Note

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

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I. INTRODUCTION

1. Technological innovations and pressure within companies to invent are increasing. 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. 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.

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. 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, and the purchaser modifies the unused product and resells it, the purchaser has made an impermissible
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 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”).


8 U.S. CONST. art. I, § 8, cl. 8.

9 Id.

develop, and innovate useful and novel products and processes for public use.\textsuperscript{11} Without this exclusive protection, innovators may not expend as much time and effort developing new technologies.\textsuperscript{12} The patent system also secures early public disclosure of new technological information.\textsuperscript{13} Inventors that file a patent application reserve all patent rights as of the day of filing, thereby encouraging early filing and disclosure.\textsuperscript{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.\textsuperscript{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.\textsuperscript{16} Further, the patent system stimulates future capital investment in improvements on patented technology.\textsuperscript{17} For corporate patentees, patents provide financial security because they give companies the exclusive right to manufacture, use, and sell the patented invention.\textsuperscript{18} Indeed, “the existence and worth of most high

\textsuperscript{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).

\textsuperscript{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.

\textsuperscript{13} See id. at 3, 47.

\textsuperscript{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).

\textsuperscript{15} See ADVISORY COMM’N ON PAT. L. REFORM, supra note 11, at 53.

\textsuperscript{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.”).

\textsuperscript{17} See ADVISORY COMM’N ON PAT. L. REFORM, supra note 11, at 3.

\textsuperscript{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.” Patentees rely on their patents to create short term monopolies that earn prospectively large and exclusive profits.

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

9. Section 271 of the Patent Act recognizes three types of patent infringement: direct infringement, induced infringement, and contributory infringement. Direct infringement occurs when a party uses or practices all of a
patent’s claims without the patentee’s permission. Induced infringement occurs if
a seller induces another to commit the infringement through active aiding or
abetting. 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.” This Note explores direct and contributory infringement in the context
of repair and reconstruction.

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. 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. 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
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.
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. A “repair” is necessary to keep a product in good working order, 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.” Disputes, therefore, may arise about whether a modification is a permissible repair or an impermissible reconstruction. Interpretation of an implied license 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.

11. The Supreme Court first addressed the repair and reconstruction issue in Wilson v. Simpson. 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. 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

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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.” 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.

12. The next significant repair and reconstruction decision was Aro Manufacturing Co. v. Convertible Top Replacement Co. (“Aro I”). 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. The fabric portion’s useful life was about three years, whereas the other components usually lasted the lifetime of the automobile. The defendant manufactured and sold replacement fabric tops for use exclusively with Aro’s patented combination. In holding that no contributory infringement occurred because there was not a reconstruction, 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.

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. “[M]aintenance of the ‘use of the whole’ of the patented combination through

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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.


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.


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.\textsuperscript{53} Relying on its prior decisions,\textsuperscript{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.”\textsuperscript{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.”\textsuperscript{56}

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

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

\textsuperscript{53} Id. at 346.


\textsuperscript{55} \textit{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)).

\textsuperscript{56} \textit{Id.} See also \textit{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).

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

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

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

\textsuperscript{60} \textit{See Aro Mfg. Co.}, 365 U.S. at 362-68 (Brennan, J., concurring in the result).

\textsuperscript{61} \textit{Id.} at 363.

\textsuperscript{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 I’s 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).


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 Mercoid cases. See Mercoid Corp. v. Mid-Continent Co., 320 U.S. 661, 667 (1944); Mercoid 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.” Mercoid, 320 U.S. at 684.


72 See Farley, supra note 30, at 162.
ha[d] been purchased to replace a worn-out part or for some other purposes.” In cases of contributory infringement, the crux of the analysis is whether the product sold could have had a substantial noninfringing use. 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. The final factor in Aro I’s minority test was the balancing of the patentee’s intent with the purchaser’s legal rights. This factor should be, and usually is, controlling. 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. 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. 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.* Plaintiff Everpure sold a patented combination of parts for filtration, which contained a removable filter attached to a head that directed fluid. It also sold entire filter cartridges to replace worn ones because the head had a longer lifetime. The combination was designed to be spent when the filter wore out, despite the head's longer lifetime.

Cuno sold its own cartridges that attached to Everpure's heads using a Cuno adapter. The Federal Circuit decided that because the cartridge was "simply a component" 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. 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.

The dissenting opinion in *Everpure* illustrates a potentially adverse

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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 I*’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. The dissent objected to Cuno’s replacement of unworn, unbroken parts in the cartridge. 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.” Reconstruction is always impermissible, even when accompanied by a permissible repair. A contrary rule eviscerates the quintessential benefit of the patent system: the right to exclude others.

21. The Federal Circuit’s next important decision was *Sage Products, Inc. v. Devon Industries, Inc.* 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.” 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. 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.

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. Further, a patentee may

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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 I’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.

The patented drill tip\textsuperscript{107} 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.\textsuperscript{108} The court specifically distinguished \textit{Aktiebolag} from \textit{Wilson v. Simpson},\textsuperscript{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.”\textsuperscript{110}

25. The final case of relevance is \textit{Universal Electronics, Inc. v. Zenith Electronics Corp.}\textsuperscript{111} In this case, Zenith charged that Universal’s sale of remote controls contributorily infringed its patent on the particular method of remote control.\textsuperscript{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.”\textsuperscript{113} The court held that Zenith granted its customers an implied license to replace the remotes.\textsuperscript{114} Further, the district court considered whether replacement under the above three circumstances constituted repair or reconstruction.\textsuperscript{115} The court found that the

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

\textsuperscript{108} \textit{Id.} at 673-74.

\textsuperscript{109} 50 U.S. (9 How.) 109, 125-26 (1850).

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

\textsuperscript{111} 846 F. Supp. 641 (N.D. Ill. 1994), \textit{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. \textit{See CHISUM, supra} note 34, § 16.03[3][e].

\textsuperscript{112} \textit{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.” \textit{Id.} Universal actually brought this action, seeking a declaratory judgment that Zenith’s patent was invalid and, thus, unenforceable. \textit{See id.}

\textsuperscript{113} \textit{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.” \textit{Id.} at 644 n.4.

\textsuperscript{114} \textit{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, multicombination remote control transmitter and using it with the Zenith receiver.”).

\textsuperscript{115} \textit{See id.} at 648-50.
replacement of a broken remote was a permissible repair. 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. When purchasing a new remote, a consumer did not fully recreate the patented combination; Universal merely enabled consumers to conduct a repair.

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

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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.


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*.\textsuperscript{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.\textsuperscript{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*.\textsuperscript{128} Under *Aro I*, a reconstruction occurs only if a user completely recreates a patented entity after it becomes spent.\textsuperscript{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.\textsuperscript{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.\textsuperscript{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.”\textsuperscript{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.\textsuperscript{133}

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

\textsuperscript{126} See *id.* (“[T]here is no such special circumstance in this case.”).

\textsuperscript{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.*

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

\textsuperscript{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)).

\textsuperscript{130} See *id.*

\textsuperscript{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”).

\textsuperscript{132} CHISUM, supra note 34, § 16.03[3][d].

\textsuperscript{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. HP manufactures and sells disposable ink jet printer cartridges for use with its ink jet printers. HP holds a variety of patents on “ink jet printing technology, including patents on ink jet printers, cartridges, and ink formulations.” The cartridge’s user instructions advise consumers to discard and replace used cartridges. 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.

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

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.


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. HP did not manufacture the refill inks or packages, which were labeled as ROT’s.

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. The district court ruled against HP on the patent claims and granted summary judgment for ROT. 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,’” the court held that HP showed no patent infringement and, thus, did not state a claim.

32. On appeal, the Federal Circuit affirmed the district court’s ruling on the patent charges. The Federal Circuit concentrated on ROT’s lawful purchase of the cartridges and modification before the cartridges were spent. 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.


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. Consequently, the Federal Circuit found ROT's modification of an unspent cartridge “more akin to permissible ‘repair’ than to impermissible ‘reconstruction.’” 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. 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.”

IV. ANALYSIS

33. The Federal Circuit’s decision in Hewlett-Packard illustrates the problems created by Aro I's 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. 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. There are four primary methods of imposing post-sale restrictions.

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,\footnote{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.} (ii) tying arrangements,\footnote{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.} (iii) type or field restrictions,\footnote{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).} and (iv) duration or number of use restrictions.\footnote{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.} 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.\footnote{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.}  Patentees can avoid the problems associated with implied licenses if they draft their patent claims carefully or file all significant inventions in separate patents.\footnote{See Swope, supra note 2, at 306; see also Stern, supra note 98, at 28, 31-32 (explaining methods to avoid licensing problems).}  Implied licenses must be analyzed absent this patent application fix.\footnote{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”).}

35. The first sale doctrine is an example of a restriction that courts strictly apply.\footnote{See Gene Bolmarcich, First Sale Doctrine May Spell Last Rights, INTELL. PROP. STRATEGIST, May 1996, at 8.}  This doctrine terminates a patentee's control over a patented product’s further sale and use after the product’s first authorized sale.\footnote{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,}  “The patent owner’s
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.”

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.”

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.” But patents do allow some restrictions. Reconstruction restrictions arise by an implied license that disallows a purchaser from fully remaking a purchased, patented product. Even after the authorized first sale, the purchaser cannot reconstruct the patented device. 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. 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.\textsuperscript{172} There are no explicit rules for repair and reconstruction cases, and each case’s facts must be individually scrutinized by the courts.\textsuperscript{173}

37. Given the Federal Circuit’s past emphasis on patentees’ single use only restrictions,\textsuperscript{174} the \textit{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. \textit{Sage Products},\textsuperscript{175} \textit{Kendall},\textsuperscript{176} and \textit{Mallinckrodt},\textsuperscript{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 \textit{Kendall Co. v. Progressive Co.}}
Medical Technology, Inc. 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.” To remedy a violation of such an enforceable condition of sale, or valid implied license, a patentee can claim patent infringement. 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. 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.”

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.” 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.” 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. In such

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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.\textsuperscript{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”\textsuperscript{187} and may prematurely repair a part.\textsuperscript{188} In a case like Hewlett-Packard, though, the modified part was neither spent nor in need of repair to correct an impending problem.\textsuperscript{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.\textsuperscript{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.\textsuperscript{191} The court stated that

\begin{quote}
[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
\end{quote}

\textsuperscript{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.

\textsuperscript{187} Kendall, 85 F.3d at 1575.

\textsuperscript{188} See id.


\textsuperscript{190} See Farley, supra note 30, at 160-63.

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

A patentee’s intent regarding the duration or number of uses of a patented product is often considered the most important factor.\textsuperscript{193}

42. \textit{Mallinckrodt} affirmed the dominance of a patentee’s intent in the context of a “single use only” restriction.\textsuperscript{194} Unfortunately, the Federal Circuit in \textit{Hewlett-Packard} strayed from \textit{Mallinckrodt} by not respecting HP’s “discard after one use” restriction.\textsuperscript{195} The Federal Circuit discussed HP’s attempt to use “intent-of-the-patentee analysis,”\textsuperscript{196} but only gave a cursory treatment of key “single use only” cases.\textsuperscript{197} Further, the court never explained why HP’s implied license was not enforceable, as in \textit{Mallinckrodt}. The court called HP’s single use only restriction a “noncontractual intention,” that constituted a “hope” or “advice,” but not an implied license.\textsuperscript{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.\textsuperscript{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

\textsuperscript{192} \textit{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.’ \textit{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. \textit{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.

\textsuperscript{193} \textit{See Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 368 (1961); see also} Farley, \textit{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 \textit{intent of the patentee}.”).

\textsuperscript{194} \textit{See Stern, supra} note 98, at 51.

\textsuperscript{195} \textit{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.’”).

\textsuperscript{196} \textit{Id.} at 1453.

\textsuperscript{197} \textit{See id.} at 1452-54. \textit{Hewlett-Packard} only considered \textit{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.” \textit{See Hewlett-Packard, 123 F.3d at 1452.}

\textsuperscript{198} \textit{Id.} at 1453-54.

\textsuperscript{199} Perhaps \textit{Hewlett-Packard} ambiguously tried to distinguish \textit{Mallinckrodt} as in \textit{Kendall} and \textit{Sage Products, Inc. v. Devon Industries, Inc., 45 F.3d 1575 (Fed. Cir. 1995). \textit{See Hewlett-Packard, 123 F.3d at 1454} (“Neither [\textit{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.”).
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. 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.

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. Further, trademarks symbolize and embody the trademark owner’s goodwill, for which companies often spend vast amounts of resources to create and embed in the public’s conscience. For example, ROT’s refill kits caused confusion: HP received letters and telephone calls about the refill kits as if they were HP products. Even if courts find that trademark infringement occurs in


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.


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.


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


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

214 Id. at 345-46.


216 45 F.3d 1575 (Fed. Cir. 1995).


218 See Hewlett-Packard, 123 F.3d at 1449.
formulation\textsuperscript{219} and designs its cartridge to be nonrefillable,\textsuperscript{220} ROT should be held an infringer.

51. HP’s cartridges were not spent when ROT modified them; they were new.\textsuperscript{221} Thus, as the Federal Circuit held, any modification or replacement ROT did was a repair because reconstruction can only happen to spent parts.\textsuperscript{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 I’s 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.\textsuperscript{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.”\textsuperscript{224}

\textsuperscript{219}See id. at 1447.

\textsuperscript{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.

\textsuperscript{221}See Hewlett-Packard, 123 F.3d at 1452 (“[T]he HP cartridges were certainly not spent.”).

\textsuperscript{222}See id.

\textsuperscript{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.

\textsuperscript{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.*\(^\text{225}\) implicitly agreed with this analysis. In holding that the replacement of functioning remote controls merely to reduce clutter can be a reconstruction,\(^\text{226}\) the court demonstrated its willingness to accept a less restrictive interpretation of “spent.” This perspective would consider the replacement of new or working\(^\text{227}\) 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,\(^\text{228}\) 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.”\(^\text{229}\) 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.\(^\text{230}\) *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.\(^\text{231}\) ROT had to go through a


\(^{226}\) 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.\textsuperscript{232}

56. \textit{Aktiebolag} also stressed that the replaced tip did not have a useful life much shorter than the rest of the patented device.\textsuperscript{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 \textit{Hewlett-Packard} is \textit{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.”\textsuperscript{234} \textit{Aktiebolag} based its decision on all of these factors,\textsuperscript{235} and it seems incongruous that \textit{Hewlett-Packard} apparently ignored them in deciding that ROT’s actions constituted a permissible repair.\textsuperscript{236}

57. Another concern in \textit{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.”\textsuperscript{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.

\textit{Id.}

\textsuperscript{232} See \textit{Hewlett-Packard}, 123 F.3d at 1448-49.

\textsuperscript{233} 121 F.3d at 674.

The drill tip in this case is not a part like the detachable knives in the \textit{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.

\textit{Id.}

\textsuperscript{234} \textit{Id.}

\textsuperscript{235} See \textit{id.}

\textsuperscript{236} \textit{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 \textit{Aktiebolag} does not apply to \textit{Hewlett-Packard} because in \textit{Aktiebolag}, the defendant created a product identical to the patentee’s, but ROT added a feature to HP’s product.

\textsuperscript{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. Many problems exist, however, with refilling and reusing ink jet printer cartridges. Consumers suffer from decreased print quality and malfunctioning printers. HP is injured because consumers blame them for the problems stemming from the modified or refilled cartridges. 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. Patentees must have non-arbitrary reasons for the restrictions. Convincing reasons include reasonableness, 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. Labeling a product with a restriction such as “Single Use Only” can be sufficient. 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 Bolmarchich, 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. 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. 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. 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. 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.