occur.¹⁵⁴ This definition unnecessarily prevents reasonable business actions and frustrates the Patent Act's goals. By altering the definition of "spent" to include new patented parts that the patentee never intended to be modified, the outcome of cases like *Hewlett-Packard* would be more just and equitable.

A. Implied Licenses

34. Patentees may wish to restrict purchasers' use of their products to maintain the product's integrity, create corporate relationships, or further other business goals.¹⁵⁵ There are four primary methods of imposing post-sale

¹⁵⁰ See *id.* at 1451.

¹⁵¹ *Id.* at 1452.

¹⁵² See *id.* at 1453-54.

¹⁵³ *Id.* at 1454. The court apparently automatically deemed the cartridges' user instructions to be without contractual significance.

¹⁵⁴ Intuitively, this definition may sound backwards because one normally repairs only worn or broken parts. By requiring a part to be worn or broken before allowing its reconstruction, however, courts could prevent parties from fully recreating or rebuilding patented products and make them respect patentees' intentions for products that are not to be used after they are no longer functional.

¹⁵⁵ See generally Arno, *supra* note 20, at 279-305 (discussing the reasons behind the four primary types of patentee restrictions and the cases that have interpreted them).

restrictions, which patentees can impose through express or implied licenses: (i) resale price restrictions,¹⁵⁶ (ii) tying arrangements,¹⁵⁷ (iii) type or field restrictions,¹⁵⁸ and (iv) duration or number of use restrictions.¹⁵⁹ Courts generally reject most restrictions, whether express or implied, to effect a free market economy and allow buyers who paid a fair price to receive the full use and benefit of the purchased products.¹⁶⁰ Patentees can avoid the problems associated with implied licenses if they draft their patent claims carefully or file all significant inventions in separate patents.¹⁶¹ Implied licenses must be analyzed absent this patent application fix.¹⁶²

35. The first sale doctrine is an example of a restriction that courts strictly apply.¹⁶³ This doctrine terminates a patentee's control over a patented product's further sale and use after the product's first authorized sale.¹⁶⁴ "The patent owner's

¹⁵⁶ See *id.* at 280 & n.7 ("A resale price restriction requires the owner of a patented or copyrighted product to sell only, if at all, in some limited price range."). Courts usually declare these restrictions to be antitrust violations, and therefore, unenforceable. See *id.* at 289-91.

¹⁵⁷ See *id.* at 280 & n.8 ("Tying restrictions typically require the owner of a patented or copyrighted product to use it only in conjunction with another product also provided by the patent or copyright holder."). These restrictions often fail as beyond the scope of statutory protection. See *id.* at 288-91.

¹⁵⁸ See *id.* at 280-81 & n.9 ("A field of use restriction requires the owner of a patented or copyrighted product to use it for particular types of activities."). The decision in *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700 (Fed. Cir. 1992), suggests that these types of restrictions would now be held valid by a court and within a patentee's rights. See Stern, *supra* note 98, at 18-19; see also *Mallinckrodt*, 976 F.2d at 708-10 (discussing the validity of field restrictions).

¹⁵⁹ See Arno, *supra* note 20, at 281 & n.10 ("A duration restriction requires the owner of a patented or copyrighted product to dispose of or otherwise stop using the article after a certain period of time or number of uses."). *Mallinckrodt* also suggests that this restriction would now be within a patentee's rights to impose. See Stern, *supra* note 98, at 18-19; see also *Mallinckrodt*, 976 F.2d at 708-10 (discussing the validity of a number of use restrictions). These four restrictions apply to all intellectual property rights, not just patents.

¹⁶⁰ See Arno, *supra* note 20, at 281. Paying a fair price for a product in a sale through legal channels is called an authorized sale.

¹⁶¹ See Swope, *supra* note 2, at 306; see also Stern, *supra* note 98, at 28, 31-32 (explaining methods to avoid licensing problems).

¹⁶² Companies could also enter into cross licensing agreements to anticipate and avoid future patent infringement problems. See Carter, *supra* note 1, at 694-95 (explaining that cross-licensing agreements are used in many technology fields "because they promote 'science and the useful arts' rather than litigation of patent rights").

¹⁶³ See Gene Bolmarcich, *First Sale Doctrine May Spell Last Rights*, INTELL. PROP. STRATEGIST, May 1996, at 8.

¹⁶⁴ See CHISUM, *supra* note 34, § 16.03[2][a]; see also Bolmarcich, *supra* note 163, at 8 (noting that the first sale doctrine, as defined, applies to patents, copyrights, and trademarks). Increasingly,

rights with respect to the product end with the sale, and a purchaser of such a product may use or resell the product free of the patent.”¹⁶⁵ Thus, the patentee’s monopoly effectively ends and the lawful purchaser of the product “may use or resell the product free of control or conditions imposed by the patent owner.”¹⁶⁶

36. Courts rarely allow a patentee to control a product after its first sale because they do not want intellectual property rights “interfering with the free flow of goods in the marketplace.”¹⁶⁷ But patents do allow some restrictions.¹⁶⁸ Reconstruction restrictions arise by an implied license that disallows a purchaser from fully remaking a purchased, patented product.¹⁶⁹ Even after the authorized first sale, the purchaser cannot reconstruct the patented device.¹⁷⁰ The primary problem courts encounter when considering implied licenses is balancing a lawful purchaser’s rights, including the right to repair, with a patentee’s rights to sell new products after the original product’s use is extinguished.¹⁷¹ In fact, the case law is conflicting about whether and how patentees can impose post-sale restrictions on

companies are entering cross-licensing agreements. “Generally, each company in a cross-licensing agreement grants the other company the rights to its patents for a specified term. Therefore, a cross-licensing agreement removes the concerns a company has of infringing the patent rights of the other companies to the agreement.” Carter, *supra* note 1, at 694 & n.36. Because cross-licensing agreements have received much commentary and since *Hewlett-Packard* did not involve a cross-licensing agreement, this Note does not discuss them.

¹⁶⁵ Carter, *supra* note 1, at 695 (construing *United States v. Univis Lens Co.*, 316 U.S. 241, 250-52 (1942)).

¹⁶⁶ CHISUM, *supra* note 34, § 16.03[2][a].

¹⁶⁷ Bolmarcich, *supra* note 163, at 8.

¹⁶⁸ This may be because some use restrictions, “especially when enforceable against subsequent purchasers, can actually reduce the market distortions and inefficient use of creation that accompany the intellectual property grant.” Arno, *supra* note 20, at 281.

¹⁶⁹ A case like *Cotton-Tie Co. v. Simmons*, 106 U.S. 89 (1882), demonstrates this principle. The plaintiff in *Cotton-Tie* had a patent on a metallic tie and buckle combination used to bind cotton bales. *See id.* at 90-91. The user cut the metallic bands and then discarded them. *See id.* at 91. The defendant bought these severed bands, refastened them, and sold them for reuse as used bands. *See id.* The Court held that unlike *Wilson v. Simpson*, 50 U.S. (9 How.) 109 (1850), the defendant performed a reconstruction because the original cutting destroyed the band, and defendant’s procedure was an unlicensed remaking of the product. *See Cotton-Tie*, 106 U.S. at 93-94; *see also Wilson*, 50 U.S. at 125-26 (arguing that replacing worn knives with new knives is a permissible repair). Further, the patentee intended the bands to serve a “one-shot” function and the defendant circumvented this purpose by recreating the destroyed bands. *See Cotton-Tie*, 106 U.S. at 91, 93-94.

¹⁷⁰ *See* Chisum, *supra* note 34, § 16.03[2][a]. The copyright equivalent is that the “first sale of a particular work does not permit the buyer to create a derivative work using the work it owns.” Bolmarcich, *supra* note 163, at 8, 10.

¹⁷¹ *See* Farley, *supra* note 30, at 153.

resale by an implied license that otherwise eliminates the first sale doctrine.¹⁷² There are no explicit rules for repair and reconstruction cases, and each case's facts must be individually scrutinized by the courts.¹⁷³

37. Given the Federal Circuit's past emphasis on patentees' single use only restrictions,¹⁷⁴ the *Hewlett-Packard* court's silence on HP's restriction seems all the more incongruous. Perhaps the Federal Circuit's inconsistency is explained by a heightened sensitivity to cases involving medical devices. The Federal Circuit may perceive a greater magnitude and potential for disaster when medical waste is involved. *Sage Products*,¹⁷⁵ *Kendall*,¹⁷⁶ and *Mallinckrodt*,¹⁷⁷ the leading single use only cases, all involve single use only restrictions on certain medical devices. This increased sensitivity to medical devices, although justified, should also be accorded to all high tech devices, given these devices' increasingly complex design. Although the possibility of death or serious injury from defective ink jet printer cartridges is negligible, it does not mean that the adverse results of their misuse do not necessitate strict preventive measures.

38. If a court concludes that a patentee's implied license is valid and that a defendant violated it, there is no need for the court to consider the repair and reconstruction doctrine. This analysis is explained in *Kendall Co. v. Progressive*

¹⁷² See CHISUM, *supra* note 34, § 16.03[2][a][iii]. See generally *Hewlett-Packard Co. v. Repeat-O-Type Mfg. Corp.*, 123 F.3d 1445 (Fed. Cir. 1997), *petition for cert. filed*, 66 U.S.L.W. 3509 (U.S. Jan. 23, 1998) (No. 97-1226) (ignoring the patentee's single use only restriction); *Kendall Co. v. Progressive Med. Tech., Inc.*, 85 F.3d 1570 (Fed. Cir. 1996) (recognizing the patentee's single use only restriction and the buyer's respect of it); *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700 (Fed. Cir. 1992) (finding a breach of a single use only restriction).

¹⁷³ See *Farley*, *supra* note 30, at 153; see also *Polcyn*, *supra* note 7, at 287-88 (lamenting *Aro*'s lack of a specific repair and reconstruction test). This reluctance to establish a bright-line test is grounded in years of case law. "[T]he question whether [the patented device's] restoration to a sound state was legitimate repair, or a substantial reconstruction or reproduction of the patented invention, should be determined less by definitions or technical rules than by the exercise of sound common sense and an intelligent judgment." *Goodyear Shoe Mach. Co. v. Jackson*, 112 F. 146, 150 (1st Cir. 1901).

¹⁷⁴ A single use only restriction is typically imposed by conspicuously labeling a patented product or its instructions with a phrase such as "For Single Use Only." See, e.g., *Hewlett-Packard*, 123 F.3d at 1447 ("discard old print cartridge immediately"); *Kendall*, 85 F.3d at 1572 ("FOR SINGLE PATIENT USE ONLY. DO NOT REUSE"); *Sage Prods., Inc. v. Devon Indus., Inc.*, 45 F.3d 1575, 1577 (Fed. Cir. 1995) ("BIOHAZARD - SINGLE USE ONLY"); *Mallinckrodt*, 976 F.2d at 702 ("Single Use Only"). This type of restriction is not technically called an implied license since it is expressly, albeit briefly, stated. It is more properly termed a condition of sale restriction. Because it is commonly called an implied license, however, that this Note includes a single use only restriction under the term "implied license."

¹⁷⁵ *Sage Products*, 45 F.3d at 1577-79.

¹⁷⁶ *Kendall*, 85 F.3d 1570.

¹⁷⁷ *Mallinckrodt*, 976 F.2d 700.

*Medical Technology, Inc.*¹⁷⁸ If a license, such as a single use only restriction, is valid, then “there would be no need to choose between repair and reconstruction’ because ‘even repair of an unlicensed device constitutes infringement.’”¹⁷⁹ To remedy a violation of such an enforceable condition of sale, or valid implied license, a patentee can claim patent infringement.¹⁸⁰ In analyzing this logic, a commentator discussing the *Mallinckrodt* case posed a hypothetical involving a laser printer toner cartridge having a single use only restriction.¹⁸¹ He concluded that “[s]ome courts, perhaps most, will be impressed by the argument that there is no explicit agreement between the machine manufacturer and the customer All that the machine manufacturer does is refrain from granting any license [except the single use license] under its patent.”¹⁸²

39. Courts may apply the repair and reconstruction doctrine instead, and hold that “the owner of a product has an unlimited right to repair the product by replacing one or more worn or otherwise unsatisfactory parts (elements) of the product.”¹⁸³ But even if a court follows this second route, *Mallinckrodt* allows the court to circumvent the repair and reconstruction analysis if the patentee labels its product “licensed for use only until element [X] wears out.”¹⁸⁴ With such a label, a purchaser must comply with the patentee’s limited license, despite the applicability of the repair reconstruction doctrine.

B. Repair and Reconstruction

40. Courts, however, may not always conclude that an express or implied license is valid or find that a license demonstrates a patentee’s intent.¹⁸⁵ In such

¹⁷⁸ 85 F.3d 1570, 1575-76 (Fed. Cir. 1996).

¹⁷⁹ *Id.* (quoting *Mallinckrodt*, 976 F.2d at 709); see also *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 480-85 (1964); Stern, *supra* note 98, at 14 n.52 (discussing *Mallinckrodt*’s concurrence with this sentiment).

¹⁸⁰ See *Kendall*, 85 F.3d at 1576 (citing *Mallinckrodt*, 976 F.3d at 709). The patent infringement suit is made possible under 35 U.S.C. § 271(a) (1994), governing direct infringement.

¹⁸¹ See Stern, *supra* note 98, at 12-14. A laser printer toner cartridge is like an ink jet printer cartridge, but to modify it, a third party merely drills a hole in the used cartridge and fills it with new toner. See *id.* at 12.

¹⁸² *Id.* at 13.

¹⁸³ *Id.* at 14.

¹⁸⁴ *Id.*

¹⁸⁵ Courts usually treat licenses this way because the licenses violate some positive law. Licenses may also not be determinative of whether patent infringement occurred because licenses can be unrelated to further use, like a price restriction. Finally, licenses may actually permit the so-called infringing use. See, e.g., *Kendall*, 85 F.3d at 1575-76 (allowing replacement of patient pressure

situations, a court would then apply the repair and reconstruction doctrine. The repair and reconstruction analysis becomes complicated, though, when the part that a user modifies is durable and not broken, in need of repair, or intended to be replaced.¹⁸⁶ Realize that “[a] purchaser may repair or replace *any* unpatented component that wears out or otherwise becomes ‘spent,’ whether or not the patentee believed at the time the patent application was filed that it would be necessary to do so”¹⁸⁷ and may prematurely repair a part.¹⁸⁸ In a case like *Hewlett-Packard*, though, the modified part was neither spent nor in need of repair to correct an impending problem.¹⁸⁹ Where an authorized purchaser alters a part’s design, courts are faced with muddled doctrine and precedent.

1. The Patentee’s Intent

41. One method for resolving this problem is directly applying *Aro I* and treating the modification or replacement of an unspent part as a repair and not a reconstruction. Alternatively, the courts could choose to create a new solution. Emphasizing external factors other than whether a part is spent, as *Aro I*’s minority test does, may help to clarify the analysis.¹⁹⁰ As recently as the *Aktiebolag* decision, the Federal Circuit has explicitly considered a variety of factors in evaluating whether a repair or a reconstruction occurred.¹⁹¹ The court stated that

[t]here are a number of factors to consider in determining whether a defendant has made a new article, after the device has become spent, including the nature of the device and how it is designed (namely, whether one of the components of the patented combination has a shorter useful life than the whole), whether a market has

sleeves); *Sage Prods., Inc. v. Devon Indus., Inc.*, 45 F.3d 1575, 1578-79 (Fed. Cir. 1995) (allowing the replacement of a waste disposal system’s inner container).

¹⁸⁶ See Comment, *Repair and Reconstruction of Patented Combinations*, 32 U. CHI. L. REV. 353, 354-55 (1965). This problem has brewed since the inception of the repair and reconstruction doctrine in *Wilson v. Simpson*, 50 U.S. (9 How.) 109 (1850). The additional problem that *Hewlett-Packard* raises is whether modification of a new, durable part not in need of or ever intended to need repair can be considered a reconstruction.

¹⁸⁷ *Kendall*, 85 F.3d at 1575.

¹⁸⁸ See *id.*

¹⁸⁹ *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 123 F.3d 1445, 1452 (Fed. Cir. 1997), *petition for cert. filed*, 66 U.S.L.W. 3509 (U.S. Jan. 23, 1998) (No. 97-1226).

¹⁹⁰ See Farley, *supra* note 30, at 160-63.

¹⁹¹ *Aktiebolag v. E.J. Co.*, 121 F.3d 669, 673-674 (Fed. Cir. 1997), *cert. denied*, 104 L. Ed. 2d 499 (1998).

developed to manufacture or service the part at issue and objective evidence of the intent of the patentee.¹⁹²

A patentee's intent regarding the duration or number of uses of a patented product is often considered the most important factor.¹⁹³

42. *Mallinckrodt* affirmed the dominance of a patentee's intent in the context of a "single use only" restriction.¹⁹⁴ Unfortunately, the Federal Circuit in *Hewlett-Packard* strayed from *Mallinckrodt* by not respecting HP's "discard after one use" restriction.¹⁹⁵ The Federal Circuit discussed HP's attempt to use "intent-of-the-patentee analysis,"¹⁹⁶ but only gave a cursory treatment of key "single use only" cases.¹⁹⁷ Further, the court never explained why HP's implied license was not enforceable, as in *Mallinckrodt*. The court called HP's single use only restriction a "noncontractual intention," that constituted a "hope" or "advice," but not an implied license.¹⁹⁸ Simply given the linguistic similarity of HP's restriction to other enforceable restrictions, HP's instructions should also qualify as an enforceable "single use only restriction," illustrative of the patentee's intent.¹⁹⁹ The Federal Circuit's neglect of this issue is especially alarming because ROT usually disposed of HP's instructions, leaving consumers unaware that the cartridges were

¹⁹² *Id.* at 673. ("A combination patent is a patent on a combination of elements which by themselves need not be patentable but which together combine to create a 'new and useful . . . machine, manufacture . . . or any new and useful improvement thereof.'" *Repair and Reconstruction of Patented Combinations*, *supra* note 186, at 353 n.1. (citing 35 U.S.C. § 101 (1958)). None of HP's patents are combination patents, but they do cover the entire cartridge device. *See Hewlett-Packard*, 123 F.3d at 1451-52. Although much of this Note's analysis deals with combination patents, the analysis is applicable to HP's situation as well.

¹⁹³ *See Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 368 (1961); *see also* Farley, *supra* note 30, at 173 ("It has become abundantly clear that the factor which tops the list of criteria considered by the courts is the *intent of the patentee.*").

¹⁹⁴ *See Stern*, *supra* note 98, at 51.

¹⁹⁵ *See Hewlett-Packard*, 123 F.3d at 1448 ("[T]he user instructions in the Kukla and Stanley cartridges advise the user to 'Discard old print cartridge immediately.'").

¹⁹⁶ *Id.* at 1453.

¹⁹⁷ *See id.* at 1452-54. *Hewlett-Packard* only considered *Kendall Co. v. Progressive Medical Technology, Inc.*, 85 F.3d 1570, 1575 (Fed. Cir. 1996) for the proposition that "as long as reconstruction does not occur or a contract is not violated, nothing in the law prevents a purchaser of a device from prematurely repairing it." *See Hewlett-Packard*, 123 F.3d at 1452.

¹⁹⁸ *Id.* at 1453-54.

¹⁹⁹ Perhaps *Hewlett-Packard* ambiguously tried to distinguish *Mallinckrodt* as in *Kendall and Sage Products, Inc. v. Devon Industries, Inc.*, 45 F.3d 1575 (Fed. Cir. 1995). *See Hewlett-Packard*, 123 F.3d at 1454 ("Neither [*Sage Products*] nor other decisions of this court cited by HP suggest that a patentee's intent alone limits the scope of the implied license that accompanies the sale of goods.").

manufactured to be disposable.²⁰⁰

43. A compelling reason for using a patentee's intent to determine how long a patented device should be used is to protect the product's design. If authorized buyers modify a patented element or part in a patented combination, they may destroy a particular design parameter or harm the inventor's performance standards. As technology becomes increasingly more complex, unauthorized or unsupervised modifications will more likely impact patentees and consumers in severe ways.²⁰¹ Thus, if a modification is deemed a permissible repair because a patentee's intent is given enough weight, the performance of patented products may decrease or injury to the consumers may result. Such safety, health, efficacy, and liability considerations justify a license restriction.²⁰²

44. The negative impacts of treating a modification as a permissible repair are amplified when a trademark dispute exists between the same parties for the same products. If a patentee's trademark is attached to a modified product, consumers are likely to attribute wrongly the product's performance to the patentee.²⁰³ Further, trademarks symbolize and embody the trademark owner's goodwill,²⁰⁴ for which companies often spend vast amounts of resources to create and embed in the public's conscience.²⁰⁵ For example, ROT's refill kits caused confusion: HP received letters and telephone calls about the refill kits as if they were HP products.²⁰⁶ Even if courts find that trademark infringement occurs in

²⁰⁰ See *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 34 U.S.P.Q.2d 1450, 1452 (N.D. Cal. 1995).

²⁰¹ A patentee's reputation for quality may be damaged if its products malfunction while owned by a third party, due to modifications by a purchaser. See Christopher S. Marchese, *Patent Infringement and Future Lost Profits Damages*, 26 ARIZ. ST. L.J. 747, 778-81 (1994). A patentee may also find itself involved in tort litigation stemming from the decreased standards or injury that resulted from the unauthorized modifications. This litigation could severely harm the patentee's reputation and financial standing, which could be avoided if the modification was deemed an unlawful reconstruction. *But see* *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 359-60 (1961) (Black, J., concurring) ("In this day of advanced technology and mechanical appliances upon which so many people depend, this wise policy against permitting patentees to expand their control of commodities after they reach the hands of bona fide purchasers is all the more important.").

²⁰² See Arno, *supra* note 20, at 286. Injury to a patentee's reputation and goodwill may also be grounds to award lost profits damages. See Marchese, *supra* note 201, at 779.

²⁰³ See Michael E. Peters, Note, *When Patent and Trademark Law Hit the Fan: Potential Effects of Vornado Air Circulation Systems, Inc., v. Duracraft Corp. on Legal Protection for Industrial Design*, 15 TEMP. ENVTL. L. & TECH. J. 123, 128 (1996); see also *Hewlett-Packard*, 34 U.S.P.Q.2d at 1454 (explaining the confusion created by ROT's use of HP's trademark).

²⁰⁴ 1 JEROME GILSON & JEFFREY M. SAMUELS, TRADEMARK PROTECTION AND PRACTICE § 1.03[6][a] (1997).

²⁰⁵ See *id.* § 1.03[7][a].

²⁰⁶ See *Hewlett-Packard*, 34 U.S.P.Q.2d at 1454. The District Court was concerned that ROT

these situations, as the *Hewlett-Packard* court did, the damages to the patentee's reputation and business may be irreparable.²⁰⁷

45. A patentee's intent, however, cannot always control. If a patentee's reasons for using an implied license violate the law, a court could choose not to enforce the implied license. More significantly, it seems oppressive to allow a patentee to dictate how its products will be used, given that the doctrines discussed in this Note exist to further free market ideals.²⁰⁸ The *Mallinckrodt* court, for example, did not explain why a restriction "should become a servitude, binding future owners of [a] product who are not a party to a license contract with the patentee."²⁰⁹

2. When is a Part Spent?

46. Even if a court uses a patentee's intent, its decision may hinge on whether a part is spent because the repair and reconstruction doctrine turns on whether a device is spent. *Hewlett-Packard's* inadequacies could be remedied by expanding the definition of "spent," but applying the rule narrowly to prevent courts from hampering the free market's exchange of ideas and product usage.

47. *Aro I*, the controlling precedent for determining when a part is spent, states that "reconstruction of a patented entity, comprised of unpatented elements, is limited to such a true reconstruction of the entity as to 'in fact make a whole new article,' after the entity, viewed as a whole, has become spent."²¹⁰ This phrase has forced all subsequent courts to determine whether a modified or replaced part was spent before it was altered. If a part is not spent, its modification cannot be an impermissible reconstruction.

48. Courts have developed various modes of interpreting what "spent" means. *Wilson v. Simpson* began the discourse by ruling that reconstruction can only occur on worn or broken parts.²¹¹ *Aro I* extended *Wilson* by acknowledging that courts in repair and reconstruction cases must only consider whether a part

intentionally misled the public into believing that the refill kits were HP's by using the HP logo. *Id.* Indeed, the judge who granted HP's motion for a temporary restraining order commented that "it's been a long time since I've seen a more blatant . . . copying of somebody else's logo [P]eople, I think, are understandably very likely to be confused." *Id.*

²⁰⁷ See GILSON & SAMUELS, *supra* note 204, § 1.03[7][a]. Damages for trademark infringement are given because trademarks symbolize goodwill and their violation deprives the trademark owner of the returns from its investment in the mark. *See id.*

²⁰⁸ See Stern, *supra* note 98, at 31, 33.

²⁰⁹ Arno, *supra* note 20, at 286. Perhaps a reason is not necessary since the oppression may be more perceived than real. *See* Stern, *supra* note 98, at 33-34.

²¹⁰ *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 346 (1961) (citation omitted) (quoting *United States v. Aluminum Co. of America*, 148 F.2d 416, 425 (2d Cir. 1945)).

²¹¹ 50 U.S. (9 How.) 109, 123 (1850).

“has worn out, been broken, or otherwise spent.”²¹² This includes parts that need to be replaced for a user to be able to have continued use of the patented product.²¹³ Reconstruction is summed up as “a second creation of the patented entity.”²¹⁴ Unfortunately, *Aro I* does not explain or allude to what “otherwise spent” means. This omission caused years of ambiguity in the law.

49. Most patent infringement cases that involve repair and reconstruction use a traditional definition of “spent” without difficulty because the product in question is “worn out” or “broken.” Uncertainty arises only when interpreting “otherwise spent” and in confronting properly functioning products modified by a purchaser.²¹⁵ Two important lessons that clarify the term “spent” can be learned from *Sage Products, Inc. v. Devon Industries*.²¹⁶ First, the Federal Circuit acknowledged that a part need not be completely broken or worn to be spent. At some point during its usable lifetime, a part becomes sufficiently exhausted to be repairable. The court did not allude to or explain when this point is reached. Second, *Sage Products* recognizes that the patentee’s intent plays an important role in determining repair or reconstruction.

50. Interestingly, none of the special circumstances that existed in *Hewlett-Packard* are normally required for a part to be spent.²¹⁷ ROT’s replacement of HP’s black ink with its own colored ink highlights this discrepancy.²¹⁸ HP’s ink was in no way broken, worn, or otherwise spent when ROT replaced it. HP offered no implied or express license to its customers allowing for the ink to be replaced, before or after the original supply was depleted. Thus, given that HP holds a patent on its ink

²¹² *Aro Mfg. Co.*, 365 U.S. at 342.

²¹³ *See id.* at 342 (construing *Wilson*, 50 U.S. at 123).

²¹⁴ *Id.* at 345-46.

²¹⁵ All of the cases decided after *Aro I* and discussed in this Note illustrate this point. *See, e.g.*, *Hewlett-Packard Co. v. Repeat-O-Type Mfg. Corp.*, 123 F.3d 1445 (Fed. Cir. 1997), *petition for cert. filed*, 66 U.S.L.W. 3509 (U.S. Jan. 23, 1998) (No. 97-1226); *Aktiebolag v. E.J. Co.*, 121 F.3d 669, 673-74 (Fed. Cir. 1997), *cert. denied*, 140 L. Ed. 2d 499 (1998) (retipping a working drill); *Kendall Co. v. Progressive Med. Tech., Inc.*, 85 F.3d 1570 (Fed. Cir. 1996) (replacing pressure sleeves in a workable pressure apparatus); *Sage Prods., Inc. v. Devon Indus., Inc.*, 45 F.3d 1575 (Fed. Cir. 1995) (replacing medical waste containers in a waste disposal unit); *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700 (Fed. Cir. 1992) (sterilizing an inhaler system for reuse); *Everpure, Inc. v. Cuno, Inc.*, 875 F.2d 300 (Fed. Cir. 1989) (affixing new head to filter cartridge); *Universal Elecs., Inc. v. Zenith Elecs. Corp.*, 846 F. Supp. 641 (N.D. Ill. 1994) (replacing functioning remote controls to reduce clutter).

²¹⁶ 45 F.3d 1575 (Fed. Cir. 1995).

²¹⁷ *See Universal Elecs., Inc. v. Zenith Elecs. Corp.*, 846 F. Supp. 641, 650 (N.D. Ill. 1994) (“On those few occasions where a court allowed replacement of a non-worn or broken part, special circumstances existed.”).

²¹⁸ *See Hewlett-Packard*, 123 F.3d at 1449.

formulation²¹⁹ and designs its cartridge to be nonrefillable,²²⁰ ROT should be held an infringer.

51. HP's cartridges were not spent when ROT modified them; they were new.²²¹ Thus, as the Federal Circuit held, any modification or replacement ROT did was a repair because reconstruction can only happen to spent parts.²²² The only difference, however, between this case and cases involving reconstructions was that HP's product was not broken or worn. Given that the other factors weigh in favor of HP, should ROT's modification still be held to be a reconstruction under all circumstances? If patentees are allowed to freely impose use restrictions on their products, the restrictions could lead to abuse. Patentees could attempt to impose single use only restrictions to prohibit all subsequent repairs, forcing users to purchase new parts from the patentee. This result is unacceptable in our market economy.

52. The most important reason to require a part to be spent before determining whether a repair or a reconstruction has occurred is that the determination gives courts a fair, consistent starting point from which they can analyze the issue. Given *Aro Is* weight, courts are not likely to abandon the spent requirement anytime in the foreseeable future. Indeed, courts have undeniably resisted moving towards a bright-line test in determining repair or reconstruction.²²³ A slight broadening and relaxation of the repair and reconstruction doctrine would help courts evaluate different facts but also give practitioners and patentees more guidance in drafting patent applications and marketing patented products. "If the law is certain . . . the patentee and consumers will know where they stand when the sale of the [patented] combination is made."²²⁴

²¹⁹ See *id.* at 1447.

²²⁰ See *id.* Although on its face this is the same special circumstance as in *Everpure*, 875 F.2d at 303, the distinction is that Everpure designed its cartridges to be replaceable whereas HP did not.

²²¹ See *Hewlett-Packard*, 123 F.3d at 1452 ("[T]he HP cartridges were certainly not spent.").

²²² See *id.*

²²³ Nearly every one of the cases cited in this Note reflects this sentiment. Most recently, the Federal Circuit in *Hewlett-Packard*, 123 F.3d at 1452, and *Aktiebolag v. E.J. Co.*, 121 F.3d 669, 674 (Fed. Cir. 1997), *cert. denied*, 140 L. Ed. 2d 499 (1998), mention that no bright-line test exists, but neither case attempted to construct one.

²²⁴ *Repair and Reconstruction of Patented Combinations*, *supra* note 186, at 366. The commentator in this article proposes clarifying the repair and reconstruction doctrine by eliminating the concept of reconstruction in the law of infringement and combination patents except where there is replacement of all the product's elements or their equivalents. *Id.* at 363-68.

53. The court in *Universal Electronics, Inc. v. Zenith Electronics Corp.*²²⁵ implicitly agreed with this analysis. In holding that the replacement of functioning remote controls merely to reduce clutter can be a reconstruction,²²⁶ the court demonstrated its willingness to accept a less restrictive interpretation of “spent.” This perspective would consider the replacement of new or working²²⁷ patented products a reconstruction, despite the traditional definition of “spent” that covers only broken or worn products. The Federal Circuit in *Hewlett-Packard* did not discuss *Universal Electronics* or its analysis. If it had, ROT’s modification of a new ink jet printer cartridge,²²⁸ in violation of HP’s patent, would be a reconstruction.

54. When an authorized purchaser modifies a new part so it can be further altered by a third party purchaser when the patented product is finally spent, the benefits of the patent system to the patentee are circumvented. At its most basic level, a reconstruction is impermissible because “the patentee’s sale does not convey permission to ‘make’ the patented entity either for use by the purchaser or by others.”²²⁹ Yet by modifying the product so as to keep the original product functioning for use by others, a practical reconstruction has occurred.

55. When viewing *Hewlett-Packard* in light of *Aktiebolag*, decided by the same court just six days earlier, there seems to be little reason why *Hewlett-Packard* did not involve a reconstruction either.²³⁰ *Aktiebolag*’s analysis on retipping a drill applies to *Hewlett-Packard*’s analysis on modifying a printer cartridge. *Aktiebolag* stressed that there were a number of factors to consider in evaluating whether there was a reconstruction. Significantly, *Aktiebolag* stressed that the defendant had to “go through several steps to replace, configure and integrate” its modification to the patented combination.²³¹ ROT had to go through a

²²⁵ 846 F. Supp. 641 (N.D. Ill. 1994), *aff’d* 41 F.3d 1520 (Fed. Cir. 1994).

²²⁶ *See Universal Electronics*, 846 F. Supp. at 650. The court did not hold that a reconstruction occurred, however, because Zenith sold its products with an implied license, interpreted by the court as allowing replacement of the remote controls for any reason. *See id.* Absent this implied license, the court explicitly acknowledged that “the doctrine of permissible repair would not allow Zenith’s customers to replace non-broken remote control units.” *Id.*

²²⁷ Lost parts may be workable, but their replacement would be permissible repair. *See id.* at 650.

²²⁸ In *Universal Electronics*, the remotes were replaced to meet consumers’ desire to reduce clutter. *See id.* Similarly, in *Hewlett-Packard*, the printer cartridges were altered to satisfy consumers’ desire to avoid making subsequent purchases of cartridges. *See Hewlett-Packard*, 123 F.3d at 1450.

²²⁹ *Repair and Reconstruction of Patented Combinations*, *supra* note 186, at 353 (construing *Wilson v. Simpson*, 50 U.S. (9 How.) 109 (1850)).

²³⁰ *Hewlett-Packard*, 123 F.3d at 1445, was decided on August 12, 1997 and *Aktiebolag v. E.J. Co.*, 121 F.3d 669 (Fed. Cir. 1997), *cert. denied*, 140 L. Ed. 2d 499 (1998), was decided on August 6, 1997. *Hewlett-Packard* does not cite *Aktiebolag*.

²³¹ 121 F.3d at 673. In *Aktiebolag*, the defendant had

similar process to modify the cartridges.²³²

56. *Aktiebolag* also stressed that the replaced tip did not have a useful life much shorter than the rest of the patented device.²³³ Like the HP cartridges, the drill tip was not made to be replaceable or to have a purposefully short life, so the defendant's alteration of it was more like a reconstruction. Also relevant to *Hewlett-Packard* is *Aktiebolag's* focus on the patentee's intent that the tips would never be replaced, especially concerning "the fact that no replacement drill tips have ever been made or sold by the patentee."²³⁴ *Aktiebolag* based its decision on all of these factors,²³⁵ and it seems incongruous that *Hewlett-Packard* apparently ignored them in deciding that ROT's actions constituted a permissible repair.²³⁶

57. Another concern in *Aktiebolag* was that "[e]vidence of development in the industry" of replacement services "could prove that there is a reasonable expectation that the part of the patented combination wears out quickly and requires frequent replacement."²³⁷ The market for companies selling refillable ink

to break the worn or damaged tip from the shank by heating it to 1300 degrees Fahrenheit. It braze[d] the shank a new rectangular block of carbide and grind[ed] and machine[ed] it to the proper diameter and create[ed] the point. Thereafter, the tip [was] honed and sharpened, grinding the rake surfaces and the center of the point and honing the edges. These actions [were] effectively a re-creation of the patented invention after it [was] spent.

Id.

²³² See *Hewlett-Packard*, 123 F.3d at 1448-49.

²³³ 121 F.3d at 674.

The drill tip in this case is not a part like the detachable knives in the *Wilson* that have to be replaced periodically over the useful life of the planing machine. The drill tip was not manufactured to be a replaceable part, although it could be resharpened a number of times to extend its life. It was not intended or expected to have a life of temporary duration in comparison to the drill shank.

Id.

²³⁴ *Id.*

²³⁵ See *id.*

²³⁶ *Hewlett-Packard*, 123 F.3d at 1453-54, did consider HP's intent, but concluded that the implied license accompanying HP's cartridges carried no contractual significance. Perhaps *Aktiebolag* does not apply to *Hewlett-Packard* because in *Aktiebolag*, the defendant created a product identical to the patentee's, but ROT added a feature to HP's product.

²³⁷ 121 F.3d at 674 (citing *Kendall Co. v. Progressive Med. Tech., Inc.*, 85 F.3d 1570, 1572 (Fed. Cir. 1996) and *Sage Prods., Inc. v. Devon Indus., Inc.*, 45 F.3d 1575, 1588 (Fed. Cir. 1995)).

jet printer cartridges does exist and is increasing.²³⁸ Many problems exist, however, with refilling and reusing ink jet printer cartridges. Consumers suffer from decreased print quality and malfunctioning printers.²³⁹ HP is injured because consumers blame them for the problems stemming from the modified or refilled cartridges.²⁴⁰ These difficulties make the decision in *Hewlett-Packard* more disturbing. Application of this precedent to different and increasingly complex technologies could lead to even more severe problems.

C. A Legal Solution

58. Traditionally, reconstruction has been limited to spent parts, but modifying unspent, new patented products should sometimes also be deemed a reconstruction. To clarify the confusing repair and reconstruction doctrine, courts should make a patentee's intent controlling, if the intent is expressed through an implied license in the form of a single use only restriction. Sales, however, must be authorized and buyers must receive fair notice of sellers' intent.²⁴¹ Patentees must have non-arbitrary reasons for the restrictions. Convincing reasons include reasonableness,²⁴² efficient product design, manufacturing costs, and safety. Unacceptable reasons include imposing the requirement merely to exclude and prevent competition or to require the purchase of a new product instead of a replacement part when the replacement part is cheaper and as efficient as repurchasing. This rule applies to new parts modified by an authorized purchaser.

59. Patentees are still best served if they file their patent application appropriately. Inventors will also suffer less hardship if licenses are made as explicit as possible.²⁴³ Labeling a product with a restriction such as "Single Use Only" can be sufficient.²⁴⁴ Including user instructions with explicit instructions

²³⁸ As of April 24, 1997, there were at least 24 companies that refill ink jet printer cartridges for U.S. consumers. See *Procurement: EPA Excludes Ink Jet Cartridges From Recycling Procurement List*, SOLID WASTE REP., Apr. 17, 1997, available in 1997 WL 10909450. The Environmental Protection Agency has "tentatively decided not to include [ink jet cartridges] in its guidelines for federal agencies on procuring products with recycled content," which will help create a market for used cartridges for refill. *Id.* In addition, a parallel market for refillable laser printer toner cartridges exists. See Patrick McKenna, *Court Decides Against Fake HP Toner Cartridge Firms*, NEWSBYTES NEWS NETWORK, June 12, 1997, available in 1997 WL 10959868.

²³⁹ See *Hewlett-Packard*, 123 F.3d at 1447.

²⁴⁰ See McKenna, *supra* note 238.

²⁴¹ See Swope, *supra* note 2, at 305.

²⁴² See Stern, *supra* note 98, at 34.

²⁴³ See Bolmarcich, *supra* note 163, at 8-9.

²⁴⁴ This restriction was sufficient in *Mallinckrodt, Inc. v. Medipart, Corp.*, 976 F.2d 700, 710 (Fed.

that call for the immediate disposal of the product after it has been spent can also satisfy this rule.²⁴⁵ By ruling that these types of notice are valid implied licenses, courts will avoid decisions like *Hewlett-Packard*.

60. This proposal satisfies the Patent Act goals discussed in Part II.A. better than the traditional repair and reconstruction requirement that parts be spent. Most significantly, it helps assure companies making large investments in intellectual property that their efforts will be rewarded with patent exclusivity. After a patented product's first sale to an authorized purchaser, the patentee can rely on its lawfully imposed implied license to restrict the product's uses. This restriction helps guarantee that purchasers will not make small modifications to the new product, in violation of the product's instructions or design parameters.

61. This Note's proposal does not establish a bright-line test for application of the repair reconstruction doctrine; rather, it suggests a small clarification of the doctrine.²⁴⁶ Common sense demands that purchasers not be easily able to circumvent the goals of the Patent Act, especially when the purchasers act simply to capitalize on another company's technological innovations. The law ought to reflect this common sense by restructuring the rules.²⁴⁷ The formulation suggested in this Note prevents companies like ROT from unjustly benefiting from modifying another company's patented product and reaping the exclusive benefits of the patent.²⁴⁸ In

Cir. 1992).

²⁴⁵ HP's user instructions to "discard old print cartridge immediately" and to replace it would be sufficient. *Hewlett-Packard*, 123 F.3d at 1447.

²⁴⁶ See Polcyn, *supra* note 7, at 288 (explaining that courts need some more framework in the area of repair and reconstruction).

²⁴⁷ "[T]he question whether [the part's] restoration to a sound state was legitimate repair, or a substantial reconstruction or reproduction of the patented invention, should be determined less by definitions or technical rules than by the exercise of sound common sense and an intellectual judgment." *Goodyear Shoe Mach. Co. v. Jackson*, 112 F. 146, 150 (1st Cir. 1901); see also *FMC Corp. v. Up-Right, Inc.*, 21 F.3d 1073, 1078-79 (Fed. Cir. 1994) (reaffirming *Goodyear's* sentiment that no bright-line test should be established).

²⁴⁸ *But see United States v. Univis Lens Co.*, 316 U.S. 241, 251 (1942):

[T]he purpose of the patent law is fulfilled with respect to any particular article when the patentee has received his reward for the use of his invention by the sale of the article, and that once that purpose is realized the patent law affords no basis for restraining the use and enjoyment of the thing sold.

Id. This implies that this Note's approach may create royalty problems. If the modification done is considered to be directly related to the useful capacity of the patented parts, then the purchaser already paid a royalty, in the form of a purchase price, for the full use and enjoyment of the part. In this case, a patentee would have no claim because any actions taken by a purchaser would be a lawful repair. See Farley, *supra* note 30, at 175. This concern, however, would be near nullified under this Note's approach, which relaxes the license rules, allows for single use restrictions on patented products, and prevents treating new product modifications as repairs because the parts are

addition, the patentee's design parameters are not circumvented, insulating the patentee from liability.

V. CONCLUSION

62. Often, a patentee's intent for his product to be used only once clashes with an implied license to use, which is implied in most purchases. When a patentee's single use intent is not arbitrary, but based on a legitimate need, like maintaining a product's specific design standards or protecting consumer safety, this intent should control. Modifying the repair and reconstruction doctrine helps to achieve this goal and solve the problem. By broadening the interpretation of reconstruction to include alteration of new patented products, even those not traditionally "spent," patentees, consumers, and the patent system all benefit. Injustices as in *Hewlett-Packard* will be avoided.