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ARTICLE

# Emulation is the Most Sincere Form of Flattery: - Retro Videogames, ROM Distribution and Copyright

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Submitted: March 2012

Accepted: April 2012

Published: May 2012

**Abstract**

The Internet has made it possible for amateur game creators to collaborate on projects irrespective of geographical location. The success of projects such as Minecraft, and even CounterStrike, demonstrates that 'indie' developers can create entertainment products just as popular and successful as mainstream developers with huge budgets. However, many individuals instead are more interested in the old than the new - reliving past experiences through the playing of old videogames that are no longer commercially sold. Through the creation of emulators, and the ripping of ROM images (data that allows for the playing of an emulated videogame, such as Super Mario Bros. on the Super Nintendo), games with nostalgic value can be easily distributed, played and replayed. In addition, this allows for the preservation of legacy content that may otherwise be consigned to the 'dustbin of history'.

However, irrespective of the effort and ingenuity that goes into the creation of emulation software, and the effort involved in ripping ROM data to make old games playable, are these pursuits entirely legal? The purpose of this paper is to consider the compatibility of such projects with pre-existing norms of intellectual property law, comparing and contrasting the approaches of US and EU IP regimes in their handling of emulators and ROMS. The paper will analyse the issue under pre-existing legislation and with regard to relevant case law, seeking to draw conclusions on whether the existing regimes in copyright law are compatible and satisfactorily balance the right of videogame publishers to seek fair remuneration for their work with the desire by enthusiasts to preserve and relive a form of creative culture.

**Keywords**

copyright, intellectual property, ROMs, emulator, user generated content, digital preservation

**Topic**

Law, comparative, copyright

## *La emulación es la forma de adulación más sincera: Videojuegos retro, distribución de ROM y derechos de autor*

### **Resumen:**

*Internet ha posibilitado a los creadores de juegos amateurs colaborar en proyectos independientemente de su localización geográfica. El éxito de productos como Minecraft, e incluso CounterStrike, demuestra que los desarrolladores «independientes» pueden crear productos de entretenimiento tan populares y exitosos como los desarrolladores consolidados y con grandes presupuestos. Sin embargo, muchos consumidores están más interesados en lo viejo que en lo nuevo -revivir experiencias pasadas, jugando a viejos videojuegos que ya no están disponibles en el mercado. Mediante la creación de emuladores, y la copia de imágenes ROM (datos que permiten jugar a videojuegos emulados, como Super Mario Bros, en la Super Nintendo), se pueden distribuir juegos con valor nostálgico y se puede jugar y volver a jugar con ellos fácilmente. Además, esto permite la conservación de contenido antiguo (legacy content) que de otro modo podría acabar archivado en la «papelera de la historia».*

*No obstante, independientemente del esfuerzo y la inventiva que implica la creación de software de emulación, y el esfuerzo que supone copiar datos ROM para poder jugar a juegos antiguos, ¿son estas actividades completamente legales? El propósito de este artículo es considerar la compatibilidad de estos proyectos con las normas preexistentes de propiedad intelectual, comparando y contrastando los enfoques de los regímenes de EE. UU. y la UE a la hora de tratar emuladores y ROM. El artículo analizará la cuestión bajo la legislación preexistente y en relación con la jurisprudencia relevante, con la intención de llegar a conclusiones en cuanto a si los regímenes existentes de derechos de autor son compatibles y concilian satisfactoriamente el derecho de las productoras de videojuegos de pretender una remuneración justa por su trabajo con el deseo de los entusiastas de preservar y revivir una forma de cultura creativa.*

### **Palabras clave:**

*derechos de autor, propiedad intelectual, ROM, emulador, contenido generado por el usuario, conservación digital*

### **Tema:**

*Derecho, Derecho comparado, derechos de autor*

## 1. Introduction

Most of the debate concerning copyright and the Internet has focused primarily on issues relating to conventional piracy, and more so on piracy and the music and movie industries. In the EU in particular, little focus has apparently been placed on videogame piracy, and even less on the issue of the distribution of 'legacy' videogames. While some authors in the US have considered the legality of videogame emulation, there appears to be little literature on this subject from European intellectual property scholars. The issue of the distribution of digital versions of old videogames for obsolete consoles poses interesting problems for copyright law - while the distribution of such content appears to be in breach of copyright, unlike with movie and music distribution, many of the titles exchanged by videogame

enthusiasts are no longer commercially available, nor are physical copies easily found in second-hand markets. Furthermore, although the distribution of digital versions of old games may be in breach of copyright, the creation of emulators, software solutions facilitating the access and use of old videogames for discontinued hardware on personal computers, represents a success for ingenuity and creativity and a method of preserving cultural artefacts. However, many in the videogame industry perceive emulators to be a threat to their business model. The purpose of this article is to consider the legality of the distribution of old videogames in the form of ROM files and the use of emulators, comparing the US and EU legal regimes in order to build analogies from US law. This is due to the limited available case law on emulation in the EU, where the legality of emulators does not appear to have been tested within the court system. The article will also attempt to determine the impact of

emulation of legacy content on the videogame industry, and whether the benefits of preservation may potentially outweigh any found detriments to copyright holders. The article will then conclude with some consideration of possible legal responses to the issue of emulation, and what policies the videogame industry may be advised to adopt.

## 2. Emulators and Roms: - The Legalities of Re-Engineering Videogame Past

In order to be able to effectively discuss the copyright issues that arise in the use of emulators and ROM files, it is necessary to explain the terminology and how the technology works. An emulator, or more accurately, a videogame emulator (which should not be confused with a terminal emulator), *'is a piece of hardware/software that allows a user to execute game software on a platform for which the software was not originally intended'*<sup>1</sup>. Or, as another source puts it, *'an emulator makes one system imitate another by tricking software into running on a computer for which it wasn't designed'*<sup>2</sup>. With regard to a PC (or Mac) based software emulator, the emulator program creates a virtual representation of the videogame console on the user's desktop. For example, through the use of GENs, a Sega Megadrive emulator, the user can run Sega Megadrive games on their computer, mimicking perfectly (or close to perfectly) the specifications of that videogame console. The virtual console runs as any other standard program. However, the program is the same as a console - unless you have games to play it on, it is just an empty system. Once again using the Sega Megadrive as an example, games for the system came on 16-megabit cartridges that connected to the hardware using a pin-connector system. The console itself contained no hard-disk, meaning that if the console were switched on without a game cartridge inserted, the

user would be presented with a blank screen on the TV that the system was connected to. Without game information loaded into the emulator program, the user will also be presented with a blank screen. The videogame itself is stored on the videogame cartridge as Read Only Memory, known by the acronym ROM. For use with a videogame emulator, the ROM data on the cartridge is extracted (also known as 'ripping'), and dumped into a 'ROM' file. For this reason, the files that contain code for videogames are known as ROMs.

### 2.1. A *prima facie* case of infringement? Copyright and videogame emulation

On first viewing, it would appear that the use of emulators and ROMs would be a standard case of copyright infringement. Through the use of emulation software combined with a ROM file, a user can avoid paying for a videogame, and instead download a copy of that game from the Internet. Corporations such as Nintendo argue this in strong terms; *'the introduction of emulators created to play illegal software represents the greatest threat to date to the intellectual property rights of video game developers...such emulators have the potential to significantly damage a worldwide entertainment software industry'*<sup>3</sup>. The Entertainment Software Association (ESA) argues that it is *'illegal to make or distribute software or hardware emulators or ROMs without the copyright or trademark owners' permission'*<sup>4</sup>. In order to assess whether this is true, however, and to determine the extent to which ROMs and emulators are illegal, it is necessary to separate the two types of software and consider them on their own merits.

The first item for consideration is the ROM. In the EU, computer programs are granted copyright protection under Article 1 of the Software Directive<sup>5</sup>, which states that *'Member States shall protect computer programs, by copyright, as literary works...protection in accordance with this Directive shall apply to the expression in any form of*

1. J. Conley, E. Andros, P. Chinai, E. Lipkowitz and E. Perez, 2004, "Use of a Game Over: - Emulation and the Videogame Industry, a White Paper". Northwestern Journal of Technology and Intellectual Property, 2(2) 261 at p. 264.
2. T. O'Brien (09/04/2011), "Switched's Comprehensive Guide to Videogame Emulators", Switched. Retrieved on 25th February 2011 from <http://www.switched.com/video-game-emulators/switched-ultimate-guide-retro-gaming/>.
3. Nintendo Corporate, *Legal Information (Copyrights, Emulators, ROMs, etc.)*, original date of creation not stated, last modified 28/04/2012. Retrieved on 25th February 2012 from <http://www.nintendo.com/corp/legal.jsp>.
4. ESA, *Anti-Piracy Frequently Asked Questions*, ESA Policy, (original date of creation not stated, last modified 28/04/2012) retrieved on 25th February 2012 from [http://www.theesa.com/policy/antipiracy\\_faq.asp#6](http://www.theesa.com/policy/antipiracy_faq.asp#6).
5. Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs (Codified version), replacing Council Directive 91/250/EEC of 14 May 1991.

a computer program. Ideas and principles which underlie any element of a computer program...are not protected'<sup>6</sup>. Whereas in the UK the protection of computer programs as literary works predates the Software Directive<sup>7</sup>, other countries such as Spain and France granted protection as literary works through the implementation of the Directive in national legislation<sup>8</sup>. Although the Directive does not explicitly define computer programs, and indeed the Commission has stated a hesitance to use an explicit definition on the grounds that any definition may become outdated by developments in technology<sup>9</sup>, this lack of an explicit definition does not appear to have caused significant problems in the protection of computer programs as literary works in the European Union<sup>10</sup>. In comparison, the US has specifically defined a 'computer program' as being 'a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result'<sup>11</sup>. Videogames form an interesting case study for the analysis of copyright as applicable to computer programs, as Professor Irini Stamatoudi has commented upon in significant detail<sup>12</sup>. Initially, the treatment of videogames as copyrighted works was initially far from certain, with individual nations treating them dissimilarly<sup>13</sup>. At least one explanation for this, reasons Professor Stamatoudi, is that 'videogames were new to the market. Their commercial value was not immediately evident and neither was their need for protection'<sup>14</sup>. For example, in the US during the early 1980s, videogames were deemed not to be subject to copyright protection. In

the case of *Atari v Phillips*<sup>15</sup>, which concerned a possible infringement of copyright regarding the game Pac-Man, it was determined that computer games were not protected by copyright, as they amounted to little more than systems or procedures, which were specifically excluded from copyright protection<sup>16</sup>.

Nevertheless, elements of the game may be copyrightable as an audiovisual work - despite there being no protection of the game as a work in itself, 'the audio component and the concrete details of the visual presentation constitute the copyrightable expression of that game "idea"<sup>17</sup>. This reasoning may be explained by the fact that earlier videogames such as Pac-Man constituted very simple procedures, such as navigating a maze, and the protection of these works in this form would be too close to the protection of an idea, rather than the expression of that idea. Therefore, if a character were too similar to Pac-Man in its artistic representation, this would constitute an infringement over the copyright of the graphical representation, whereas a game with significantly different characters navigating a maze would not be deemed significantly distinct or original, and would therefore not constitute an infringement. As games have become more complex, however, and with relatively recent legislative developments, the situation is somewhat different. As one writer commented, 'both the audiovisual display and the videogame computer program enjoy independent copyrights'<sup>18</sup>. Professor Stamatoudi expands upon this, stating that videogames can 'qualify as

6. Software Directive, Article 1(1) and Article 1(2).

7. Copyright, Designs and Patents Act 1988, c.48, s.3(1)(b), although it was originally stated that computer programs could be covered by copyright as literary works in the UK as far back as 1977, according to the *Whitford Report*, Report of the Commission to Consider the Law on Copyright and Designs 17 (Cmd. 6732 H.M.S.O. Mar. 1977).

8. Ley 16/1993, de 23 de diciembre de incorporación al Derecho español de la Directiva 91/250/CEE, de 14 de mayo de 1991, sobre la protección jurídica de programas de ordenador Art 1(1) and Loi n° 94-361 du 10 mai 1994 portant mise en oeuvre de la directive (C. E. E.) n° 91-250 du Conseil des communautés européennes en date du 14 mai 1991 concernant la protection juridique des programmes d'ordinateur et modifiant le code de la propriété intellectuelle Art 1 respectively.

9. Commission Staff Working Paper on the review of the EC legal framework in the field of copyright and related rights, SEC(2004) 995, Brussels (19/07/2004) at para. 2.2.1.1.

10. Commission of the European Communities, Report from the Commission to the Council, the European Parliament and the Economic and Social Committee on the implementation and effects of Directive 91/250/EEC on the legal protection of computer programs, COM(2000) 199 final (10/04/2000) at p.20.

11. 17 USC §101.

12. See I. Stamatoudi, 2007, *Copyright and Multimedia Products: - A Comparative Analysis*, Cambridge University Press pp.166-185.

13. *Ibid* at pp.167-168.

14. *Ibid* at p.168.

15. *Atari v North American Phillips Consumer Electronics Corp* 672 F.2d (7th Cir. 1982).

16. See also A. R. Glasser, 1987, *Video Voodoo: - Copyright in Video Game Computer Programs*, 38 Fed. Comm. L.J. 103 at p.107.

17. *Atari v Phillips supra* 15 at p.617.

18. A.R. Glasser *supra* 16 at p.103.

computer programs, as audiovisual works, as a combination of the two, or where not enough originality is found to classify them as such, they can perhaps attract copyright protection as drawings for their characters, figures or other designs<sup>19</sup>.

In the US, the computer program itself is protected as a literary work by virtue of its code following the case of *Apple v Franklin*<sup>20</sup>, where the court determined that the category of literary works was not restricted to literature in the conventional sense. In addition to written literary texts such as *Alice in Wonderland*, the category 'literary works' in US copyright law was deemed to also cover numbers or symbols with a given meaning, concluding therefore that 'a computer program, whether in object code or source code, is a "literary work" and is protected from unauthorised copying...'<sup>21</sup>. English case law pursuant to the Software Directive has adopted a similar approach. In the 2007 case *Nova Productions v Mazooma Games*<sup>22</sup>, the English Court of Appeal determined that videogames were afforded protection both as audiovisual works and literary works, stating that infringement of copyright as regarding the videogame as a literary work would not occur where 'nothing has been taken in terms of program code or program architecture'<sup>23</sup>.

What does this mean for videogame ROM files? Ultimately, based on their protection both as computer programs and as audiovisual works, a copy of a ROM file constitutes the wholesale copying of the entire game, including both the source code and audiovisual representation of that code during play. This indicates that the distribution of these files by collectors on the Internet constitutes what is known as a secondary infringement of copyright. Whereas primary infringement is committed by the act of copying a creative work, such as by making a copy of the ROM file, secondary infringement applies to 'dealing in' an infringing work, such as through distribution of that infringing ROM file. The uploader of a ROM may therefore be found liable for

both primary infringement through the making of a copy, in addition to secondary liability through dissemination, whereas a downloader may be found to only commit an act of primary infringement through the making of a copy through the act of downloading. To distribute these files interferes with the exclusive reproduction and making available rights of copyright holders provided for under the Information Society Directive<sup>24</sup> in the European Union, and the exclusive reproduction and distribution rights in the US<sup>25</sup>. Could it be that Nintendo's previously stated stance on ROMs and emulators is correct?

## 2.2. Good coders copy, great coders steal? Reverse engineering and the legality of emulators

It must be stated that although the distribution of ROM files of copyrighted videogames may constitute an infringement of copyright, the legal situation regarding the creation and use of emulators is not as clear. Unfortunately (or, perhaps, fortunately for those involved in the distribution and downloading of emulators), there appears to be no case law at the European level, and little if any case law at the national level that expressly deals with copyright issues as applicable to emulators in the EU. As such, the only definitive cases involving these issues appear to originate in the United States. One of the first relevant cases is that of *Sega Enterprises v Accolade*<sup>26</sup>, which concerned the reverse engineering of Sega code by Accolade. During the 1990s, the Sega Megadrive (known as the Sega Genesis in the US) was one of the two dominant videogame consoles (the other being Nintendo's Super Nintendo) in the US market. Sega could grant independent videogame producers a license over the copyrighted code and trademark of Sega in order to develop games for the console, which would then sell in competition with Sega-produced games. However, Accolade was not licensed to use the code or trademark, as licensing negotiations broke down with Sega. This was due to a demand by Sega that Sega would be the exclusive

19. I. Stamatoudi *supra* 12 at p.176.

20. *Apple Computer, Inc v Franklin Computer Corporation* 714 F.2d 1240 (3rd Cir. 1983).

21. *Ibid* at p.1249.

22. *Nova Productions Ltd v Mazooma Games Ltd & Others*, 2007, EWCA Civ 219.

23. *Ibid* at paragraph 30.

24. Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society, Articles 2 and 3.

25. 17 USC §106(1) and (3).

26. *Sega Enterprises Ltd v Accolade Ltd*, 977 F.2d 1510 (9th Cir. 1992).



manufacturer of all games produced by Accolade<sup>27</sup>. In order to produce games for the system, Accolade employees bought a Megadrive console and three games, connected the system to a decompiler, and generated a print-out of the source code for the system, a process known as 'disassembly'<sup>28</sup>. A decompiler, briefly, is a computer program or piece of hardware that takes an executable program and translates it into machine-readable code. They then loaded the disassembled code back into a computer, and experimented with it in order to discover the interface specifications for the Genesis console by modifying the decompiled programs and studying the results<sup>29</sup>. This process is called 'reverse engineering'. Usually, this process is performed using the 'clean room' technique where the work is 'carried out by two different people...one person writes the specification (after determining what exactly the decompiled code does) and the other later codes the result, so that the coder has not seen the original code'<sup>30</sup>. In this case, Accolade initially did not copy any of Sega's proprietary code, and instead wrote distinct code to achieve the same result of allowing functionality with the Sega system. However, due to Sega's concerns with the possible piracy of videogame cartridges, they created a form of technical prevention for the new version of the system, known as the Genesis III. This protection was in the form of a code - the Trademark Security System (TMSS). This system was held on the console microprocessor, which would check for 4 bytes of data in the header file contained on an inserted cartridge. The data would spell the name SEGA, and if detected, the console visual output would display the message "PRODUCED BY OR UNDER LICENSE FROM SEGA ENTERPRISES LTD". If these 4 bytes were not found on the system, then the game would not run. In order to ensure Accolade games would run on the new system, Accolade inserted this line of code into the

header file of the game ROM. Ultimately, Sega brought a legal action against Accolade, on the grounds of copyright and trademark infringement.

In considering the case, the Court of Appeal determined that infringement through the use of intermediary code (the code displayed through the decompiling process) may ultimately constitute fair use, *'where disassembly is the only way to gain access to the ideas and functional elements contained in a copyrighted computer program and where there is legitimate reason for seeking such access'*<sup>31</sup>. In reaching such a decision, the Court deemed that the use of code was related to ensuring functionality with Sega's console, specifically stating that functional requirements are not protected by US copyright under 17 USC §102(b)<sup>32</sup>. With regard to the trademark issue, the Court seemed particularly unimpressed with Sega's use of a trademark as a technical prevention mechanism, stating that its use did not constitute a legitimate use of trademark<sup>33</sup>, and therefore the action by Accolade did not infringe upon Sega's intellectual property right. This right to reverse engineer code, established in the Accolade case appears to have been enshrined in the Digital Millennium Copyright Act (or DMCA), written six years after the case's conclusion, where it is stated that: -

*'a person who has lawfully obtained the right to use a copy of a computer program may circumvent a technological measure<sup>34</sup> that effectively controls access to a particular portion of that program for the sole purpose of identifying and analysing those elements of the program that are necessary to achieve interoperability of an independently created computer program with other programs, and that have not previously been readily available to the person engaging in the circumvention'*<sup>35</sup>.

27. *Ibid* at paragraph 2.

28. *Ibid* at paragraph 4.

29. *Ibid*

30. J. Conley, E. Andros, P. Chinai, E. Lipkowitz & E. Perez *supra* 1 at p.274.

31. *Ibid* at paragraph 72.

32. *Ibid* at paragraph 46.

33. *Ibid* at paragraph 81.

34. It is worth mentioning briefly at this stage the notion of a TPM. A TPM is a way of preventing the copying of a digital work, whether in the form of ROM or MP3 file, or the data on a DVD or Blu-ray disc, through the use of encryption technologies. The breaking of an encryption code, for example, in order to access source-code, would constitute an act of TPM circumvention, as it allows for behavior that the right holder wished to prevent. Digital Rights Management, or DRM, is any system of technology implemented by a right holder in order to control or limit access to a copyrighted work. Therefore, TPMs form a subset of DRMs.

35. 17 USC §1201(f)(1) as created by the DMCA.

In addition, US case law has determined that the creation of videogame emulators constitute a legitimate goal for which the fair use protection offered to reverse engineering may be granted. This is the result of two cases, *Sony v Connectix*<sup>36</sup> and *Sony v Bleem*<sup>37</sup>. Both cases concerned the creation of videogame emulators of the Sony Playstation system, a console that took both Sega and Nintendo by surprise upon its 1994 release. The Playstation was Sony's first foray into the videogame console market, and proved to be highly successful. Whereas the competing consoles the Sega Saturn and Nintendo 64 sold 9.2 million units and 32.9 million units respectively, during its lifetime the Playstation sold over 100 million units<sup>38</sup>. Given its popularity, it appears almost inevitable that the console would be a source of interest to emulator communities. In the *Connectix* case, Connectix created and sold emulation software called 'Virtual Game Station'. The software did not use any of Sony's code in the final program, although code was decompiled in order to construct the emulator. In the Court's reasoning, it was determined that the correct precedent to follow was that set by the Sega case. The Court considered that the software did not merely supersede the objects of the original creation, but instead add something new, in essence, a transformative work. *'The product creates a new platform, the personal computer, on which consumers can play games designed for the Sony PlayStation...(affording) opportunities for game play in new environments, specifically anywhere a Sony PlayStation console and television are not available... (it) is a wholly new product, notwithstanding the similarity of uses and functions between the Sony PlayStation and the Virtual Game Station...'*<sup>39</sup>. The confirmation of the legality of emulators was confirmed in the Bleem case (which in itself considered the potential breach of copyright by Bleem for showing pictures of Playstation games in its marketing, which the Court determined to be permitted comparative advertising), when it was stated that *'we have already ruled that the emulator is not a violation of the copyright laws'*<sup>40</sup>.

Although there are no cases that appear to deal with the issue of emulators in EU law, it may be inferred from the

reading of the Software Directive that emulators created through reverse engineering would also be considered legal under similar conditions. The Software Directive states at Article 6 that decompilation for the purposes of achieving interoperability of an independently created computer program with other programs will be permitted so long as it is indispensable to obtaining the information necessary to achieve that interoperability. According to Article 6(1), this will be permitted only if the decompiling is performed by someone who has a license to use a copy of the program, the information required is not already readily available, and the acts of decompilation are confined to the parts of the original program which are necessary to achieve interoperability. In addition, subsection 2 dictates that the information cannot be used for any other purpose except achieving interoperability, to be given to others, or used to create *'competing computer programs substantially similar in its expression, or for any other act which infringes copyright'*<sup>41</sup>. One potential problem that could be perceived as arising is that the Directive only covers software-to-software emulation, rather than hardware-to-software interoperability functions. However, there are reasons why this is unlikely. The first is that although a videogame emulator may emulate (and thus require source code from) a console, i.e. hardware, the hardware is not involved in the use of the emulator, and the only interoperability is between the software emulator installed on a computer, and the software video game. Therefore, videogame emulators appear to meet the requirement of constituting software-to-software interoperability. Furthermore, although arguments have been raised that Article 6 may be too restrictive in its scope, and that its current reading may prevent hardware-to-software interoperability software, the Working Paper nevertheless concludes that *'there is no jurisprudence to support these claims; nor is there any other evidence to suggest that there would be a need for revision'*<sup>42</sup>. It would appear then, that as it stands, the Directive poses no substantial bar to emulators created through the decompilation of code. With respect to the requirement that the software does not create a competing program

36. *Sony Computer Entertainment Inc v Connectix Corp*, 203 F.3d 596 (9th Cir. 2000).

37. *Sony Computer Entertainment Inc v Bleem LLC*, 214 F.3d 1022 (9th Cir. 2000).

38. PVC Museum, 2005, *Total Worldwide Console Hardware Sales* retrieved on 25th February 2012 from <http://www.pvc-museum.com/games/charts/total-worldwide-console-hardware-sales.htm>.

39. *Sony Computer Entertainment Inc v Connectix Corp*, *supra* 36 at s.3.

40. *Sony Computer Entertainment Inc v Bleem LLC*, *supra* 36 at paragraph 32.

41. Software Directive Article 6(2)(c).

42. Working Paper *supra* 9 at para. 2.2.1.3.

substantially similar in its expression, it would be hoped that the European Court of Justice or national courts would take a similar view of that of the Court of Appeal in the *Sega* and *Connectix* cases; namely that the emulator only imitates the functional requirements of the console, which cannot be copyrighted, and would constitute an entirely new product, serving a different purpose than that of the original console. So long as the clean room technique is used for the decompiling of the proprietary code and the building of the new code, then it should be the case that the created emulation software is considered compliant with the Software Directive.

### 2.3. Emulation, preservation, termination?

#### A consideration of the impact of ROM distribution

Despite the potential illegality of the distribution of ROMs, websites offering these files are still readily accessible on the Internet. There are however possible reasons, and indeed significant benefits, for this. The first is that it assists in the preservation of cultural products. As one article states, the business model of console manufacturers relies on *'planned obsolescence in which they introduce a new system every five years'*<sup>43</sup>. A short time after this, the previous console is no longer supported, and games for that console no longer sold. As one writer for Maximum PC magazine wrote, *'while the major companies are only too willing to consign older products to oblivion, hardcore game fans are busting their collective asses to keep them alive'*<sup>44</sup>. This may be important - as academics from the Vienna University of Technology have stated in one paper, the consignment of videogame consoles and the respective game cartridges to museums as a means of preservation does not appear to be suitable; *'console videogame systems are usually*

*built from custom manufactured parts which cannot be replaced once broken'*<sup>45</sup>, and the videogame cartridges become less reliable over a period of years. When dealing with cartridges with an internal battery (used for saving game data in longer games such as Role-Playing Games, for example), their ability to successfully store and restore data becomes compromised after a period of 10 years. Many games for systems from the 16-bit era, such as the Sega Genesis and Super Nintendo, are now over 20 years old. Therefore, the paper argues, *'emulation may be the most promising solution'*<sup>46</sup> for the long-term preservation of videogame data, with the videogames being stored as ROM files. A digital file is not subject to the same risks of damage and obsolescence as videogame cartridges, and through circulation on the Internet, videogames for 'legacy' systems may be effectively preserved for future generations to use. Nevertheless, this does not constitute a valid defence to the breach of copyright - as one paper argues, *'the preservation argument is relatively weak* (as a raised defence to infringement), *since only copyright holders can determine whether they wish their software to be archived'*<sup>47</sup>. While the Information Society Directive Article 5(2)(c) allows for specific acts of reproduction by institutions such as libraries, educational institutions and museums which are not for direct or indirect economic benefit, it is difficult to argue that this restriction on copyright could be relied upon by those distributing ROM files, even if the provision was enacted in national legislation<sup>48</sup>.

After all, Nintendo argues that even if people claim that the use of emulators and ROMs help publishers by making old games that are no longer sold by the copyright holder available in new formats, *'it is illegal...if these vintage titles are available far and wide, it undermines the value of this intellectual property...the assumption that the games*

43. J. Conley, E. Andros, P. Chinai, E. Lipkowitz & E. Perez *supra* 1 at pp.269-270.

44. McDonald, T.L. (September 1999) *'You Will Be Emulated: - Console Emulators are Not Piracy; They're Ingenuity at Work'*, Maximum PC September 1999 at p.41.

45. Guttenbrunner, M., Becker, C., Rauber, A. & Kehrberg, C. (2008) *'Evaluating Strategies for the Preservation of Console Video Games'* Association for the Advancement of Artificial Intelligence, Vienna University of Technology, at p.3.

46. *Ibid* at p.3.

47. J. Conley, E. Andros, P. Chinai, E. Lipkowitz & E. Perez, *supra* 1 at p.270.

48. The exceptions and restrictions on copyright provided for by the Information Society Directive Article 5(2) form an optional list of exceptions that a Member State may choose to implement in national legislation. For example, many Member States implemented this section but exempted educational institutions from the section, and Ireland did not implement this section at all. See, for example, Institute for Information Law (February 2007), *Study on the Implementation and Effect in Member States' Law of Directive 2001/29/EC on the Harmonisation of Certain Aspects of Copyright and Related Rights in the Information Society*, University of Amsterdam, in particular Part II of the Report, G. Westkamp, 2007, *The Implementation of Directive 2001/29/EC in the Member States*, at p.22.



involved are vintage...is incorrect. Nintendo is famous for bringing back to life its popular characters for its newer systems...<sup>49</sup>. However, there are problems with this argument. Although it may be illegal, the second part of the argument is somewhat incoherent. Nintendo claims the titles are vintage, but then contradictorily that they're not actually vintage. Therefore ROMs (and, in Nintendo's view, emulators) should be illegal, because the distribution of otherwise inaccessible legacy content undermines the ability to make new content. Firstly, the argument that it undermines the intellectual property is questionable. As the Gower Review of intellectual property in the UK commented, *'the existence of such a large volume of old work protected but unavailable means that a great amount of intellectual capital is wasted'*<sup>50</sup>. The result is that the locking away of this content, which is not being commercially exploited, does not benefit society under either the US or EU systems. One economics researcher at the University of Cambridge determined that the optimal duration of copyright would be approximately 15 years<sup>51</sup>. This would give a creator more than enough time to recoup their costs, while allowing non-profitable works to enter the public domain. With a console and videogames that are 20 years old, and no longer exploited commercially by the creators, there is no revenue being generated through sales that can be used to subsidise the creation of new works by, for example, Nintendo.

Furthermore, it is unlikely that legacy games compete with newly released games in terms of sales. For example, it is unlikely that Super Mario Bros., a 2D-platforming game released for the Nintendo Entertainment System (NES) in 1985, effectively competes with Super Mario Galaxy, a 3D-platforming game for the Nintendo Wii released in 2007. The games are likely to cater to different audiences; as one journalist commented, *'the arcade games of the 1980s were laughably primitive compared to the immersive 3-D games we take for granted today. Who would want to play Donkey*

*Kong when he could choose Halo or Splinter Cell instead?'*<sup>52</sup> According to another author, *'with hardware capacities expanding almost monthly, and computer programmers learning faster, smarter and better-looking ways to style their games, any game three months after release is considered old and outdated'*<sup>53</sup>. There is also nothing in the release of a ROM file that appears to prevent Nintendo from continuing to exploit the character of Mario in new games - the release of legacy games happening to feature the same character does not in any way limit Nintendo's rights over the creation of a new Mario game.

As mentioned at the beginning of this section, the business model of the videogame industry relies on planned obsolescence, and the replacement of old consoles and games with new, usually in the space of five years. Unlike the music industry, for example, the business model does not predominantly rely upon the re-releasing of old content on new media, but on continued innovation and the creation of new products. For this reason, the claim that emulation is a considerable economic threat to the videogame industry should be questioned. To provide one example, one of the previously quoted papers states that *'game enthusiasts can download 298 Nintendo 64 games along with an emulator in less than one hour, an act that results in a potential US\$10,920 loss per customer to the gaming industry'*<sup>54</sup>. This does of course assume that the average consumer would both have \$10,920 to spend on Nintendo games, and the somewhat contested view that every act of downloading equals a lost sale. As one academic stated with regard to the sale of counterfeit DVDs, *'it may be that a fake DVD bought at £2 represents a lost legitimate sale at £10, but it very well may not'*<sup>55</sup>. The article presents the yearly sales figures for Nintendo 64 software, demonstrating a fall of revenue from \$1.34 billion at the peak of the console's sales in 1998, to just under \$59 million in 2002<sup>56</sup>. Two points are worth mentioning regarding these figures - firstly, that 2002 was

49. Nintendo Corporate, *supra* 3.

50. A. Gowers, November 2006, *Gowers Review of Intellectual Property* prepared for HM Treasury, British Government, s.3.30.

51. R. Pollock, August 2007, *Forever minus a day? Some theory and empirics of optimal copyright*, University of Cambridge. Retrieved 27th February 2012 from [http://www.rufuspollock.org/economics/papers/optimal\\_copyright.pdf](http://www.rufuspollock.org/economics/papers/optimal_copyright.pdf).

52. H. Bray, 2004, *Consoles allow nostalgia buffs to play 1980s arcade favorites*, Boston Globe.

53. J. Dean Lord IV, 2005, *Would You Like to Play Again? Saving classic videogames from virtual extinction through statutory licensing*, 35 Sw. U. L. Rev 401 at p.409.

54. J. Conley, E. Andros, P. Chinai, E. Lipkowitz & E. Perez, *supra* 1 at p.261.

55. MACKENZIE, S. (2010) *'Counterfeiting as corporate externality: intellectual property crime and global insecurity'* Crime Law and Social Change 54 21-38 at p.23.

56. J. Conley, E. Andros, P. Chinai, E. Lipkowitz & E. Perez, *supra* 1 at p.268.

not only the seventh year of the Nintendo 64's life, but also the year after the console was replaced by Nintendo's 6<sup>th</sup> generation console, the Nintendo Gamecube, which would help to explain such a drastic fall in sales. Secondly, the first Nintendo 64 emulator, UltraHE, was released in 1999, in the fifth year of the console's lifespan. In 1999, the sales revenue for software was \$1.28 billion, and in the following year, in which the Gamecube was released, \$526 million. When it comes to the purchase of tens of thousands of dollars worth of videogames, the figures presented as potential losses due to videogame emulation, although potential, are highly unlikely. It also assumes that each download could be legitimately purchased - given the business model of the videogame industry, this is also difficult to argue, as it is likely that in 2002 the majority of Nintendo 64 software was removed from videogame store shelves in order to make room for sixth generation stock. To take another example, a copy of the Role-Playing Game "Sword of Vermillion" for the Sega Megadrive, for example, cannot be legitimately purchased from Sega, and the only way of legally purchasing such a game would be to attempt to find it at second-hand stores, or on online auction sites such as eBay (in addition of course, to either having or purchasing a still-functioning Sega Megadrive). Even if such a copy were found, the proceeds of the second-hand sale would not go to Sega. Therefore, the only feasible way to obtain the game would be to download the ROM and emulator to play it on.

### 3. Possible Legal Approaches to Emulation

There are several ways in which the issue of ROM distribution could be handled. The first would be for companies like Nintendo to try to curb the distribution of old videogames through issuing takedown requests to websites hosting these files, and issuing legal proceedings against those involved in distribution. However, such an approach would potentially have little success, and probably make little economic sense. The music industry publicly announced the end of mass lawsuits against the sharers of music files, with critics stating that the lawsuits *'did little to stem the*

*tide of illegally downloaded music...(and) created a public relations disaster'*<sup>57</sup>. The cost-effectiveness of bringing lawsuits against those sharing ROMs of games from the 1990s, for example, is highly debatable.

Indeed, the older the system, the less likely that a company is to take legal action against distributors of game content; often the games *'had been off the market so long that their manufacturers didn't care'*<sup>58</sup>. There is little incentive to go after individuals sharing games that have been out of print for more than ten years, and such action would appear to make little commercial sense. This is in stark contrast to other creative industries - *'it would be ludicrous in any other industry to say that just because a copyrighted work was old, yet not in the public domain, that its copyright should be ignored, but that is exactly what is happening'*<sup>59</sup>. What actions have been brought, as in the case of Sony's actions against Bleem and Connectix and Nintendo's threat of action against the creators of the UltraHE emulator, are actions based on emulation of current or almost-current emulators. The ESA, when it has brought actions against infringers, has done so primarily against those distributing ROM files for systems still being commercially sold<sup>60</sup>. However, as mentioned at the beginning of this article, given that the first emulators are often released four years after the release of the new console and the average lifespan of a console before the release of the next system is approximately five years, this gives the videogame industry significant time to commercially exploit those games - after the five-year period, sales are likely to be minimal. It is also worth noting that as games consoles become more technically advanced, emulation becomes much more difficult. At the time of writing, it appears that there are no viable emulators for the Xbox 360 or Playstation 3, despite these consoles being released in 2005 and 2006 respectively.

The videogame industry can also benefit through the exploitation of emulation software. As games experience popular revivals, the rerelease of older games in compilation form can occur. For example, Backbone Entertainment, in partnership with Sega, has released the Sega Ultimate Megadrive Collection for the Xbox 360 and Playstation

57. S. McBride & E. Smith, 19/12/2008, *Music Industry to Abandon Mass Suits*, Wall Street Journal. Retrieved 1st March 2012 from <http://online.wsj.com/article/SB122966038836021137.html>.

58. H. Bray *supra* 52.

59. J. Dean Lord IV *supra* 53 at pp.411-412.

60. *Ibid.*

3, which contain 40 Megadrive games run on Backbone's emulation software. The disc also contains bonus content such as interviews with game creators and design sketches for the games contained, providing additional value for those who decide to purchase the content. Despite the availability of these games as ROM files, a significant number of copies were sold. According to one source, in the week of the compilation's release, it was the top-selling game in the US on both the Playstation 3 and Xbox 360, beating triple-A titles such as *Batman: - Arkham Asylum* and *Guitar Hero: - Beatles Edition*<sup>61</sup> from Amazon sales alone. Nintendo also has a 'Virtual Console' for its Nintendo Wii, where consumers can purchase some legacy games such as the Super Mario games as downloadable content that runs on an internal software emulator.

However, the officially released Megadrive games represent 40 titles out of 915 games released for the system. In comparison, the number of Super Nintendo games released

for the Wii's Virtual Console total 101 in Japan, 72 in the US, and 65 in Europe, out of a total of 784. It is unlikely that companies such as Sega and Nintendo would release their entire back catalogues through these systems, as '*with thirty-four years of history and counting, there are too many titles to reasonably expect they will all see release in the future*'<sup>62</sup>. In some instances, companies release old games under license, allowing games to be distributed freely, so long as it is done on a non-commercial basis<sup>63</sup>. Perhaps one solution for the videogame industry is to consider adopting a policy of allowing for the distribution of content publicly released more than 10 years ago (provided that the content is not for a current generation console) on discontinued systems. As the Sega Ultimate Megadrive Collection shows, the pre-existence of ROM files of games does not appear to seriously prejudice the sales of rereleased legacy content, and a non-commercial licensing regime may also result in the generation of a considerable amount of goodwill for the videogame publishers involved.

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61. D. Cowan, 18/09/2009, *Saling the World: - Scribblenauts, Beatles Rock Band Lead US Sales*, GamaSutra. Retrieved 02/03/2011 from [http://www.gamasutra.com/php-bin/news\\_index.php?story=25315](http://www.gamasutra.com/php-bin/news_index.php?story=25315).

62. J. Dean Lord IV, *supra* 53 at p.411.

63. Exidy, for example, have released 14 games they produced for arcade systems during the 1970s and 1980s for use on arcade emulators. For more information, please see the official MAME website, *ROMs available for free download*, retrieved 02/03/2011 from <http://mamedev.org/roms/.roms/>.

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### Recommended citation

FARRAND, Benjamin (2012). "Emulation is the Most Sincere Form of Flattery: - Retro Videogames, ROM Distribution and Copyright" [online article]. *IDP. Revista de Internet, Derecho y Política*. No. 14, pp. 5-18. UOC. [Accessed: dd/mm/yy].  
<http://idp.uoc.edu/ojs/index.php/idp/article/view/n14-farrand/n14-farrand-en>  
 DOI <http://10.7238/idp.v0i14.1546>  
 ISSN 1699-8154



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