Rights in Digital Age

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RESEARCH PAPER

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PROGRAM MODULE AND SOFTWARE COPYRIGHT PROTECTION ELIGIBILITY

Abstract — In this digital age where the copyright protection for program modules and software seems to be growing narrower due to Fair use and Merger doctrine. It would be better that software is considered as another section altogether due to its aspect of functionality.

***Index Terms* — Copyright, Fair-Use, Merger Doctrine, API**

I. INTRODUCTION

With advent of new technologies in the cyber world, the ever drastically revised copyright law is still unable to address the issues that are newly rising up. New digital system provides new means for infringements, increased difficulty in detecting an infringement. The fair use doctrine greatly undermines the copyright law, making it harder for the law to be enforced and gain public acceptance. This leads to a much narrower scope for copyright laws to act on to protect the present works and may finally lead to overthrowing the whole system.

[11]

One of the best scenarios that explains this situation is a recent case - Google LLC v Oracle America, Inc, where Oracle files a case against Google claiming that Google infringes the copyright on JAVA APIs. Google uses its own version of JAVA programming language for the Android platform but implemented using the same functionalities of JAVA APIs. The courts jumped back and forth regarding this case trying to figure out whether Google is on the right by fair use defense. This paper attempts to analyze similar cases and also try to figure out if it is appropriate to reconstruct program structures that emulate equivalent functionality created by a competitive company.

II. LITERATURE REVIEW

A. Copyright and Fair Use Doctorine

Copyright is the right, for an extended period, to exclude others from using, copying, selling, or importing "works" of authorship.

17 U.S. Code § 102 explains that copyright protection applies to original works of authorship fixed in any medium of tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.

Works of authorship include the following categories:

1. literary works
2. musical works, including any accompanying words
3. dramatic works, including any accompanying music

4. pantomimes and choreographic works
5. pictorial, graphic, and sculptural works
6. motion pictures and other audiovisual works
7. sound recordings
8. architectural works.

17 U.S. Code § 102 also explains that copyright protection doesn't not apply to an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.

17 U.S. Code § 106 presents us the exclusive rights the owner of the copyright has, this includes:

1. to reproduce the copyrighted work in copies or phonorecords
2. to prepare derivative works based upon the copyrighted work
3. to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending
4. in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works, to perform the copyrighted work publicly
5. in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work, to display the copyrighted work publicly
6. in the case of sound recordings, to perform the copyrighted work publicly by means of a digital audio transmission.

17 U.S. Code § 107 provides one of the limitations of these exclusive rights, which is a doctrine called Fair use. In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include:

1. the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes
2. the nature of the copyrighted work
3. the amount and substantiality of the portion used in relation to the copyrighted work as a whole
4. the effect of the use upon the potential market for or value of the copyrighted work.

With respect to the given context, since computer software is considered to be a literary work, the applications and programs created by using programming languages are copyrightable. These applications that are developed can only be reproduced as well as the production of the derivative work can be done only by the owner of the copyright. At the same time, it can be noted that the programming language itself is not protected by the copyright law as the programming language represents a general tool or medium and the software expressed through this medium is protectable.

[13]

B. Patent

"A patent is a property right granted by the U.S. Patent and Trademark Office (USPTO). A patent holder may exclude others from using, making, or selling an invention for a limited time. As long as the applicant pays the applicable maintenance fees, the exclusive right for utility and plant patents lasts for a term of 20

years from the application date. The exclusive rights granted for a design patent lasts for 14 years from the date of the grant."

[9]

Considering the patent eligibility for programming languages, it can be understood that patents on programming languages effectively correspond to patents on grammar. However, programming language as grammar doesn't have sufficient utility or functionality to be eligible to be patentable. Software that is created using a programming language can be patentable based on its utility and various conditions but the programming language itself is not eligible to be patentable.

[10]

C. Lotus Development Corp. v. Borland International

Lotus Development Corp. (Lotus) filed a case against Borland International (Borland) for copyright infringement in 1990. They claimed that the menu hierarchy present in the user interface of Lotus-1-2-3 has been copied by Borland for their products. Lotus the plaintiff, marketed Lotus-1-2-3, a computer spreadsheet program that has several menu commands as well as the option to create macro commands (run a series of commands using single key stroke). After which Borland, the defendant, released Quattro and Quattro Pro, 2 versions of its own spreadsheet program that has menu trees identical to that of the Lotus-1-2-3. Borland did not copy the underlying code for the menu but only the functionalities to make it easier for the consumers familiar with Lotus' macro to use its spreadsheet program. The United States District Court for the District of Massachusetts ruled in favor of the plaintiff and claimed that Borland has infringed the copyright over the menu based on the fact that the menu can be redesigned. Borland appealed to the United States Court of Appeals for the First Circuit, they reversed the decision based on the fact that the menu is a 'method of operation", making it uncopyrightable.

This court decision made a very huge impact on the copyright laws revolving around a software interface and software implementation. The software implementation is copyrightable. The software interfaces are usually not copyrightable unless they contain expressions such as icons.

[7,8]

D. Merger Doctrine

"Merger Doctrine is a principle of copyright law which says when there is only one or limited number of ways to express an idea, copyright law will not protect the expression because it has 'merged' with the idea. When the idea and expression are very difficult to separate, they are said to merge."

[5]

III. RESEARCH METHODOLOGY

A. Significant Cases

The factors for copyright eligibility for implementations of programming language, specifically instances where the functionality is popular enough to be copied off are to be determined. The following are specific cases are considered:

Software Reverse Engineering Cases

There are several cases where the Software is replicated by looking at the functionality alone. These are cases where the product in question has identical features to a competitive product so as to appeal to their customers as well. These products will have similar interfaces and functions, but the underlying code is seemingly non-identical. These products are created referencing public manuals. One of the prominent examples is the case SAS v WPL. There are similar situations like ReactOS functionality being identical to Microsoft Windows, but there are no lawsuits for these occurrences because it is recognized that functionalities cannot be copyrighted, which was proved again in SAS v WPL case.

SAS Institute Inc v World Programming Limited

The SAS Institute Inc (SAS) filed a case against World Programming Limited (WPL) for infringing their copyright protection. SAS developed an analytical software where the user can program using the SAS language (proprietary programming language) to write and run application programs. This required the customer to have a SAS license to utilize this application. WPL created World Programming System (WPS) that could also execute the application program that runs in SAS programming language. The WPS emulates functionality similar to that of the SAS application for appealing towards SAS customers. WPL did not have access to private SAS manuals or decompiled source codes.

The case was handled by the High Court of England and Wales, which took reference from the Court of Justice of the European Union and came to the conclusion, after testing WPS, that no software copyright infringement of SAS components had occurred to create WPS. Similar results regarding the cases have come up with subsequent filings in the US lawsuits.

[6]

Software Cloning Cases

There are several cases especially in video games where identical games are being released based on pre-existing games. The general idea for a game can never be protected by copyright but the expression of the game can be protected based on the level of creativity and novelty the game has. There are 2 distinct examples of this situation.

Capcom U.S.A. Inc. v. Data East Corp.

Capcom had released “Street Fighter II” in 1991 after which Data East Corp released a similar game “Fighter’s History” that copied the distinctive fighting style, appearance, special and combo moves. The case did not hold strong in court because the isolated similarities are not actionable. The stock characters and standard moves used in “Street Fighter II” were for immediate recognition and increased familiarity for the customers, but in doing so the characters and their moves lose their creativity and novelty. This makes them uncopyrightable and hence “Fighter’s History” doesn’t infringe any copyrights.

[4]

Tetris Holding, LLC v. Xio Interactive, Inc.

Tetris Holding LLC is famous for the game Tetris, they filed a lawsuit against Xio Interactive for infringing copyright. Xio created an iOS game called Mino that is very identical to Tetris. Xio defended the lawsuit based on the Merger doctrine and Fair use doctrine. Tetris won the lawsuit even though here the functionality and the general idea of the game cannot be copyrightable. Even though the movement of the piece or style of the game cannot be copyrighted. The expression of this functionality in the Mino game

that includes the style, design, shape and movement are similar to that of Tetris. Further, Mino can create an assumed association with Tetris by the customers that can affect the Tetris market. Here the visual expression, a non-functional trade dress, is copyrightable, the Fair use or Merger doctrine cannot address this issue - Minos has made a copyright infringement. A similar example is the case when. copyright of Pac-man got infringed.

[3]

Program Module Cloning

The above cases provide insights regarding issues when functionalities revolving around a whole application is being copied. When lawsuits are filed based on copying functionalities, it usually revolves around the underlying code being reproduced without having access to the original. We can already see the lines of copyright being narrow in the previous cases, but is it alright if the code is being used for commercial purpose directly copied verbatim - Oracle v Google is the case that represents this issue.

Google LLC v. Oracle America, Inc.

Google implemented its own Operating System - Android Operating System (Android OS), using its own programming language based on the programming language Java which is owned by Oracle. Due to the general familiarity with Java programming language, Google's version used the same names, organization, and functionality as Java's Application Programming Interfaces (APIs).

Oracle filed a lawsuit against Google for infringing copyright that they have on their Java API. It is observed that Java doesn't have a patent on their product but only copyright protection. The federal district judge held that APIs cannot be protected by copyright because this gives the private company monopoly over the programming language and defeats the purpose of the copyright. The US Court of Appeals for the Federal Circuit reversed the lower court, allowing Google to make a Fair use defense. The district court concluded that usage of Java API is considered Fair use. Yet again the Federal court reversed this decision. This case is still ongoing.

[2]

IV. RESULTS AND DISCUSSIONS

A. Court Finding Discussions

Going through the laws on copyright and the ongoing cases several factors can be pinpointed regarding the eligibility of Copyright protection on programs and applications.

1. SAS Institute Inc v World Programming Limited:
    - It can be observed that recreating the functionality that is similar to an existing application doesn't lead to infringement as long as the functionality is not expressive, and the recreation is done without utilizing illegal access to private materials.
    - Overall, recreating the functionality of an application that was monopolized by a private company is all-in-all fair.
2. Capcom U.S.A. Inc. v. Data East Corp. :
    - In my opinion this is a case where the copyright disturbs an ethical boundary.
    - The original is being directly cloned into a new game, the similarities are many and there were several references proving the same. I believe the new game played along the lines of

copyright laws making the connections incidental and weakening the claims for an infringement.
    - This case reflects on how strict on the eligibility of copyright. The expressiveness and uniqueness of the product can only grant it the copyright protection.
3. Tetris Holding, LLC v. Xio Interactive, Inc. :
    - This case reflects on how a program can be properly protected by copyright.
    - The expressiveness of the game through its colors, shape and movement made it unique and provided the protection it requires.
4. Google LLC v. Oracle America, Inc. :
    - In my opinion, API is generally not copyright protectable. But here Google based its programming language on an already existing language Java and added all the functionality of it as well. This I believe crosses an ethical boundary. Java is not a patented programming language, but the program modules made from the language should be protected by copyright from being directly copied off.

Further Discussion

To further discuss regarding the last case, what does it mean for a program/ program module to be protected by copyright? It is believed that software is part of the literary work that is provided in 17 U.S. Code § 102, providing it copyright protection. For a literary work this means that if the author gives a work that is substantially similar to an already existing work that is protected by copyright, then an infringement occurs. There is no infringement if the author of the new work had created it independently. Is the same not applicable for program modules that are made in the world of software. Usually certain functionalities can only be created in a certain manner using a programming language, hence a user will independently write the code that is substantially similar to the original code existing and this case there is no infringement.

In the context of Google v Oracle, it certain that Google has made their language based on Oracle Java program. In this case the code that Google is not just substantially similar but also rather identical if they are using the same name, organisation, etc. This I believe is why Google is infringing the copyright protection on the Java APIs. In the case of a Fair Use defense, from 17 U.S. Code § 107, it understandable that Google is using this work for commercial purposes and the amount of content used is practically every module useful in Java. APIs are generally uncopyrightable because it represents a functionality that can be obtained only in a certain manner, but in this case the Google is copying off the whole pre-existing work in line of Fair use doctrine, which I believe is wrong.

[1]

B. Conclusions

In conclusion, I believe the parameters of eligibility of copyright for program modules gets dissolved due to the functional aspect of these works. I believe a separate section should be dedicated for the copyright protection for program modules since they are being highly utilized in this digital age. To start off the following is what I formulated, that I believe the section should include:

- Reproduction of functionality in software applications independently is not copyright infringement. There should be confirmation that there was no illegal access to the source or decompiled version of the original application that is protected by copyright.

- Program modules/ software that are function as well as expressive through unique graphics and representation is completely protected by copyright laws.
- Since program modules are always functional and not usually expressive, if a new work appears that is substantially similar or identical to a protected work, and if there is confirmation that the new module is based on the protected work, then I propose this as infringement of copyright based on several factors. I propose the level of plagiarism and the utility of the function as the core aspect on which the decision will be made. The fair use and merger doctrine will be considered as well.

Copyright is made for the progress of Sciences and Useful Arts. But in this digital age and the context of program modules, replication of functionality of program modules by copying preexisting protected by verbatim is easy and should not be allowed. A lot of ethical boundaries are being crossed when creating software or program modules that already exist for commercial purposes; even if it doesn't mean it infringes copyright laws, it doesn't help in innovation. This is why I believe the copyright laws be more tightened not to have such loopholes for the real innovations.

REFERENCES

[1] (). *Literary Work*. Available: https://copyright.uslegal.com/enumerated-categories-of-copyrightable-works/copyright-for-literary-work/.

[2] (). *Google LLC v. Oracle America Inc.* Available: https://www.oyez.org/cases/2020/18-956.

[3] (). *Tetris Holding v. Xio Interactive*.
Available: https://itlaw.wikia.org/wiki/Tetris_Holding_v._Xio_Interactive.

[4] (Aug 29,). *Case: Capcom v. Data East (N.D. Cal. 1994) [C]*.
Available: http://patentarcade.com/2005/08/case-capcom-v-data-east-nd-cal-1994-c.html.

[5] (). *Merger Doctrine Law and Legal Definition*. Available: https://definitions.uslegal.com/m/merger-doctrine/.

[6] (). *SAS Institute Inc v World Programming Ltd*.
Available: https://en.wikipedia.org/wiki/SAS_Institute_Inc_v_World_Programming_Ltd.

[7] (). *Lotus Development Corp. v. Borland International*.
Available: https://www.casebriefs.com/blog/law/intellectual-property-law/intellectual-property-keyed-to-merges/copyright-law/lotus-development-corp-v-borland-international/.

[8] (). *Lotus Dev. Corp. v. Borland Int'l,*
Inc. Available: https://en.wikipedia.org/wiki/Lotus_Dev._Corp._v._Borland_Int%27l,_Inc.

[9] S. Zimmeck, "Patent eligibility of programming languages and tools," in *Patenting Medical and Genetic Diagnostic Methods*Anonymous Edward Elgar Publishing, 2013, pp. 50-109.

[10] (February 20,). *How Patents Differ from Copyrights and Trademarks*.
Available: https://www.findlaw.com/smallbusiness/intellectual-property/patent-definition-and-the-difference-between-copyrights-and.html.

[11] E. Fleischmann, "The impact of digital technology on copyright law," *Computer/Law Journal,* vol. 8, *(1),* pp. 1, 1987.

[12] [2013] RPC 17, [2013] EWHC 69 (Ch)
[13] (). US Codes. Available: https://www.law.cornell.edu/uscode/text.