

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

By Elaine Stracker

For many consumers, the purchase of a personal computer also encompasses the purchase of an inexpensive ink-jet printer. Because the hardware is generally sold for little or no margin, printer manufacturers depend on the sales of supplies, such as replacement ink-jet cartridges for these printers, to make a profit.¹ Aftermarket companies, which either refill spent cartridges or modify cartridges so that they can be refilled, pose a significant threat to the business prospects and profitability margins of printer manufacturers.

In *Hewlett-Packard Co. v. Repeat-O-Type Stencil Manufacturing Corp.*,² the U.S. Court of Appeals for the Federal Circuit recently affirmed the permissibility of such aftermarket modifications on patented ink-jet cartridges. The Federal Circuit held that modification of patented ink-jet cartridges to make them refillable “is more akin to permissible ‘repair’ than to impermissible reconstruction.”³

The court determined that Hewlett-Packard’s ink-jet pen claims read on Repeat-O-Type’s modified cartridges.⁴ Restricting its infringement analysis solely to repair and reconstruction, the court determined that modifying the cartridge constituted repair and, consequently, did not infringe.⁵ This decision impacts incentives to create and invent, the exclusivity of patent rights, and the effectiveness of blocking patents.

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1. See Greg Stohr, *H-P Loses Refilled Cartridges Fight*, THE N.Y. TIMES NEWS SERVICE, ¶4 (Sept. 8, 1997) <http://nytsyn.com/lilve/New3/226-08147_100001_26424.html> (Like other computer manufacturers, H-P depends on sales of supplies, because “you sell the hardware for little or no margin, and you make your margin on ink,” said Daniel Kunstler, an analyst with J.P. Morgan Securities.).

2. 123 F.3d 1445, 43 U.S.P.Q.2d (BNA) 1650 (Fed. Cir. 1997).

3. *Id.* at 1452, 43 U.S.P.Q.2d at 1656.

4. See *id.* at 1451, 43 U.S.P.Q.2d at 1655.

5. See *id.* at 1455, 43 U.S.P.Q.2d at 1659. However, the court did not address the other limitation on the implied license under the first sale doctrine, not to make the patented item, which is what HP was claiming that ROT had done.

I. STATEMENT OF THE FACTS

Hewlett-Packard (HP) manufactures and sells ink-jet printers and disposable ink-jet cartridges for its printers.⁶ The ink-jet cartridges are intended for one-time use and, once the ink is depleted, HP expected the cartridges would be discarded.⁷ Accompanying the cartridges was a disclaimer for any printer damage as a result of refilling and reusing the cartridges and a warning to discard old cartridges immediately.⁸

HP's cartridges use thermal ink-jet printing technology.⁹ The cartridges consist of a printhead with thermal resistors in a thin-film-semiconductor substrate and an ink reservoir.¹⁰ Electrical energy is provided to the cartridge by the printer.¹¹ This energy causes the thermal resistors to heat and the ink to boil, forming a vapor, which results in the release of ink droplets from the cartridge onto a receiving medium, such as paper.¹²

HP owns a number of patents covering this technology.¹³ These include patents on ink-jet printers, cartridges, and ink compositions.¹⁴ HP asserted that Repeat-O-Type (ROT) infringed twelve of these patents by modifying two of the HP print cartridges.¹⁵

ROT purchased two types of HP cartridges, the "Kukla" cartridge, model HP 51625A, and the "Stanley" cartridge, the HP 51608A.¹⁶ ROT converted the black-ink Stanley cartridge to a colored-ink cartridge and modified the cap on the Kukla cartridge so that the cartridge could be refilled.¹⁷ ROT obtained a patent on the method for modifying the HP cartridge and on the modified cartridge.¹⁸ ROT repackaged the cartridges in the original HP boxes and sold them with refill ink as refill kits, packaged in an outer box with a see-through window.¹⁹ On most of the kits, al-

6. *See id.* at 1446, 43 U.S.P.Q.2d at 1652.

7. *See id.*

8. *See id.*

9. *See id.*

10. *See id.*

11. *See id.*

12. *See id.*

13. *See id.*

14. *See id.*

15. *See id.* at 1449-50, 43 U.S.P.Q.2d at 1654.

16. *See id.* at 1448, 43 U.S.P.Q.2d at 1653.

17. *See id.* at 1449, 43 U.S.P.Q.2d at 1654.

18. *See id.* at 1448, 43 U.S.P.Q.2d at 1653.

19. *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 34 U.S.P.Q.2d (BNA) 1450, 1452 (N.D. Cal. 1995), *aff'd*, 123 F.3d 1445, 43 U.S.P.Q.2d (BNA) 1650 (Fed. Cir. 1997).

though not all, ROT placed its own logo.²⁰ The refillable nature of the kits made it possible for ROT to sell the kits for a substantial premium over the price of the original HP cartridges.²¹

II. THE DISTRICT COURT DECISION

HP brought suit against ROT in the United States District Court for the Northern District of California claiming patent and trademark infringement, false designation, false description, false representation, unfair competition, and deceptive trade practices.²² The district court granted summary judgment for HP on the trademark infringement claims.²³

HP also alleged that ROT infringed its patents but restricted its arguments to two of its patents, Patent No. 4,827,294 (the '294 patent) and Patent No. 4,931,811 (the '811 patent), for purposes of summary judgment.²⁴ The court stated that patent infringement had to be established before applying the repair versus reconstruction doctrine.²⁵ Determining

20. *See id.*

21. *See* Brief for Appellant at 20, *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 43 U.S.P.Q.2d 1650 (Fed. Cir. 1997) (No. 96-1379). Currently, ROT advertises its refill ink kit for the HP 51625A at \$39.95. *See Repeat-O-Type Refill Ink Systems & Compatible Cartridges* (visited Jan. 25, 1998) <<http://www.repeatotype.com/refill.html>>. One can purchase the HP 51625A cartridge in stores for \$29.89 (list price at Staples in Vacaville, CA on Jan. 25, 1998).

22. *See Hewlett-Packard*, 34 U.S.P.Q.2d at 1451. For purposes of this paper, only the trademark and patent infringement causes of action will be addressed as this was a motion for summary judgment and the court only dealt with the trademark and patent infringement claims.

23. *See id.* at 1454. The court stated that the only issue was whether ROT was using HP's trademark in a manner likely to cause confusion, mistake, or deception. *See id.* at 1453. The court applied the facts to the eight factor test propounded in *AMF Inc. v. Sleekcraft Boats*. *See id.* at 1453-54. "These factors are: (1) strength of the plaintiff's marks; (2) proximity of the goods; (3) similarity of the marks; (4) evidence of actual confusion, (5) marketing channels used; (6) type of goods and the degree of care likely to be exercised by the purchaser; (7) defendant's intent in selecting the marks; and (8) likelihood of expansion of the product lines. *AMF Inc. v. Sleekcraft Boats*, 599 F.2d 341, 348 (9th Cir. 1979)." *Hewlett-Packard*, 34 U.S.P.Q.2d at 1453. The court determined that the marks on the packages were similar, HP's registered trademarks were very strong marks, the marketing channels used by ROT were similar to those used by HP, and finally, although not necessary to prove infringement, that ROT intended to deceive the public. *See id.* at 1454. Thus, the court concluded that confusion was likely to result and that ROT had infringed HP's trademarks. *See id.*

24. *See Hewlett-Packard*, 34 U.S.P.Q.2d at 1452.

25. *See id.* at 1455. HP had argued that because ROT modified HP's product before there were any worn or spent parts; the modification could not be permissible repair and so must be impermissible reconstruction.

whether a patent claim is infringed requires a two-step analysis: “[f]irst, the claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process.”²⁶ In analyzing the claims in the patents, the court determined that because the ink, the cap, and the cartridge were not specifically claimed in the patents, the modified cartridges did not literally infringe, even though claim 2 of the '811 patent recited “a thermal ink-jet pen including ...” and the accompanying diagram illustrated a pen body housing and a cap.²⁷ Upon applying the doctrine of equivalents, the court again concluded that because the cap was not a patented element, there was no infringement. Summary judgment was then granted to ROT on the patent claims.²⁸

III. THE FEDERAL CIRCUIT DECISION

A. The Cartridge Modification

Only the summary judgment on the patent infringement claims was appealed.²⁹ HP first asserted that the district court erred in its interpretation of the claims of the '294 and '811 patents and then argued that ROT's modification created new cartridges with different properties, features, and performance characteristics and, as such, were not “authorized.”³⁰

The Federal Circuit agreed that the district court misconstrued the scope of the claims.³¹ The preamble of the claims state “an ink-jet pen including” and, because the word “including” in claim interpretation is synonymous with “comprising,” the claim can include unnamed components, such as the cap.³² In addition, the cap was depicted in the drawings of the patent.³³ The court then assumed, for purposes of analysis, that: (1) HP's patents read on ROT's modified cartridges, or in other words, everything in HP's patent claims appeared in the modified cartridge, and (2) that the modification of the cap involved “making” the “ink-jet pens” claimed in the '294 and '811 patents.³⁴ The court then said that the issue

26. *Carroll Touch, Inc. v. Electro Mechanical Sys.*, 15 F.3d 1573, 1576, 27 U.S.P.Q.2d 1836, 1839 (Fed. Cir. 1993).

27. *See Hewlett-Packard Co. v. Repeat-O-Type Mfg. Corp.*, 123 F.3d 1445, 1447-48, 43 U.S.P.Q.2d (BNA) 1650, 1653.

28. *See Hewlett-Packard*, 34 U.S.P.Q.2d at 1456.

29. *See Hewlett-Packard*, 123 F.3d at 1446, 43 U.S.P.Q.2d at 1651.

30. *See id.* at 1450-51, 43 U.S.P.Q.2d at 1652.

31. *See id.*

32. *See id.*

33. *See id.*

34. *See id.*

remaining was whether this modification was authorized or exceeded the scope of the implied license granted to purchasers.³⁵

The court then proceeded to analyze the case under the doctrine of repair and reconstruction. The court acknowledged that ROT's modification was not conventional repair or reconstruction because the caps were not broken or defective, nor was the combination, as a whole, spent.³⁶ However, the court concluded that the modification was more akin to "permissible 'repair'" than "impermissible 'reconstruction.'"³⁷

In support, the court determined that because the cartridges were not spent, the making could not be reconstruction.³⁸ The court cited *Wilbur-Ellis Co. v. Kuther*,³⁹ saying that ROT's modification was similar to the purchaser's in *Wilbur-Ellis Co.*, who had modified worn fish-canning machines to pack fish into smaller cans.⁴⁰ The court said this was permissible repair because it "bore on the useful capacity of the old combination, on which the royalty had been paid."⁴¹ The court concluded that ROT's modification simply improved the cartridge's usefulness and that HP failed to recognize a distinction between what it intended to be the life of the cartridge, as determined by the ink supply, and its actual useful life.⁴²

Likewise, the court rejected HP's argument "that the boundary between permissible repair and impermissible reconstruction turns on the intention of the patentee."⁴³ The court stated that although the Supreme

35. *See id.* Upon the sale of a patented item, an implied license is said to be created which allows or authorizes the purchaser to use, repair, and resell a product without violating the patentee's exclusive rights. Thus, repairing a patented item is permissible. However, reconstructing a patented item is said to be impermissible because it violates the exclusive right of the patentee not to have his item made by another. *See id.* at 1451, 43 U.S.P.Q.2d at 1655-56.

36. *See id.* at 1452, 43 U.S.P.Q.2d at 1656.

37. *Id.*

38. *See id.*

39. 377 U.S. 422 (1964).

40. *See Hewlett-Packard*, 123 F.3d at 1452, 43 U.S.P.Q.2d at 1656-57.

41. *Id.*, 43 U.S.P.Q.2d at 1657. The court never addresses the fact that the items modified were worn and that the packing size of the cans was not an aspect of the claims.

42. *See id.* However, the court does not address the distinction between useful capacity, as to scope of the patent claim, which is what the court in *Wilbur-Ellis* was addressing, as opposed to extending the useful lifespan of a patented product by modifications which is the issue in *Hewlett-Packard*. Also, this concept of "improved usefulness," as it is called by the court, would seem to be more akin to a dictionary definition of making, building, or reconstructing a product than to repairing the product, although this suggestion is contravening to the court's analysis.

43. *Id.*

Court spoke in terms of intent of the patentee in *Wilson*,⁴⁴ it focused on the nature of the device sold.⁴⁵ While in *American Cotton-Tie Co. v. Simmons*,⁴⁶ the Supreme Court again spoke in terms of patentee intent, later, in *Aro Manufacturing Co. v. Convertible Top Replacement Co.*,⁴⁷ the Court noted it was important that the devices “were marked ‘licensed to use once only.’”⁴⁸ The court stated that none of the 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.”⁴⁹ Thus, the court concluded that “absent a restriction having contractual significance, a purchase carries with it the right to modify as long as reconstruction of a spent product does not occur” or as long as a new patented entity is not made.⁵⁰

The court then stated that while HP clearly intended the cartridges to be discarded after a single use, a noncontractual intention is not an enforceable restriction.⁵¹ Thus, the court concluded that a ruling in HP’s fa-

44. 50 U.S. (9 How.) 109 (1850).

45. See *Hewlett-Packard*, 123 F.3d at 1453, 43 U.S.P.Q.2d at 1657. In *Wilson*, 50 U.S. at 109, the Court held that replacement of worn cutting knives in a planing machine was permissible repair rather than of impermissible reconstruction because the inventor intended that the knives were to be replaced or repaired as required and that such repair when the “wearing or injury is partial, is restoration and not reconstruction.” *Id.* at 123. Replacing the temporary parts did not alter the identity of the machine, rather its identity is preserved even though not every part of the repaired machine contained its original material. See *id.* at 126. However, the Court also said that “when the material of the combination ceases to exist, in whatever way that may occur ... there is no right to rebuild the combination.” *Id.* at 123.

46. 106 U.S. (16 Otto) 89 (1882).

47. 365 U.S. 336, 343 (1961).

48. *Hewlett-Packard*, 123 F.3d at 1453, 43 U.S.P.Q.2d at 1657. In *American Cotton Tie*, 106 U.S. at 89, the plaintiff held a patent on a metallic tie and buckle combination for tying cotton bales and stamped in the middle of the buckle were the words, “Licensed to use once only.” *Id.* at 90-91. After the ties had served their “one-time” purpose, the user would sever the ties and discard them. See *id.* at 91. The defendant purchased the severed ties and riveted the bands back together for reuse. See *id.* The Court distinguished this reuse from the principle set out in *Wilson*, and held that, by severing the tie, the product was voluntarily destroyed, thus the defendant’s actions constituted reconstruction. See *id.* at 94.

49. *Hewlett-Packard*, 123 F.3d at 1454, 43 U.S.P.Q.2d at 1658.

50. *Id.* at 1453, 43 U.S.P.Q.2d at 1657.

51. See *id.* at 1453, 43 U.S.P.Q.2d at 1658. This comment by the court seems to imply that HP could restrict ROT or other purchasers from modifying the cartridges for repeat use by using in essence a “shrink wrap” agreement. Cf. *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 24 U.S.P.Q.2d (BNA) 1173 (Fed. Cir. 1992). In *Mallinckrodt*, the court noted that Mallinckrodt’s sale of his patented product was conditional, as his products were marked “Single Use Only.” *Id.* at 701, 709, 24 U.S.P.Q.2d at 1173,

vor would deprive ROT of the right to use and resell its own property, which it purchased free of restriction.⁵²

B. The Remaining Patents In Suit

HP also claimed that ROT infringed its '503 ink patent.⁵³ The court upheld the summary judgment on the ink patent claims, stating that HP failed to provide any evidence that created a genuine issue of fact concerning whether the accused products contain inks which are covered by the asserted claims of the '503 patent.⁵⁴

Likewise, the court dismissed the claims of infringement on the remaining nine patents covering ink-jet cartridge components.⁵⁵ The court determined that HP had not introduced any evidence to show that ROT's

1180. In addition, the court stated that "[t]he principle of exhaustion of the patent right did not turn a conditional sale into an unconditional one." *Id.* at 706, 24 U.S.P.Q.2d at 1178. Thus, the court held that repair of a patented device would be impermissible if it was violating a license for single use, in that any reuse would be infringement. *See id.* at 709, 24 U.S.P.Q.2d at 1180.

52. *See id.*

53. *See Hewlett-Packard*, 123 F.3d at 1454, 43 U.S.P.Q.2d at 1658

54. *See id.* HP cited deposition testimony of two ROT chemists, including "admissions" of infringement. *Id.* One of the chemists later refuted his earlier testimony, saying he did not understand the examining attorney's use of the phrase "fall within the claims." *Id.* The court determined that the statement, made by the other chemist, that "there was a problem, there was patent infringement" regarding the ink-jet formula, was hardly an admission that the accused product infringed. *Id.* Generally, however, patent infringement is a question of fact and to be determined by a jury. In this instance, there appears to be dispute as to whether the above statements were admissions and therefore, based on the information presented in the opinion, this issue should arguably have been decided by the jury.

In addition, though not stated in the opinion, the deposition material also included the formulation for the alleged ink. *See* Brief for Appellant at 19, 45, *Hewlett-Packard Company v. Repeat-O-Type Stencil Manufacturing Corp.* 43 U.S.P.Q.2d 1650 (Fed. Cir. 1997) (No. 96-1379). HP proffered as evidence the Material Safety Data Sheet listing the ingredients of ROT's ink. *See id.* The ingredients were copied in material part verbatim from HP's data sheet. *Id.* The court should have compared the alleged ink formulation to the claims in the '503 patent. [Claim 1 is an open-end claim for an ink-jet ink comprising only three elements, with a final pH restriction. *See* U.S. Patent No. 5,108,503, issued Sept. 19, 1994. Thus, as long as this claim read on ROT's formulation, or stated in another way, as long as ROT's formulation contained these three elements, regardless of whether it had additional elements, and was within the requisite pH range, ROT would be infringing HP's ink claim.] At the very least, this proffered evidence should have been sufficient to create a genuine issue of material fact precluding summary judgment of noninfringement of the ink claims. As an interesting aside, ROT changed its formulation almost immediately upon notification of the patent infringement lawsuit against it in regard to HP's ink patent.

55. *See Hewlett-Packard*, 123 F.3d at 1454, 43 U.S.P.Q.2d at 1659.

modification constituted reconstruction of the patented cartridges and therefore, these claims were not infringed.⁵⁶

IV. DISCUSSION

A. The Court's Analysis

The Court, in analyzing HP's patent infringement claims, stated that because ROT had purchased the ink-jet cartridges, the patent exhaustion doctrine applied.⁵⁷ Thus, they concluded that the appropriate analysis of the alleged infringement was under the doctrine of repair and reconstruction.⁵⁸ Under patent exhaustion, an implied license between a patent owner and a buyer is created upon the authorized first sale of a patented product.⁵⁹ The right transferred by this implied license controls the exchange of the right to use an invention.⁶⁰ The sale of a product generally gives the purchaser the right to full use including resale of the purchased item without violating the patentee's exclusive rights.⁶¹ However, as stated by the Supreme Court in *Leeds & Catlin Co. v. Victor Talking Machine Co.*,⁶² "[t]he license granted to a purchaser of a patented combination is to preserve its fitness for use so far as it may be affected by wear or

56. *See id.*

57. *See id.* at 1451, 43 U.S.P.Q.2d at 1655-56.

58. *See id.*, 43 U.S.P.Q.2d at 1656.

59. *See* ROBERT L. HARMON, PATENTS AND THE FEDERAL CIRCUIT 210-11 (2d ed. 1991) (citing *Fromson v. Western Litho Plate & Supply Co.*, 853 F.2d 1568 (Fed. Cir. 1988) and *Spindelfabrik Suessen-Stahlecker & Grill GmbH v. Schubert & Salzer Mas. Ak.*, 829 F.2d 1075 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1063 (1988)).

60. *See* ERNEST B. LIPSCOMB III, LIPSCOMB'S WALKER ON PATENTS §20:5, §20:14, (3d ed. 1987) (noting that many rules of express licenses are applicable to implied licenses).

61. *See* *United States v. Univis Lens Co.*, 316 U.S. 241, 249-50 (1942); *Adams v. Burke*, 84 U.S. 453, 456 (1873); *Bloomer v. McQuenwan*, 55 U.S. (14 How.) 539, 549-50 (1852) (holding that the patent monopoly was limited with respect to purchasers of the patented product); *see also*, *Intel Corp. v. ULSI Sys. Tech. Corp.*, 995 F.2d 1566, 1568, 27 U.S.P.Q.2d (BNA) 1136, 1138 (Fed. Cir. 1993), *cert. denied*, 510 U.S. 1092 (1994); *Brandt Consol., Inc. v. Agrimar Corp.*, 801 F. Supp. 164, 173, 24 U.S.P.Q.2d 1341, 1347-48 (C.D. Ill. 1992); *Duplan Corp. v. Deering Milliken, Inc.*, 444 F. Supp. 648, 757, 197 U.S.P.Q. (BNA) 342, 434 (D.S.C. 1977), *aff'd*, 594 F.2d 979, 201 U.S.P.Q. 641 (4th Cir. 1979), *cert. denied*, 444 U.S. 1015 (1980); *Extractol Process v. Hiram Walker & Sons*, 153 F.2d 264, 265, 68 U.S.P.Q. (BNA) 128, 128 (7th Cir. 1946); *Southwestern Tool Co. v. Hughes Tool Co.*, 98 F.2d 42, 45 (10th Cir. 1938).

62. 213 U.S. 325 (1909), *overruled* on other grounds by *Merciod Corp. v. Mid-Continent Investment Co.*, 320 U.S. 661, 668 (1944) (challenging the doctrine of contributory infringement).

breakage. Beyond this there is no license."⁶³ Thus, while this implied license allows a purchaser to use, repair, and resell a product, he cannot make or remake the patented product.⁶⁴

In interpreting the term "make," as it relates to patent infringement, courts have adopted the ordinary usage of the word "to create by putting together component parts."⁶⁵ Synonyms for "make," used by courts in analyzing for infringement, include "assemble," "build," "construct," "fabricate," and "manufacture."⁶⁶ Thus, the term "make" implies a process which culminates when the potentially infringing product is equivalent or identical to the patented invention.⁶⁷ After an authorized sale, the "make" issue arises primarily as a result of the repair or reconstruction of a patent combination.⁶⁸

63. *Id.* at 336.

64. See DONALD CHISUM & MICHAEL JACOBS, UNDERSTANDING INTELLECTUAL PROPERTY LAW: UNITED STATES §2F[3] (1992); see generally Jerome L. Jeffers, *Restriction of Propagation of Patented Bacteria Sold by the Patentee-Can It be Done?* 70 J. PAT. & TRADEMARK OFF. SOC'Y, 137 (1988); Mark A. Farley, *Infringement Questions Stemming from the Repair or Reconstruction of Patented Combinations*, 68 J. PAT. & TRADEMARK OFF. SOC'Y 149 (1986); Edmund J. Sease, *Patent Law: Repair-Reconstruction A Review, Analysis and Proposal*, 20 DRAKE L. REV. 85 (1970); Note, *Repair and Reconstruction of Patented Combinations*, 32 U. CHI. L. REV. 353 (1965); *Wilbur-Ellis Co. v. Kuther*, 377 U.S. 422 (1964); Note, *Repair and Reconstruction in Patented Combinations*, 23 U. PITT. L. REV. 184 (1961); *Westinghouse Electric & Mfg. Co. v. Hesser*, 131 F.2d 406, 56 U.S.P.Q. (BNA) 347 (6th Cir. 1942); *Marconi Wireless Tel. Co. v. United States*, 99 Ct. Cl. 1, 53 U.S.P.Q. (BNA) 246, modified, 63 S. Ct. 1393, 57 U.S.P.Q. (BNA) 471, *reh. den.* 320 U.S. 809 (1942); *C. & R. Research Corp. v. Write, Inc.*, 19 F.2d 380 (D. Del. 1927); *Cinema Patents Co. v. Craft Film Laboratories, Inc.*, 56 F.2d 265, 12 U.S.P.Q. (BNA) 501 (D. Del. 1932), *aff'd*, 64 F.2d 42, 17 U.S.P.Q. (BNA) 103 (3rd Cir. 1932); *Electric Vacuum Cleaner Co. v. Green*, 41 F. Supp. 562, 51 U.S.P.Q. (BNA) 123 (N.D. Ohio 1941), *amended on other grounds by* (6th Cir.) 132 F.2d 312, 56 U.S.P.Q. (BNA) 127, *cert. dismissed.* 319 U.S. 777; *J.F. Rowley Co. v. Rowley*, 18 F.2d 704 (3rd Cir. 1927); *De Forest Radio Tel. & Tel. Co. v. Radio Corporation of America*, 20 F.2d 598 (3rd Cir. 1927).

65. *Hughes Aircraft Co. v. United States*, 29 Fed. Cl. 197, 221 (1993) (quoting Webster's II New Riverside University Dictionary 718 (1984)); see also *Bauer & Cie v. O'Donnell*, 229 U.S. 1, 10 (1913).

66. *Bergstrom v. Sears, Roebuck & Co.*, 496 F. Supp. 476, 493 (D. Minn. 1980); *Hughes Aircraft*, 29 Fed. Cl. at 221-22.

67. See Eitan Alexander Ogen, *Notes: Assembling A Theory Of Infringement: Third Party Liability Based On In Vivo Production Of Patented Pharmaceuticals*, 17 CARDOZO L. REV. 117, 128 (1995).

68. See *id.* at 129-30.

B. First Problem Associated With Restricting Analysis To The Doctrine of Repair and Reconstruction—Definitions of Terms

There are two major problems associated with the court restricting its analysis, in *Hewlett-Packard v. Repeat-O-Type*, to the doctrine of repair or reconstruction after an "authorized" sale. The first resides in the general definitions of repair and reconstruction. The word "repair," as used in connection with a patented article, means the restoration or replacement of worn-out parts.⁶⁹ More specifically, "repair" means "to restore to a sound or good state after decay, injury, dilapidation, or partial destruction."⁷⁰ The expense of replacement and the difficulty of installation are immaterial to the issue of repair.⁷¹ Rather, the condition of the device before and the nature of the device after the alleged repair are among factors that courts find significant.⁷²

The right to repair, however, is not absolute. Repairs so extensive that the identity of the article is lost amount to impermissible reconstruction.⁷³ Rebuilding an entirely worn article, and not merely an element of it constitutes reconstruction.⁷⁴ Likewise, the replacement of nonpatented parts in a patented combination to the extent that the new parts dominate the structural substance of the article also constitutes reconstruction.⁷⁵ Thus, reconstruction is considered to be a second creation of the patented entity and a direct infringement of the patent owner's right under 35 U.S.C. § 271.⁷⁶

69. See *Wilson v. Simpson*, 50 U.S. (9 How.) 109, 109 (1850); *Simpson v. Wilson*, 45 U.S. (4 How.) 709, 709 (1846); *Hughes Tool Co. v. Owen*, 39 F. Supp. 656, 658 (N.D. Tex. 1941); *Foglesong Mach. Co. v. J. D. Randall Co.*, 239 F. 893, 895 (6th Cir. 1917); *Goodyear Shoe Mach. Co. v. Jackson*, 112 F. 146, 150 (1st Cir. 1901).

70. *Missouri, K. & T. Ry. Co. of Texas v. Bryan*, 107 S.W. 572, 576 (Tex. Civ. App. 1908).

71. See *Aktiebolag v. E. J. Co.*, 121 F.3d 669, 672, 43 U.S.P.Q.2d (BNA) 1620, 1623 (Fed. Cir. 1997).

72. See *Aktiebolag*, 121 F.3d at 673, 43 U.S.P.Q.2d at 1623.

73. See *Ideal Wrapping Mach. Co. v. George Close Co.*, 23 F.2d 848, 850 (D. Mass. 1928).

74. See *Hughes Tool Co. v. Owen*, 123 F.2d 950, 953, 51 U.S.P.Q. (BNA) 487, 489 (5th Cir. 1941); *Hughes Tool Co. v. United Mach. Co.*, 35 F. Supp. 879, 885-86, 47 U.S.P.Q. (BNA) 74, 80 (N.D. Tex. 1939).

75. See *Southwestern Tool Co. v. Hughes Tool Co.*, 98 F.2d 42, 45 (10th Cir. 1938); *Automotive Parts Co. v. Wisconsin Axle Co.*, 81 F.2d 125, 127 (6th Cir. 1935); *Standard Stoker Co. v. Berkley Mach. Works & Foundry Co.*, 29 F. Supp. 349, 374-5 (E.D. Va. 1938).

76. See *Aro Mfg. Co v. Convertible Top Replacement Co.*, 365 U.S. 336, 346 (1961); *Lumms Indus., Inc. v. D.M. & E. Corp.*, 862 F.2d 267, 272, 8 U.S.P.Q.2d (BNA) 1983, 1986 (Fed. Cir. 1988); 35 U.S.C. § 271 (1997) (which states that "whoever

These definitions of repair and reconstruction presume that the alleged infringing product or at least one of the elements of which it is comprised has been used or worn in some way and subsequently repaired or reconstructed. Case law in this area is premised on the repaired or reconstructed product being used, worn, or spent. The court in *Universal Elec. Inc. v. Zenith Elec. Corp.*⁷⁷ held that “the law of repair is confined to repairing worn or broken parts.”⁷⁸ However, in *Hewlett-Packard* the modified ink-jet cartridges had not been used and the caps were not worn or deteriorated.⁷⁹ Thus, any attempt to analyze this case under the repair/reconstruction doctrine, which by definition requires a choice between a product that is partially used and a product that is completely spent, would logically result in the conclusion that modifying an unused product with new elements is closer to repair.

However, the definition of “make” in patent law is not so narrowly construed. The permissible repair doctrine was derived by the courts as an exception to the general ban on a purchaser’s right to *make* a patented product.⁸⁰ As such, this doctrine should not be construed as the sole context in which to assess “making” in infringement cases involving purchased items. Any process that culminates in a new patented product constitutes “making” of the product.⁸¹ Generally in infringement cases, excluding situations encompassing the patent exhaustion doctrine, the infringer “makes” the infringing device using new components.

HP argued that the cartridge made by ROT was not the same cartridge that they had sold. HP reasoned that the modified cartridges made by ROT had new properties, different features, and different performance characteristics, even though it fell within the scope of HP’s patent claims.⁸² In fact, ROT was able to obtain a patent on the modified cartridge and not just the method of modifying.⁸³ Thus, the patent provided evidence to support HP’s contention that the modified cartridge was new and distinct.

without authority makes, uses, offers to sell, or sells any patented invention . . . infringes the patent”).

77. 846 F. Supp. 641, 30 U.S.P.Q.2d (BNA) 1853 (N.D. Ill. 1994).

78. *Id.* at 650, 30 U.S.P.Q.2d at 1860.

79. *See Hewlett-Packard v. Repeat-O-Type Stencil Mfg. Corp.*, 123 F.3d 1445, 1452, 43 U.S.P.Q.2d (BNA) 1650, 1653 (Fed. Cir. 1997).

80. *See Hewlett-Packard v. Repeat-O-Type Stencil Mfg. Corp.*, 34 U.S.P.Q.2d 1450, 1455 (N.D. Cal. 1995).

81. *See Ogen, supra* note 67, at 128.

82. *See Hewlett-Packard*, 123 F.3d at 1450, 43 U.S.P.Q.2d at 1655.

83. *See id.* at 1448, 43 U.S.P.Q.2d at 1653.

Hypothetically, the two cartridges can be considered species of HP's generic ink-jet pen claim, wherein one species has a sealed cap and the other a removable cap. The qualification of the cap for one species (sealed) is mutually exclusive of the qualification of that same element for the other species (removable). This is analogous to a generic claim for a stool comprising a seat and three legs attached at one end to the seat, where in one species of the invention, the legs are untapered and in another species, the legs are tapered. That one species can be used to generate a second species under the same genus, as an alternative to making the new species from scratch, should not negate this action being considered a "second creation of the patented entity," where the patented entity is viewed as the genus claim. For example, routing the legs of the untapered stool so that they are tapered results in a new stool with different properties but still within the scope of the generic claim. However, analysis under the doctrine of repair and reconstruction would not be workable, as both stools are species of the generic claim and one is not making the untapered stool when one tapers the legs.

The court, while acknowledging that the modified cartridges fell within the scope of the patent claims, never addressed the issue of whether ROT's cartridge was new and different from the one it purchased. Unfortunately, the court restricted its analysis to repair or reconstruction of the purchased ink-jet cartridges and did not consider whether there might be a broader interpretation of unauthorized "making" of a patented product. Thus, this decision significantly expanded the repair doctrine to include replacement or modification of unworn and unused elements of a patented product.

C. Second Problem Associated With Restricting Analysis To The Doctrine Of Repair And Reconstruction—Indeterminate Scope

The second problem in using this analysis lies in the indeterminate scope of repair and reconstruction in the case law. The distinction between permissible repair and infringing reconstruction is generally nebulous and requires consideration of the special circumstances of each case.⁸⁴ In 1961, the Supreme Court took its last major look at the problem of repair and reconstruction in *Aro Manufacturing Co. v. Convertible Top Replacement* and concluded that "[m]ere replacement of individual unpat-

84. See *Micromatic Hone Corp. v. Mid-West Abrasive Co.*, 177 F.2d 934 (6th Cir. 1949); *Hughes Tool Co. v. Owen*, 123 F.2d 950 (5th Cir. 1941); *Automotive Parts Co. v. Wisconsin Axle Co.*, 81 F.2d 125 (6th Cir. 1935); *Morrin v. Robert White Eng'g Works*, 143 F. 519 (2d Cir. 1905); *Goodyear Shoe Mach. Co. v. Jackson*, 112 F. 146 (1st Cir. 1901); *Davis Elec. Works v. Edison Elec. Light Co.*, 60 F. 276 (1st Cir. 1894).

ented 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."⁸⁵ In deciding *Aro*, the Court rejected the various tests that lower courts had fashioned and considered the only relevant fact to be that a worn and unpatented part of a patented combination was replaced.⁸⁶

However, the value of *Aro* is dubious. Soon after *Aro* was decided, the Fifth and Ninth Circuits, in deciding two cases with the same facts, *Fromberg, Inc. v. Thornhill*⁸⁷ and *Fromberg, Inc. v. Gross Manufacturing Co.*,⁸⁸

85. *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 346 (1961). In *Aro*, the plaintiff owned the patent on the convertible top mechanism including the top fabric, mechanical support structure, and sealing mechanism. *See id.* at 337. While the support structure and sealing mechanism lasted the life of the car, the fabric generally wore out in three years. *See id.* at 337-38. The defendant sold replacement fabrics. *See id.* at 338. The district court found that replacement of the fabric constituted a reconstruction and thus a direct infringement. *See id.* Consequently, the defendant was guilty of contributory infringement. *See id.* The First Circuit affirmed and the Supreme Court reversed. *See id.* In reversing, the Court first noted that the defendant did not directly infringe because the fabrics were unpatented elements of a patented combination. *See id.* at 340. Second, the Court rejected the First Circuit's reasoning which gave significant weight to the qualitative factors such as relative life, cost, and importance of the individual components. *See id.* at 344. The First Circuit court had reasoned that "the life of the fabric is not so short, nor is the fabric so cheap, that we can safely assume that an owner would rationally believe that in replacing it he was making only a minor repair to his top structure." *Aro Mfg. Co. v. Convertible Top Replacement*, 270 F.2d 200, 205, 122 U.S.P.Q. (BNA) 536, 540-41 (1959). The Court then stated that "the maintenance of the 'use of the whole' of the patented combination through replacement of a spent, unpatented element does not constitute reconstruction." *Aro Mfg. Co.*, 365 U.S. at 346.

86. *See Aro Mfg. Co.*, 365 U.S. at 346. This rationale was contrary to previous decisions which had recognized that replacement of a worn part could amount to reconstruction. *See id.* at 363-64. As the dissent in *Aro* notes, the Court's rejection of the criteria formerly used to evaluate the facts, together with its clear statement that mere replacement of unpatented parts cannot amount to a reconstruction, seems to indicate that the entire patented combination must be rebuilt at once for infringement to result. *See id.* at 370. (Harlan, J., dissenting). The dissenters opined that "there is no single test to which all must yield; rather the determination is to be based upon the consideration of a number of factors" including the life of the replaced part in relation to the useful life of the whole combination, the cost of the component, the intention of the patent owner and the buyer as to the combination's perishable components, and other pertinent factors. *Id.* at 363-64. (Harlan, J., dissenting).

87. *See* 315 F.2d 407, 137 U.S.P.Q. (BNA) 84 (5th Cir. 1963). *Fromberg* patented a two part device, a metal tube and plug, to repair punctures in tubeless tires. *See id.* at 410, 137 U.S.P.Q. at 85-86. Once the plug is inserted in the tire the tube is useless unless refilled. *See id.* In *Thornhill* the Fifth Circuit held that: 1) sale of replacement plugs was contributory infringement; 2) that *American Cotton Tie* was controlling; and 3) the *Aro* test, while "beguiling," was insufficient as this particular patented device had a purpose for one-time use only. *See id.* at 412, 137 U.S.P.Q. at 87.

arrived at different outcomes. In most decisions since *Aro*, the courts, while citing the analysis and holding of *Aro*, appear to consider and weigh differently a variety of factors, and hence, have devised numerous "tests" for analyzing repair and reconstruction as opposed to the "single" test proposed in *Aro*.

For example, the Federal Circuit Court, using a variety of tests, has liberally expanded the repair doctrine over the past ten years to include replacing removable items under special circumstances and extensive replacements of worn components.⁸⁹ Just recently, the Federal Circuit in *Aktiebolag v. E.J. Co.*,⁹⁰ reiterated a list of factors to consider in determining whether a defendant has made a new article.⁹¹ Also over this same

88. 328 F.2d 803, 140 U.S.P.Q. (BNA) 641 (9th Cir. 1964). The Ninth Circuit in *Gross Mfg. Co.* disagreed with the Fifth Circuit and held that such a sale did not constitute either direct or contributory infringement. *See id.* at 807, 140 U.S.P.Q. at 644. The court stated that under *Aro* neither the intent of the patentee nor the "essence of the combination is controlling where one element of the combination is necessarily removed, while the other remains and is capable of further use." *Id.* at 808, 140 U.S.P.Q. at 645.

89. *Dana Corp. v. American Precision Co., Inc.*, 827 F.2d 755, 760, 3 U.S.P.Q.2d (BNA) 1852, 1856 (Fed. Cir. 1987) (holding that supplying new unpatented clutch parts for the use in rebuilding and repairing disassembled clutches was not contributory infringement because the rebuilding of the clutches was not demonstrated to be direct infringement of the patent); *Lumms Indus., Inc. v. D.M. & E. Corp.*, 862 F.2d 267, 8 U.S.P.Q.2d (BNA) 1983 (Fed. Cir. 1988) (holding that selling cutter reels specially designed to fit into a patented apparatus that cut continuous filament textile fiber bundles into uniform, short lengths was contributory infringement because this amounted to a second creation of the patented entity); *Everpure, Inc. v. Cuno, Inc.*, 875 F.2d 300, 10 U.S.P.Q.2d (BNA) 1855 (Fed. Cir. 1989), (holding that selling an adapter designed to attach replacement filter cartridges to the patent holder's filter unit, so that users could replace worn out filter cartridges, did not infringe a patent for the filtration equipment, even though the adapter modifies the filtering system somewhat); *FMC Corp. v. Up-Right Inc.*, 21 F.3d 1073, 1074, 30 U.S.P.Q.2d (BNA) 1361, 1361 (Fed. Cir. 1994), (holding that replacing parts in picking heads of grape harvesters qualifies as repair, rather than reconstruction, especially considering that the replaced parts wear out frequently); *Sage Products, Inc. v. Devon Industries, Inc.*, 45 F.3d 1575, 33 U.S.P.Q.2d (BNA) 1765 (Fed. Cir. 1995) (holding that a patent system of disposing of sharp medical instruments, by claiming a "removable" inner container, did not make replacement of the inner container impermissible reconstruction where the patentee intended that its customers dispose of the inner container); *Kendall Co. v. Progressive Med. Tech., Inc.*, 85 F.3d 1570, 1574, 38 U.S.P.Q.2d (BNA) 1917, 1921 (Fed. Cir. 1996) (holding that when the patent assignee sold its patented medical device for applying compressive pressure to patients' limbs to purchaser, without restrictions, the purchaser could replace the sleeves used with the device because reusing the original sleeves was not feasible due to risk of contamination).

90. 121 F.3d 669, 43 U.S.P.Q.2d (BNA)1620 (Fed. Cir. 1997).

91. *Id.* at 673, 43 U.S.P.Q.2d at 1623. "[T]here are a number of factors to consider ... including the nature of the actions by the defendant, the nature of the device and how

time frame, the court has expounded upon some restrictions to the right to repair a patented article, for example, when the replacement amounts to a second creation or when the sale is a conditioned sale.⁹² However, because each case either looks at a different combination of factors or places different weights on the various factors, there remains ambiguity as to the criteria courts use in determining reconstruction versus repair.

This problem of ambiguity is readily seen in the court's discussion of the role of "patentee intent" in *Hewlett-Packard*, as it relates to repair and reconstruction.⁹³ Intent of the patentee has been cited in a number of the court decisions as one of the determinate factors in distinguishing between repair and reconstruction.⁹⁴ In particular, the Federal Circuit in *FMC*

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 developed to manufacture or service that part at issue and objective evidence of the intent of the patentee." *Id.*

92. See *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 709, 24 U.S.P.Q.2d (BNA) 1173, 1180 (Fed. Cir. 1992). The court held that repair of a patented device would be impermissible if it was violating a license for single use, in that any reuse would be infringement. See *id.* The court noted that "[t]he principle of exhaustion of the patent right did not turn a conditional sale into an unconditional one." *Id.* at 706, 24 U.S.P.Q.2d at 1178. Mallinckrodt's patented device was an apparatus for delivery of radioactive material to the lungs of a patient. See *id.* at 702, 24 U.S.P.Q.2d at 1174. The device traps and retains any radioactive exhalate and is marked "Single Use Only." *Id.* The hospital shipped the used manifold assemblies to Medipart, which treated them and replaced the filter, tubing, mouthpiece, and nose clip and shipped them back to the hospital. See *id.* Medipart contends that it was only servicing the apparatus. See *id.* However, the court stated that "when the structure is unlicensed ... the traditional rule is that even repair constitutes infringement." *Id.* at 709, 24 U.S.P.Q.2d at 1180.

In *Universal Elec. Inc. v. Zenith Elec. Corp.*, 846 F. Supp. 641, 30 U.S.P.Q.2d (BNA) 1853 (N.D. Ill. 1994), the court held that the customers did not directly infringe on the patent held by the manufacturer of remote control transmitters when they replaced broken transmitters with transmitters made by other manufacturers. See *id.* at 650, 30 U.S.P.Q.2d at 1860. Replacement of the broken transmitters was not a "second creation" of the patented entity, because the patented entity was a transmitter/receiver combination rather than a transmitter, and there was no evidence that the combination was spent once the transmitter was broken. See *id.* at 640-50, 30 U.S.P.Q.2d at 1859-60. The court also held that "the law of repair is confined to repairing worn or broken parts" and therefore did not extend to replacement of lost remotes. *Id.* at 650, 30 U.S.P.Q.2d at 1860.

93. See *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 123 F.3d 1452, 1453-54, 43 U.S.P.Q.2d (BNA) 1650, 1657-58 (Fed. Cir. 1997).

94. See, e.g., *Wilson v. Simpson* 50 U.S. (9 How.) 109, 125 (1850); *Micromatic Hone Corp. v. Mid-West Abrasive Co.*, 177 F.2d 934, 937, 83 U.S.P.Q. (BNA) 409, 412 (6th Cir. 1949); *Westinghouse Elec. & Mfg. Co. v. Hesser*, 131 F.2d 406, 410, 56 U.S.P.Q. (BNA) 347, 350 (6th Cir. 1942); *Payne v. Dickinson*, 109 F.2d 52, 54, 44 U.S.P.Q. (BNA) 181, 183 (3rd Cir. 1940), *cert. denied*, 310 U.S. 637 (1940); *Electric Auto-Lit Co. v. P & D. Mf. Co.*, 78 F.2d 700, 704 (2d Cir. 1935), *cert. denied*, 56 296 U.S. 648, *reh'g denied*, 296 U.S. 665 (1936); *Aro Mfg. Co. v. Convertible Top Replace-*

Corp. v. Up-Right Inc.,⁹⁵ in declining to establish a bright-line test, stated that it was “unwise, to attempt to lay down any rule” and that each case as it arises “must be decided in light of all the facts and circumstances presented” including “the condition of decay or destruction of the patented device” and the “fair and reasonable intention of the parties.”⁹⁶ However, Judge Lourie throws out HP’s argument that the boundary between ‘permissible repair’ and ‘impermissible reconstruction’ turns on the intention of the patentee. He states “[a]lthough at times speaking in terms of the intention of the inventor, the Court focused on the nature of the device sold.”⁹⁷ However, later in the discussion, Judge Lourie appears to modify his earlier statement about the significance and implications of patentee intent in analyzing repair and reconstruction. In explaining *Sage Products, Inc. v. Devon Industries, Inc.*,⁹⁸ he states that the “patentee’s intent was relevant ... to show that the patentee expected the product to be repaired.”⁹⁹ Inconstant statements, particularly within the same decision, regarding the interpretation of a factor only adds to the confusion about an already nebulous distinction between repair and reconstruction.

Furthermore, the court in *Hewlett-Packard* goes on to say that “[e]ach case turns on its own particular facts, but a seller’s intent, unless embodied in an enforceable contract, does not create a limitation on the right of a purchaser to use, sell, or modify a patented product as long as a reconstruction of the patented combination is avoided.”¹⁰⁰ However, this statement does not address the fact that this right to use, sell, or modify a patented product arises from an implied contract upon the sale of the item.¹⁰¹ And as discussed below, contract interpretation looks to the intent of the parties at the time the contract was formed.¹⁰² HP manifested its intent

ment, 365 U.S. 336, 363-64 (1961) (Brennan, J., dissenting); *Fromberg, Inc. v. Thornhill* 315 F.2d 407, 413, 137 U.S.P.Q. (BNA) 84, 86 (5th Cir. 1963); *Everpure, Inc. v. Cuno, Inc.*, 875 F.2d 300, 303, 10 U.S.P.Q.2d (BNA) 1855, 1857 (Fed. Cir. 1989); *FMC Corp. v. Up-Right Inc.*, 21 F.3d 1073, 1079, 30 U.S.P.Q.2d (BNA) 1361, 1365 (Fed. Cir. 1994); *Sage Products, Inc. v. Devon Industries, Inc.*, 45 F.3d 1575, 1578, 33 U.S.P.Q.2d (BNA) 1765, 1768 (Fed. Cir. 1995); *Aktiebolag v. E.J. Co.*, 121 F.3d 669, 673, 43 U.S.P.Q.2d (BNA) 1620, 1623 (Fed. Cir. 1997).

95. 21 F.3d 1073, 30 U.S.P.Q.2d (BNA) 1361 (Fed. Cir. 1994).

96. *Id.* at 1078-79, 30 U.S.P.Q.2d at 1365.

97. *Hewlett-Packard, Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 123 F.3d 1445, 1453, 43 U.S.P.Q.2d (BNA) 1650, 1657 (Fed. Cir. 1997).

98. 45 F.3d 1575, 33 U.S.P.Q.2d (BNA) 1765 (Fed. Cir. 1995).

99. *Hewlett-Packard, Co.*, 123 F.3d at 1454, 43 U.S.P.Q.2d at 1658.

100. *Id.* at 1453, 43 U.S.P.Q.2d at 1658.

101. See HARMON, *supra* note 59, at 210-11.

102. See generally CORBIN ON CONTRACTS § 536 (West Supp. 1996); *Tin Decorating Co. v. Metal Package Corp.*, 29 F.2d 1006, 1007 (S.D.N.Y. 1928).

that the cartridges were not to be refilled by including a warning to discard old cartridges immediately and disclaiming any printer damage as a result of refilling or reusing the cartridges.¹⁰³ Thus, standard contract interpretation should lead to the conclusion that there was no authorization to undertake this type of modification.

D. Policy Considerations

Likewise, an analysis of the incentives for research and development reveals that the Federal Circuit could have rationalized curtailing the patent exhaustion doctrine and limiting the repair doctrine so as to exclude replacements of new and unworn parts. Protecting intellectual property is "fundamentally about incentives to invest and create" requiring substantial up-front investment and risk.¹⁰⁴

The U.S. Constitution and judicial decisions acknowledge the incentive theory in justifying protection of intellectual property. The Constitution expressly conditions the grant of power in the 'patent clause' on a particular end, namely "to promote the Progress of Science and useful Arts."¹⁰⁵ As the Supreme Court explained in *Mazer v. Stein*,¹⁰⁶ "[t]he economic philosophy behind the clause empowering Congress to grant patents ... is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare."¹⁰⁷ Thus, the government has created intellectual property rights to encourage inventors to invest in the production of new ideas.¹⁰⁸

Some commentators have argued that patent law is fundamental to the American economy, because, without patent law, the free market alone would not provide the incentive necessary to create better products.¹⁰⁹ Invention and creation require the investment of resources, which usually include the time of an inventor, and often expenditures on facilities, prototypes, supplies, and the like. In a private market economy, individuals will not invest in invention or creation unless a reasonable profit over cost

103. See *Hewlett-Packard, Co.*, 123 F.3d at 1453, 43 U.S.P.Q.2d at 1657.

104. See Mark. A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 993-94 (1997).

105. U.S. CONST. art. I, §8, cl. 8.

106. 347 U.S. 201 (1954).

107. *Id.* at 219 (1954) (quoting *United States v. Paramount Pictures, Inc.*, 334 U.S. 131, 158 (1948) and U.S. CONST. art. I, §8, cl. 8).

108. See Lemley, *supra* note 104, at 997.

109. See generally, Nannette Diacovo, *Going Once, Going Twice, Sold: The First Sale Doctrine Defense in Right of Publicity Actions*, 12 U. MIAMI ENT. & SPORTS L. REV. 57 (1994); John W. Schlicher, *If Economic Welfare is the Goal, Will Economic Analysis Redefine Patent Law*, 6 J. PROPRIETARY RTS. 12 (1992).

is expected.¹¹⁰ Patent law, by granting the patentee the right to exclude others from making, using, or selling an invention, provides the incentive to invest in and produce new technology. This investment in and production of new technology creates new jobs and industries, and benefits trade which in turn helps to make the United States economy strong and stable.¹¹¹

Because a primary aim of patent law is to promote progress, courts have held that any arrangement which diminishes the incentive to invent is against the public interest.¹¹² In ruling in ROT's favor to avoid "depriving ROT of the right to use and resell its own property," the court decreased HP's incentives to invest the time in creating superior ink cartridges.¹¹³ This is readily apparent when one considers that ROT, by simply prying off the cap with a knife and modifying it slightly, is allowed under the rubric of repair to not only use the product for its intended use and lifetime but, in addition, is allowed to use the cartridge in excess of its intended life. Thus, ROT is able to reap the financial benefits of HP's investment in time, resources, and research and the profits of HP's anticipated repeat users market with minimal investment of its own resources. This case is not about a small competitor who has made a significant contribution and improvement to an invention and is trying to benefit society by making it available to the public. Rather, ROT seems to be attempting to enter the cartridge market as a free rider on another's significant investments in research, manufacturing, and marketing.

The courts are left with a difficult task of balancing the interests and rights of inventors and purchasers.¹¹⁴ While attempting to strike a balance between these rights, the courts should seek to promote ultimately what is in the public's best interest.¹¹⁵ One might argue that allowing competitors

110. See Lemley, *supra* note 104, at 994.

111. See Paulik v. Rizkalla, 760 F.2d 1270, 1276, 226 U.S.P.Q. (BNA) 224, 228 (Fed. Cir. 1985); see generally *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470 (1974) (discussing how patent law promotes progress, new products, and new processes of manufacturing in the United States economy which in turn creates better lives for United States citizens).

112. See *Transparent-Wrap Machine Corp. v. Stokes & Smith Co.*, 329 U.S. 637, 646 (1947).

113. *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 123 F.3d 1445, 1454, 43 U.S.P.Q.2d (BNA) 1650, 1658 (Fed. Cir. 1997).

114. The courts must guard against two extremes which are potentially equally prejudicial—the one, of depriving inventors of ability of their just merits and the reward of their ingenuity and labor, the other, of depriving a purchaser of his right to use, repair, and resell a product.

115. See *supra* notes 105 and 106.

to enter the market will spur innovation. In turn, this will result in better products at reduced prices or, at a minimum, provide extended use of an existing product and thereby provide a cost savings for the consumer.¹¹⁶

However, in the instant case, whether ROT's modification was an improvement at all is questionable. In spite of its patent on the modification technique and resultant cartridges, Judge Smith stated during the TRO hearing "[y]ou have modified the product as far as I can tell. Whether you've modified it to make it better or worse, I don't know."¹¹⁷ In addition, HP expressly warns on its instruction sheet that use of the ink cartridges, in this manner, may result in inferior print quality and damage to the printer.¹¹⁸ At the very least, ROT's modification is unlikely to be considered a radical improvement when compared to the ink-jet printing technology developed by HP. And yet, by holding that this type of modification is permissible repair, HP's incentive to design a superior product to last at least the life of the ink supply is decreased, while their incentive to raise prices, to recoup anticipated market losses, or to make an equal return on investment, is increased. Thus, decisions of this type which uphold the patent exhaustion doctrine without considering the public's best interest, the impact on incentives to invent, and whether the goals for establishing such a doctrine in the first place are being met, in the long term may result in inferior products at higher prices to the significant detriment of the public.

Another policy justification for limiting the scope of the repair doctrine under the facts of this case follows from the underlying rationale behind the first sale doctrine in patent law, the "just rewards" theory.¹¹⁹ Un-

116. See generally, Robert McGee, *An Economic Analysis of Protectionism in the United States with Implications for International Trade in Europe*, 26 GW J. INT'L L & ECON. 539 (1993); David Crane, *The New International Competitive Environment: A Canadian Perspective*, 21 CAN. - U.S. L.J. 15 (1995).

117. *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.*, 34 U.S.P.Q.2d (BNA) 1450, 1451 (N.D. Cal. 1995).

118. As a result of the use of refilled cartridges and ink-refill products, HP has received numerous complaints from its customers regarding damage inflicted or poor performance caused by these products. See Brief for Appellant at 12, *Hewlett-Packard Co. v. Repeat-O-Type Stencil Mfg. Corp.* 43 U.S.P.Q.2d 1650 (Fed. Cir. 1997) (No. 96-1379). Thus, HP has had imposed upon it a financial cost of unanticipated printer repairs and an intangible cost of an unwarranted sullied reputation with some customers. See *id.*

119. See *Keeler v. Standard Folding Bed Co.*, 157 U.S. 659, 661 (1895) (finding the first sale doctrine to be a viable defense, and that purchaser is free to resell machine without permission from patentee, because once patentee receives satisfactory compensation for his patented machine he has received all rights conferred to him by law). See generally, A. Samuel Oddi, *Un-Unified Economic Theories of Patents - The Not-Quite-*

der this theory, the patentee obtains certain exclusive rights for a limited time as an incentive and reward for inventing a patentable item.¹²⁰ During this time, the patentee can exploit the benefits conferred upon him by, for example, controlling the sale of his product. Upon the sale of a patented product, the value of which resides in its use, the royalty or payment received is considered to be "just reward" for its use.¹²¹ The question, then, is whether HP received, from the sale of the ink-jet cartridges to ROT, the value residing in the use of the cartridges. The Federal Circuit, when analyzing this case, does not directly address this issue.¹²² HP likely calculated into their selling price of the cartridges the useful life-expectancy of the cartridges as single use only, manufacturing costs, anticipated sales to new customers, and the repeat sales market. Upon setting a price based on a one-time use of the ink-jet cartridge, the selling price for the cartridge would not reflect multiple uses of the product and therefore HP, upon the sale of its cartridges, may not have received the value which resides in the multiple use of the cartridge sold. Thus, applying the first sale doctrine under these circumstances may not capture the intent of the doctrine. Instead, the application of the just rewards doctrine may better accomplish these goals.

Furthermore, while the first sale doctrine may remove a product from the patent monopoly, this does not preclude a conditional grant on the sale of the item.¹²³ Recently, the Federal Circuit confirmed that a "restriction on reuse is, as a matter of law enforceable."¹²⁴ While the unconditional sale of a patented product may exhaust the patentee's right regarding the product, the court also stated that "the principle of exhaustion of the patent

Holy Grail, 71 NOTRE DAME L. REV. 276 (1996); WARD S. BOWMAN JR., PATENT ANTITRUST LAW: A LEGAL AND ECONOMIC APPRAISAL (1971).

120. See 35 U.S.C. § 154(a)(2) (1997).

121. See *Keeler*, 157 U.S. at 661.

122. Although the Federal Circuit cites the Supreme Court decision in *Wilbur-Ellis Co. v. Kuther*, 377 U.S. 422 (1964) as support for their contention that ROT's modification is more kin to repair, the Federal Circuit does not address the fact that first, the parts in *Wilbur-Ellis Co.* were worn and secondly, that the modification made to the packing machine did not extend the useful capacity of the old combination in terms of useful lifespan. In *Wilbur-Ellis*, the modification only extended the scope as to size of can serviced and, as the can size was not part of the patented invention, there was no infringement. See *id.* at 424-25. However, as stated earlier the cap on the ink-jet cartridge was not worn and ROT's modification did extend the useful capacity of the sealed cartridge in terms of its lifespan.

123. See WILLIAM C. ROBINSON, THE LAW OF PATENTS FOR USEFUL INVENTIONS § 591-92, n.3; *id.* § 813.

124. *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 709, 24 U.S.P.Q.2d (BNA) 1173, 1180 (Fed. Cir. 1992).

right does not turn a conditional sale into an unconditional one."¹²⁵ Because the sale of a patented product evokes an implied license, the scope of the license is determined from the circumstances surrounding its creation and the intention of the parties.¹²⁶ The court determined that the basis for assessing the legality of an individual restriction is the "rule of reason" as related to the patentee's right to exclude from all or part of the patent grant.¹²⁷

In *Mallinckrodt*, the patented devices were clearly marked "Single Use Only."¹²⁸ While not as explicit, HP indicated that its cartridges were intended for "single use only," by placing a notice on the accompanying instructions that the cartridges were not meant to be refilled, warning against damages as a result of refilling, and advising the user to "discard old print cartridges immediately."¹²⁹ It is difficult, in light of these facts, to imagine that HP would intend for anyone buying its product to eliminate its market share by making a 'single use' product into a refillable and reusable product.¹³⁰ By reaching its conclusion, the court ignored the intent of HP at the time the agreement for the sale of its product was made. Ignoring intent flies in the face of contract interpretation principles.¹³¹ Using similar analysis, but applied to the reverse scenario, the court in *Everpure, Inc. v. Cuno, Inc.*¹³² stated that the purchasers had an implied license to use a filterhead with replacement cartridges.¹³³ The patentee, even though not expressly licensing the use, clearly did not intend the unit to be limited to the useful life of the filter element as evidenced by his own selling of replacement cartridges. Unlike the patentee in *Everpure*, HP does not sell replacement ink for their cartridges and does intend, as indicated by both their actions and statements, the unit to be limited to the useful life of the ink. The court could have reasonably held on the facts of this case that the

125. *Id.* at 706, 24 U.S.P.Q.2d at 1178.

126. *See Tin Decorating Co. v. Metal Package Corp.*, 29 F.2d 1006, 1007 (S.D.N.Y. 1928).

127. *See Mallinckrodt*, 976 F.2d at 706, 24 U.S.P.Q.2d at 1178. In *Mallinckrodt*, the patented devices, were clearly marked "Single Use Only," and sold directly to hospitals. *See id.* at 702, 24 U.S.P.Q.2d at 1174.

128. *Id.* at 702, 24 U.S.P.Q.2d at 1174.

129. *See Hewlett-Packard*, 123 F.3d at 1448, 43 U.S.P.Q.2d at 1653.

130. Indeed, as a consequence of this decision, one might reasonably expect HP's cartridge prices to change to compensate for the fact that some uses will now be multiple uses.

131. *See generally* CORBIN ON CONTRACTS § 536 (West Supp. 1996).

132. 705 F. Supp. 725 (D. Conn. 1988).

133. *Id.* at 732.

sale of the cartridges was conditional, and thereby limited ROT's use of the cartridges.

A ruling that making a modified ink-jet cartridge from a new and unused cartridge is not infringement but only repair when the modified cartridge falls within the scope of the patent claims of the unused cartridge, now allows any company which could not get or did not want to pay for a license to circumvent HP's patents and deprive HP of its market. This ruling limits the exclusive rights of the patentee as to the *making* of its patented product and makes insecure the scope of the patentee's grant of exclusion. A patentee with a product that can potentially be modified for repeat or extended use will need to consider the contingency that someone will come along and buy their product, incorporate such a modification, and sell the resultant product under the guise of repair, even though it falls within the scope of their claims. Thus, the initial inventor will need to either price their product anticipating a loss in market share, in the event that this occurs, or rethink their patent strategy when applying for patents.

The problem with rethinking one's patent strategy to account for this contingency is that this requires the initial inventor to anticipate not only what improvements will be made, but also how these improvements will be used against them. Generally, such improvements are patented and used as blocking patents.¹³⁴ The improvement patent grants exclusivity over its discrete subject matter while preserving the exclusionary force of the broad pioneer patent. This provides both sides with leverage to negotiate a transaction. Blocking patents balance the incentives for pioneers with the incentives for independent inventors to push pioneering technology forward.¹³⁵ However, the ruling in *Hewlett-Packard* distorts the balance between improver-pioneer bargaining. The person with the infringing blocking patent has the benefit of using the item and preventing the original patentee from using the improvement. This places the pioneering inventor at a competitive disadvantage and rebalances the competing interests of the patent grant by giving more weight to the interest of the improver than to the original patentee. Thus, the improver is now free to use and sell his improved product without the pioneering inventor being able to use the improvement even though the improvement is within the scope of his claims.

134. For example, see *Standard Oil v. United States*, 283 U.S. 163 (1931); *International Mfg. Co. v. Landon, Inc.*, 336 F.2d 723, 142 U.S.P.Q. (BNA) 421 (9th Cir. 1964).

135. See, Robert Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75 (1994); WARD S. BOWMAN, JR., PATENT AND ANTITRUST LAW 201 (1973) (describing the economic forces that drive the holders of blocking patents together).

V. CONCLUSION

It remains to be seen whether the courts will continue to uphold this expansion of the repair doctrine to include repair of non-worn components of a patented combination. Expansion of this type impacts the exclusivity of a patentee's remaining rights upon the sale of a patented product, the incentives to invent and create, and the balance of blocking patent. The traditional operable repair and reconstruction standards served to limit the grant of implied license upon sale to protect the patentee's rights to control the *making* of his product. The court in *Hewlett-Packard* rebalanced the competing interests of the patent grant, giving more weight to the interests of the improver. The goals of patent protection would be better served by restraining the scope of repair to encompassing items that are worn, used, or broken, and analyzing construction of a product from new materials under a different standard.

However, until the courts or Congress rule otherwise, perhaps the decision in *Mallinckrodt* indicates the best means of protection for the patentee in HP's situation. The patentee should expressly limit the power of the licensee when entering into any licensing agreement, express or implied. Further support that this might be an effective means of protection is provided by *B. Braun Medical, Inc. v. Abbott Laboratories*,¹³⁶ where the Federal Circuit following their decision in *Mallinckrodt* stated

exhaustion doctrine ... does not apply to an expressly conditional sale In such a transaction, it is more reasonable to infer that the parties negotiated a price that reflects only the value of the 'use' rights conferred by the patentee. As a result, express conditions accompanying the sale ... of a patented product are generally upheld.¹³⁷

For HP, this could probably be accomplished by placing notice on the outside packaging of its cartridges stating "for single use only." Placing express notice on the outside of its cartridge boxes would not necessarily prevent ROT from making the modifications and selling the cartridges. However, express notice upon sale would shift the burden to ROT to justify a substantially non-infringing use for modifying the cartridge to have a removable cap.

136. 124 F.3d 1419, 43 U.S.P.Q.2d (BNA) 1896 (Fed. Cir. 1997).

137. *Id.* at 1426, 43 U.S.P.Q.2d at 1901.

