LIBRARY OF CONGRESS

U.S. Copyright Office

[Docket No. 2015-6]

Software-Enabled Consumer Products Study: Notice and Request for Public Comment

AGENCY: U.S. Copyright Office, Library of Congress.

ACTION: Notice of inquiry.

SUMMARY: The U.S. Copyright Office is undertaking a study at the request of Congress to review the role of copyright law with respect to software-enabled consumer products. The topics of public inquiry include whether the application of copyright law to software in everyday products enables or frustrates innovation and creativity in the design, distribution and legitimate uses of new products and innovative services. The Office also is seeking information as to whether legitimate interests or business models for copyright owners and users could be improved or undermined by changes to the copyright law in this area. This is a highly specific study not intended to examine or address more general questions about software and copyright protection.

DATES: Written comments must be received no later than February 16, 2016 at 11:59 p.m. Eastern Time. Written reply comments must be received no later than March 18, 2016 at 11:59 p.m. Eastern Time. The Office will be announcing one or more public meetings, to take place after written comments are received, by separate notice in the future.

ADDRESSES: All comments must be submitted electronically. Specific instructions for submitting comments will be posted on the Copyright Office website at

http://www.copyright.gov/policy/software on or before February 1, 2016. To meet accessibility standards, all comments must be provided in a single file not to exceed six megabytes (MB) in one of the following formats: Portable Document File (PDF) format containing searchable, accessible text (not an image); Microsoft Word; WordPerfect; Rich Text Format (RTF); or ASCII text file format (not a scanned document). Both the web form and face of the uploaded comments must include the name of the submitter and any organization the submitter represents. The Office will post all comments publicly in the form that they are received. If electronic submission of comments is not feasible, please contact the Office using the contact information below for special instructions.

FOR FURTHER INFORMATION CONTACT: Sarang V. Damle, Deputy General Counsel, sdam@loc.gov; Catherine Rowland, Senior Advisor to the Register of Copyrights, crowland@loc.gov; or Erik Bertin, Deputy Director of Registration Policy and Practice, ebertin@loc.gov. Each can be reached by telephone at (202) 707-8350.

SUPPLEMENTARY INFORMATION: Copyrighted software can be found in a wide range of everyday consumer products—from cars, to refrigerators, to cellphones, to thermostats, and more. Consumers have benefited greatly from this development: software brings new qualities to ordinary products, making them safer, more efficient, and easier to use. At the same time, software's ubiquity raises significant policy issues across a broad range of subjects, including privacy, cybersecurity, and intellectual property rights. These include questions about the impact of existing copyright law on innovation and consumer uses of everyday products and innovative services that rely on such products. In light of these concerns, Senators Charles E. Grassley and Patrick Leahy (the Chairman and Ranking Member, respectively, of the Senate Committee on the

Judiciary) have asked the U.S. Copyright Office to "undertake a comprehensive review of the role of copyright in the complex set of relationships at the heart" of the issues raised by the spread of software in everyday products.[1] The Senators called on the Office to seek public input from "interested industry stakeholders, consumer advocacy groups, and relevant federal agencies," and make appropriate recommendations for legislative or other changes.[2] The report must be completed no later than December 15, 2016.[3]

This study is not the proper forum for issues arising under section 1201 of the Copyright Act, which addresses the circumvention of technological protection measures on copyrighted works. Earlier this year, the Register of Copyrights testified that certain aspects of the section 1201 anticircumvention provisions of the Digital Millennium Copyright Act ("DMCA") were unanticipated when enacted almost twenty years ago, and would benefit from further review. These issues include, for example, the application of anticircumvention rules to everyday products, as well as their impact on encryption research and security testing. If you wish to submit comments about section 1201, please do so through the forthcoming section 1201 study, information on which will be available shortly at www.copyright.gov.

I. Background

Copyright law has expressly protected computer programs,[4] whether used in general purpose computers or embedded in everyday consumer products, since the

[1] Letter from Sen. Charles E. Grassley, Chairman, Senate Committee on the Judiciary, and Sen. Patrick Leahy, Ranking Member, Senate Committee on the Judiciary, to Maria A. Pallante, Register of Copyrights, U.S. Copyright Office, at 1 (Oct. 22, 2015), *available at* http://www.copyright.gov/policy/software.
[2] *Id.* at 2.
[3] *Id.*
[4] Although the Copyright Act uses the term "computer program," s*ee* 17 U.S.C. 101 (definition of "computer program"), the terms "software" and "computer program" are used interchangeably in this notice.

enactment of the 1976 Copyright Act ("1976 Act"). Though the 1976 Act did not expressly list computer programs as copyrightable subject matter, the Act's legislative history makes it evident that Congress intended for them to be protected by copyright law as literary works.[5] At the same time, in the 1976 Act, Congress recognized that "the area of computer uses of copyrighted works" was a "major area [where] the problems are not sufficiently developed for a definitive legislative solution."[6] Accordingly, as originally enacted, 17 U.S.C. 117 "preserve[d] the status quo" as it existed in 1976 with respect to computer uses,[7] by providing that copyright owners had no "greater and lesser rights with respect to the use of the work in conjunction with automatic systems capable of storing, processing, retrieving, or transferring information, or in conjunction with any similar device, machine, or process, than those afforded to works under the law" as it existed prior to the effective date of the 1976 Act.[8]

Since the 1976 Act's enactment, the scope of copyright protection for computer programs has continued to be refined by Congress through legislation and by the courts through litigation. At least some of that attention has focused on the precise problem presented here: the presence of software in everyday products.

A. CONTU Report

In the mid-1970s, Congress created the National Commission on New Technological Uses of Copyrighted Works ("CONTU") to study and report on the

[5] *See* H.R. Rep. No. 94-1476, at 55 (1976); *see also* National Commission on New Technological Uses of Copyrighted Works, Final Report of the National Commission on New Technological Uses of Copyrighted Works 16 (1978) ("CONTU Report").
[6] H.R. Rep. No. 94-1476, at 55.
[7] *Id.*
[8] Public Law 94-553, sec. 117, 90 Stat. 2541, 2565 (1976).

complex issues raised by extending copyright protection to computer programs.[9] In its 1978 Report, CONTU recommended that Congress continue to protect computer programs under copyright law, specifically by amending section 101 of the 1976 Act to include a definition of computer programs and by replacing section 117 as enacted in the 1976 Act with a new provision providing express limitations on the exclusive rights of reproduction and adaptation of computer programs under certain conditions.[10] Congress adopted CONTU's legislative recommendations in 1980.[11]

While CONTU did not specifically anticipate that software would become embedded in everyday products, CONTU did recognize some general issues resulting from the fact that computer programs need a machine to operate. Specifically, CONTU recognized that the process by which a machine operates a computer program necessitates the making of a copy of the program and that adaptations are sometimes necessary to make a program interoperable with the machine.[12] CONTU preliminarily addressed these issues by including in its recommended revisions to section 117 a provision permitting the reproduction or adaptation of a computer program when created as an essential step in using the program in conjunction with a machine, finding that "[b]ecause the placement of a work into a computer is the preparation of a copy, the law should provide that persons in rightful possession of copies of programs be able to use them freely without fear of exposure to copyright liability."[13] CONTU's

[9] *See* CONTU Report at 3-4.
[10] *Id.* at 12.
[11] *See* Act of Dec. 12, 1980, Public Law 96-517, sec. 10, 94 Stat. 3015, 3028-29.
[12] *See* CONTU Report at 12-14.
[13] *Id.* at 12-13.

recommendations for the new section 117 also included a provision permitting the making of copies and adaptations for archival purposes.[14]

At the same time, CONTU foresaw that the issues surrounding copyright protection for software would have to be examined again by Congress and the Copyright Office:

> [T]he Commission recognizes that the dynamics of computer science promise changes in the creation and use of authors' writings that cannot be predicted with any certainty. The effects of these changes should have the attention of Congress and its appropriate agencies to ensure that those who are the responsible policy makers maintain an awareness of the changing impact of computer technology on both the needs of authors and the role of authors in the information age. To that end, the Commission recommends that Congress, through the appropriate committees, and the Copyright Office, in the course of its administration of copyright registrations and other activities, continuously monitor the impact of computer applications on the creation of works of authorship.[15]

B. Computer Software Rental Amendments Act of 1990

A decade later, in response to concerns that commercial rental of computer programs would encourage illegal copying of such programs, Congress passed the Computer Software Rental Amendments Act of 1990 ("Computer Software Rental Act"), which amended section 109 of the Copyright Act to prohibit the rental, lease or lending of a computer program for direct or indirect commercial gain unless authorized by the copyright owner of the program.[16] Notably, Congress also expressly provided an exception to this prohibition for "a computer program which is embodied in a machine or product and which cannot be copied during the ordinary operation or use of the machine

[14] *Id.*
[15] *Id.* at 46.
[16] *See* Public Law 101-650, 104 Stat. 5089, 5134-35 (1990); 17 U.S.C. 109(b)(1)(A).

or product."[17] In doing so, Congress recognized that computer programs can be embedded in machines or products and tailored the rental legislation to avoid interference with the ordinary use of such products.[18]

C. DMCA

Congress revisited the issues surrounding software and copyright law with the DMCA.[19] As particularly relevant here, the DMCA amended section 117 of the Copyright Act to permit the reproduction of computer programs for the purposes of machine maintenance or repair following a court of appeals decision[20] that cast doubt on the ability of independent service organizations to repair computer hardware.[21] This provision foreshadows the more general concerns raised by the spread of software in everyday products—namely, that maintaining or repairing a software-enabled product often will require copying of the software. Section 104 of the DMCA also directed the Office to study the effects of the DMCA amendments and the development of electronic commerce and associated technology on the operation of sections 109 and 117 of the Copyright Act, as well as "the relationship between existing and emergent technology and the operation of sections 109 and 117."[22] The Office subsequently published a report detailing its findings and recommendations in August 2001 ("Section 104 Report").[23]

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[17] 17 U.S.C. 109(b)(1)(B)(i).
[18] *See Computer Software Rental Amendments Act (H.R. 2740, H.R. 5297, and S. 198): Hearing Before the Subcomm. on Courts, Intellectual Prop., and the Admin. of Justice of the H. Comm. on the Judiciary*, 101st Cong. 15-16 (1990) (statement of Rep. Mike Synar) ("Some parties have interpreted the [Computer Software Rental Act] as potentially affecting computer programs which may be contained as a component of another machine, such as a program which drives a mechanized robot or runs a microwave or a household kitchen utensil. Such a result was not intended and will be addressed in this legislation.").
[19] Public Law 105-304, 112 Stat. 2860 (1998).
[20] *MAI Sys. Corp. v. Peak Computer*, 991 F.2d 511 (9th Cir. 1993).
[21] *See* DMCA, sec. 302, 112 Stat. 2860, 2887 (1998); S. Rep. No. 105-190, at 21-22 (1998).
[22] DMCA, sec. 104, 112 Stat. 2860, 2876 (1998).
[23] *See generally* U.S. Copyright Office, DMCA Section 104 Report (2001).

The Section 104 Report discussed a number of issues relevant to the discussion of software in everyday products. For instance, it addressed proposals to add a "digital first sale" right to section 109 of the Copyright Act to explicitly grant consumers the authority to resell works in digital format. Although the Office concluded that no legislative changes to section 109 were necessary at the time, it recognized that "[t]he time may come when Congress may wish to consider further how to address these concerns."[24] In particular, the Office anticipated some of the issues presented here when it highlighted "the operation of the first sale doctrine in the context of works tethered to a particular device"—an example of which would be software embedded in everyday products—as an issue worthy of continued monitoring.[25] Additionally, the Office noted the concern that unilateral contractual provisions could be used to limit consumers' ability to invoke exceptions and limitations in copyright law. Although the Office concluded that those issues were outside the scope of the study, and that "market forces may well prevent right holders from unreasonably limiting consumer privileges," it also recognized that "it is possible that at some point in the future a case could be made for statutory change."[26]

D. Developments in Case Law

In the meantime, courts, too, have weighed in on a number of issues concerning copyright protection of software, including copyrightability, the application of the fair use doctrine, and ownership of software by consumers. In analyzing these issues, however, courts have not generally distinguished between software installed on general purpose computers and that embedded in everyday products.

[24] *Id.* at 96-97.
[25] *Id.* at xvi-xvii.
[26] *Id.* at 162-64.

Courts have helped define the scope of copyright protection for software and address questions of infringement through application of doctrines such as the idea/expression dichotomy (codified in 17 U.S.C. 102(b)), merger, and *scènes à faire*.[27] The idea/expression dichotomy, as applied to software, excludes from copyright protection the abstract "methodology or processes adopted by the programmer" in creating the code.[28] In the context of software, the merger doctrine excludes certain otherwise creative expression from copyright protection when it is the only way, or one of a limited number of ways, to perform a given computing task.[29] The *scènes à faire* doctrine has been used to limit or eliminate copyright protection for elements of a program that are dictated by external factors or by efficiency concerns, such as the mechanical specifications of the computer on which the program runs.[30]

The fair use doctrine, codified in 17 U.S.C. 107, is also relevant here. Courts have applied the fair use doctrine to permit uses of software that ensure interoperability of software with new products and devices. For example, in *Sega Enterprises Ltd. v. Accolade, Inc.*, the Court of Appeals for the Ninth Circuit held that copying a video game console's computer program to decompile and reverse engineer the object code to make it interoperable with video games created by the defendant was a fair use.[31] Similarly, in

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[27] *See, e.g.*, *Lexmark International, Inc. v. Static Control Components, Inc.*, 387 F.3d 522, 534-36 (6th Cir. 2004); *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1252-53 (3d Cir. 1983); *Computer Management Assistance Co. v. DeCastro*, 220 F.3d 396, 400-02 (5th Cir. 2000).

[28] H.R. Rep. No. 94-1476, at 9; *see also* CONTU Report at 22 ("[C]opyright leads to the result that anyone is free to make a computer carry out any unpatented process, but not to misappropriate another's writing to do so.").

[29] *See* CONTU Report at 20 ("[C]opyrighted language may be copied without infringing when there is but a limited number of ways to express a given idea. ... In the computer context, this means that when specific instructions, even though previously copyrighted, are the only and essential means of accomplishing a given task, their later use by another will not amount to an infringement.").

[30] *See, e.g.*, *Lexmark*, 387 F.3d at 535-36 (outlining applicability of doctrine to computer programs).

[31] 977 F.2d 1510, 1527-28 (9th Cir. 1992), *amended by* 1993 U.S. App. LEXIS 78 (9th Cir. 1993).

Sony Computer Entertainment, Inc. v. Connectix Corp., the court held that reverse engineering the operating system of a PlayStation gaming console to develop a computer program allowing users to play PlayStation video games on a desktop computer, as well as making copies in the course of such reverse engineering, was a fair use.[32]

Another important issue courts have tackled involves the scope of section 117's limitations on exclusive rights in computer programs. Section 117(a) allows copies or adaptations of computer programs to be made either "as an essential step in the utilization of the computer program in conjunction with a machine" or for archival purposes, but this provision may only be invoked by "the owner of a copy of a computer program."[33] This raises difficult questions regarding whether a consumer owns a copy of software installed on a device or machine for purposes of section 117 when formal title is lacking or a license purports to impose restrictions on the use of the computer program. Courts have provided somewhat conflicting guidance regarding this issue, and the application of the law can be unclear in many contexts.[34]

E. Recent Legislation

Issues associated with the spread of copyrighted software in everyday products have prompted legislative action in an attempt to address some of the copyright issues created by the spread of such works.[35] In the context of section 1201—which, as

[32] 203 F.3d 596, 602-08 (9th Cir. 2000).
[33] 17 U.S.C. 117(a).
[34] *Compare Krause v. Titleserv, Inc*., 402 F.3d 119, 124 (2d Cir. 2005), *with Vernor v. Autodesk, Inc.*, 621 F.3d 1102, 1111 (9th Cir. 2010).
[35] Bills have also been introduced addressing related issues outside copyright law stemming from the spread of software in everyday products. The Spy Car Act of 2015 would direct the National Highway Traffic Safety Administration to conduct a rulemaking and issue motor vehicle cybersecurity regulations protecting against unauthorized access to electronic systems in vehicles or driving data, such as information about a vehicle's location, speed or owner, collected by such electronic systems. SPY Car Act of 2015, S. 1806, 114th Cong. sec. 2 (2015). A discussion draft introduced in the Commerce, Manufacturing, and Trade Subcommittee of the Energy & Commerce Committee of the House of Representatives would

explained, is the subject of a separate Copyright Office study—Congress enacted legislation in August 2014 to broaden the regulatory exemption permitting the circumvention of technological measures for the purpose of connecting wireless telephone handsets to wireless communication networks (a process commonly known as "cellphone unlocking").[36]

The Unlocking Technology Act of 2015, as most pertinent to this study, would amend section 117 of the Copyright Act to permit the reproduction or adaptation of "the software or firmware of a user-purchased mobile communications device for the sole purpose of . . . connect[ing] to a wireless communications network" if the reproduction or adaptation is initiated by or with the consent of the owner of the device, the owner is in legal possession of the device, and the owner has the consent of the authorized operator of the wireless communications network to use the network.[37] The legislation would also limit the prohibition on circumvention in section 1201 of title 17 to circumstances where circumvention is carried out in order to infringe or facilitate the infringement of a copyrighted work, and would permit the use of or trafficking in circumvention devices unless the intent of such use or trafficking is to infringe or facilitate infringement.[38]

In addition, the You Own Devices Act ("YODA") would amend section 109 of the Copyright Act to allow the transfer of ownership of a copy of a computer program embedded on a machine or other product "if [the] computer program enables any part of

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prohibit access to electronic control units or critical systems in a motor vehicle. A Bill to provide greater transparency, accountability, and safety authority to the National Highway Traffic Safety Administration, and for other purposes [Discussion Draft], 114th Cong. sec. 302 (2015), *available at* http://docs.house.gov/meetings/IF/IF17/20151021/104070/BILLS-114pih-DiscussionDraftonVehicleandRoadwaySafety.pdf.

[36] *See* Unlocking Consumer Choice and Wireless Competition Act, Public Law 113-144, 128 Stat. 1751 (2014).

[37] Unlocking Technology Act, H.R. 1587, 114th Cong. sec. 3 (2015).

[38] *Id.* sec. 2.

[that] machine or other product to operate," as well as any right to receive software updates or security patches from the manufacturer.[39] This right of transfer could not be waived by any contractual agreement.[40] In addition, the original owner of the device would be prohibited from retaining an unauthorized copy of the computer program after transferring the device and the computer program to another person.[41]

F. Relationship to Questions About Section 1201

Some issues related to software embedded in everyday products have come to the forefront in recent years through the 1201 rulemaking process. As the Copyright Office has frequently noted, the 1201 rulemaking can serve as a barometer for larger public policy questions, including issues that may merit or would require legislative change. The public should not submit concerns about section 1201 through this software study, but rather through the Copyright Office's forthcoming study on section 1201, information about which will be available shortly at http://www.copyright.gov/.

II. Subjects of Inquiry

In response to the letter from Senators Grassley and Leahy, the Office is seeking public comment on the following five topics. A party choosing to respond to this Notice of Inquiry need not address every subject, but the Office requests that responding parties clearly identify and separately address each subject for which a response is submitted.

1. The provisions of the copyright law that are implicated by the ubiquity of copyrighted software in everyday products;

[39] YODA, H.R. 862, 114th Cong. sec. 2 (2015).
[40] *Id.*
[41] *Id.*

2. Whether, and to what extent, the design, distribution, and legitimate uses of products are being enabled and/or frustrated by the application of existing copyright law to software in everyday products;
3. Whether, and to what extent, innovative services are being enabled and/or frustrated by the application of existing copyright law to software in everyday products;
4. Whether, and to what extent, legitimate interests or business models for copyright owners and users could be undermined or improved by changes to the copyright law in this area; and
5. Key issues in how the copyright law intersects with other areas of law in establishing how products that rely on software to function can be lawfully used.

When addressing these topics, respondents should consider the following specific issues:

1. Whether copyright law should distinguish between software embedded in "everyday products" and other types of software, and, if so, how such a distinction might be drawn in an administrable manner.
    a. Whether "everyday products" can be distinguished from other products that contain software, such as general purpose computers—essentially how to define "everyday products."
    b. If distinguishing between software embedded in "everyday products" and other types of software is impracticable, whether there are alternative ways the Office can distinguish between categories of software.

2. The rationale and proper scope of copyright protection for software embedded in everyday products, including the extent to which copyright infringement is a concern with respect to such software.
3. The need to enable interoperability with software-embedded devices, including specific examples of ways in which the law frustrates or enables such interoperability.
4. Whether current limitations on and exceptions to copyright protection adequately address issues concerning software embedded in everyday products, or whether amendments or clarifications would be useful. Specific areas of interest include:
    a. The idea/expression dichotomy (codified in 17 U.S.C. 102(b))
    b. The merger doctrine
    c. The *scènes à faire* doctrine
    d. Fair use (codified in 17 U.S.C. 107)
    e. The first-sale doctrine (codified in 17 U.S.C. 109)
    f. Statutory limitations on exclusive rights in computer programs (codified in 17 U.S.C. 117)
5. The state of contract law *vis-à-vis* software embedded in everyday products, and how contracts such as end user license agreements impact investment in and the dissemination and use of everyday products, including whether any legislative action in this area is needed.

6. Any additional relevant issues not raised above.

Dated: December 9, 2015.

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Maria A. Pallante,
Register of Copyrights,
U.S. Copyright Office.

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