



UNITED STATES COPYRIGHT OFFICE

Long Comment Regarding a Proposed Exemption Under 17 U.S.C. § 1201

Reply Comment of iFixit and The Repair Association, Repair.org

Regarding Class 12: Repair

March 10, 2021

[] Check here if multimedia evidence is being provided in connection with this comment

ITEM A. COMMENTER INFORMATION

iFixit is an international, open-source, online repair manual for everything. iFixit represents a global community of makers, fixers, refurbishers, tinkerers, and repair professionals. In 2020, iFixit helped over 110 million people repair everything from mobile phones to cars and tractors. Expansion of these exemptions is necessary to preserve ownership rights, maintain a consumer's right to repair, and enable iFixit to continue helping people repair the devices they own.

The Repair Association, Repair.org ("Repair.org") represents the combined interests of repair professionals in the technology aftermarket. Its members span the interests of individuals, nonprofits, and for-profits engaged in the repair, resale, recycling, and re-commerce of technology driven equipment. Its mission is to advocate for repair-friendly policies, regulations, statutes, and standards at the federal, state, and local level.

iFixit
1330 Monterey St.
San Luis Obispo, CA 93401
(805) 464-0573
Kyle Wiens
kyle@ifixit.com
Kerry Maeve Sheehan
kerry@ifixit.com

The Repair Association, Repair.org
P.O. Box 283
North River, NY 12856
(518) 251-2837
Gay Gordon-Byrne
ggbyrne@repair.org

iFixit and Repair.org are represented in this comment by:

Jason Schultz
Technology Law & Policy Clinic
New York University School of Law

Adrienne Lewis, J.D. Candidate 2022
Shivani Morrison, J.D. Candidate 2021
SchultzJ@exchange.law.nyu.edu
(212) 992-7365

ITEM B. PROPOSED CLASS ADDRESSED

Proposed Class 12: Computer Programs – Repair

ITEM C. OVERVIEW

An exemption must be granted upon a showing of adverse impact on non-infringing uses of software-enabled devices. 17 U.S.C. § 1201 provides that the ban on circumvention “shall not apply” to users of copyrighted works when the Librarian determines that such users are adversely impacted.¹ And the statute requires that the Librarian “shall publish” each class of works for which adverse impact is shown.² The proponents of class 12 have made such a showing.

First, the use of software embedded in devices as needed for diagnosis, repair, and modification is non-infringing under the fair use doctrine and the software maintenance, modification and repair exception codified at 17 U.S.C. § 117.

Second, Section 1201’s ban on circumvention causes an adverse effect to users of software-enabled devices. Lawful users of software-enabled devices must be able to repair their devices or else suffer from the device’s failure to work properly. At-home repairs and local, independent repair services are staples of society that consumers have relied upon since well before the emergence of software-enabled devices. As these devices become more ubiquitous, this long-standing practice must be preserved or else users will suffer adverse impacts. Copyright owners do not have an exclusive right to control repair,³ and Section 1201 does not give them one.⁴ Therefore, interference with a user’s ability to repair their devices itself constitutes an adverse effect.

Opponents attempt to argue that the availability of alternative repair solutions mitigates this harm. However, alternatives are often insufficient, unduly difficult, costly, or even impracticable, if they are available at all. In many cases, manufacturers of software enabled devices do not provide repair services, or do not provide them for all devices. Thus, the ability to repair software-enabled devices should not be impeded by the circumvention prohibition; without this exemption, the adverse effect will continue to grow as more and more everyday devices require circumvention to repair their software components.

These adverse effects are felt by all users of software-enabled devices, albeit to differing degrees and in different contexts, as will be described in Item E. Therefore, contrary to the opponents’ assertions, it is appropriate and sensible to define these devices together as a class to protect

¹ 17 U.S.C. § 1201(a)(1)(B).

² 17 U.S.C. § 1201(a)(1)(D).

³ 17 U.S.C. § 106.

⁴ *Chamberlain Group, Inc. v. Skylink Technologies, Inc.*, 381 F.3d 1178, 1203 (Fed. Cir. 2004).

users' rights and prevent widespread disruption to consumers. Moreover, it is necessary to do so to avoid placing an enormous administrative burden on industry entities, who may struggle to categorize products in the increasingly interconnected Internet of Things (IoT) space, and on the Copyright Office (the "Office") itself, who would inevitably face countless, almost identical proposed exemptions for each unique subcategory of software-enabled device.

Finally, the relevant statutory factors favor adoption of the exemption. As to the first factor, an exemption for diagnosis, maintenance, and repair increases the availability for use of embedded software by restoring software-enabled devices to working order, and by enhancing the functionality of such devices. Under the fourth factor, the proposed exemption will not negatively affect the market for or value of software-enabled devices. With respect to the fifth factor, the record supports consideration of positive externalities of adopting the exemption beyond its primary benefit, the removal of barriers to non-infringing repair and modification; regulatory and legal concerns already adequately addressed by other statutes or in other areas of law are not sufficient to prevent the adoption of this exemption, which is otherwise warranted.

ITEM D. TECHNOLOGICAL PROTECTION MEASURE(S) AND METHOD(S) OF CIRCUMVENTION

As described in the initial comment, the Office continues to recognize that technological protection measures ("TPMs") effectively control access to the computer programs in software-enabled devices within the meaning of the statute and the Office intends to renew exemptions for the repair of software-enabled devices in certain categories.⁵ The same types of TPMs are at issue here, bypassed in the same way, to perform the same noninfringing use: repair. These include passwords required to perform maintenance and repair, the need for replacement parts to be paired to the device by the manufacturer, and separate calibration software that must be connected to receive diagnostic information and reset error codes. More and more types of products are embedded with software, and manufacturers commonly utilize TPMs to prevent access to that software.⁶ Our initial comment describes numerous such TPMs in software-enabled devices.⁷

ITEM E. ASSERTED ADVERSE EFFECTS ON NONINFRINGEMENT USES

Repair, Diagnosis, and Maintenance Are Non-Infringing Fair Uses and Also Non-Infringing Under 17 U.S.C. § 117

The repair of software-enabled devices is noninfringing under Section 107 (Fair Use) and Section 117 (Repair and Maintenance) of the Copyright Act. In its 2016 report on software-enabled devices, the Office stated that "[t]raditional copyright doctrines such as the idea/expression dichotomy, merger, scènes-à-faire, and fair use provide a combined and reasonable defense for many repair activities."⁸ This finding and its basis remain correct.

⁵ Exemptions to Permit Circumvention of Access Controls on Copyrighted Works: Notice of Proposed Rulemaking, 85 Fed. Reg. 65,295, 65,299-300 (Oct. 15, 2020).

⁶ Opening Comment of iFixit and The Repair Association, Repair.org at 10.

⁷ *Id.* at 5-10.

⁸ U.S. Copyright Office, *Software Enabled Consumer Products*, 33 (Dec. 2016), <https://www.copyright.gov/policy/software/software-full-report.pdf> ("2016 Software Study").

Repair of software-enabled devices is a fair use and therefore non-infringing. For over three decades, courts have consistently found fair use in software copyright cases when the purpose and character of the use has been to access, understand, and interoperate with unprotectable elements of software, such as its functionality or other methods of operation,⁹ or to enable legitimate private uses.¹⁰ Because the purpose of repair is to restore a device’s functionality to its previous working state, it likely constitutes non-infringing use.¹¹ Modification of a software-enabled device is also non-infringing, especially when it is a reasonable step to a transformative use such as repair.¹² Therefore, prohibition of repair adversely affects those who seek to undertake and benefit from these non-infringing uses.

Repair of software-enabled devices is also non-infringing under Section 117 of the Copyright Act. Under 17 U.S.C. § 117(c), copying done solely for the purpose of repair or maintenance is not infringement.¹³ While “repair” describes restoring a device to original working order, “maintenance” includes a broader range of activities such as monitoring for and diagnosing problems or component malfunctions over the life of a device.¹⁴ Section 1201 does not create new exclusive rights; it merely helps protect those that already exist under the Copyright Act.¹⁵ Therefore, under both Sections 107 and 117, repair and maintenance activities are non-infringing and outside the scope of copyright owners’ exclusive rights.

Some opponents of this exemption claim the proposed class is overly broad, but it is properly scoped, in part because the fair use and Section 117 analyses are consistent across the proposed class. For example, the proposed class properly includes all software-enabled devices because when the purpose of the secondary use is repair, this purpose has been consistently found to favor a finding of non-infringement regardless of the type of physical device containing the software.¹⁶ Whether the relevant software which a user must access for repair is embedded within a car or a smart refrigerator, the analysis is the same.¹⁷ The same is true for the second factor, since this class is united by the relevant copyrighted work being *software*. The second fair

⁹ *Sony Computer Entm’t v. Connectix Corp.*, 203 F.3d 596, 603 (9th Cir. 2000); *Sega Enters. v. Accolade, Inc.*, 977 F.2d 1510, 1527 (9th Cir. 1992).

¹⁰ *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 450 (1984).

¹¹ *Storage Tech. Corp. v. Custom Hardware Eng’g & Consulting, Inc.*, 421 F.3d 1307 (Fed. Cir. 2005); *Connectix*, 203 F.3d 596; *Sega*, 977 F.2d 1510.

¹² See *Sega*, 977 F.2d at 1527 (finding that disassembly was fair use even when Accolade modified Sega’s programs and studied the results thereof to produce interoperable software); see also *Connectix*, 203 F.3d at 602 (finding that Connectix’s intermediate copying and modification of Sony’s entire software system in order to gain access to its unprotectable elements was fair use).

¹³ 17 U.S.C. 117(c).

¹⁴ *Storage Tech*, 421 F.3d at 1312.

¹⁵ *Chamberlain*, 381 F.3d at 1202-3.

¹⁶ See *Storage Tech*, 421 F.3d at 1309-10 (repair of data library units); see also *Connectix*, 203 F.3d at 599 (reverse engineering an emulator from software contained in a Sony PlayStation console); see also *Sega*, 977 F.2d at 1514-15 (disassembly of Genesis console and Sega game cartridges to create compatible games).

¹⁷ Acting Register of Copyrights, *Section 1201 Rulemaking: Seventh Triennial Proceeding to Determine Exemptions to the Prohibition on Circumvention: Recommendation of the Acting Register of Copyrights* (“2018 Recommendation”), 203-205 (2018)

https://cdn.loc.gov/copyright/1201/2018/2018_Section_1201_Acting_Registers_Recommendation.pdf (determining diagnosis, repair, and maintenance to be fair uses across a large class of devices including home appliances and smart phones).

use factor weighs in favor of fair use across the class because, as the Register acknowledged in its 2015 Recommendation when it adopted an exemption for repair and diagnosis of some software in motorized land vehicles,¹⁸ the nature of the underlying copyrighted software is essentially functional rather than expressive where the software is not meant to be consumed as a creative work.¹⁹ Under the third factor, even use of the entire software work is reasonable when the purpose is repair or even modification, given that such activities often require analysis of the full software program, when the ultimate product does not contain infringing copies.²⁰ Finally, the fourth factor also supports a finding of fair use because repair creates no cognizable effect on a market the copyright holder has a right to control or license. In the 2018 Recommendation, the Register noted that there is no separable market for embedded software and that repair, which supports rather than displaces the objects of the copyrighted work, is unlikely to interfere with markets available to the copyright owner.²¹ Moreover, when the purpose of the secondary use is transformative, as it is here,²² copyright owners cannot claim market harm.²³ The repair of software-enabled devices simply does not undermine the potential market for the original copyrighted works. Therefore, repair, diagnosis, and maintenance of software-enabled devices is invariably fair use.

This holds true even for software-enabled devices that contain, display, or perform expressive content. In these cases, the exemption does not allow access for any other purpose than repair, so circumvention for other purposes, such as displaying or performing literary or audiovisual works to entertain or enjoy those works would be excluded,²⁴ as the underlying copyrighted work that is the subject of this exemption is still the software, not the literary or audiovisual content that the device may hold. The proposed exemption encompasses acts that ultimately restore functionality to the device, not those that aim to copy, distribute, or alter the expressive content therein. Further, there is no evidence that repair harms the market for expressive works. Indeed, in ensuring that devices remain operational, repair supports the market for those works.

¹⁸ Acting Register of Copyrights, *Section 1201 Rulemaking: Sixth Triennial Proceeding To Determine Exemptions to the Prohibition on Circumvention* (“2015 Recommendation”), 235 (2015) <https://www.copyright.gov/1201/2015/registers-recommendation.pdf> (“Although opponents urge the Register to treat vehicle software differently, the Register is unable to discern a meaningful difference between computer programs used to operate a vehicle and those used to operate a phone. Vehicle software is at least as functional as a phone’s operating system, in that it is used to support operational and mechanical processes.”).

¹⁹ *Id.* at 234-235 (recommending an exemption for diagnosis, repair, or modification of some vehicle software).

²⁰ *See Connectix*, 203 F.3d at 606 (finding fair use even when defendant copied plaintiff’s entire operating system multiple times); *see also Sega*, 977 F.3d at 1526-27 (“[W]here the ultimate (as opposed to direct) use is as limited as it was here, the [third fair use] factor is of very little weight.”); *see also Universal City Studios*, 464 U.S. at 449-50 (copying of entire work does not preclude fair use); *see also Campbell v Acuff-Rose Music, Inc.*, 510 U.S. 569, 586-590 (1994) (finding fair use even when a substantial amount and the “heart” of the copyrighted work was used because it was reasonable in relation to the purpose of the use).

²¹ 2018 Recommendation at 204-205.

²² *Id.* at 204 (relying on the 2015 Recommendation’s determination that repair is a transformative use to give little weight to the third fair use factor, leading to a fair use finding).

²³ *Bill Graham Archives v. Dorling Kindersley, Ltd.*, 448 F.3d 605, 615 (2d Cir. 2006) (holding that when a use falls within a transformative market, the rights holder does not suffer market harm).

²⁴ *See* 2018 Recommendation at 197 (acknowledging that concerns about unauthorized access to expressive content on vehicle infotainment and telematics systems relate primarily to abuses of circumvention outside the scope of the then proposed exemption).

The Lack of an Exemption Adversely Affects the Lawful Use of Personal Property

The Lack of an Exemption Deprives Users of the Right to Repair

Sections 107, 109, and 117 of the Copyright Act create a right to non-infringing use of one's devices, such as repair, because the devices are one's personal property.²⁵ The ban on circumvention for software-enabled devices for the purposes of diagnosis, maintenance and repair deprives users of this right and interferes with their ability to use their property in a non-infringing manner.²⁶ The deprivation of this right *in itself* is a harm to users, even absent other tangible harms.²⁷

The ban also tangibly adversely impacts users. For the many who cannot gain access to timely, affordable repair without circumvention, the ban leaves them with inoperative or depleted devices, thus depriving them of the value that their devices could deliver. For those who eventually manage to find a route to repair without circumvention, the ban requires them to expend much more time, money, and energy than they otherwise would. For example, users of unrepaired smart alarm clocks or lightbulbs may find themselves running late to work and spending their evenings holding flashlights, respectively. Additionally, homeowners with unrepaired smart thermostats may see an increase in their energy bills; those with broken smart washing machines may need to spend time and money at a laundromat; and those with unfixed smart garage door openers may need to seek out and even pay for alternative parking. A family or commercial kitchen with an unrepaired smart refrigerator or meat thermometer may have its dinner ruined or may inadvertently consume or serve spoiled products. A driver with an unrepaired software safety system may be seriously injured in a crash, while a farmer with an unrepaired tractor may be unable to harvest his or her crops, causing great financial distress.²⁸ The lost benefits and increased costs are very real for all users of software-enabled devices.

While opponents of the proposed exemption continue to recycle their argument that the availability of alternatives and the existence of an independent repair market somehow obviate the need for an exemption, these are not core elements of the test that the Office has consistently employed in making its determinations on exemptions. By comparison, an adverse effect on non-infringing uses is a core element of the test, and has in previous cycles been sufficient to that determination despite available alternatives to circumvention.²⁹ When the Office has contemplated alternatives, such as with regard to repair in the 2018 Recommendation, it did not do so to *deny* an exemption; rather, it highlighted the insufficiency of those alternatives as further reason to *grant* one.³⁰ Therefore, the Office should prioritize the users' right to repair and the adverse impact on users when manufacturers actively deprive them of their ability to exercise

²⁵ See generally Aaron Perzanowski & Jason Schultz, *Reconciling Intellectual and Personal Property*, 90 Notre Dame L. Rev. 1211 (2015).

²⁶ *Id.*

²⁷ See generally Aaron Perzanowski & Jason Schultz, *The End of Ownership: Personal Property in the Digital Economy*, MIT Press (2016).

²⁸ See Jason Koebler, *Why American Farmers Are Hacking Their Tractors With Ukrainian Firmware*, Vice (Mar. 17, 2017),

<https://www.vice.com/en/article/xykkkd/why-american-farmers-are-hacking-their-tractors-with-ukrainian-firmware>.

²⁹ 2015 Recommendation at 239-40.

³⁰ 2018 Recommendation at 213-214.

that right, as discussed above, and should not deny an exemption based on the purported existence of alternatives.

Current Alternatives Fail to Mitigate the Harms that the Lack of an Exemption Imposes

As mentioned in the preceding section, availability of alternatives should have little relevance to the Office's determination; limited commercially-available options for repair do not solve for the adverse effects to users who are deprived of the affirmative right to non-infringing routes to repair. But in the event that alternatives are considered, it should be noted that opponents' assertions regarding the sufficiency of alternatives are misguided and inaccurate. Existing alternatives consist of those offered by manufacturers, their inconsistent and often delayed updates, and the very limited amount of authorized third-party repair providers. These limited alternatives fail to address the growing demand of users' repair needs, leaving many users without a remedy and denying them the utility of their devices. Additionally, these alternatives, when they *are* available, impose unnecessary and unreasonable costs on those who seek them. Thus, the dearth of accessible, reasonably-priced repair alternatives adversely affects users.

First, alternatives fail to meet the at-home repair needs of users with broken devices who cannot safely and with reasonable effort access outside services. These users include people with limited mobility and those in rural areas, who would either typically rely on repair services that come directly to the user or make repairs themselves.³¹ The COVID-19 pandemic has universalized this challenge and greatly increased the importance of a solution; at-home repair is not simply a frivolous convenience, but rather is key for public health and safety. But neither the open-source alternatives nor authorized repair shops to which opponents turn sufficiently address this need. Thus, users must either exert unwarranted extra time, money, and effort; sacrifice their safety to access out-of-home repair services (if available); or forgo the tangible and intangible benefits of properly-functioning devices.

Second, manufacturer resources, services, and updates are not sufficient to address users' repair needs and instead exploit users' desperation in an anti-competitive manner. Manufacturer updates may not work, may crash the devices, or may fail to address a user's specific issue in a timely fashion.³² For example, a manufacturer software update to Nest thermostats introduced a bug that drained the devices' batteries, leaving many users in the cold without heat in the middle of winter; Nest failed to communicate with or provide any timely repair solutions to these users.³³ Additionally, manufacturers may fail to provide timely services and updates or may go out of business, foreclosing any future resources.³⁴ For example, John Deere has consistently

³¹ See Dan D. Nabel, *Comment of the USC Intellectual Property & Technology Law Clinic* 12 (2015), https://cdn.loc.gov/copyright/1201/2015/comments-020615/InitialComments_longform_USC_Class21.pdf.

³² Google updated their calendar API, and Samsung failed to update older smart refrigerators, essentially breaking this feature. Hundreds of users complain about this in the Google forums. See Google Forums, *Can't sign in to Google calendar on my Samsung refrigerator* (Nov. 11, 2014), <https://support.google.com/calendar/forum/AAAAd3GaXpEUhfpcwO0X0c/?hl=en&gpf=%23!topic%2Fcalendar%2FUhfpcwO0X0c>.

³³ See Nick Bilton, *Nest Thermostat Glitch Leaves Users in the Cold*, *The New York Times* (Jan. 13, 2016), <https://www.nytimes.com/2016/01/14/fashion/nest-thermostat-glitch-battery-dies-software-freeze.html>.

³⁴ See *Better Business Bureau, Black and Decker (U.S.): Complaints*, *Better Business Bureau, Better Business Bureau* (Oct. 12, 2020), <https://www.bbb.org/us/md/towson/profile/electric-tools/black-decker-us-inc-0011-1070/complaints> [<https://perma.cc/VJ95-Y9VT>] ("I have e-mailed Black and Decker for several months to comply

withheld repair, software, and diagnostics tools from users of its software-enabled farming equipment, forcing farmers to come to the manufacturer for simple fixes that they would typically do themselves.³⁵ Deere's stronghold has enabled it to charge inflated repair rates and has left some farmers with lengthy repair delays that have had real, detrimental impacts on their crops and yields.³⁶ After ongoing pushback from the farming industry, Deere committed nearly three years ago to make various repair resources public for farmers to access, but has failed to follow through on this promise.³⁷ This has resulted in direct adverse impact on users of Deere farming equipment.³⁸ Unkept promises, delays, and wildly inflated prices can be seen across the entire class of software-enabled devices, as can the adverse impact to the day-to-day lives and pockets of their users.

Third, the select parties permitted to perform repairs, such as automotive repair shops who operate under the industry's memorandum of understanding ("MOU"), are prohibited from performing certain types of repairs, leaving gaps in the market, a shortcoming the Register recognized in its 2015 recommendation.³⁹ For example, the wireless telematics systems found in software-enabled Tesla vehicles fall outside of the MOU. As a result, Tesla users must go directly to the manufacturer for repair services.⁴⁰ As these systems and others excluded by the MOU become more prevalent in the near future, delays, inflated repair rates, and the insufficiency or unavailability of adequate repair tools will become more ubiquitous.⁴¹ Furthermore, many manufacturers impose large financial and temporal hurdles to even becoming such an authorized party; fees, formal request, training programs, and certification requirements often make the process impracticable.⁴²

to their warranty and repair my drill. . . Black and Decker will not reply to me but is pathetic enough to send me adds [sic] to my e-mail instead asking me to buy more products. After two months of emailing [Black and Decker] and them refusing to answer me and repair my tool. I went to their website to get a [sic] address of one of their repair locations near me. . . After [. . .] finding them out in the county and the owner mowing the grass, Paul tells me he is no longer in business and has not been in business for about 7 years!") [<https://perma.cc/VJ95-Y9VT>].

³⁵ See *Why American Farmers Are Hacking Their Tractors With Ukrainian Firmware*.

³⁶ *Id.*

³⁷ *Id.*

³⁸ See *Welcome to the Tractor Hacking Team Site*, Tractor Hacking, <https://tractorhacking.github.io/> (A group of farmers have resorted to attempting to reverse-engineer Deere's technician software in response to Deere's unkept promise to make repair resources available.).

³⁹ 2018 Recommendation at 240 ("While it is an encouraging development, the record nonetheless suggests that the MOU cannot fully address the cited adverse impacts.").

⁴⁰ See Jonathan M. Gitlin, *After 12,523 Replacements, Feds Investigate Tesla Media Control Unit Failures*, *Ars Technica* (Nov. 17, 2020),

<https://arstechnica.com/cars/2020/11/after-12523-replacements-feds-investigate-tesla-media-control-unit-failures/>.

⁴¹ Fredrik Dahlqvist et al., *Growing opportunities in the Internet of Things*, McKinsey (Jul. 22, 2019), <https://www.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/growing-opportunities-in-the-internet-of-things#> [<https://perma.cc/6LRJ-E3LZ>] ("The number of businesses that use the IoT technologies has increased from 13 percent in 2014 to about 25 percent today. And the worldwide number of IoT-connected devices is projected to increase to 43 billion by 2023, an almost threefold increase from 2018.").

⁴² See Isaac Scher, *Hospitals need ventilators to keep severe COVID-19 patients alive. They might not be able to fix them without paying the manufacturer \$7,000 per technician.*, *Insider* (Jun. 3, 2020) <https://www.businessinsider.com/ventilator-manufacturers-dont-let-hospitals-fix-coronavirus-right-to-repair-2020-5> (describing how hospitals have struggled to repair ventilators since the beginning of the COVID-19 pandemic due to manufacturers' hurdles to becoming an authorized technician).

The Expanded Exemption Can and Should Permit Third-Party Assistance

The Statutory Language Allows for Third-Party Assistance

Section (a)(1) of 1201 specifically features the term “user” instead of “owner.” Had the legislature intended to limit the statute’s application to owners only, it would have designated it as such. The fact that the statute contemplates “users” indicates the intended inclusion of users *beyond* owners, including users whom owners authorize, as the Register recognized in the 2018 Recommendation.⁴³ Third-party authorization is based in the law of agency, which enables a principal to authorize an agent to act on the principal’s behalf. Accordingly, lawful owners of devices who lack the technical skills and expertise needed to perform a repair must be allowed to authorize third-party technicians, their agents, to make these repairs instead and use their devices in the process. Any legal rights for the principal to do so should be transferable to the agent.

Excluding Third-Party Assistance Would Lead to Absurd Results and Would Undermine Consumers’ Ability to Use Repair Services

While the average consumer may be able to sew a ripped seam or even fix a leaky faucet with relative ease, most are not equipped with the skills and expertise needed to repair their own software-enabled devices, as the Office has recognized⁴⁴ and aimed to address in recommending broadened statutory language in 2018.⁴⁵ Instead, those users, the potential beneficiaries of this proposed exemption, must rely upon third-party assistance when faced with a broken device. Most owners of an Amazon Echo smart speaker are incapable of coding a jailbreak. American farmers are incredibly resourceful and talented, but very few have the software engineering expertise to create the software to bypass a sensor in their combines. Biomedical engineers in hospitals are well-trained and highly knowledgeable, but have to maintain hundreds of types of products. Even if they had the technical ability to develop a circumvention, the variety of devices that they manage would make relying on third party circumventions almost certainly necessary.⁴⁶ As a result, if the exemption does not allow for such assistance, most users will not be able to realize its benefits, rendering the exemption futile.

Again, existing alternatives are not sufficient to address these users’ needs in lieu of the wider independent third-party repair market. While an exemption would sustain that market, the absence of an exemption threatens its existence, with consumers bearing the cost. More and more of the products that third-party service providers have traditionally repaired are now software-enabled.⁴⁷ Without extension of an exemption to third parties, there will be an

⁴³ 2018 Recommendation at 225-25 (“...the statutory directive to consider possible adverse effects on ‘users of a copyrighted work’ arguably suggests that, in at least some cases, a party other than the owner of a copy of a work may be within the class of persons covered by an exemption.”).

⁴⁴ U.S. Copyright Office, *Section 1201 of Title 17: A Report of the U.S. Register of Copyrights* (“Section 1201 Report”) 62 (June 2017), <https://www.copyright.gov/policy/1201/section-1201-full-report.pdf> [<https://perma.cc/G9JA-BMZ5>].

⁴⁵ 2018 Recommendation at 224.

⁴⁶ See, e.g. *Ventilators Service Manuals*, Frank’s Hospital Workshop, http://www.frankshospitalworkshop.com/equipment/ventilators_service_manuals.html (an online collection of teaching and learning materials related to medical devices that demonstrates the many types of devices and the numerous models per device).

⁴⁷ 2016 Software Study at 8.

ever-growing list of devices that these independent providers are prohibited from repairing for their customers.⁴⁸ As the list grows, traditional repair will become increasingly obsolete and these providers, many of whom are small local businesses, will struggle to stay afloat. Consumers will then be forced to abandon the longstanding custom of patronizing local service providers for repair of their devices. Because consumers understand ownership to entitle them to use and repair their devices in the manner they choose, this inability to access traditional repair channels runs contrary to consumers' well-settled expectations. In place of small businesses, manufacturers themselves will arise as the primary providers of repair services due to their stronghold on permission to repair—that is, if they opt to provide repair services at all. Some may prefer not to do so in order to encourage users to buy new replacement devices and discard their old ones. As was evidenced by John Deere, this manufacturer dominance will lead to significant delays and inflated costs for consumers. Thus, an extension of an exemption to third parties is increasingly necessary to help sustain the repair market and in turn protect consumers.

The Statutory Factors Favor Granting the Proposed Expanded Exemptions

With respect to the first factor,⁴⁹ removing barriers to repair increases the availability and use of copyrighted works. Software can only be used when the device it enables functions; software lying dormant in broken devices left unrepaired because of circumvention prohibitions is rendered unavailable. It follows that repairing devices increases the availability and use of software.⁵⁰ Furthermore, none of the opponents provide evidentiary or empirical support for the proposition that allowing circumvention for the purpose of repair of software-enabled devices will decrease the availability of software for devices. This factor clearly favors adopting the exemption.

In finding that the fourth factor⁵¹ favored an exemption with respect to home appliances and smartphones in the 2018 Recommendation, the Register noted that “the purpose of diagnosis and repair is to restore the intended functionality of the device.... not to modify expressive works,” and “there [was] little in the record to suggest that engaging in these activities will negatively affect the value of copyrighted works.”⁵² Because the purpose here is the same as it was in 2018 and opponents' record is similarly thin, the fourth factor favors exemption. Opponents to the exemption have failed to provide any evidence that repair of software-enabled devices negatively affects the market for or value of the software.

The relevant market for the work is not the same as the relevant market for the device and should not be confused as such. Some opponents comment that repair or modification of software contained in software-enabled devices could affect the resale value of such devices, but this idea is both faulty and irrelevant. There is no evidence that users purchase software-enabled devices

⁴⁸ *Id.* at i–ii, 2, 8 (offering examples of software embedded in home appliances including microwaves, toasters, thermostats, and refrigerators and noting “the marketplace is changing; some would say radically”); *see also* Section 1201 Report at 88–90.

⁴⁹ 17 U.S.C. § 1201(a)(1)(C)(i).

⁵⁰ 2018 Recommendation at 221 (stating with respect to repair of home devices and smartphones: “The first statutory factor favors an exemption, as the proposed uses extend the useful life of the devices by facilitating repair and restoration of device functionality.”).

⁵¹ 17 U.S.C. § 1201(a)(1)(C)(iv).

⁵² 2018 Recommendation at 221–222.

for the expressive software aspects contained in them rather than for their uncopyrightable functional characteristics, either at the first sale or in subsequent sales. Furthermore, copyright owners do not have a right to control the aftermarket of their works or devices containing their works, per the first sale doctrine.⁵³ As such, the argument that repair and modification of software-enabled devices might affect the value of copyrighted works is both too attenuated and could only concern a market not within the copyright owner's right to control.

Under the fifth statutory factor, the Librarian may consider any other factors it deems appropriate.⁵⁴ The Librarian should consider potential positive externalities of adopting this exemption. While this exemption's primary benefit is the removal of barriers to the user's ability to repair devices that they own—a fair and non-infringing use and one central to conventional understandings of consumer-product ownership—it will also provide external benefits. Allowing device repair will enable consumers to keep their devices longer rather than replacing them with new items, reducing the environmental strain from new device manufacturing and shipping. The exemption will also serve to protect and expand the independent repair industry, leading to the creation of more repair jobs.⁵⁵

In considering other factors, however, the analysis should still remain rooted in the central aim of the triennial rulemaking process: to clear the way for non-infringing uses by removing circumvention prohibitions that adversely affect users. The denial of an exemption on the basis of external regulatory or legal concerns, which are already adequately and more expertly addressed by other government or industry bodies, fails to remove the legitimate harm done to countless users who are adversely affected in their ability to make non-infringing uses. The appropriate bodies to address such external issues are the relevant expert agencies who have the statutory authority to investigate and enforce any alleged violations rather than this Office. Reciprocally, agencies such as the EPA do not appear to consult the Copyright Office when they draft rules that might implicate copyrighted works, such as vehicle emissions regulations, which may implicate software. The rights of so many non-infringing users to simply repair and continue to use their software-enabled devices should not be sacrificed because of mere speculation that some bad actors might ignore already existing laws and proceed under the exemption in an unlawful manner.

If the Librarian nonetheless proceeds to consider potential interference with non-copyright laws and regulations, it certainly should not deny or abridge an exemption absent strong evidence that such conflicts are real, dangerous, and unique to software modifications—that is, not already possible as a result of non-software modifications. Even with more convincing evidence, opponents must do more than merely list safety and regulatory conflicts; they must demonstrate that such conflicts are new threats brought on by software repair and modification specifically, beyond the harm that can be caused by low-tech modifications. For example, a user could remove the muffler from a software-enabled tractor, thus rendering the machine's emissions non-compliant; software modifications that *could* affect emissions levels are nothing beyond the already existing risk of ordinary modification. None of the opponents provide any evidentiary or empirical basis to support the proposition that 1201 exemptions are likely to present such

⁵³ See, e.g., *Kirtsaeng v. John Wiley & Sons, Inc.*, 568 U.S. 519 (2013).

⁵⁴ 17 U.S.C. § 1201(a)(1)(C)(v).

⁵⁵ Opening Comment at 22-23.

significant threats to any other area of law or regulation, and pure speculation does not suffice. Accordingly, the Librarian should disregard opponents' assertions.

DOCUMENTARY EVIDENCE

This Reply does not include documentary evidence.

CONCLUSION

For the above reasons, the Register should recommend and the Librarian should grant the expanded and clarified exemption covering repair of all lawfully acquired software-enabled devices.