NOTE

Fix Me: Copyright, Antitrust, and the Restriction on Independent Repairs

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 J.D. Candidate, University of California Davis School of Law, 2019. I would like to thank Dean Mahdavi Sunder and Senior Notes and Comments Editor Remington Lamons for their valuable guidance and insight. I could not have written this Note without the writer's intuition of my beloved partner Alexandra, and the unending love and support from my mom, Teeba, Elena, Mellad, and Henry. This Note is dedicated to you.

INTRODUCTION

Before the advent of software-embedded technology, repairing a tractor was straightforward if one knew how to do it. A farmer could diagnose the problem, buy a new part from a local shop, and perform the repair. Today, however, software is embedded in devices that were once strictly mechanical, including farming equipment. Tractor repairs now have an added layer of digital complexity, requiring diagnostic software to fully fix any problems. To further complicate the issue, the only way to acquire diagnostic software is from either the manufacturer or a licensed repair provider answering directly to the manufacturer. This leaves the repair-savvy farmer with a new problem. If something goes wrong with a piece of equipment in the middle of a work day, a farmer cannot simply fix the broken part and continue working. She must bring the tractor to a licensed repair facility and pay a fee to have the software reset, regardless of whether she could otherwise successfully perform the repair.[1]

Manufacturers retain exclusive rights to diagnostic software and repair tools. They severely reduced licensing these rights to third parties or have outright revoked these licenses, in an attempt to position themselves as the only available repair provider. In the case of the farmer with broken equipment, this restriction severely hampers her ability to maintain her livelihood.

Farming technology is not the only place where manufacturers seek to maintain control over the third-party repair market. For consumer electronics, the high price and difficulty of repair encourages an environmentally damaging practice of throwing out and replacing electronics, rather than long-term maintenance of the device.[2] The manufacturers have effectively created a monopoly on repairs by shutting out independent third parties. However, federal and state legislators have taken notice.

There is a history of attempts to enact broad legislation targeted at repairs in a variety of industries at the federal and state level.[3] Federal

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[1] Kyle Wiens, *New High-Tech Farm Equipment Is a Nightmare for Farmers*, WIRED (Feb. 5, 2015, 7:00 AM), https://www.wired.com/2015/02/new-high-tech-farm-equipment-nightmare-farmers/.

[2] *See, e.g.*, Syed Faraz Ahmed, *The Global Cost of Electronic Waste*, ATLANTIC (Sept. 29, 2016), https://www.theatlantic.com/technology/archive/2016/09/the-global-cost-of-electronic-waste/502019/ (discussing the hazardous effects of electronic waste).

[3] *See, e.g.*, H.R. 1449, 112th Cong., 1st Sess. (2011); *Right to Repair Act Introduced into 112th Congress with Bipartisan Support*, CISION PR NEWSWIRE (Apr. 11, 2011, 1:00 PM), http://www.prnewswire.com/news-releases/right-to-repair-act-introduced-into-

efforts largely failed due to aggressive manufacturer lobbying; these lobbying efforts often killed those bills very early in the legislative process.[4] However, the state of Massachusetts has had one major victory in the area of automotive repair in recent history.[5] In 2011, Massachusetts successfully passed a "right to repair" bill targeted at automobile manufacturers.[6] Every automobile manufacturer in the country subsequently promised to adhere to the requirements in this legislation, making it a de-facto nationwide standard for automotive repair and independent repair shops.[7]

Eighteen states have introduced broader "right to repair" bills in recent years, working from the momentum of the Massachusetts automotive "right to repair" bill.[8] The collective purpose of the proposed legislation is to prevent a monopoly by compelling manufacturers to make parts, diagnostic software, and repair tools freely available to individuals and independent repair shops.[9] Some of the bills focus on consumer electronics and software, and others are tailored to address agricultural equipment.[10] Some manufacturers that oppose "right to repair" legislation and advocacy efforts claim that limiting access to diagnostic software and tools is a valid exercise of their copyright.[11] They argue that any law compelling them to grant

112th-congress-with-bipartisan-support-119609714.html.

[4] *See, e.g.*, Scott Sturgis, *A Mechanic's Laptop Makes Manuals All but Obsolete*, N.Y. TIMES (Jan. 28, 2007), https://query.nytimes.com/gst/fullpage.html?res=9505E1D6163FF93BA15752C0A9619C8B63&sec=&spon=&pagewanted=1; *H.R. 1449 (112th): Motor Vehicle Owners Right to Repair Act of 2011*, GOVTRACK, https://www.govtrack.us/congress/bills/112/hr1449 (last visited Oct. 4, 2017).

[5] S.B. 104, 187th Gen. Court, Reg. Sess. (Mass. 2011); *see also* Kyle Wiens, *You Gotta Fight for Your Right to Repair Your Car*, ATLANTIC (Feb. 13, 2014), https://www.theatlantic.com/technology/archive/2014/02/you-gotta-fight-for-your-right-to-repair-your-car/283791/ [hereinafter *You Gotta Fight*].

[6] Mass. S.B. 104.

[7] *See* Wiens, *You Gotta Fight*, *supra* note 5.

[8] *See* Julia Bluff, *8 States Have Introduced Right to Repair Legislation, Apple to Oppose*, IFIXITORG (Feb. 16, 2017), https://ifixit.org/blog/8780/apple-right-to-repair/ (noting that Illinois, Kansas, Nebraska, Wyoming, Tennessee, New York, Massachusetts, and Minnesota have introduced right to repair bills); Jason Koebler, *The Right to Repair Battle Has Come to Silicon Valley*, MOTHERBOARD (Mar. 7, 2018, 2:25 PM), https://motherboard.vice.com/en_us/article/8xdp94/right-to-repair-california-bill.

[9] *See generally* Emily Matchar, *The Fight for the "Right to Repair,"* SMITHSONIAN.COM (July 13, 2016), http://www.smithsonianmag.com/innovation/fight-right-repair-180959764/.

[10] *See, e.g.*, H.B. 0199, 64th Leg., Reg. Sess. § 1(e)(2) (Wyo. 2017); L.B. 67, 105th Leg., 1st Sess. § 3(b)(3) (Neb. 2017).

[11] *See, e.g.*, Jason Bloomberg, *John Deere's Digital Transformation Runs Afoul of Right-To-Repair Movement*, FORBES (Apr. 30, 2017, 12:03 PM), https://www.

access to diagnostic software and tools would violate their copyright.[12] For example, John Deere argues that their licensing restriction on repairs is a consumer protection measure to prevent hazards resulting from improper repair.[13] Apple has made similar arguments, arguing that restrictions on repair keep their phones "secure" and protect consumers.[14] No manufacturer has yet conceded to waiver of all liability for consumers from third-party repairs in lieu of maintaining control over repairs.[15] They instead seem more intent on preserving this apparent threat to consumers as a justification for continuing to control the repair market.[16]

The manufacturers' conduct sends a clear signal to consumers: they want to be the sole entities reaping the financial benefits of providing repairs by forcing competition out of the market for repairs. Furthermore, they intend to implement practical and legal measures to preclude consumers from providing their own repairs on the products they own. This Note argues that the conduct and business practices of these manufacturers violates copyright and antitrust protections designed to deter exactly this kind of conduct. Part I introduces background information on the analogous provisions in the state bills, and the challenges they currently face. Part I also introduces the three primary legal arguments for "right to repair" legislation and discusses how existing statutory exceptions have proven inadequate as a legal remedy for "right to repair" advocates. Part II outlines the copyright misuse doctrine and argues that the manufacturers are engaged in such misuse through the overreaching exercise of their copyright. Part III discusses the fair use doctrine and applies it to the "right to repair" context as a defense for consumers and independent repair providers. Part IV delineates applicable federal antitrust laws and argues that the manufacturers' conduct rises to the level of an "attempt to monopolize" under antitrust laws. Part V concludes by proposing

forbes.com/sites/jasonbloomberg/2017/04/30/john-deeres-digital-transformation-runs-afoul-of-right-to-repair-movement/#50bc2a45ab99.

[12] *Id.*

[13] Jason Koebler, *Source: Apple Will Fight 'Right to Repair' Legislation*, MOTHERBOARD (Feb. 14, 2017, 2:09 PM), https://motherboard.vice.com/en_us/article/mgxayp/source-apple-will-fight-right-to-repair-legislation [hereinafter *Apple Will Fight*].

[14] *See, e.g.*, Adam Minter, Commentary, *Dismantle Apple's Strangehold on iPhone Repairs*, CHI. TRIB. (Feb. 16, 2016, 3:03 PM), http://www.chicagotribune.com/news/opinion/commentary/ct-apple-iphone-repairs-20160216-story.html [hereinafter *Dismantle Apple's Strangehold*].

[15] *See, e.g.*, *id.*

[16] *Id.*

policy justifications for manufacturers to grant free access to repair materials and to open the market for independent repair providers.

I. BACKGROUND

A. The Massachusetts Automotive Repair Act and Proposed "Right to Repair" Legislation

The proposed "right to repair" bills pending in the eighteen states are based on the landmark Massachusetts Automotive Repair Act.[17] The Automotive Repair Act requires manufacturers to make diagnostic manuals, schematics, tools, and software freely available in a standardized format for a reasonable price.[18] Shortly after Massachusetts adopted the law, the Alliance of Automobile Manufacturers, Association of Global Automakers, and two other aftermarket repair groups signed a memorandum promising to self-regulate and adhere to the requirements in the Automotive Repair Act on a nationwide scale.[19] These groups represent nearly every major automobile manufacturer operating in the United States.[20] After this decision, independent repair providers like Jiffy Lube and AutoZone had access to parts, tools, and diagnostic software with a universal, standardized hardware interface.[21] In exchange for the automobile manufacturers' national adoption of the requirements in the Massachusetts law, independent automotive repair garages and shops agreed to stop lobbying for federal "right to repair" legislation.[22]

Legislators identified similar concerns in the context of consumer electronics repairs and automotive repairs. Both products have extensive markets for third-party and after-market repairs and both of these markets are at the whim of the manufacturers to provide the

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[17] *See* Wiens, *You Gotta Fight*, *supra* note 5.

[18] S.B. 104, 187th Gen. Court, Reg. Sess. § 2 (Mass. 2011).

[19] Gabe Nelson, *Automakers Agree to 'Right to Repair' Deal*, AUTOMOTIVE NEWS (Jan. 25, 2014, 12:01 AM), http://www.autonews.com/article/20140125/RETAIL05/301279936/automakers-agree-to-right-to-repair-deal. The intent here was to self-regulate, rather than subject themselves to increased state regulation.

[20] *See Our Members*, GLOBAL AUTOMAKERS, https://www.globalautomakers.org/about/our-members (last visited Sept. 26, 2018); *We Are the Voice for a United Auto Industry*, AUTO ALLIANCE, https://autoalliance.org/about-the-alliance/ (last visited Oct. 5, 2017).

[21] *See* Clifford Atiyeh, *Automakers Agree to Fix Your Car Anywhere in "Right to Repair" Pledge*, CAR & DRIVER (Jan. 29, 2014, 12:49 PM), https://blog.caranddriver.com/automakers-agree-to-fix-your-car-anywhere-in-right-to-repair-pledge/.

[22] *See* Nelson, *supra* note 19.

parts and information to perform those repairs.[23] Thus, many of the provisions shared by the proposed "right to repair" bills were adapted from the Massachusetts Automotive Repair Act for the consumer electronics context (or, in the case of Kansas and Wyoming, farming equipment).[24] Every bill requires repair information, like manuals, schematics, or diagrams, to be available in a standardized format.[25] The bills prevent electronics manufacturers from providing this information in a proprietary format inaccessible to independent repair providers.[26] Parts with necessary firmware and software updates must be available for purchase at "fair and reasonable" terms.[27] Electronics manufacturers must make all necessary repair tools and diagnostic software available so independent shops can effectively service their devices.[28] The "right to repair" bills also have provisions specifically excluding automobile manufacturers.[29] Automobile manufacturers are excluded because of the aforementioned agreement to the provisions of the Massachusetts Automotive Repair Act; their exclusion from the bills is both a compromise to avoid redundancy, and an effort to recognize their adherence to the Massachusetts Act.[30] Finally, the bills grant the state attorney general the ability to fine or seek an injunction against a manufacturer if it fails to comply with the legislation.[31] Taken together, these elements provide a strong first draft toward a comprehensive solution to the growing monopoly in the repair market.

Manufacturers of consumer electronics and software-embedded farming equipment have responded to these bills with fierce resistance.[32] They argue that these laws violate their copyright and

[23] *See* Bluff, *supra* note 8; Wiens, *You Gotta Fight*, *supra* note 5.

[24] *Compare* H.B. 2122, 2017 Leg., Reg. Sess. § 2(b) (Kan. 2017), *and* H.B. 0199, 64th Leg., Reg. Sess. § 1(a) (Wyo. 2017), *with* S.B. 104, 187th Gen. Court, Reg. Sess. (Mass. 2011).

[25] *See, e.g.*, H.B. 3030, 100th Gen. Assemb., Reg. Sess. § 10(a)(1) (Ill. 2017).

[26] *Id.* §10(b).

[27] Kan. H.B. 2122 § 3(a)(2).

[28] L.B. 67, 105th Leg., 1st Sess. § 3(b)(3) (Neb. 2017).

[29] H.B. 1382, 2017 Gen. Assemb. § 5(4) (Tenn. 2017).

[30] *See* Nelson, *supra* note 19.

[31] S. 618B, 2017 Leg., Gen. Sess. § 1(11)(a) (N.Y. 2017).

[32] *See, e.g.*, Karl Bode, *Apple, Verizon Join Forces To Lobby Against New York's 'Right to Repair' Law*, TECHDIRT (May 23, 2017, 10:41 AM), https://www.techdirt.com/articles/20170522/06182037417/apple-verizon-join-forces-to-lobby-against-new-yorks-right-to-repair-law.shtml; Jason Koebler, *Apple Is Lobbying Against Your Right to Repair iPhones, New York State Records Confirm*, MOTHERBOARD (May 18, 2017, 5:00 AM), https://motherboard.vice.com/en_us/article/nz85y7/apple-is-lobbying-against-your-right-to-repair-iphones-new-york-state-records-confirm [hereinafter *Apple Is Lobbying*].

endanger their customers.[33] For example, Apple argues against allowing consumers to repair their own phones because it would create safety issues, such as a lithium battery fires.[34] John Deere argues that allowing people to make alterations to their software effectively allows "pirates" and other third parties to make a profit on the creativity and expression of their tractor vehicle software.[35] John Deere also argues that regulating the repair market is necessary to maintain emissions standards compliance.[36] Apple, along with other electronics manufacturers, has engaged in lobbying efforts attempting to derail the progress of these bills.[37] Their efforts have begun to slow the bills' momentum in state legislatures, and many laws previously on track for a vote have now been tabled or stalled.[38]

B. Introduction to Legal Arguments Supporting the "Right to Repair"

"Right to repair" advocates have several legal arguments they can use to support their position. These arguments provide common law and statutory safeguards for "right to repair" legislation. The three arguments this Note focuses on are the copyright misuse doctrine, statutory and common law fair use principles, and section 2 of the Sherman Antitrust Act, as they are the most pertinent and the most effective arguments in support of the "right to repair."

The copyright misuse doctrine is recognized as a defense to a copyright infringement claim.[39] The doctrine prohibits manufacturers or corporations from exceeding the scope of their copyrights in order to limit market competition.[40] The classic example from the copyright misuse line of cases is usually a licensing agreement, where a licensor attempts to condition the use of its copyrighted material on the

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[33] *See, e.g.*, Bode, *supra* note 32; Koebler, *Apple Will Fight*, *supra* note 13.

[34] Bode, *supra* note 32.

[35] Kyle Wiens, *We Can't Let John Deere Destroy the Very Idea of Ownership*, WIRED (APR. 21, 2015, 9:00 AM), https://www.wired.com/2015/04/dmca-ownership-john-deere/ [hereinafter *We Can't Let John Deere*].

[36] Letter from Thomas E. Iles, Dir. of State Pub. Affairs, John Deere (Feb. 14, 2017), https://www.scribd.com/document/339340098/John-Deere-letter#.

[37] *See* Olivia Solon, *Under Pressure from Tech Companies, "Fair Repair" Bill Stalls in Nebraska*, GUARDIAN (Mar. 11, 2017, 12:33 PM), https://www.theguardian.com/us-news/2017/mar/11/nebraska-farmers-right-to-repair-bill-stalls-apple.

[38] *See, e.g.*, Margaret Sessa-Hawkins, *Farmers Face Uphill Battle in Right to Repair Tractors*, CIVIL EATS (June 6, 2017), https://civileats.com/2017/06/06/in-the-fight-over-the-right-to-repair-tractors-farmers-face-an-uphill-battle/; Solon, *supra* note 37.

[39] Lasercomb Am., Inc. v. Reynolds, 911 F.2d 970, 972-74 (4th Cir. 1990).

[40] *Id.* at 977.

licensee's exclusive use of its copyright, and a prohibition on the licensee's use of other third-party copyrighted material.[41] This type of conditional use effectively functions as an instrument for monopolizing the market. It is an attempt to restrict competition at the user level.[42] Circuit courts have held that this type of conduct constitutes copyright misuse.

Fair use of the manufacturers' copyright is another argument independent repair providers can rely on.[43] Fair use is the non-infringing use of copyrighted material for the purposes of criticism, comment, news reporting, teaching, scholarship, or research.[44] Circuit courts extended fair use rights to protect deconstructing hardware and copying software to reverse engineer for study.[45] This rationale is poised for extension into the "right to repair" context.

Finally, advocates can argue that manufacturers' restrictions on the repair market constitute an "attempt to monopolize" in violation of section 2 of the Sherman Antitrust Act. An "attempt to monopolize" claim requires a showing that the manufacturer or other entity had specific intent to monopolize, engaged in anti-competitive conduct, and had a dangerous probability of success.[46] The manufacturers' practices of withholding parts and software from independent repair shops and revoking repair licenses has been characterized as an attempt to monopolize.[47] This rationale will be strengthened as manufacturers continue to restrict the third-party repair market.

C. Insufficient Statutory Exemptions in Existing Copyright Law

Presently, the Copyright Act grants some black letter exceptions regarding copyright software and repair activity that benefit repair providers, albeit in a limited way. These exceptions are nowhere near the blanket exceptions suggested by the Copyright Office in a recent memorandum.[48] The Copyright Act of 1976 created section 117,

[41] *See, e.g.*, Alcatel USA, Inc. v. DGI Techs., Inc., 166 F.3d 772, 777 (5th Cir. 1999); Practice Mgmt. Info. Corp. v. AMA, 121 F.3d 516, 521 (9th Cir. 1997).

[42] *See Alcatel*, 166 F.3d at 777.

[43] *See generally* 17 U.S.C. § 107 (2018).

[44] *Id.*

[45] *See, e.g.*, Sega Enter. v. Accolade, Inc., 977 F.2d 1510, 1520-21 (9th Cir. 1992).

[46] 15 U.S.C. § 2 (2018); *see, e.g.*, Abbott Labs. v. Brennan, 952 F.2d 1346, 1354 (D.C. Cir. 1991).

[47] *See generally* Joseph P. Bauer, *Antitrust Implications of Aftermarkets*, 45 ANTITRUST BULL. 31 (2007).

[48] *See generally* U.S. COPYRIGHT OFFICE, SOFTWARE-ENABLED CONSUMER PRODUCTS 1, 31-41 (2016), https://www.copyright.gov/policy/software/software-full-report.pdf.

which prohibits copying on "automatic systems capable of storing . . . information."[49] Title III of the Digital Millennium Copyright Act ("DMCA") expanded this section to allow non-copyright holders to copy computer software for maintenance and repairs.[50] However, section 117 enumerates two conditions on creating a software copy for repair purposes.[51] First, individuals performing repairs may not access aspects of the software not required for repair.[52] Second, the software copy must be destroyed after the repair is complete.[53] However, manufacturers have undermined section 117(c) by introducing software locks into their programs that prevent unauthorized individuals from creating copies.[54] Because circumvention of software locks is illegal under 17 U.S.C. section 1201(a), the exception in section 117 has effectively been sidestepped.[55]

However, section 1201 does grant the Librarian of Congress fairly broad authority to grant exceptions to the statute and allow non-copyright holders to bypass software locks.[56] An exception expires after three years unless it is successfully renewed during the Copyright Office's next rulemaking cycle.[57] The Librarian typically grants narrow exceptions, limited to specific use cases.[58] Examples relevant to the repair context include exceptions for bypassing software locks in internet routers and diagnostic software for automobiles.[59] However, these exceptions are functionally too narrow because they apply only in specific contexts; an exception for software in a network router

[49] Copyright Act of 1976, S. 22, 94th Cong. § 117 (1976).

[50] 17 U.S.C. § 117(c) (2018).

[51] *See id.* § 117(c)(1)-(2).

[52] U.S. COPYRIGHT OFFICE, THE DIGITAL MILLENNIUM COPYRIGHT ACT OF 1998: U.S. COPYRIGHT OFFICE SUMMARY 13-14 (1998), https://www.copyright.gov/legislation/dmca.pdf.

[53] *Id.*

[54] *See* Realnetworks, Inc. v. DVD Copy Control Ass'n, 641 F. Supp. 2d 913, 943-44 (N.D. Cal. 2009) (considering, but ultimately denying, the application of fair use to copied software due to software locks). *But see* U.S. COPYRIGHT OFFICE, SECTION 104 REPORT 73-74 (2001), https://www.copyright.gov/reports/studies/dmca/sec-104-report-vol-1.pdf (concluding that the prohibition on circumvention of software locks in 17 U.S.C. § 1201 does not have a significant effect on copies made under 17 U.S.C. § 117). *See generally* Brett Glass, *What Does DRM Really Mean?*, PC MAG. (Apr. 8, 2003, 12:00 AM EST), https://www.pcmag.com/article2/0,2817,1164013,00.asp.

[55] 17 U.S.C. § 1201(a)(1)(A) (2018).

[56] *See id.* § 1201(a)(1)(D).

[57] Maria Scheid, *New DMCA Exemptions*, COPYRIGHT CORNER (Dec. 30, 2015), https://library.osu.edu/blogs/copyright/2015/12/30/new-dmca-exemptions/.

[58] *See id.*

[59] *See* Exemption to Prohibition on Circumvention of Copyright Protection Systems, 37 C.F.R. § 201.40(b)(3)-(6) (2015).

does not apply to software in a cellular phone.[60] Thus, one possible solution, within the confines of the current system, can be a broad and more general exception for repairs from the Librarian of Congress.

A broader exception would grant repair providers more latitude to perform repairs because they would avoid liability under section 1201. One effective broad exception would allow non-copyright holders to copy diagnostic software and create their own "white box"[61] testing and repair environment. A "white box" is a test environment created by copying and exposing the inner workings of that software.[62] It allows someone to modify or repair the software in a digital environment where aspects of the software can be easily changed and tested.[63] A "white box" exception would allow more effective dissection, modification, and repair of software embedded in cell phones and other hardware devices.

Although broad within the context of section 1201, ultimately, something like a "white box" exception solves problems only in the narrow context of repair and modification of software. The Librarian continually avoids granting broad exceptions for fear of potential abuse.[64] As a result, the existing exceptions have proven unwieldy and ineffective because their narrowness prevents repair providers from doing their job while completely avoiding liability.[65] Many critics argue for longer-term exceptions and call the current three-year length of exceptions "ridiculous" because they create unnecessary hoops non-copyright holders must continuously jump through to maintain their

[60] *See id.*; *see also* Sarah Jeong, *Why DMCA Rulemaking Is an Unsustainable Garbage Train*, MOTHERBOARD (Nov. 3, 2015, 9:00 AM), https://motherboard.vice.com/en_us/article/9a33wv/why-dmca-rulemaking-is-an-unsustainable-garbage-train.

[61] *See White Box Testing*, SOFTWARE TESTING FUNDAMENTALS, http://softwaretestingfundamentals.com/white-box-testing/ (last visited Mar. 27, 2018) (defining white box).

[62] *See* Garish Janardhanudu & Ken van Wyk, *White Box Testing*, US-CERT, https://www.us-cert.gov/bsi/articles/best-practices/white-box-testing/white-box-testing (last visited Oct. 31, 2018).

[63] *See id.*

[64] *See* Jonathan Band, *A New Approach to Copyright Exceptions and Limitations*, ARL POL'Y NOTES (Aug. 18, 2016), http://policynotes.arl.org/?p=1413 ("[T]he exemptions that the Library of Congress has adopted during the course of the triennial rulemaking under section 1201 of the DMCA reflect an unhealthy obsession with possible abuse.").

[65] *See Re:Create Coalition Reacts To Copyright Exemptions Released By The Library Of Congress*, RE:CREATE (Oct. 28, 2015), http://www.recreatecoalition.org/press_release/recreate-coalition-reacts-to-copyright-exemptions-released-by-the-library-of-congress/ [hereinafter *Re:Create*].

exemption.[66] Advocates like the Electronic Frontier Foundation argue that "right to repair" legislation at the state level presents a more concrete opportunity for permanent reform compared to federal solutions like section 1201 exemptions.[67] However, to survive as broader carveouts in copyright law, the proposed state bills require legal justifications beyond the contours granted by the federal copyright statute.[68]

II. COPYRIGHT MISUSE DOCTRINE

Copyright misuse doctrine arose from the language in the United States Constitution protecting intellectual property rights to promote the public good.[69] The groundwork for copyright misuse started with a Supreme Court holding in the patent context.[70] This was the 1940 case of *Morton Salt Co. v. G.S. Suppiger Co*.[71]

A. Development of the Copyright Misuse Doctrine

1. Early Developments: Patent Misuse

The first building block of copyright misuse jurisprudence is the Supreme Court decision in *Morton Salt v. G.S. Suppiger Co.* in 1940.[72] This case involved Morton Salt licensing the use of its salt deposit machine to Suppiger.[73] One condition on the license required Suppiger to only use Morton's salt tablets; it forbid the use of any

[66] *Id.*

[67] *See, e.g.*, Corynne McSherry, *Support the Right to Repair in South Dakota (and Everywhere Else)*, ELECTRONIC FRONTIER FOUND. (Feb. 18, 2014), https://www.eff.org/deeplinks/2014/02/support-right-repair-south-dakota (discussing pending "right to repair" legislation in South Dakota); *see also* Mitch Stoltz, *Copyright Office Proposes Modest Fixes to DMCA 1201, Leaves Fundamental Flaws Untouched*, ELECTRONIC FRONTIER FOUND. (June 28, 2017), https://www.eff.org/deeplinks/2017/06/copyright-office-proposes-modest-fixes-dmca-1201-leaves-fundamental-flaws (arguing that permanent exemption under 17 U.S.C. § 1201 would be a "positive step" towards effective "right to repair" reform).

[68] *Cf.* Bill Snyder, *Surprise! You Don't Own the Digital Devices You Paid For*, CIO (Feb. 10, 2017, 9:50 AM), https://www.cio.com/article/3167861/consumer-electronics/surprise-you-don-t-own-the-digital-devices-you-paid-for.html (discussing the difficulty in defending repair under the current structure of the Copyright Act).

[69] Lasercomb Am., Inc. v. Reynolds, 911 F.2d 970, 975-77 (4th Cir. 1990).

[70] *See e.g.*, Morton Salt Co. v. G.S. Suppiger Co., 314 U.S. 488 (1940).

[71] *Id.*

[72] *Id.*

[73] *Id.* at 490.

third-party salt tablets.[74] Suppiger argued that Morton was misusing its patent to restrain competition of other salt tablet manufacturers.[75] The Supreme Court agreed with Suppiger, and found that Morton improperly used patent rights on articles outside the scope of those patent rights.[76] The Court reasoned that patents were written into the Constitution to promote progress and further the public good by promoting innovation; using patents to create a monopoly was contrary to this constitutional principle.[77] The Court also stated, in *dicta*, that this doctrine of misuse may also be applicable to copyright and trademark because those intellectual property rights are rooted in the same clause in the Constitution.[78] The Court's broad language created an avenue for the misuse doctrine's application in the copyright context.[79]

2. Extending Patent Misuse to the Copyright Context

The Fourth Circuit extended the patent misuse doctrine to the copyright context in *Lasercomb America, Inc. v. Reynolds*.[80] Lasercomb used computer software called Interact that allowed a designer to create a template for a cardboard cutout and direct the creation of a steel rule die.[81] Lasercomb licensed Interact to its competitor, Holiday Steel, prior to Interact's commercial release.[82] The licensing agreement forbade Holiday Steel from directly or indirectly assisting in the creation of any steel rule die manufacturing software for ninety-nine years.[83] Holiday Steel and its employee, Reynolds, appealed from a district court judgment against them, and asserted that Lasercomb had improperly used its copyright when it forbid Holiday from creating its own software.[84] The Fourth Circuit agreed, and denied Lasercomb's copyright infringement claim against Holiday.[85]

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74 *Id.* at 491.

75 *Id.* at 490-91.

76 *Id.* at 491.

77 *Id.* at 492.

78 *See id.* at 493-94.

79 *See* Note, *Clarifying the Copyright Misuse Defense: The Role of Antitrust Standards and First Amendment Values*, 104 HARV. L. REV. 1289, 1292 (1991) ("Morton Salt had made clear that misuse was not limited to conduct illegal under antitrust law.").

80 *See* Lasercomb Am., Inc. v. Reynolds, 911 F.2d 970, 976 (4th Cir. 1990).

81 *Id.* at 971.

82 *Id.*

83 *Id.* at 973.

84 *Id.* at 972.

85 *Id.* at 979.

The Fourth Circuit rooted its copyright misuse analysis in Article I, Section 8 of the Constitution.[86] It made an analogy to the Supreme Court's patent misuse doctrine from *Morton Salt* as a tool for promoting progress and the "public good" and discouraging misuse of intellectual property protections.[87] The Fourth Circuit recognized the relationship of this doctrine to antitrust law, but held that a full antitrust analysis for copyright misuse cases was not necessary.[88] The doctrine does not consider whether the conduct violates antitrust principles.[89] It considers, instead, whether the corporation's conduct is adverse to the public policy and "public good" embodied in the grant of a copyright.[90] Ultimately, the court held that Lasercomb attempted to control the competition by aggressively exercising its software copyright, and therefore misused its software copyright.[91]

3. Copyright Misuse in the Ninth Circuit

In *Practice Management Information Corp. v. AMA*, the defendant, the American Medical Association ("AMA"), created a coding system for doctors to identify medical procedures.[92] These codes were published in the Physician's Current Procedural Terminology ("CPT"), to which the AMA claimed to hold the copyright.[93] The AMA then licensed the CPT codes to Practice Management on the condition that they use the CPT codes exclusively.[94] Practice Management filed a lawsuit, arguing the AMA misused its copyright by requiring exclusive use of its coding system and precluding the use of other systems.[95]

The Ninth Circuit agreed with Practice Management and held the AMA misused its copyright.[96] It reasoned that the AMA's terms, which forbade licensees from using any other coding system, was an improper use of its copyright.[97] The court quoted the *Lasercomb* opinion, holding that the AMA used its copyright "in a manner

[86] *See id.* at 975-77.

[87] *See id.*

[88] *See id.* at 978.

[89] *Id.*

[90] *Id.*

[91] *Id.* at 979.

[92] Practice Mgmt. Info. Corp. v. Am. Med. Ass'n, 121 F.3d 516, 517 (9th Cir. 1997).

[93] *Id.*

[94] *Id.* at 517-18.

[95] *Id.* at 518.

[96] *Id.* at 520.

[97] *Id.* at 521.

violative of . . . public policy."[98] Thus, the Ninth Circuit followed the *Lasercomb* line of reasoning that public policy should be one of the main considerations in determining whether a corporation misused its copyright.[99]

4. Copyright Misuse in the Fifth Circuit

Alcatel USA, Inc. v. DGI Technologies, Inc. concerned Alcatel's copyright over the operating system controlling their telephone switches.[100] DGI studied the device, as well as schematics and owner's manuals provided to Alcatel's customers, to reverse engineer these switches.[101] Alcatel stifled DGI's efforts to enter the market by threatening to issue software patches that killed DGI's switches and voided the warranty of customers who used those switches.[102] Many customers used DGI's switches, which had to bypass Alcatel's software locks to work.[103] Alcatel filed a lawsuit against DGI for several claims, including copyright infringement.[104] The district court found DGI liable for copyright infringement and granted Alcatel an injunction against DGI.[105] However, on appeal, DGI argued that Alcatel was engaged in copyright misuse.[106]

The Fifth Circuit found that Alcatel's licensing agreement was an attempt by Alcatel to misuse its copyright and gain indirect control over copyrights it otherwise did not control.[107] It was irrelevant that Alcatel did not restrict similar software.[108] The "common control," which ran all external software through Alcatel's operating system, created a de-facto monopoly by preventing DGI from developing its own software product.[109] Thus, the Fifth Circuit applied the reasoning of the *Lasercomb* court, and held that this attempt to exert control of another's copyright violated the fundamental "public good"

98 *Id.*

99 *See id.*

100 Alcatel USA, Inc. v. DGI Techs., Inc., 166 F.3d 772, 777 (5th Cir. 1999).

101 *Id.* at 778 (Alcatel gave these manuals to customers on the condition that they do not disclose the information in them to third parties.).

102 *Id.*

103 *See id.* (describing how DGI sold a certain microprocessor with its cards in order to make them compatible with Alcatel's software).

104 *Id.* at 777.

105 *Id.*

106 *Id.* at 793.

107 *Id.* at 793-94.

108 *Id.* at 794.

109 *Id.*

considerations central to the grant of a copyright.[110] Like *Lasercomb* and *Practice Management*, the central question in determining copyright misuse is whether a corporation's conduct ran contrary to this "public good."[111]

B. Application to "Right to Repair" Legislation

At the heart of the copyright misuse doctrine is the idea that a manufacturer cannot use their copyright to extend their influence on objects outside of their copyright.[112] Lasercomb was forthcoming with its intentions to restrict the market in its license agreement.[113] Like Lasercomb, electronics manufacturers targeted by "right to repair" bills are being open about their intentions to restrict the market.[114] They antagonize and coerce consumers and third-party repair providers, and aggressively lobby against "right to repair" legislation.[115]

Consumers are tethered to manufacturers' upselling practices for product repairs.[116] For example, Apple provides a limited warranty covering only manufacturing defects, which Apple rather broadly define as any deviation from technical specifications and user manuals.[117] Apple also sells an extended warranty, called

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[110] *Id.* at 793.

[111] *See id.* at 793-94.

[112] Lasercomb Am., Inc. v. Reynolds, 911 F.2d 970, 976 (4th Cir. 1990).

[113] *See id.* at 973 (Lasercomb's license agreement explicitly restricted the licensee from engaging in development of similar software for ninety-nine years.).

[114] *See, e.g.*, *A "Right to Repair" Movement Tools Up*, ECONOMIST (Sept. 30, 2017), https://www.economist.com/news/business/21729744-tractors-smartphones-mending-things-getting-ever-harder-right-repair-movement ("[F]irms say that restricting repairs . . . helps protect their intellectual property . . . ."); Mike Wuerthele, *"Fair Repair Act" Proposal in New York Under Fire by Apple Lobbyists*, APPLE INSIDER (May 18, 2017, 1:45 PM ET), http://appleinsider.com/articles/17/05/18/fair-repair-act-proposal-in-new-york-under-fire-by-apple-lobbyists (discussing how Apple "has always contended that conducting repairs through authorized outlets like Apple stores and vetted shops provides customers with a consistent experience. Further, Apple notes that an authorized repair network helps the company control and protect its various hardware platforms that users rely on for security and authentication, like Touch ID").

[115] *See* Peter High, *A Recycling Entrepreneur Has Been Sentenced to 15 Months in Prison*, FORBES (June 20, 2017, 9:30 AM), https://www.forbes.com/sites/peterhigh/2017/06/20/a-recycling-entrepreneur-has-been-sentenced-to-15-months-in-prison/#b0bc194362ae; Wuerthele, *supra* note 114.

[116] *See* Shirley Pulawski, *Don't Fall for It: Upsells That Are Not Worth It*, HUFF POST (Oct. 16, 2013, 11:57 AM ET), https://www.huffingtonpost.com/mybanktracker/dont-fall-for-it-upsells-_b_4086210.html.

[117] *Apple One (1) Year Limited Warranty*, APPLE, https://www.apple.com/legal/

AppleCare.[118] It provides some limited increase in services compared to the limited warranty: consumers are allotted up to two narrowly defined, limited repairs, or "service events."[119] After two repairs, the extended warranty "expires."[120] Both the limited warranty and AppleCare warranty are also immediately void if Apple discovers that the device has been "opened, serviced, modified, or altered by anyone other than Apple or an authorized representative."[121] John Deere similarly voids customer warranties when the product has been "altered or modified in ways not approved by John Deere."[122] These unsanctioned activities include repairs done during "normal maintenance."[123] Such warranties signal to the consumer and the independent repair provider that Apple and John Deere want to be the sole entities reaping the financial benefits of providing repair services.[124]

Electronics manufacturers have also implemented multiple design features in their products to discourage or prevent tinkering and repair.[125] Lexmark installed microchips in their printers to prevent the

warranty/products/ios-warranty-document-us.html (last visited Oct. 20, 2017).

[118] *See AppleCare+ for iPhone*, APPLE, https://www.apple.com/legal/sales-support/applecare/applecareplus/docs/applecareplusnaen.html (last visited Oct. 20, 2017) [hereinafter *AppleCare+*]. You cannot purchase AppleCare+ until Apple has run a diagnostic to ensure your device is "eligible." *Check Your Coverage for Service Support*, APPLE, https://checkcoverage.apple.com (last visited Oct. 20, 2017).

[119] *See AppleCare+*, *supra* note 118. Covered repair services are limited to manufacturing defects and drained battery replacements. *See id.* Any repairs caused by accidents require an additional fee, and Apple continues to arbitrarily raise AppleCare+ prices for newer devices. *Id.*

[120] *Id.*

[121] *Id.*; *Apple One (1) Year Limited Warranty*, *supra* note 117.

[122] *Limited Warranty for New John Deere Turf & Utility Equipment*, JOHN DEERE (Oct. 1, 2018), https://www.deere.com/assets/pdfs/common/parts-and-service/warranty-protection-plans/WarrantyUS.pdf.

[123] *Id.*

[124] *See* Juli Clover, *Apple Now Replacing Damaged iPhone 5s Displays in Retail Stores*, MACRUMORS (July 31, 2014, 10:53 AM PDT), https://www.macrumors.com/2014/07/31/apple-replacing-displays-in-stores/; *Limited Warranty for New John Deere Turf & Utility Equipment*, JOHN DEERE (Oct. 1, 2018), https://www.deere.com/assets/pdfs/common/parts-and-service/warranty-protection-plans/WarrantyUS.pdf; *see also New Study Shows Damaged iPhones Cost Americans $10.7 Billion, $4.8B in the Last Two Years Alone*, SQUARETRADE (Sept. 18, 2014), https://www.squaretrade.com/press/new-study-shows-damaged-iphones-cost-americans-10.7billion-4.8b-in-the-last-two-years-alone.

[125] Bill Detwiler, *Five Ways Manufacturers Make Devices Hard to Repair*, TECHREPUBLIC (Aug. 16, 2012), http://www.techrepublic.com/blog/cracking-open/five-ways-manufacturers-make-devices-hard-to-repair/; *see, e.g.*, Lou Carlozo, *10 Electronic Devices That Are Nearly Impossible to Repair*, TECHSPOT (Sept. 23, 2013),

use of third-party cartridges.[126] It filed suit for copyright infringement when another corporation circumvented those microchip locks to allow others to compete in aftermarket printer cartridge sales.[127] In another instance, Apple deliberately changed the screws on their iPhone from universal Philips head screws to proprietary and tamper-proof pentalobe screws with no available screwdriver.[128] These design choices make the product difficult to fix, and do not appear solve an engineering problem or otherwise to improve the product's computing capabilities.[129] These prohibitive design choices are a deliberate attempt to misuse copyright ownership and exert control over the market for repairs.

Apple argues that all these restrictive measures are designed to protect consumers, and avoid possible hazards resulting from improper repairs.[130] However, Apple makes consumer goods, not nuclear weapons. Repairing their products does not require an advanced degree, and many people repair electronics as a hobby.[131] The most common repairs are often simple fixes that the average tinkerer could easily manage: fixing a phone screen, reconnecting a headphone jack, or replacing a battery.[132] Even if one of these fixes

https://www.techspot.com/article/715-unrepairable-electronic-devices/ (describing some of the most difficult to repair electronic devices).

126 Lexmark Int'l, Inc. v. Static Control Components, Inc., 387 F.2d 522, 529 (6th Cir. 2004).

127 *Id.*; *see also* Joe Mullin, *Supreme Court Hears Aftermath of Long-Dead DMCA Printer Cartridge Case*, ARSTECHNICA (Dec. 4, 2013, 6:10 PM), https://arstechnica.com/tech-policy/2013/12/supreme-court-hears-aftermath-of-long-dead-dmca-printer-cartridge-case/.

128 Gabriel Madway, *Apple Tightens the Screws on iPhone 4*, REUTERS (Jan. 21, 2011, 5:11 AM), https://www.reuters.com/article/uk-apple-screws/apple-tightens-the-screws-on-iphone-4-idUSLNE70K02T20110121.

129 *See, e.g.*, *HTC One Teardown*, IFIXIT (Mar. 28, 2013), https://www.ifixit.com/Teardown/HTC+One+Teardown/13494 (critiquing the difficulty of repairing this HTC device because of the design); *see also MacBook Pro 13" Touch Bar 2017 Teardown*, IFIXIT (June 8, 2017), https://www.ifixit.com/Teardown/MacBook+Pro+13-Inch+Touch+Bar+2017+Teardown/92171 (providing a review of an Apple device that states "pentalobe screws continue to make working on the device unnecessarily difficult").

130 *See, e.g.*, Koebler, *Apple Will Fight*, *supra* note 13 (discussing Apple's opposition to "Right to Repair" legislation and argument that "consumers who repair their own phones could cause lithium batteries to catch fire").

131 *See, e.g.*, John Patrick Pullen, *These 5 Kits Can Teach Kids About Computers and Coding*, TIME (Oct. 13, 2015, 10:17 AM ET), http://time.com/4066213/kids-children-technology-sets/; *The Ins and Outs of Electronics Hobbyists' and Their Electronics Projects*, JAMECO ELECTRONICS, https://www.jameco.com/Jameco/workshop/rollcall/ins-and-outs-electronics-hobbyists-electronics-projects.html (last visited Oct. 20, 2017).

132 *See, e.g.*, Eric Ravenscraft, *The Most Common Smartphone Repairs You Can Do*

went horribly wrong, any risk of electrocution or injury is almost non-existent.[133] The worst-case scenario is one many electronics hobbyists are accustomed to: a "bricked" phone,[134] which turns the device into little more than an unresponsive paperweight.[135] The oppressive limitations Apple and other companies place on repairs is not the best way to protect consumers from exploding telephones.[136] The most recent and infamous example of this — the exploding Samsung telephones — was the result of manufacturing defects, not a rogue tinkerer or unlicensed repair provider.[137] These phones were even banned from airplanes for being too dangerous.[138]

An electronics hobbyist doing a bad repair may damage a personal cell phone or laptop and need to buy a replacement.[139] An independent repair shop performing bad repairs will be out of

Yourself, LIFEHACKER (Feb. 4, 2014), https://lifehacker.com/the-most-common-smartphone-repairs-you-can-do-yourself-1515709328 (discussing how a few common problems such as broken screens and headphone jacks can be easily repaired).

133 *See* Brandon Griggs, *Can You Be Electrocuted by Your Smartphone?*, CNN (July 16, 2013, 2:59 PM ET), http://www.cnn.com/2013/07/15/tech/gaming-gadgets/iphone-woman-electrocuted/index.html.

134 A "bricked" device is an electronic device that can no longer be powered on or function normally, and is not otherwise recoverable. It has now become a "brick" worth hundreds of dollars. Chris Hoffman, *What Does "Bricking" a Device Mean?*, HOW-TO GEEK (Sept. 26, 2016, 5:36 PM EDT), https://www.howtogeek.com/126665/htg-explains-what-does-bricking-a-device-mean/.

135 *See* Whitson Gordon, *How Do I Fix My Bricked Android Phone?*, LIFEHACKER (Oct. 26, 2011, 1:00 PM), https://lifehacker.com/5853519/how-do-i-fix-my-bricked-android-phone.

136 *Cf.* Kris Carlon, *Galaxy Note 7 Teardown Reveals Another Not-Easy-to-Fix Samsung Phone*, ANDROID AUTHORITY (Aug. 18, 2016), https://www.androidauthority.com/samsung-galaxy-note-7-teardown-results-710951/ (noting that the Samsung Galaxy Note 7 is an extremely difficult phone to repair); Tim Moynihan, *Samsung Finally Reveals Why the Note 7 Kept Exploding*, WIRED (Jan. 22, 2017, 9:36 PM), https://www.wired.com/2017/01/why-the-samsung-galaxy-note-7-kept-exploding/ (stating that one of the most widespread cell phone consumer dangers in recent memory was the result of defective batteries by an approved parts supplier).

137 *See* Moynihan, *supra* note 136; *cf.* Ben Gilbert, *How Microsoft Spent $1 Billion on a Simple Mistake with the Xbox 360*, BUS. INSIDER (Sept. 2, 2015, 2:38 PM), http://www.businessinsider.com/when-all-the-xbox-360s-broke-2015-8 (claiming that one of the biggest waves of hardware failures for Microsoft cost the company one billion dollars in repairs, and was the result of a design issue with the hardware itself).

138 *See Safety Alert for Operators*, FED. AVIATION ADMIN. (Sept. 16, 2016), https://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safos/media/2016/SAFO16011.pdf (noting that all phones with a lithium battery subject to recall are not allowed on aircraft, which includes Samsung's infamous smartphones).

139 *See* Gordon, *supra* note 135.

business or develop a reputation for performing bad repairs until it is driven out of business.[140] Both activities should stay beyond the reach of manufacturers using copyright infringement claims as a tool to drive away their competitors and narrow the market.[141] If Apple or John Deere are concerned about liability, the simplest and least restrictive solution is a legal waiver of all liabilities from any injury resulting from third-party repairs.[142]

Manufacturers are also engaged in coercive tactics that force licensed repair providers out of business.[143] Apple only allows its licensed repair providers to fix screens and batteries on specific devices.[144] The licensee must send back phones requiring any other type of repair.[145] Furthermore, licensees often have no authority to repair other Apple devices.[146] For instance, licensees may be required to send iPads back to Apple for any reason at all.[147] One shop owner stated that he "would lose 75 percent of [his] opportunities to do repairs" if he became certified to repair Apple products.[148] This is because his license from Apple would forbid him from performing many types of simple repairs on many Apple products which currently constitute the majority of his work.[149]

Many repair providers, including the one quoted above, currently use non-Apple parts to perform repairs.[150] Using non-Apple parts contributes to the current hit-or-miss reputation of third-party repairs:

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[140] *Cf.* Anthony Giorgianni, *What to Do When Product Repairs Go Wrong*, CONSUMER REP. (Dec. 19, 2014, 5:00 PM), https://www.consumerreports.org/cro/news/2014/12/what-to-do-when-product-repairs-go-wrong/index.htm (advising consumers on actions to take against a bad repair shop, including calling another repair shop, complaining to a local consumer protection agency, disputing any credit card charges, or legal action).

[141] *See* Minter, *Dismantle Apple's Strangehold*, *supra* note 14.

[142] *See, e.g.*, *Personal Computer Repair Waiver*, CLINTON COMMUNITY C., https://www.clinton.edu/repository/2766.pdf (last visited Nov. 19, 2017) (illustrating a basic disclaimer of liability for any harm resulting from a third-party repair).

[143] *See, e.g.*, Elizabeth Chamberlain, *How Nikon is Killing Camera Repair*, IFIXIT (Feb. 14, 2012), https://ifixit.org/blog/1349/how-nikon-is-killing-camera-repair/.

[144] Jason Koebler, *Do You Know Anything About Apple's "Authorized Service Provider" Program?*, MOTHERBOARD (Mar. 16, 2017, 9:21 AM), https://motherboard.vice.com/en_us/article/ypkqxw/do-you-know-anything-about-apples-authorized-service-provider-program [hereinafter *Do You Know*].

[145] *See id.*

[146] *See id.*

[147] *Id.*

[148] *Id.*

[149] *See id.*

[150] *Id.*

some parts are cheaply made and prone to failure, while others may be just as reliable as genuine Apple parts.[151] "Right to repair" advocates and independent repair providers argue for a simple solution to the untrustworthy reputation of unlicensed repairs.[152] Apple should make all their parts available, relinquish all liability for third-party repairs, and let the market determine who continues to stay in the repair business.[153]

Manufacturers have also used copyright notices to bully repair shops into ceasing repair operations.[154] For example, in 2012, Toshiba issued a copyright takedown notice to Tim Hicks, who ran an ad-free website providing repair guides for laptops.[155] Hicks found the manuals online and reposted them to support independent repair shops performing service after the manufacturer's warranties had expired, but quickly removed them after Toshiba's notice.[156] Manufacturers have even utilized the Department of Homeland Security ("DHS") as a tool to enforce their copyright; spurred by manufacturers' accusations of infringement, DHS has conducted raids against independent repair shops justified as a deterrence measure against copyright violations.[157]

It is clear that electronics manufacturers are not using their copyright to "promote the progress of science and useful arts."[158] They are trying to constrict competition by limiting the availability of tools, manuals, and diagnostic software to exert control over conduct outside the scope of their copyright.[159] The courts applying copyright

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151 *See id.*

152 *See id.*

153 *Id.*

154 *See* Kyle Wiens, *Using Copyright to Keep Repair Manuals Secret Undermines Circular Economy*, GUARDIAN (Dec. 20, 2013, 10:09 AM EST), https://www.theguardian.com/sustainable-business/copyright-law-repair-manuals-circular-economy.

155 *Id.*

156 Kyle Wiens, *The Shady World of Repair Manuals: Copyrighting for Planned Obsolescence*, WIRED (Nov. 12, 2012, 6:00 PM), https://www.wired.com/2012/11/cease-and-desist-manuals-planned-obsolescence.

157 *See Federal Agents Raid Smartphone Repair Shops*, WPLG LOCAL 10 NEWS (Apr. 29, 2013, 11:33 AM), https://www.local10.com/news/federal-agents-raid-smartphone-repair-shops_20151127205611881. This raid of twenty-five stores resulted in a seizure of $250,000 in parts. *Id.* The Department of Homeland Security officer cited "licensing violations" as one reason for the raid. *See id.*

158 U.S. CONST. art. I, § 8, cl. 8.

159 *E.g.*, Mike Masnick, *John Deere Clarifies: It's Trying to Abuse Copyright Law to Stop You from Owning Your Own Tractor . . . Because It Cares About You*, TECHDIRT (May 14, 2015, 11:43 AM), https://www.techdirt.com/articles/20150513/18001030993/john-deere-clarifies-trying-to-abuse-copyright-law-to-stop-you-owning-

misuse doctrine identified virtually the same behavior as a clear example of copyright misuse.[160] Copyright misuse applies even when the alleged copyright material was obtained through "improper" means, like a disclosure of schematics and manuals prohibited by the copyright holder.[161] An independent repair provider who acquired the manuals through arguably "improper" means would be protected by a misuse defense, because the doctrine of "unclean hands" does not disqualify someone from asserting the defense.[162] Market constriction in conjunction with threats of infringement lawsuits by Apple, Toshiba, and John Deere violates the public good, and often causes direct public harm.[163] Thus, pending "right to repair" legislation is simply a state-level codification of the public good of copyright set forth in the Constitution, federal statutes, and Supreme Court precedent.

III. FAIR USE

"Right to repair" advocates can also argue that use of a manufacturer's copyright constitutes fair use.[164] Fair use was originally a common law doctrine, established by piecemeal interpretations on a

your-own-tractor-because-it-cares-about-you.shtml.

160 *See* Alcatel USA, Inc. v. DGI Techs., Inc., 166 F.3d 772, 792-94 (5th Cir. 1999); Lasercomb Am. Inc. v. Reynolds, 911 F.2d 970, 975-80 (4th Cir. 1990).

161 *Alcatel*, 166 F.3d at 794 (holding that whether DGI had "unclean hands" is "irrelevant" in deciding whether DGI is precluded from asserting a copyright misuse defense).

162 *See id.* at 796.

163 *See, e.g.*, Peter High, *A Recycling Entrepreneur Has Been Sentenced to 15 Months in Prison*, FORBES (June 20, 2017, 9:30 AM), https://www.forbes.com/sites/peterhigh/2017/06/20/a-recycling-entrepreneur-has-been-sentenced-to-15-months-in-prison/#b0bc194362ae (discussing how an environmentally responsible entrepreneur was criminally convicted in one of these infringement lawsuits for trying to reduce the world's e-waste); Laura Sydell, *DIY Tractor Repair Runs Afoul of Copyright Law*, NPR (Aug. 17, 2015, 4:20 PM ET), http://www.npr.org/sections/alltechconsidered/2015/08/17/432601480/diy-tractor-repair-runs-afoul-of-copyright-law (describing an instance of the impact that these infringement laws have on farmers); *cf.* Rosie Spinks, *We're All Losers to a Gadget Industry Built on Planned Obsolescence*, GUARDIAN (Mar. 23, 2015, 3:00 AM EDT), https://www.theguardian.com/sustainable-business/2015/mar/23/were-are-all-losers-to-gadget-industry-built-on-planned-obsolescence (discussing how planned obsolescence similarly harms the public good and the interests of consumers).

164 *See More Information on Fair Use*, U.S. COPYRIGHT OFF., https://www.copyright.gov/fair-use/more-info.html (last visited Jan. 5, 2018) (defining fair use as "a legal doctrine that promotes freedom of expression by permitting the unlicensed use of copyright-protected works in certain circumstances").

case-by-case basis.[165] Eventually, these common law doctrines were codified into a four-part test.[166]

A. Development of the Fair Use Doctrine

1. Statutory Test for Fair Use Under 17 U.S.C. § 107

Fair use is a non-infringing use of copyrighted material for the purposes of criticism, comment, news reporting, teaching, scholarship, or research.[167] Although the statute enumerates non-infringing uses, these categories are flexible; even conduct falling under a plain language definition is not *per se* fair use.[168] For example, courts have held that the use of copyright for news reporting does not necessarily constitute fair use, depending on the commercial character of the news reporting.[169] This is true despite the fact that "news reporting" is listed in the statute.[170]

The test for determining fair use comes from 17 U.S.C. section 107, which codified prior common law doctrines of fair use.[171] It outlines a four-factor test to determine whether use of copyrighted material falls under the fair use doctrine.[172] These factors are: 1) the purpose and character of the use; 2) the nature of the copyrighted work; 3) the amount and substantiality of the use in relation to the copyrighted work as a whole; and 4) the effect of the use upon the potential market value of the copyrighted work.[173] The statute does not provide guidance on how much weight should be given to each of the four factors.[174] For example, if a copyrighted work is used regularly as part of an overall work, such as a regularly played jingle in a news broadcast, "amount and substantiality" may be more relevant than the other factors.[175]

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165 *See generally* Comment, *Copyright Fair Use — Case Law and Legislation*, 18 DUKE L.J. 73 (1969) (discussing early judicial developments of fair use).

166 17 U.S.C. § 107 (2018).

167 *Id.*; Comment, *supra* note 165, at 107.

168 *See* Harper & Row, Publishers, Inc. v. Nation Enters., 471 U.S. 539, 551 (1985).

169 *E.g.*, *id.* at 540.

170 *Id.* (noting that although the copyrighted work was used for news reporting, the commercial character of the reporting was such that the use was not fair, even if "news reporting" is specifically enumerated in the statute).

171 17 U.S.C. § 107.

172 *Id.*

173 *Id.*

174 *See id.*

175 *Compare* Byrne v. British Broad. Corp., 132 F. Supp. 2d 229, 234-36 (S.D.N.Y.

Furthermore, in regard to the "purpose and character of the use," there is a presumption against fair use in the commercial context that may create some difficulty for independent repair shops.[176] Independent repair providers want to sell repair services and tool kits without fear of an infringement claim.[177] However, despite this presumption, commercial use may not necessarily preclude fair use.[178] The Supreme Court has held, after all, that the application of a fair use defense is ultimately a case-by-case inquiry.[179] If a court were to consider the copyright misuse and antitrust issues as persuasive elements under the first category, "the purpose and character of use," commercial use may be given less weight relative to the negative repercussions of denying fair use in the "right to repair" context.[180]

2. Weighing the Four Factors of the Fair Use Test

Sony Corporation of America v. Universal City Studios, Inc. serves as an example where the court weighed the four factors of the fair use test in the context of commercial use.[181] Here, Universal filed suit against Sony, the creators of Betamax tapes.[182] Customers used Betamax tape video recorders to record broadcasts of Universal's copyrighted films and televisions shows.[183] They argued that Sony was vicariously liable for copyright infringement of their works, and sought an injunction against Sony preventing further sale of Betamax tapes.[184] Justice Stevens wrote for the 5-4 majority, which held Sony

2001) (finding that music used during news broadcasts as filler in-between stories was determinative of fair use), *with* Salinger v. Random House, Inc., 650 F. Supp. 413, 423 (S.D.N.Y. 1986) (considering "[thirty] instances of the use" as a factor determinative of fair use).

176 *See* Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 451 (1984).

177 *See* Geoffrey A. Fowler, *We Need the Right to Repair Our Gadgets*, WALL ST. J. (Sept. 8, 2015, 3:04 PM ET), https://www.wsj.com/articles/we-need-the-right-to-repair-our-gadgets-1441737868 (detailing the different steps the author took to repair his colleague's broken television: calling an independent shop, buying a repair kit, and trying to find the parts himself).

178 *See generally* Sega Enters. Ltd. v. Accolade, Inc., 977 F.2d 1510 (9th Cir. 1992) (examining Accolade's use of reverse engineering to enter the video games market was acceptable, especially in the face of Sega's potential to create a monopoly by restricting competition).

179 *See* Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569, 578 (1994) (discussing the fact-specific nature of a fair use application).

180 *See supra* Part II; *infra* Part IV.

181 *Sony Corp. of Am.*, 464 U.S. at 448-50.

182 *Id.* at 417.

183 *Id.* at 420.

184 *Id.*

not vicariously liable for the conduct of its customers.[185] Furthermore, the Court held that recording broadcasts for later viewing, while unauthorized, is a legitimate fair use.[186] In weighing the four fair use factors, the Court found noncommercial private use, solely for later viewing, did not adversely affect the market for Universal's films.[187] The Court also held that the four factors in the test were not of equal weight.[188] The weight given to each factor depended on the context in which the copyright was used.[189] Another aspect determining the weight of the fair use factors is whether the use was productive and added some benefit to the public beyond the first author's work.[190]

Sony will likely be difficult to apply in the "right to repair" context because the Court stated that commercial use creates a presumption against fair use.[191] The Court focused on market effects, and ultimately sided with Sony because the individuals using Betamax tapes were engaged in private activity, and not commercial resale.[192] Unlike *Sony*, "right to repair" advocates seek to apply fair use to commercial opportunities.[193] In spite of this, *Sony* lays the groundwork because of its expansive reading of fair use and the equitable application of the four factor test.[194] The "productive use" language also benefits "right to repair" arguments, since advocates could argue that discouraging the monopoly on repair constitutes a public good.[195] This leads to a reading of the statute that lessens the importance of commercial

185 *Id.* at 437-39.

186 *Id.* at 454-56.

187 *See id.* at 451-53.

188 *See id.* at 449-55 (discussing the "effect of use upon the potential market value" and "the commercial or nonprofit character of the activity" factors more heavily than the others, and applying this test to time-shifting for private home use — a use that is not enumerated in the statute).

189 *See id.*

190 *Id.* at 478-79 (Blackmun, J., dissenting) (noting that fair use is designed to protect "socially laudable purposes").

191 *See id.* at 451.

192 *See id.* at 448-49.

193 *See, e.g.*, Nicole Nguyen, *What You Should Know About Repairing Your iPhone*, BUZZFEED (Aug. 22, 2017, 5:09 PM ET), https://www.buzzfeed.com/nicolenguyen/fixing-your-iphone?utm_term=.tpOqvL4aK#.bobp1DJMr (discussing how some "right to repair" advocates are seeking to make electronics companies simplify obtaining repair information and access to replacement parts).

194 *See* Pamela Samuelson, *Unbundling Fair Uses*, 77 FORDHAM L. REV. 2537, 2540, 2589 (2009) ("A well-recognized strength of the fair use doctrine is [its] considerable flexibility . . . .").

195 *See infra* Part III.B.

use.[196] Such a reading would create an opportunity for the presumption against fair use in the commercial context to be rebutted by other factors.[197]

3. Further Application of Fair Use in the Commercial Context

Campbell v. Acuff-Rose Music, Inc. concerned the rap music group 2 Live Crew and their parody of Roy Orbison's song "Oh, Pretty Woman."[198] Acuff-Rose Music filed suit for copyright infringement after 2 Live Crew had sold almost 250,000 copies of the album with their version of the song.[199] The district court found 2 Live Crew's commercial use of the song was not a bar to a fair use defense, considering how drastically they modified the song.[200] The Sixth Circuit reversed, and found that the lower court did not put enough emphasis on the group's commercial use.[201] This commercial use barred 2 Live Crew from a fair use defense.[202]

The Supreme Court disagreed, and held that the Sixth Circuit placed too much weight on commercial use.[203] Commercial use is only one consideration in the inquiry and not a dispositive evidentiary finding that immediately barred a fair use defense.[204] Although the group copied the original song's opening lyrics and bass line, it was not excessive in relation to the song's parodic purpose; in other words, it was sufficiently "transformative."[205] Furthermore, the derivative work did not necessarily serve as a market replacement for the original song, since the two works serve different markets.[206] It gave no consideration to the second factor (i.e., "the nature of the copyrighted

196 *See generally id.* (discussing the fair use framework currently in place and that policy will help mold "right to repair" fair use defense).

197 *See* MCA, Inc. v. Wilson, 677 F.2d 180, 182 (2d Cir. 1981) ("While commercial motivation and fair use can exist side by side, the court may consider whether the alleged infringing use was primarily for public benefit or for private commercial gain.").

198 Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569, 571-72 (1994).

199 *Id.* at 573.

200 *See id.*

201 *Id.* at 573-74.

202 *Id.* at 574.

203 *Id.* at 584.

204 *Id.*

205 *Id.* at 589.

206 *Id.* at 591.

work") since any analysis of that factor would not help reach a conclusion.[207]

The Court here explicitly states that a commercial use does not preclude a fair use defense.[208] Another important aspect of the Court's analysis is the lack of consideration given to the second factor of the test.[209] Presumably, if the second factor can be given almost no weight depending on the circumstances and facts of the case, any element of the fair use statutory test can be similarly disregarded or minimized.[210]

4. Software Copying and Reverse Engineering as Fair Use

In *Sega Enterprises v. Accolade, Inc.*, video game company Accolade reverse engineered game cartridges and system-level code for Sega's video game system, the Genesis.[211] Accolade did so to create their own video games cartridges for the Genesis.[212] Accolade did this by purchasing Sega's system and cartridges from a retail outlet and reverse engineering the software and hardware interface.[213] It then created and sold its own cartridges for the Genesis.[214]

Sega brought a copyright infringement claim against Accolade.[215] The district court found that Accolade's copying of Sega's code for a commercial purpose constituted infringement, and Accolade could not assert a fair use defense.[216] The Ninth Circuit reversed the district court's holding, and found Accolade's reverse engineering of Sega's hardware and software to be a valid fair use.[217] It held that the district court had incorrectly weighed the first and fourth factors against Accolade and ignored the second factor entirely, which all weighed in

[207] *Id.* at 586.

[208] *Id.* at 594 ("It was error for the Court of Appeals to conclude that the commercial nature of 2 Live Crew's parody of 'Oh, Pretty Woman' rendered it presumptively unfair.").

[209] *See id.* at 586 (stating that facts proving the second factor are "not much help" in a parody case and giving that factor of the fair use test a relatively short analysis).

[210] *See id.* at 576-78 (holding that consideration should be given to all four factors relative to their application in the specific copyright context).

[211] Sega Enters. Ltd. v. Accolade, Inc., 977 F.2d 1510, 1514 (9th Cir. 1992).

[212] *See id.*

[213] *Id.* at 1514-15.

[214] *Id.*at 1515.

[215] *Id.* at 1516.

[216] *Id.* at 1517.

[217] *Id.* at 1527-28.

Accolade's favor.[218] It was the reconsideration of these factors that convinced the judges to reverse the decision in Accolade's favor.[219]

With respect to the first statutory factor, the court found Accolade's need to reverse engineer was legitimate because their primary purpose was to study the functional requirements of the console.[220] The presumption of unfairness for a commercial purpose is a rebuttable presumption based on the characteristics of the commercial use.[221] One factor that may rebut the presumption of unfairness is a derived public benefit.[222] Here, although Accolade was selling their cartridges for profit, their activities were promoting growth in creative expression through the dissemination of ideas contained in Sega's video games.[223] Thus, the court held that Accolade had overcome the presumption of unfairness.[224]

With respect to the fourth statutory factor, the court held that where a copied work completely replaces the market for the copyrighted work, this factor becomes dispositive.[225] However, in this case, Accolade did not supplant Sega's position in the market.[226] Rather, the reverse engineering process allowed Accolade to enter the market.[227] Any attempt by Sega to create a monopoly on the market by making it impossible for others to compete runs counter to the purpose of copyright.[228] Thus, this conduct was not a strong basis for Sega to resist Accolade's argument for fair use.[229]

Finally, regarding the second statutory factor, the court found that software creates a problem for considering "the nature of the copyrighted work."[230] The court had difficulty applying the "idea/

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218 *Id.* at 1522.

219 *Id.* at 1527.

220 *Id.* at 1522-23.

221 *Id.* at 1522.

222 *Id.* at 1523. *See generally* Jason Koebler, *The US Government Wants to Permanently Legalize the Right to Repair*, MOTHERBOARD (June 22, 2017, 12:02 PM), https://motherboard.vice.com/en_us/article/d3zbnz/the-government-wants-to-permanently-legalize-the-right-to-repair (noting the support for and public benefit of an independent repair market).

223 *Sega*, 977 F.2d at 1523.

224 *Id.*

225 *Id.*

226 *Id.*

227 *Id.*; *see also* Ernie Smith, *Reverse-Engineering the Industry*, TEDIUM (Mar. 9, 2017), https://tedium.co/2017/03/09/video-games-reverse-engineering-tengen-accolade/.

228 *Sega*, 977 F.2d at 1523-24.

229 *Id.*

230 *See id.* at 1524.

expression" distinction used to determine the extent of copyrightable material.[231] Software does have creative, expressive elements subject to copyright protections.[232] However, software is also largely utilitarian and functional in nature.[233] Any functional aspects of the software, including the limited ways to implement and execute the software, are not subject to copyright protections.[234] Here, the unprotected aspect of Sega's software relevant to the fair use defense is the machine language code, which humans cannot read without disassembling, copying, and translating the code into a human-readable format.[235] To access these unprotected aspects, Accolade had to copy the software.[236] Finally, the argument that disassembly constitutes fair use was strengthened because there were no alternatives to disassembly.[237]

B. Application to "Right to Repair" Legislation

The first factor — the purpose and character of the use — is likely the most challenging for independent repair providers to overcome, because the argued-for use is ultimately commercial in nature.[238] "Right to repair" advocates want to participate in the third-party repair market by copying and using a manufacturer's copyrighted repair software and manuals.[239] Some jurisdictions have been hesitant to find fair use in the commercial context, when the defendant is selling their product without any transformation.[240] However, the Ninth Circuit in *Sega* mentions market monopoly as one factor outweighing the

231 *See id.* at 1524-25.

232 *See id.* at 1524.

233 *Cf. Software Definition*, TECHTERMS, https://techterms.com/definition/software (last updated Dec. 5, 2006) (defining software as scripts or instruction sets that are installed on a computer).

234 *See Sega*, 977 F.2d at 1524.

235 *See id.* at 1525-26.

236 *See id.*

237 *See id.* at 1526.

238 *See, e.g.*, Michael Oberdick, *Dear Consumers, You Want "Right to Repair" to Pass*, IOUTLET (Apr. 10, 2018), https://ioutlet.net/blogs/news/dear-consumers-you-want-right-to-repair-to-pass (discussing how independent repair providers want to sell their services).

239 *See id.* ("[Right to repair] would win local repair shops . . . access to parts, service manuals, and diagnostic tools from electronics manufacturers at a fair price.").

240 *Compare Sega*, 977 F.2d at 1514 (finding fair use even when the copied product was designed for compatibility with the reverse-engineered hardware), *with* Tiffany Design, Inc. v. Reno-Tahoe Specialty, Inc., 55 F. Supp. 2d 1113, 1123-24 (D. Nev. 1999) (holding that the presumption of unfair use in the commercial context is not rebutted by a defendant copying visual elements for a postcard).

presumption against fair use in the commercial context.[241] Here, the independent repair provider's commercial purpose will likely be acceptable, because the alternative grants manufacturers an unfair monopoly on the market for repairs.[242] The monopoly in the "right to repair" context is much more egregious and obvious than in *Sega*.[243] In the context of such serious risk of monopoly, other district and circuit courts have considered finding a fair use defense for a party utilizing the copyright for a commercial use, and have not simply found for the copyright holder in the context of commercial use without analysis.[244]

Individual tinkerers and hobbyists will likely have an easier time overcoming the presumption of unfairness. They are situated more like the individual consumers in *Sony v. Universal*.[245] In *Sony*, consumers were not infringing on Universal's copyright because of the personal nature of the recording and the minimal effect these recordings had on the market.[246] Similarly, individuals who are repairing their own electronics in bedrooms and garages likely have little effect on the market for repairs, especially when compared to commercial parties.[247]

For the second factor — the nature of the copyrighted work — diagnostic software presents the same idea/expression issue as the software in *Sega*. John Deere has already tried to make the case that copying their software specifically violates their copyrighted

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241 *See Sega*, 977 F.2d at 1523-24.

242 *See* Jason Koebler, *Five States Are Considering Bills to Legalize the "Right to Repair" Electronics*, MOTHERBOARD (Jan. 23, 2017, 8:14 AM), https://motherboard.vice.com/en_us/article/mg7nbv/five-states-are-considering-bills-to-legalize-the-right-to-repair-electronics [hereinafter *Five States*] ("[C]ompanies seek to make parts difficult to buy and impose artificial software lockdowns on diagnostic systems within the devices.").

243 *See supra* Part II. *See generally* Koebler, *Five States*, *supra* note 242.

244 *Cf.* EyePartner, Inc. v. Kor Media Grp. LLC, No. 4:13-10072, 2013 U.S. Dist. LEXIS 98370, at *10-12 (S.D. Fla. July 15, 2013) (considering fair use factors in the context of disassembly of software by defendant, despite plaintiff ultimately prevailing on preliminary injunction); Greaver v. Nat'l Ass'n of Corp. Dirs., No. 94-2127, 1997 U.S. Dist. LEXIS 20856, at *16-17 (D.D.C. Nov. 19, 1997) (considering fair use factors where copyrighted material was used by a non-owner to advise a corporation).

245 *See* Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 421-23 (1984).

246 *See id.* at 445-46, 456.

247 *Cf. id.* at 452-54 (holding that the "time-shifting" by individually recording programs for personal viewing will have a "minimal" effect on the overall market for programming).

expression.[248] However, the *Sega* court held that there are functional, uncopyrightable aspects to computer software a non-copyright holder can access and study.[249] Diagnostic software is, by its very definition, functional.[250] It lacks many of the creative copyrightable aspects of the video game software at issue in *Sega*.[251] The functional characteristics of diagnostic software make it easier to argue that it is uncopyrightable, compared to more artistically defined video games.[252]

For the third factor, the amount and substantiality of the copying may prove problematic for "right to repair" advocates if the factor is considered out of context. This is because repair providers must copy the entirety of the software to reverse engineer and create their own diagnostic programs, and disassemble the software to make it usable.[253] However, for "right to repair" advocates, alternatives to reverse-engineering are not available.[254] Diagnostic software is an uncopyrightable idea like the software in *Sega*.[255] This factor should be granted less consideration, since the degree to which the software is

[248] Wiens, *We Can't Let John Deere*, *supra* note 35.

[249] Sega Enters. Ltd. v. Accolade, Inc., 977 F.2d 1510, 1527-29 (9th Cir. 1992) ("[W]here disassembly is the only way to gain access to the ideas and functional elements embodied in a copyrighted computer program and where there is a legitimate reason for seeking such access, disassembly is a fair use of the copyrighted work, as a matter of law.").

[250] *Cf.* U.S. COPYRIGHT OFFICE, SOFTWARE-ENABLED CONSUMER PRODUCTS 13-14 (2016), https://www.copyright.gov/policy/software/software-full-report.pdf (stating that copyright protection for computer programs does not extend to processes and methodology); Stacey L. Dogan & Joseph P. Liu, *Copyright Law and Subject Matter Specificity: The Case of Computer Software*, 61 N.Y.U. ANN. SURV. AM. L. 203, 222-23 (2005) (suggesting that courts look to the nature of the use of copyrighted information as to functionality rather than focusing only on whether it was copied).

[251] *See Sega*, 977 F.2d at 1514.

[252] *Compare Tag, Grind, and Trick to the Beat in SEGA's Hit Game Jet Set Radio!*, SEGA, http://www.sega.com/games/jet-set-radio (last visited Nov. 18, 2017) (illustrating that sound and art, mediums typically granted copyright protections, are integral aspects of a video game), *with* Mark Russinovich & Thomas Garnier, *Sysmon v8.0*, MICROSOFT (May 21, 2017), https://docs.microsoft.com/en-us/sysinternals/downloads/sysmon (illustrating the relative lack of expressive elements beyond a simple user interface and utilitarian aspects of diagnostic software).

[253] See Richa, *Reverse Engineering Tutorial: How to Reverse Engineer Any Software*, UDEMY (June 6, 2014), https://blog.udemy.com/reverse-engineering-tutorial/, for an example of this process.

[254] *See* Pamela Samuelson, *Reverse Engineering Someone Else's Software: Is It Legal?*, 7 IEEE SOFTWARE 90, 91 (1990) (detailing the process by which software engineers copy software through disassembly in order to study it).

[255] *See Sega*, 977 F.2d at 1524; *see also* Compaq Comput. Corp. v. Procom Tech., Inc., 908 F. Supp. 1409, 1419-21 (S.D. Tex. 1995).

copied is less concerning than the commercial nature or market influence of copying the software.[256]

For the fourth factor — market influence — the issues the Supreme Court addressed in *Campbell* come into play.[257] This factor represents another substantial hurdle for "right to repair" advocates, since a court may hold that an independent provider's service effectively supplants the existing products sold by manufacturers.[258] In past cases, the presence of this kind of market influence killed a fair use defense.[259] Finding a solution to a possible de-facto unfair use may prove difficult because the crux of the "right to repair" argument is the availability of a market alternative to manufacturers' services.[260]

Although third-party repair providers may be "replacing" the products, the argument for opening the market to allow consumer choice and combat a manufacturer monopoly will likely help a fair use defense survive.[261] This argument incorporates the open market for video games the Ninth Circuit discussed in *Sega*.[262] The monopoly issue implicates the "good public policy" arguments that appear in fair use litigation, and is often a controlling aspect of a court's reasoning.[263] Ultimately, "right to repair" advocates have a strong argument for copying diagnostic software and manuals for providing repairs as fair use.[264] The fair use test can even protect against a violation of a Digital Millennium Copyright Act claim, since the Act has an implicit exception for fair use.[265] This would dissipate a

256 To successfully reverse engineer software, it must be copied and dismantled in its entirety. Any partial copy of the program is insufficient to complete the reverse engineering process. *Cf.* Richa, *supra* note 253; Samuelson, *supra* note 254.

257 Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569, 590-93 (1994).

258 *Id.* at 590 (reasoning that a finding of unfair use "would result in a substantially adverse impact on the potential market").

259 *See, e.g.*, Video Pipeline, Inc. v. Buena Vista Home Entm't, Inc., 342 F.3d 191, 200 (3d Cir. 2003) (holding that Video Pipeline's direct supplanting of Disney's movie trailer market meant their commercial use of copyright was not fair use).

260 *See* Adam Minter, *Who Killed Mr. Fixit, and How to Bring Him Back*, BLOOMBERG (Oct. 10, 2017, 5:30 AM PDT), https://www.bloomberg.com/view/articles/2017-10-10/who-killed-mr-fixit-and-how-to-bring-him-back.

261 *See* Sega Enters. Ltd. v. Accolade, Inc., 977 F.2d 1510, 1523 (9th Cir. 1992).

262 *Id.*

263 *See, e.g.*, Harper & Row, Publishers, Inc. v. Nation Enters., 471 U.S. 539, 545-49 (1985). *See generally Campbell*, 510 U.S. at 575.

264 *See* Gulfstream Aerospace Corp. v. Camp Sys. Int'l, Inc., 428 F. Supp. 2d 1369, 1377-81 (S.D. Ga. 2006) (holding that use of repair manuals without a license constitutes fair use). The court also mentions that enforcing copyright to prohibit Camp from using Gulfstream's manuals would violate antitrust principles. *Id.* at 1380.

265 Realnetworks, Inc. v. DVD Copy Control Ass'n, 641 F. Supp. 2d 913, 942 (N.D.

monopoly that would otherwise be created if manufacturers continue to force competition away with the threat of copyright infringement lawsuits.[266] Good policy considerations, coupled with the equitable flexibility of the fair use factors, will help "right to repair" advocates mount an effective fair use defense.

IV. ANTITRUST

A. Development of the "Attempt to Monopolize" Claim

1. The Sherman Antitrust Act and an "Attempt to Monopolize"

Section 2 of the Sherman Antitrust Act imposes criminal fines and imprisonment on any "person who shall monopolize, attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States."[267] The Act is designed to preserve competition among businesses with disproportionate market power by outlawing coercive and harmful business practices.[268] This disproportionate power is analyzed in the "relevant market," which is narrowly defined as the particular market and geographic area where the manufacturer's

Cal. 2009); *see also supra* Part I.C.

[266] *See supra* Part II.

[267] 15 U.S.C. § 2 (2018).

[268] *See* N. Pac. Ry. Co. v. United States, 356 U.S. 1, 4-5 (1958). Typically, the type of unfair business practices supporting a section 2 "attempt to monopolize" claim is brazenly coercive or predatory. *See, e.g.*, Lenox MacLaren Surgical Corp. v. Medtronic, Inc., 762 F.3d 1114, 1129-30 (10th Cir. 2014) (defendant-manufacturer instituted a false product recall of a licensee-turned-competitor's product while simultaneously introducing their own product to market); Coal. for ICANN Transparency, Inc. v. Verisign, Inc., 611 F.3d 495, 506 (9th Cir. 2010) (defendant engaged in harassing litigation and coercive tactics to force an exclusive dealing contract with ICANN). However, in the case of right to repair advocacy, not all conduct which electronics manufacturers are engaged in is itself unlawful. In that case, the analysis considers several factors to determine the anti-competitive effects of the conduct, including normal practices within the industry, market conditions, and the impact the conduct has on excluding competitors from the market. *See, e.g.*, United States v. Griffith, 334 U.S. 100, 105-07 (1948) (stating that lawful acts may violate section 2 of the Sherman Act if those acts foreclose competition in the market, create a competitive advantage, or destroy a competitor); SmithKline Corp. v. Eli Lilly & Co., 575 F.2d 1056, 1065 (3d Cir. 1978) (finding anticompetitive conduct where a drug company used a lawfully acquired market share in one drug market to tie sales of drugs from a second market to forcibly exclude competitors from that second market).

products are sold, within which the corporation's unfair practices are felt.[269]

Section 2 of the Act is helpful in the "right to repair" context for several reasons. First, it grants broad civil enforcement powers to private parties.[270] Independent repair shops will have the tools to enforce and recover against a large corporation like Apple.[271] Second, section 2 has been applied where there is unilateral conduct involving only a single bad actor.[272] The relevant enforcement category for the purposes of the third-party repair market is an "attempted monopolization," where a corporation does not yet have monopoly power in the relevant market but is engaged in practices that create a dangerous probably of monopoly power being achieved.[273]

2. Two Elements of an "Attempt to Monopolize" Under the Sherman Antitrust Act

In *Eastman Kodak Co. v. Image Technical Services*, Image Technical Services, along with other independent service providers ("ISO") filed a lawsuit against Kodak.[274] Among other claims, they argued that Kodak unlawfully monopolized, or attempted to monopolize, the market for repair parts and services in violation of section 2 of the Sherman Antitrust Act.[275] Kodak stopped selling parts to ISOs, and limited any future sale of parts only to those buyers who also agreed to purchase repair services from Kodak.[276] Many ISOs were forced out of business because they could not find a reliable source of parts.[277] Consumers were thereby limited to using only Kodak's services,

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[269] *See, e.g.*, Spectrum Sports, Inc. v. McQuillan, 506 U.S. 447, 459 (1993).

[270] *See* 15 U.S.C. § 15 (2018). *But cf. In re* Apple iPhone Antitrust Litigation, 846 F.3d 313, 320-21 (2017) (holding that only direct purchasers of a product from the manufacturer have standing to sue and may recover for antitrust violations under the Clayton Act). This limitation may come into play if third-party repair providers seek to recover from alleged unfair practices of an electronics manufacturer, since they may not be defined as "direct purchasers" of the product.

[271] *See* 15 U.S.C. § 15.

[272] *See, e.g.*, *Spectrum Sports*, 506 U.S. at 459 (holding that the predatory actions that a corporation engaged in can serve as the basis for an "attempt to monopolize" claim under section 2 of the Sherman Antitrust Act if there is a "dangerous probability" of a resulting monopoly).

[273] *See id.* at 456-57.

[274] Eastman Kodak Co. v. Image Tech. Servs., Inc., 504 U.S. 451, 459 (1992).

[275] *Id.*

[276] *Id.* at 458.

[277] *See id.*

regardless of their preference for the ISO's services.[278] Image Technical Services and the other ISOs lost their district court case on a motion for summary judgment but won on appeal in the Ninth Circuit; Kodak then appealed the case to the Supreme Court.[279]

The Court found sufficient questions of material fact to warrant reversal of the ISO's summary judgment of their section 2 claim.[280] The first element of this claim was the possession of monopoly power in the relevant market.[281] Here, the ISOs argued that Kodak controlled nearly 100 percent of the parts market and between eighty percent to ninety-five percent of the repair services market.[282] The Court found that these facts were sufficient to satisfy the first element of a section 2 claim, and raised a question of fact.[283] The second element was the use of monopoly power to "foreclose competition, [or] to gain a competitive advantage."[284] Here, the ISOs argued that Kodak took deliberate exclusionary actions to limit the market for repairs and maintain exclusive control over parts and services, namely its limitation on the sale of replacement parts.[285]

Kodak justified this kind of control with three "business reasons": to stress the quality of service, reduce inventory costs, and prevent the ISOs from "free-riding" on Kodak's investment in equipment, parts, and services.[286] The Court found none of these arguments sufficiently persuasive to sustain a motion for summary judgment, and questioned whether they would be sustainable as a defense at trial.[287]

3. Further Development in "Attempt to Monopolize" Cases

In *Safeway Inc. v. Abbott Laboratories*, plaintiff Safeway brought a case against Abbott Laboratories for an alleged "400 percent" price increase of an HIV drug.[288] Abbott controlled the stock and distribution of a supplemental drug that, when taken alongside the HIV medication of Abbott's competitors, would boost the effects of

278 *Id.*
279 *Id.* at 456.
280 *Id.* at 485-86.
281 *Id.* at 481.
282 *Id.*
283 *See id.*
284 *Id.* at 482-83.
285 *Id.* at 483-84.
286 *Id.* at 483.
287 *See id.* at 482-86.
288 Safeway Inc. v. Abbott Labs., 761 F. Supp. 2d 874, 882-83 (N.D. Cal. 2011).

Abbott's competitor's medication.[289] To maintain control of the market, Abbott raised the price on this drug supplement, thereby forcing its competitors to pay higher prices to administer their drugs.[290] Abbott's competitors filed a lawsuit under section 2 of the Sherman Antitrust Act.[291]

The court discussed and outlined the evidentiary requirements a plaintiff needs to demonstrate the two elements of a section 2 antitrust violation in *Kodak*.[292] The first *Kodak* element is the possession of monopoly power, which is "the power to control prices or exclude competition."[293] A plaintiff can show monopoly power through direct evidence of injury resulting from exercise of market power.[294] A plaintiff can also demonstrate a corporation's monopoly power through circumstantial evidence that: 1) defines the relevant market; 2) demonstrates the corporation's ownership of a dominant share in that market; and 3) shows significant barriers to entry.[295] The court held that the plaintiffs in this case had direct evidence of Abbot's monopoly power, as shown by the restriction on the plaintiff's ability to output their own products resulting from Abbott's price increase.[296]

The plaintiffs also had sufficient circumstantial evidence based on three pieces of evidence.[297] First, they defined the relevant market as the supplemental drug market, or the "boosted market."[298] Second, they demonstrated that Abbot controlled a majority of the market.[299] Finally, the plaintiffs showed there were sufficient barriers to entry because Abbott controlled an essential resource.[300] This resource was the supplemental drug necessary for any competitors to enter the market and maintain their product output.[301]

The second *Kodak* element is anticompetitive conduct.[302] Here, the court found three of the plaintiff's evidentiary showings sufficient to

289 *Id.*

290 *See id.*

291 *Id.* at 883.

292 *Id.* at 885-97.

293 Eastman Kodak Co. v. Image Tech. Servs., Inc. 504 U.S. 451, 481 (1992); *Safeway*, 761 F. Supp. 2d at 886.

294 *Safeway*, 761 F. Supp. 2d at 887-88.

295 *Id.* at 888.

296 *Id.* at 887-88.

297 *Id.* at 888-90.

298 *Id.* at 888.

299 *Id.* at 889.

300 *Id.*

301 *Id.*

302 *See* Eastman Kodak Co. v. Image Tech. Servs., Inc. 504 U.S. 451, 481 (1992);

demonstrate anticompetitive conduct.[303] First, Abbott bundled the drug and the supplement together, creating a predatory price increase and forcing the manufacturers to purchase their competitor's HIV drug alongside the supplement.[304] Second, Abbott violated the "antitrust duty to deal," by forcing the plaintiffs to pay the 400 percent price increase and refusing to negotiate price terms with its competition.[305] Finally, Abbott took advantage of government pricing in the "boosted market" to buy the supplement for a lower price, and sell it to competitors at an egregious price increase.[306]

B. Application to "Right to Repair" Legislation

Apple was subject to several antitrust investigations in other countries for their unfair practices in the repair market.[307] The Korean government investigated Apple for antitrust violations in connection with unfair terms in contracts with their service providers and unfair cost-shifting for repair services.[308] In European Union countries, Apple enforced a "country of purchase" rule, which only allowed service for their products in the country the phone was purchased.[309] Apple's conduct abroad illustrates its intentions to restrict the repair market.[310] Moreover, its opposition to "right to repair" legislation in the United States further informs the inquiry of Apple's potential violations of section 2 of the Sherman Antitrust Act.

Apple possesses sufficient power in the relevant market to satisfy the first element of a section 2 antitrust violation.[311] Like the anti-viral and "booster" markets in *Safeway*, the primary device sales market is separate and distinct from the supplemental market for repairs.[312] Like

see, e.g., *Safeway*, 761 F. Supp. 2d at 890.

303 *See Safeway*, 761 F. Supp. 2d at 890-97.

304 *Id.* at 891.

305 *Id.* at 894-95.

306 *See id.* at 895.

307 *See, e.g.*, Don Reisinger, *This Is Where Apple Might Be Involved in an Antitrust Investigation*, FORTUNE (June 28, 2016), http://fortune.com/2016/06/28/apple-korea-investigation/; Eric Slivka, *European Union Ends Antitrust Investigations into Apple's iPhone Repair and iOS Development Policies*, MACRUMORS (Sept. 27, 2010, 9:15 AM PDT), https://www.macrumors.com/2010/09/27/european-union-ends-antitrust-investigations-into-apples-iphone-repair-and-ios-development-policies/.

308 Reisinger, *supra* note 307.

309 The "country of purchase" rule has since been rescinded in response to the European Union investigations. Slivka, *supra* note 307.

310 *See id.*

311 *See* Eastman Kodak Co. v. Image Tech. Servs., 504 U.S. 451, 481 (1992).

312 *See* Safeway Inc. v. Abbott Labs., 761 F. Supp. 2d 874, 882 (N.D. Cal. 2011).

the plaintiff in *Kodak*, Apple controls 100 percent of the repair parts market since they are the sole providers of genuine replacement parts for their devices.[313] Most independent providers create parts and service manuals by purchasing, dismantling, and reverse engineering Apple products.[314] Apple also controls a large portion of the repair services market, likely close to 100 percent, since all repair providers must have a license as an "Authorized Service Provider" or risk the threat of closure.[315] Any individuals providing repair services outside of Apple's program are forced to "source parts directly from China and take them off of used devices, which has led to a massive grey market[316] for smartphone components."[317] This anticompetitive conduct is also illustrative of the barrier to entry in the repair market.[318] Independent providers either maintain their business by receiving parts directly from Apple or have no means to output repair services and are thus unable to do business.[319] Therefore, Apple likely has sufficient market dominance.

Apple and other electronics manufacturers are engaged in anticompetitive conduct mirroring Kodak's attempts to limit access to

[313] *See Apple Repair*, APPLE, https://support.apple.com/repair (last visited Nov. 19, 2017); *see also* Scott Dingle (@scottyd), *Are the Parts All Original from the Company?*, IFIXIT META (Dec. 14, 2014), https://meta.ifixit.com/Answers/View/6360/Are+the+parts+all+original+from+the+company ("most helpful answer" of representative from independent repair provider iFixit stating that all their parts are either directly from Apple, or built to exact Apple specification and cannot be classified as "Original Equipment Manufacturer" parts).

[314] *See, e.g.*, Shaun Nichols, *iFixit Boss: Apple Has "Done Everything It Can to Put Repair Guys Out of Business,"* REGISTER (Mar. 28, 2014, 4:01 AM), https://www.theregister.co.uk/2014/03/28/ios_repairs/.

[315] See *Apple Authorized Service Provider Program*, APPLE, https://support.apple.com/en-lamr/aasp-program (last visited Nov. 19, 2017) for service provider requirements. *See generally CPB, ICE HSI Report $1.2 Billion in Counterfeit Seizures in 2014*, U.S. CUSTOMS & BORDER PROTECTION (Apr. 2, 2015), https://www.cbp.gov/newsroom/national-media-release/cbp-ice-hsi-report-12-billion-counterfeit-seizures-2014 (showing the effects of intellectual property theft because "[c]ounterfeiting is a crime of global proportions, and when property rights are violated, American jobs are lost, business profits are stolen and ultimately, consumers are cheated").

[316] *The Grey Market*, CAMBRIDGE DICTIONARY, https://dictionary.cambridge.org/dictionary/english/grey-market (last visited Jan. 4, 2018).

[317] Jason Koebler, *"Authorized Service Provider" Programs Undermine Our Right to Repair Electronics*, MOTHERBOARD (Aug. 30, 2016, 3:25 AM), https://motherboard.vice.com/en_us/article/aek4z8/tesla-apple-right-to-repair [hereinafter *Authorized Service Provider*].

[318] *See* Safeway Inc. v. Abbott Labs., 761 F. Supp. 2d 874, 889-90 (N.D. Cal. 2011).

[319] *See* Koebler, *Authorized Service Provider*, *supra* note 317 ("Few repair shops even bother fixing other types of smartphones, because sourcing parts and figuring out how to do the repairs just isn't profitable.").

repair parts and maintain exclusive control over after-market repairs.[320] This is a violation of the second element of a section 2 antitrust claim.[321] One example of this is Apple's restrictive "Authorized Service Provider" program, which allows Apple to reshape the repair market as it sees fit.[322] Apple decides who is allowed to repair their products, the scope of the repairs, and the royalties paid back to Apple for access to parts and manuals.[323] Apple has even used federal counterfeit enforcement initiatives against third-party repair providers as a way to further solidify its control over the repair market.[324]

Another example of a company subject to antitrust litigation because of similar prohibited conduct is Keurig, and their "K-Cup."[325] Keurig designed its 2.0 coffee machines to only accept their "K-cups" and shut out sellers of third-party coffee pods that no longer worked on the new model.[326] Customers and third-party sellers found ways around the locks in Keurig's coffee machine, and Keurig eventually reneged on its decision to allow only its proprietary coffee pods.[327] As a result of this conduct, Keurig became embroiled in a number of antitrust lawsuits.[328] Keurig's and Apple's conduct effectively locks consumers into purchasing after-market products from them, without any options for alternatives.[329] This type of after-market dependence on the primary market, and lack of alternatives for after-market products, is enough to sustain an antitrust claim in many jurisdictions.[330]

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320 *See* Eastman Kodak Co. v. Image Tech. Servs., 504 U.S. 451, 483-84 (1992).

321 *Id.*

322 *See* Koebler, *Authorized Service Provider*, *supra* note 317.

323 Jason Koebler, *Do You Know*, *supra* note 144.

324 *See, e.g.*, cellphonerepair, *iPhone Screens Seized by US Customs, Cell Phone Repair is Illegal!*, HOWARD FS. MOBILE COMMUNITY (Jan. 14, 2013, 11:03 PM), http://www.howardforums.com/showthread.php/1788191-iPhone-screens-seized-by-US-Customs-cell-Phone-repair-is-illegal!. *See generally Federal Agencies Launch "Operation Chain Reaction,"* U.S. IMMIGR. & CUSTOMS ENFORCEMENT (June 14, 2011), https://www.ice.gov/news/releases/federal-agencies-launch-operation-chain-reaction (discussing the Department of Defense's new initiative against counterfeit electronic parts).

325 *See generally* JACOB A. KRAMER & S. CAGLE JUHAN, THE FIGHT FOR AFTERMARKETS: IP AND ANTITRUST ISSUES (2015), https://www.bryancave.com/images/content/7/3/v2/73352/The-Fight-for-Aftermarkets.pdf.

326 *Id.*

327 *Id.*

328 *Id.*

329 *See id.*

330 *See, e.g.*, Datel Holdings Ltd. v. Microsoft Corp., 712 F. Supp. 2d 974, 998-99

Another example of egregious conduct is Apple's blatant targeting of individuals who had taken their phones to non-Apple repair shops with "error 53."[331] This error affected iPhone users who repaired their home button touch-ID sensor through a non-Apple technician.[332] If any user updated their phone to the latest version of iOS 9, their phone would immediately be rendered useless, even when there were no prior issues with the phone.[333] All user data would be deleted without any warning or indication.[334] The phone would simply display "error 53" on the screen.[335] There was no software fix, forcing users to buy a new phone.[336] When asked to comment, an Apple representative cited "faulty screens or other invalid repair components" as the cause of "error 53."[337] However, the message only appeared on phones that underwent third-party repairs after the software update.[338] Other companies employ similar tactics to prevent repairs on devices like refrigerators.[339] For example, one repairman diagnosed a faulty part on a software-embedded fridge, successfully replaced it, but was met with a reset code known only by the manufacturer.[340]

The Sherman Act "rests on the premise that unrestrained interaction of competitive forces will yield the best allocation of our economic resources, the lowest prices, and . . . the greatest material progress."[341] The Act is designed to preserve competition and punish unreasonable

(N.D. Cal 2010) (holding that plaintiff Datel's allegation that defendant Microsoft disabled third-party memory units for its Xbox console through a software update is sufficient to plead anticompetitive conduct); Static Control Components, Inc. v. Lexmark Int'l, Inc., 487 F. Supp. 2d 861, 882-83 (E.D. Ky. 2007) (holding that Lexmark's restriction on printer cartridge resale through its patent rights may constitute an antitrust violation).

331 *See generally* Miles Brignall, *"Error 53" Fury Mounts as Apple Software Update Threatens to Kill Your iPhone 6*, GUARDIAN (Feb. 5, 2016, 1:59 AM EST), https://www.theguardian.com/money/2016/feb/05/error-53-apple-iphone-software-update-handset-worthless-third-party-repair.

332 *Id.*

333 *Id.*

334 *See id.*

335 *Id.*

336 *Id.*

337 *Id.*

338 *See id.*

339 Kendra Pierre-Louis, *Apple Doesn't Want You to Be Able To Fix Your iPhone — Here's Why*, IN THESE TIMES (July 30, 2015), http://inthesetimes.com/article/18155/fight-for-the-right-to-fix-it.

340 *Id.*

341 N. Pac. Ry. Co. v. United States, 356 U.S. 1, 4 (1958).

restraints by entities with disproportionate power.[342] Electronics manufacturers are undermining fair competition and acting contrary to the legislative intent of the Act by taking advantage of a market that no third party can effectively operate in.[343] By using their market influence to exert control, they are engaged in the type of anticompetitive conduct the Sherman Act was written to prevent.

V. SOLUTIONS AND COMPROMISES FOR MANUFACTURERS AND "FAIR REPAIR" ADVOCATES

The best solution for "right to repair" advocates under the current regime of copyright law is a permanent exception for repairs under section 1201 of the Copyright Act.[344] This exception would avoid judicial inquiries and statutory tests and reflect long-standing jurisprudence that repair is not subject to copyright protections.[345] Notably, the United States Copyright Office recognized in a recent report on section 1201 that repair should be exempt from copyright protection.[346] The report considered arguments from numerous comments on the Copyright Office's proposed rulemaking calling for a permanent exception for repair activities.[347] A permanent statutory exception would provide a solid statutory basis for "right to repair" legislation by making repair a non-infringing activity.[348] Furthermore as the Copyright Office report states, "permanent exemptions . . . may accommodate many anti-competitive concerns."[349] This suggests that a permanent exception may also resolve issues of misuse or potentially unlawful market restriction.[350] However, this kind of upheaval may require more legislative momentum than Congress could achieve on

342 *See id.* at 4-5.

343 *See* Jason Koebler, *How to Fix Everything*, MOTHERBOARD (Nov. 24, 2015, 8:20 AM), https://motherboard.vice.com/en_us/article/8q89wb/how-to-fix-everything [hereinafter *How to Fix Everything*].

344 *See* Stoltz, *supra* note 67.

345 *See id.*; *cf.* Aro Mfg. Co. v. Convertible Top Replacement Co., 377 U.S. 476, 499 (1964) (holding that repair is a permissible non-infringing activity).

346 *See* U.S. COPYRIGHT OFFICE, SECTION 1201 OF TITLE 17 92-93 (2016), https://www.copyright.gov/policy/1201/section-1201-full-report.pdf (discussing the possibility of exemptions for repair activities).

347 *Id.* at 88-89.

348 *See id.* at 90 ("[T]o the extent section 1201 precludes diagnosis, repair, and maintenance activities otherwise permissible under title 17, the Office finds that a limited and properly-tailored permanent exemption for those purposes . . . would be consistent with the statute's overall policy goals.").

349 *Id.* at 49.

350 *Id.*

an issue like the "right to repair," as past difficulties in passing legislation have demonstrated.[351]

Though it acknowledged the advantages of creating a permanent repair exception, the Copyright Office ultimately did not commit to extending permanent exceptions to repairs through its own internal rule-making process and instead recommended that Congress enact those changes.[352] The Copyright Office also noted that, with respect to any concerns of anti-competitive conduct or misuse that may result from copyright holders suing alleged infringers under section 1201, judicial doctrines and existing statutory rules are the most effective tools for preventing potential abuse.[353] Critics have pushed back on this point, arguing that the enormous costs to parties and the expenditure of judicial resources means leaving it up to the courts is less effective than a legislative or regulatory solution.[354] The more likely scenario for repairs is continued implementation of the unwieldy three-year exceptions to bypassing software locks justified by the "the smallest mote of uncertainty" leading to hesitation from the Librarian of Congress and the Copyright Office.[355] Despite granting temporary reprieve, these ephemeral exceptions will do little to help an independent repair provider who still needs the tools,

[351] *See id.* at 48-49 (noting that Congress likely did not intend to create a debatable standard in the context of repair with 17 U.S.C. § 1201 (2018)).

[352] While the Copyright Office acknowledged the importance of a permanent exception for repair, it ultimately deferred the creation of such an exception to Congress. *See id.* at 92-95. As discussed earlier, relying on Congress or state legislatures will effectively stop or greatly diminish the likelihood of a legislative solution, given the fierce resistance from electronics manufacturers and other copyright holders. *See supra* Part I.

[353] *Id.* at 48-49 (stating that federal courts are suited to address any anti-competitive concerns related to circumvention of software locks and that existing fair use principles adequately protect repair activities on software-embedded electronics). The Copyright Office ultimately puts the responsibility on courts to conduct a case-by-case inquiry to balance the fair use factors and determine whether the repair on a particular product is non-infringing, or whether a manufacturer is engaged in copyright misuse, rather than solve the problem by expressly creating an exception through its own rulemaking process. *See id.* at 49; *see also supra* Part I.C (discussing the inadequacy of statutory repair exemption under 17 U.S.C. § 117 (2018)); *supra* Part II (discussing the development and application of the copyright misuse doctrine).

[354] *See* Jessica Fjeld, *Copyright Office Says Current Law Addresses Concerns about Software-Enabled Consumer Products*, CYBERLAW CLINIC (Jan. 17, 2017), https://clinic.cyber.harvard.edu/2017/01/17/copyright-office-says-current-law-addresses-concerns-about-software-enabled-consumer-products/ (discussing the Copyright Office's "missed opportunity" by failing to address concerns about the legality of repairing consumer-embedded electronics).

[355] *Re:Create*, *supra* note 65.

manuals and software to adequately perform repairs.[356] The concerns and fears expressed by electronics manufacturers, and the Copyright Office's insistence on heeding those concerns, are the likely source of continued inaction towards a permanent exception for repairs.

Electronics manufacturers have expressed fears of software piracy if independent parties could copy the software embedded in smartphones and tractors.[357] Although their fears are not unwarranted, their products are at risk of piracy regardless of how staunchly they defend their copyright protections.[358] Apple users hacked new devices within days of their release.[359] Despite Apple's best efforts, counterfeit parts are manufactured and sold to repair providers who would otherwise buy legitimate Apple parts if they were reasonably available.[360] Illicit software "cracks" of John Deere's tractor firmware are freely available on the internet.[361] Farmers who are desperate to fix their equipment will resort to these illegal means instead of wasting time with a certified John Deere repair they could easily do themselves if not for the software locks.[362] Software piracy is pervasive and problematic, but denying legitimate customers an opportunity to fix their devices and equipment is an illogical, ineffective, and overly burdensome solution.[363]

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356 *See id.*

357 *See, e.g.*, Weins, *We Can't Let John Deere*, *supra* note 35 ("[John Deere] argues that allowing people to alter the software — even for the purpose of repair — would 'make it possible for pirates . . . to free-ride off the creativity, unique expression and ingenuity of vehicle software.'").

358 *See, e.g.*, Jason Koebler, *Why American Farmers Are Hacking Their Tractors with Ukrainian Firmware*, MOTHERBOARD (Mar. 21, 2017, 1:17 PM), https://motherboard.vice.com/en_us/article/xykkkd/why-american-farmers-are-hacking-their-tractors-with-ukrainian-firmware (detailing the process by which farmers acquire illegal software "cracks" to fix their tractors).

359 Chris Smith, *The iPhone X Has Already Been Jailbroken*, BGR (Nov. 10, 2017), http://bgr.com/2017/11/10/iphone-x-jailbreak-ios-11-1-a11-bionic/ (reporting that the iPhone X was "jailbroken" one week after its release).

360 *See* Koebler, *How to Fix Everything*, *supra* note 343 (discussing how professionals try to source legal parts from China but are ultimately frustrated both by the lack of quality assurance and the questionable origin of those parts).

361 *See id.*

362 *Id.* For a lengthy internet forum discussion between software engineers, John Deere customers, and farm workers, see *Farmers Look For Ways to Circumvent Tractor Software Locks*, Y COMBINATOR (Apr. 9, 2017), https://news.ycombinator.com/item?id=14074894.

363 *See* Grant Gerlock, *Farmers Look for Ways to Circumvent Tractor Software Locks*, NPR (Apr. 9, 2017, 6:18 PM ET), https://www.npr.org/sections/alltechconsidered/2017/04/09/523024776/farmers-look-for-ways-to-circumvent-tractor-software-locks; Stoltz *supra* note 67 (noting the unfounded early fears of piracy that led to software

Another compromise, one manufacturers might be more inclined to accept, would be nationwide adoption of right to repair standards by electronics manufacturers like the automobile manufacturers did with the Massachusetts Automotive Repair Act.[364] In doing so, electronics manufacturers would be adopting right to repair legislation as a national standard.[365] There are good business and policy reasons for promoting flexibility in after-market repairs without forcibly constricting the market. For example, in the context of automobile repairs, the availability of third-party repair providers benefits consumers by providing a range of options and lowering repair costs.[366] This encouragement of market flexibility will likely create good will for the manufacturer from consumers and critics, in contrast to the criticism that comes from underhanded business practices.[367] Moreover, it is not as though manufacturers have completely lost the repair market.[368] They can still sell parts and tools to independent repair providers for a profit and encourage growth of local business.[369] However, manufacturers have demonstrated no interest in this kind of holistic encouragement of economic growth and engagement with third parties, and instead promote the cycle of disposal and replacement of their products.[370] For example, Apple has forced new product purchases even when the repair would be inexpensive.[371] In one case, an Apple store told the customer that he would have to buy a new phone because they did not repair headphone jacks.[372] Therefore,

lock protections; many products without software protections are commercially successful despite the threat of piracy).

364 *See generally* Nelson, *supra* note 19.

365 *Cf. id.*

366 *See* Brief for Auto Care Ass'n & Int'l Imaging Tech. Council as Amici Curiae Supporting Petitioner at 29, Impression Prod., Inc. v. Lexmark Int'l, Inc., 137 S. Ct. 1523 (2017) (No. 15-1189).

367 *Cf.* Lulu Chang & Trevor Mogg, *Following Battery Backlash, Apple Offers a $50 Refund to Some Customers*, DIGITAL TRENDS (May 23, 2018, 11:22 AM), https://www.digitaltrends.com/mobile/apple-complaints-iphone-battery-replacement-pledge/ (discussing the consumer backlash after Apple charged customers high prices to replace batteries prematurely worn out as a result of Apple's own software update).

368 *See* Joe Marconi, *Why Independent Repair Shops Win*, RATCHET+WRENCH (Aug. 1, 2016), https://www.ratchetandwrench.com/articles/1765-why-independent-repair-shops-win.

369 *See id.*

370 Chris Ely, *The Life Expectancy of Electronics*, CONSUMER TECH. ASS'N (Sept. 16, 2014), https://www.cta.tech/News/Blog/Articles/2014/September/The-Life-Expectancy-of-Electronics.aspx.

371 Pierre-Louis, *supra* note 339.

372 *Id.*

he would have to trade in his old phone and purchase a new phone.[373] This "out with the old, in with the new" business model indicates that consumer electronics are designed to be disposable, not as long term pieces of equipment maintainable through regular repairs.

Embracing third-party repair providers to increase the longevity of electronics also has marked benefits for the environment.[374] For example, after the Samsung Galaxy Note 7 recall, Samsung disposed of 4.3 million smartphones without any recycling plan.[375] Lack of recycling methods for phones often exacerbates the environmental harms associated with electronics disposal.[376] Ninety-nine percent of rare earth metals in phones cannot be extracted,[377] and most of the high-grade plastic used in phone shells is turned into low-grade plastic.[378] By increasing the longevity of electronic devices and encouraging repair, electronics manufacturers can make a positive impact on the environment.[379] As iFixit CEO Kyle Weins stated: "Your competition is not each other . . . [w]e're competing with the garbage dump."[380]

CONCLUSION

Independent repair providers and individual tinkerers should have the tools, manuals, and software they need to make their own repairs without fear of a lawsuit from an electronics manufacturer. Their ability to repair the devices they purchase and own should not be barred by the manufacturer's misuse of copyright law and their eagerness to maximize profits through an unlawful monopoly. By forbidding individuals from engaging in repair activities, manufacturers are arguably redefining ownership of their products

373 *Id.* This customer took his phone to an independent repair shop and bought a headphone jack for ten cents. The entire repair cost twenty-five dollars. *Id.*

374 *See* Brief for Auto Care Ass'n & Int'l Imaging Tech. Council as Amici Curiae Supporting Petitioner at 30, Impression Prod., Inc. v. Lexmark Int'l, Inc., 137 S. Ct. 1523 (2017) (No. 15-1189).

375 Anna Leach & Olivia Boyd, *Samsung and Greenpeace: What You Need to Know About E-Waste*, GUARDIAN (Mar. 1, 2017, 1:00 AM EST), https://www.theguardian.com/sustainable-business/2017/mar/01/samsung-greenpeace-what-you-need-to-know-e-waste-smartphones-recycling.

376 *See generally Recycling Isn't the Answer; It's the Last Resort*, IFIXIT, https://ifixit.org/recycling (last visited Nov. 19, 2017).

377 *Id.*

378 Koebler, *How to Fix Everything*, *supra* note 343.

379 *See id.*

380 *Id.*

and tethering consumers to their services. Independent repair providers generally don't have the money and manpower to fight them. However, as this Note has demonstrated, there are several legal doctrines outside of the enumerated statutory exceptions that support state legislators and repair organizations advocating for "right to repair" bills. Electronics manufacturers are misusing copyright, violating fair use principles, and engaging in an unlawful monopoly on the market for repairs. By applying these legal doctrines, and continuing their zealous advocacy, "right to repair" supporters will continue to discourage corporations like Apple and John Deere from fundamentally altering the concept of ownership.