PROTECTION OF COMPUTER PROGRAMS IN EUROPEAN AND CROATIAN LAW – CURRENT ISSUES AND DEVELOPMENT PERSPECTIVE

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Protection of computer programs through copyright is marked with distinctive limitations and exceptions compared to other categories of works. The nature of computer programs differs from other works protected by copyright. Its utilitarian nature and the role it plays in the information revolution offers insights into the long lasting struggle of intellectual property versus competition regulation. An examination of the formative moments of the development of copyright protection for computer programs reveals an opportunity to refine the status of software. Potential for misuse and endangerment of privacy call for open access to the source code and decompilation right as a recognized copyright limitation.

Keywords: computer program, copyright, digital rights management, decompilation, personal data protection

1. INTRODUCTION

Using computer software[1] on an everyday basis has become an unavoidable part of professional and private life. Computer programs are present on our

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[1] The definition of software in this paper relates to computer programs, preparatory work and related data, both in purely digital form as well as stored on material media. The term "computer software" is normally not defined in laws or international treaties, usually for reasons of technical neutrality and the obvious risk of any such definition becoming quickly outdated due to fast advances of information technology. For clarification see I. Kunda and R. Matanovac Vučković: *Raspolaganje autorskim pravom na računalnom programu*, Zbornik Pravnog fakulteta u Rijeci, No. 1, 2010, pp. 85 – 132.

personal computers, smartphones, tablets and other smart appliances[2], both as local applications as well as mere interfaces to *cloud-based services*.[3] Smartphones follow our everyday lives, analyze where we are and what we do, meticulously noting what we search for using search engines and what content we visit through web browsers and social network applications. All these functions implemented in modern smart devices are manifestations of computer software, a universally accepted category of work qualified to receive copyright protection.

And yet, for thirty years there has been a substantial amount of criticism regarding the legal status of software. Some criticize the whole concept of software copyright.[4] Others focus on certain aspects of copyright protection with regard (only) to software.[5] Others still question the system of intellectual property in general, the copyright system for all of digital content in particular[6] or at least the traditional licencing schemes[7] in the digital environment. Finally, there are the users, the third element of the copyright equation alon-

2 Even simple mechanical devices are now imbued with electronic systems, thus becoming *smart* and connecting to the emerging *Internet of Things* – a term describing the interconnection of uniquely identifiable embedded computing devices within the existing Internet infrastructure. See J. Höller, V. Tsiatsis, C. Mulligan, S. Karnouskos, S. Avesand and D. Boyle: *From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence*, Elsevier, Oxford, 2014.

3 One recent definition describes cloud computing as "...a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources. These resources (e.g., networks, servers, storage, applications, and services) are interfaced through a software, virtualization layer and can be rapidly provisioned and released with minimal management effort or service provider interaction." See P. Mell and T. Grance: *The NIST definition of cloud computing*, Recommendations of the National Institute of Standards and Technology, NIST, US Department of Commerce, Gaithersburg, 2011, p. 2.

4 R. M. Stallman: *Free Software, Free Society: Selected Essays of Richard M. Stallman*, GNU Press, Boston, Massachusetts, 2010; H. J. Meeker: *The Open Source Alternative: Understanding Risks and Leveraging Opportunities*, John Wiley & Sons, Hoboken, N.J., 2008.

5 E. S. Raymond: *The Cathedral and the Bazaar*, O'Reilly Media, available at: http://www.catb.org/česr/writings/cathedral-bazaar/cathedral-bazaar/index.html, last accessed on January 12, 2015.

6 S. Kinsella: *Against Intellectual Property*, Ludwig von Mises Institute, Auburn, 2008; R. Fleischer: *Musikens Politiska Ekonomi*, Ink bokförlag, Stockholm, 2012; S. Vaidhyanathan: *Copyrights and Copywrongs: The Rise of Intellectual Property and How It Threatens Creativity*, NYU Press, New York, 2001; etc.

7 L. Lessig: *Remix: Making Art and Commerce Thrive in the Hybrid Economy*, Penguin Press, New York, 2008; *Free Culture*, CC by-nc 1.0, available at: http://www.free-culture.cc/, last accessed on January 12, 2015.

gside the interests of authors and the society itself.[8] A lot has been said and written regarding the users' behaviour in the digital domain concerning digital content; recent studies, however, show that a majority of users are not mere greedy freeloaders looking only to avoid paying licencing fees, but are in fact primarily motivated by the ease and practicality of access to content.[9] The notion of users' rights regarding access to protected content, as opposed to exclusive rights of the author, has also received a fair share of attention in recent literature.[10] These criticisms, sometimes stemming from perceived dangers of regulation misuse, sometimes from thinly veiled ideological recourse, sometimes with complete disregard for positive aspects of intellectual property legal framework in force (namely, the vast cultural, technical and scientific progress, whole new sectors of economy and hundreds of millions of jobs worldwide[11]) still point to certain inadequacies concerning some types of content in the digital domain.

Criticism aside, the copyright framework in force remains the current paradigm of software protection and that is unlikely to change in the foreseeable future. The copyright framework has proven to be a secure and enforceable fra-

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8 P. Drahos: *A philosophy of intellectual property*, Dartmouth Publishing, Hanover, 1996, p. 27.

9 Detailed data regarding the character of internet data traffic is now available, obtained directly from the active network equipment used as the basic internet infrastructure. Companies like Cisco, Huawei, Ericsson or Nokia Siemens Networks manufacture routers and other intelligent network appliances that route and manage internet traffic. These devices also track the volume and character of data packets travelling through the managed networks. The data for year 2010 revealed that almost 40% of all internet data traffic was coming through peer-to-peer networks. In the last few years (2011 – 2013), the data exposed the advent of global streaming services, following the widespread success of services such as Netflix, Pandora, Spotify, Last.FM etc. Research available at: http://www.cisco.com/c/en/us/solutions/collateral/service-provider/ip-ngn-ip-next-generation-network/white_paper_c11-481360.html, last accessed on January 12, 2015.

10 G. Mazzioti: *EU Digital Copyright Law and the End-User*, Springer, Berlin 2008; R. Sciaudone: *Personal data protection and IP rights enforcement: two worlds apart?*, Journal of Intellectual Property Law & Practice, Vol. 7, No. 4, 2012, p. 236; N. Irving: *Copyright Law for the Digital World: Evaluation of Reform Proposals*, Asper Review of International Business and Trade Law, Vol. 10, 2010, p. 141; D. Gesmann-Nuissl and K. Wünsche: *Neue Ansätze zur Bekämpfung der Internetpiraterie - ein Blick über die Grenzen*, Gewerblicher Rechtsschutz und Urheberrecht, Internationaler Teil, 2012, pp. 225 – 234.

11 K. Idris: *Intellectual property: A powertool for economic growth*, WIPO, Geneva, 2003, available at: http://www.wipo.int/edocs/pubdocs/en/intproperty/888/wipo_pub_ 888_1.pdf, last accessed on January 12, 2015.

mework and has successfully fostered the growth and development of content industry, software included. Some modifications of the paradigm concerning software, however, might be in order, especially considering the rising awareness regarding personal data protection, information security etc. The aim of this paper is to reflect on developments in European and national copyright law, most notably the recent European Orphan Works Directive[12] and its significant omission of computer programs as works that could, under certain conditions, be considered orphaned. These programs, colloquially often referred to as *abandonware,* while not regulated by the Directive, are nonetheless very much existent, facilitated by the rapidly changing and developing software industry. Companies develop software, their software ecosystems rise, spread and fall only to be replaced with new technology often leaving licenced users without recourse.[13] A further issue considered is the status of the European copyright reform, especially the perspective of the development of a true unified European digital market[14], and how it will relate to the software development industry and the users.[15] Developments in the field of personal data protection[16] and electronic communications regarding network neutrality[17], and how these seemingly unrelated issues intertwine and reflect on the status

12 Directive 2012/28/EU of the European Parliament and of the Council on certain permitted uses of orphan works, Official Journal of the European Union, L 299/5, 25 October 2012.

13 *Abandonware* is a term describing software abandoned by its rightsholder, typically a company that produced it or a software publishing company, and for which product support is no longer available, usually because the manufacturer has moved on to new products and has no commercial interest in supporting continued use of the older product, or a legal obligation to do so stemming from the original licence agreement users accepted when originally obtaining the software.

14 The new European Commission has proclaimed the formation of a unified digital market as one of its primary goals, in line with the program presented by Jean-Claude Juncker as a candidate for the President of European Commission in the European Parlliament in July 2014. The European Commission web page states the Digital Single Market as one of the top three priorities, along with Jobs, Growth and Investment, and Energy Union and Climate. According to EC at http://ec.europa.eu/index_en.htm, last accessed on January 12, 2015.

15 Review of the EU Copyright Rules, resources available at: http://ec.europa.eu/internal_market/consultations/2013/copyright-rules/index_en.htm, last accessed on December 22, 2014.

16 European Commission proposes a comprehensive reform of the data protection rules, resources and further links available at: http://ec.europa.eu/justice/newsroom/data-protection/news/120125_en.htm; last accessed on December 22, 2014.

17 The European Commission proposal and the legislative package named *Connected Continent*, available at: http://ec.europa.eu/digital-agenda/en/connected-continent-legislative-package, last accessed on December 22, 2014.

of computer programs as objects of copyright protection are also considered. This is especially evident in the case of decompiling as the only technical means of gaining an insight into the inner workings of software without access to the software source code. An additional goal was revisiting the formative years of computer program protection and the notion of adopting a *sui generis* right, a road ultimately not taken[18], but still an interesting alternative to the current copyright paradigm.[19] To our knowledge, the issues described have not recently been visited in Croatian legal literature. These are important, layered questions that require attention and will have repercussions on the software industry, computer software developers and users in the years to come. Hopefully this paper will incite further study.

2. HISTORICAL OVERVIEW

Historically, the first law that explicitly adopted copyright protection for computer programs came into being in 1980.[20] In the thirty five years since, the importance of software and the software industry has changed significantly. From a fledgling industry, peripheral work of a small number of authors, it has become a mainstay of the so called "content industry" as an increasingly important part of the global economy formed around economic exploitation of protected works. Currently, the software industry is one of

[18] J. C. Ginsburg: *Four Reasons and A Paradox: The Manifest Superiority Of Copyright over Sui Generis Protection of Computer Software*, Columbia Law Review, Vol. 94, 1994, p. 2559, available at: https://www.law.cornell.edu/copyright/commentary/gns94txt.htm, last accessed on March 11, 2015. See also J. M. Jr. Griem: *Against A Sui Generis System of Intellectual Property for Computer Software*, Hofstra Law Review, Vol. 22, 1993, p. 145; P. Goldstein: *Comments on A Manifesto Concerning The Legal Protection of Computer Programs*, Columbia Law Review, Vol. 94, 1994, p. 2310.

[19] V. N. Vasudeva: *A Relook at Sui Generis Software Protection Through the Prism of Multi—Licensing*, The Journal of World Intellectual Property, Vol. 16, No. 1-2, 2013, pp. 87 – 103. See also U. Loewenheim: *Legal Protection for Computer Programs in West Germany*, Berkeley Technology Law Journal, Vol. 4, 1989, p. 187, available at: http://www.law.berkeley.edu/journals/btlj/articles/vol4/Loewenheim/html/text.html, last accessed on March 11, 2015; M. Flinders: *Protecting Computer Software - Analysis and proposed alternative*, Journal of High Technology Law, Vol. 7, 2006, p. 71; P. Samuelson: *CONTU Revisited: The Case Against Copyright Protection for Computer Programs in Machine-Readable Form*, Duke Law Journal, 1984, p. 663; S. Corbett: *What If Object Code Had Been Excluded from Protection as A Literary Work in Copyright Law? A New Zealand Perspective,* Michigan State Law Review, No. 1, 2008, p. 173.

[20] The *Computer Software Copyright Act*, an amendment to earlier Act from 1974 and 1976, was adopted by the US Congress on December 12th, 1980.

the fastest growing industries, developing new technologies, business models, products and services at an astounding rate. According to *Economy Watch,* the software industry represents the fastest growing aspect of the global economy in general.[21] Other data reveal that the volume of global software industry has exceeded 400 billion US dollars in 2013.[22] This figure does not include losses incurred by software piracy[23], especially widespread in developing economies like those of the BRIC bloc, or results of neighbouring industries (telecommunications, computer hardware, consulting), but solely on economic exploitation of software through licencing.[24] The legal framework chosen for computer programs has had a profound impact on the development of this industry. Even the recession-ridden economy of the Republic of Croatia has had some modest success in this field, characterised by efforts of many small companies and a few medium enterprises.[25]

The issue of regulation of computer programs has previously been visited in Croatian legal literature at different times and in different stages of legal development, first following the institution of Croatia as an independent legal system (along the lines of the established Central European legal tradition[26]), and then usually following the adoption of new national laws[27,28], new Eu-

[21] According to EconomyWatch: http://www.economywatch.com/world-industries/software/, last accessed on January 12, 2015.

[22] See Gartner report: www.gartner.com/newsroom/id/2696317, last accessed on January 12, 2015.

[23] According to Business Software Alliance (BSA), unlicenced software in BRIC countries amounted to 67% in the year 2013. See http://globalstudy.bsa.org/2013/downloads/studies/2013GlobalSurvey_Study_en.pdf, last accessed on January 12, 2015.

[24] *Ibid.*

[25] IDC Adriatics market research for 2013 shows that software exports from Croatia have amounted to 1.22 billion kuna and that the sector employs a little over ten thousand developers, mostly in small and medium enterprises. According to Poslovni.hr, available at: http://www.poslovni.hr/tehnologija/hrvatska-softverska-industrija-lani-zaposlila-1066-radnika-273543, last accessed on January 12, 2015.

[26] Z. Parać: *Imovinskopravna zaštita i prijenos kompjutorskog softwarea*, doctoral dissertation, University of Zagreb, Faculty of Law, Zagreb, 1990; *id.*: *Autorskopravna zaštita kompjutorskih programa*, in: I. Henneberg (ed.): *Nove tehnologije i autorsko pravo*, Autorska agencija za SR Hrvatsku, Zagreb, 1989.

[27] Z. Parać: *Autorskopravna zaštita kompjutorskih programa nakon izmjene Zakona o autorskom pravu, dio prvi,* Privreda i pravo, Vol. 29, No. 9-10, 1990, pp. 645 – 661; *id.*: *Autorskopravna zaštita kompjutorskih programa nakon izmjene Zakona o autorskom pravu, dio drugi*, Privreda i pravo, Vol. 29, No. 11-12, 1990, pp. 793 – 807.

[28] R. Matanovac Vučković and I. Gliha: *Novela Zakona o autorskom pravu i srodnim pravima iz 2007. godine*, in: R. Matanovac (ed.): *Prilagodba hrvatskog prava intelektual-*

ropean Directives etc.[29] In order to present the legal regulation of computer programs in the comparative European and Croatian legal framework there are but two basic choices. One would be start with an analysis of our national, specific regulations, court rulings and decisions, and then move to the international framework, especially the WIPO Treaties, EU Directives and decisions by the European Court of Justice[30] and the national courts[31] that had the opportunity to consider the above mentioned issues. The alternative would be to analyze primarily the development of the international system of protection and compare it to local legal regulation. Both of these approaches have merit. However, taking into account the high level of international activity in the field of intellectual property on the one hand, and the lack of significant national court practice on the other, and taking into account the recent accession of the Republic of Croatia (and its legal system) to the EU, it would seem more appropriate to start this analysis with a review of European and international efforts.

On the outside, following the development of information and communication technologies, it is clear that some of the treaties and agreements presented bring forth new substantive provisions into the body of copyright law. New provisions are gradually introduced to regulate the changing user and rightsholder behaviour, their usage patterns and business plans specific to the digital environment. Some of the changes are indeed specific and aimed at solving critical issues, such as the widespread digital piracy. Others concern developing alternative methods of protection which might be more suited to software. It is frequently observed that, in the three hundred years since the development of the first modern copyright statute[32], the relations between authors, publishers and users have mostly remained in the same, age-old balance. What has

nog vlasništva europskom pravu, Narodne novine and Državni zavod za intelektualno vlasništvo Republike Hrvatske, Zagreb, 2007, pp. 115 – 146.

29 Kunda and Matanovac Vučković, *op. cit.* (fn. 1). See also N. Fikeys Krmić: *Licencni ugovori za računalni software*, Zbornik Hrvatskog društva za autorsko pravo, Vol. 10, 2009, pp. 123 – 132; M. Vukmir: *Abundance of sources – the true meaning of the terms copy and original; semantic changes in art and copyright terminology in digital environment and change of the role of law in digital societies*, Zbornik Hrvatskog društva za autorsko pravo, Vol. 11-12, 2011, pp. 71 – 152.

30 SAS Institute Inc v World Programming Ltd, ECJ C-406/10.

31 AVM Computersysteme Vertriebs GmbH v Cybits AG, Landgericht Berlin 16 O 255/10.

32 See L. Bentley, U. Suthersanen and P. Torremans: *Three hundred years since Statute of Anne, from 1709 to Cyberspace*, Edward Elgar Publishing, London, 2010.

substantially changed, and had a profound impact on the copyright-related industries, is the arrival of digital technology, the creation of online content stores and distribution channels, new services, and new markets. This observation is easily confirmed by even a cursory analysis of the legal framework in force – there has been a proverbial flood of new regulations, treaties, directives and national laws[33] in the last twenty years that has not been seen in the field of copyright since the formative years of the Berne Convention. It is quite clear that we find ourselves in an era akin to the time when the invention of long-distance communications, such as the telegraph, telephone and radio[34], coincided with the institution of the modern international system of intellectual property. Let us briefly revisit the current international legal framework regarding the status and protection of computer programs before proceeding to the previously mentioned questions.

3. COMPUTER PROGRAMS IN INTERNATIONAL AGREEMENTS AND TREATIES

The Berne Convention does not contain specific provisions concerning computer programs or, for that matter, digital rights management. Focused on providing universally accepted ground rules for copyright, the numerous adopted amendments do not specifically refer to computer programs, software, digital rights management or technical protection measures. While this can be easily explained by the relatively recent development of information technology, the last amendment of 1979 is recent enough to include at least a reference to the status of computer programs. Why this was not done at the time is left to interpretation of legal scholars and bears little practical concern. However, it does reflect a consideration we will revisit later on.

On the other hand, the TRIPS[35] Agreement explicitly regulates the status of computer programs, calling for the application of the Berne Convention

[33] Among those, especially with the intention to stop widespread digital piracy, a lot has been written about French measures such as DADVSI, HADOPI i HADOPI 2, as well as about similar US legislation (PRO-IP, COICA, PIPA and SOPA) and international measures such as the stalled ACTA proposal.

[34] D. Dragičević: *Kompjutorski kriminalitet i informacijski sustavi*, Informator, Zagreb, 2006, p. 14.

[35] The Agreement on Trade-Related Aspects of Intellectual Property Rights is an international agreement administered by the World Trade Organization during the Uruguay round of trade negotiations in 1994.

provisions, with the effect of granting computer programs rights equivalent to those of literary works, including the provision on the minimum term of protection of fifty years.[36] Unless changed by a special provision considering specifically computer programs, this term will usually (in most legal systems) run significantly longer.

When TRIPS introduced new rental rights regulating that rightsholders may accept or deny commercial renting of their works, the Agreement stipulated that signatories allow rightsholders to reach that decision by themselves, except when the computer program itself is not the fundamental object of rent.[37] Accordingly, Croatia has chosen the latter solution for its Copyright and Related Rights Act (CRRA)[38], so the provisions regarding rent do not apply to computer programs, unless the rightsholder stipulates otherwise.[39] This solution is the only logical solution if the nature of computer programs is considered. The distribution and sales of computer program licences, distribution of programs themselves and the process of installation of computer programs onto an information system render the renting of protected commercial software hazardous in terms of the usual commercial model – free access to installable program archives would naturally lead to a widespread unlicensed use contrary to conceivable interests of the rightsholder.

The only foreseeable context in which the alternative solution has practical value is a situation where software is protected by a digital rights management technology that prevents use without the distribution media or a hardware device. Solutions like these used to be widespread in the software industry; however, the development of more convenient distribution methods (cloud services, distribution of software through vertically integrated distribution models like iTunes or Google Play service) has made this form of protection increasingly rare.

TRIPS also regulates protection of databases regardless of the character of their content[40], whether protected by copyright or not, under the condition

[36] TRIPS, Article 10.

[37] For example, when a multimedia work consists of an audiovisual work and an additional computer program, a video player or a DRM solution in order to prevent unauthorized reproduction and distribution.

[38] Zakon o autorskom pravu i srodnim pravima [Copyright and Related Rights Act (CRRA)], Narodne Novine [Official Gazzette (OG)] 167/03, 79/07, 80/11, 125/11, 141/13, 127/14.

[39] Article 109 of the CRRA.

[40] TRIPS, Article 10.

that the selection or layout of the content, its organization and search ability represent a creative element.[41] European directives grant somewhat broader protection to databases. The Database Directive[42] outlines two methods. Where the contents or organization of the contents of a database represent the author's original intellectual creation, copyright rules apply. However, if there is no original work, some protection is still granted provided that a significant effort was employed in the obtaining, verifying or presenting of data through a *sui generis* right limited to a span of fifteen years.[43]

Since the foundation of the World Intellectual Property Organization (WIPO), one of its main goals has been to foster a globally accepted framework of copyright and intellectual property rights in general. In this regard, developing and adapting the provisions of the Berne Convention has been one of its foremost activities. However, political and economic circumstances and diverging interests have obstructed the achievement of this goal[44], so the focus of the institutional development of an international framework of copyright and neighbouring rights shifted in the early 1990s to the World Trade Organization and, in 1994, to its TRIPS Agreement. This finally led to new initiatives in WIPO where two treaties, the WIPO Copyright Treaty (WCT) and its sibling, the WIPO Performances and Phonograms Treaty (WPPT), finally came into being in 1996. Their provisions, ending almost thirty years of obstruction[45], especially regarding technical protection measures and digital rights management[46], represent widely accepted legal standards in comparative copyright law.

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41 C. Seville: *EU Intellectual Property Law and Policy*, Edward Elgar Publishing, Cheltenham, 2009, p. 19.

42 Directive 96/9/EC of the European Parliament and of the Council on the legal protection of databases, Official Journal of the EU, L 77, 27 March 1996.

43 Article 10 of the Database Directive.

44 For example, the actions of the Non-aligned movement, representing a significant number of UN member states (and WIPO members). The Movement has systematically obstructed the modernization and global application of intellectual property rights acting out of short term economic interests of its members, mostly developing countries. See C. May: *The World Intellectual Property Organization: Resurgence and Development Agenda*, Routledge, New York, 2007, p. 90.

45 A. Bogsch: *The First Twenty-Five Years of the World Intellectual Property Organization from 1967 to 1992,* International Bureau of Intellectual Property, WIPO Publication No. 881 (E), 1992, pp. 71 – 72.

46 Articles 11 and 12 of the WCT.

While there has been a number of criticisms of these Treaties from various sources pertaining to, among other things, the perceived expansion of certain rights, unclear and broad provisions regarding DRM[47], and the fact that they apply the same standard to all signatory countries despite their varying stages of economic and information society development[48], these Treaties actually represent the foundation of the globally accepted copyright framework for the digital age. European directives and national laws of the member and candidate states have considered the position of computer programs, digital rights management technologies and related data on the basis of this framework.

3.1 Computer programs in WIPO Copyright Treaty (WCT)

Both of the so-called WIPO Internet Treaties, the WCT[49] and the WPPT have been developed in order to respond to challenges to the international system of intellectual property raised by the proliferation of information technology.[50] The matter contained therein warrants comparison with TRIPS. Where TRIPS omits references to moral rights completely and only refers to the Berne Convention with regard to substantive rights, the WCT explicitly confirms the provisions of the Berne Convention, moral rights included.[51] The WCT goes on to give a more precise and encompassing definitions of distribution right and rental right, and institutes the right to communicate the work

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47 J. J. Perritt: *Rejecting WIPO Treaties*, Government Information Quarterly, Vol. 14, No. 2, 2006, pp. 201 – 205; T. A. Lipinski: *The Myth of Technological Neutrality in Copyright and the Rights of Institutional Users: Recent Legal Challenges to the Information Organization as Mediator and the Impact of the DMCA, WIPO, and TEACH*, Journal of The American Society for Information Science and Technology, Vol. 54, No. 9, 2003, pp. 824 – 835; A. Ottolia: *Preserving Users' Rights in DRM: Dealing with "Juridical Particularism" in the Information Society*, International Review of Intellectual Property and Competition Law, Vol. 35, No. 5, 2004, pp. 491 – 602; P. Akester: *The Impact of Digital Rights Management on Freedom of Expression – the First Empirical Assessment*, International Review of Intellectual Property and Competition Law, Vol. 41, No. 2, 2010, pp. 31 – 58.

48 These agreements came to be known as WIPO Internet Agreements, being prepared through the WIPO Digital Agenda program.

49 WIPO Copyright Treaty, signed on December 20th 1996 in Geneva, Switzerland. Original text of the Agreement is available at: http://www.wipo.int/treaties/en/ip/wct/trtdocs_wo033.html#P87_12240, last accessed on November 1, 2014.

50 J. S. Sheinblatt: *The WIPO Copyright Treaty*, Berkeley Technology Law Journal, Vol. 13, No. 1, 1998, p. 535 – 550.

51 Article 1 of the WCT.

to the public.[52] When compared to the corresponding provisions of the Berne Convention[53] and TRIPS[54], it is apparent that the distribution right, with regard to the joint statement following the adoption of the WCT, now refers to all categories of literary and artistic works (computer programs included, since Article 4 of the WCT finally defines computer programs as protected literary works).

Regarding the rental right, first instituted in TRIPS, the WCT further broadens its scope to include authors of phonograms[55], as well as computer programs and cinematographic works as stipulated in TRIPS.[56] Probably the most significant contribution by the WCT to the international system of copyright has been the introduction of the new right to communicate the work to the public, regulated in Article 8 of the WCT.[57] Since the WCT explicitly numbers computer programs as literary works, authors of computer programs have the exclusive right to authorize any communication of the work to the public, including the making available to the public of their works in such a way that members of the public may access these works from a place and at a time individually chosen by them – in other words, to publish and allow downloads of their program to internet users over a hosting service. These provisions were fundamental for subsequent development of national copyright laws regarding computer programs, and served as the basis for European Directives concerning copyright, information society and related services. It is these provisions that have spurred the advent of alternative rights management approaches, most notably the various free software, open source and similar licence agreements and the more refined and ambitious Creative Commons system of licence agreements.[58]

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52 Article 8 of the WCT.

53 Article 14.1 of the WCT.

54 TRIPS Article 9.1 indicates application of the Berne Convention provisions, with an optional reservation regarding Article 6*bis* on moral rights of the author as a concession to *common law* legal systems among the TRIPS signatories.

55 Seville, *op. cit.* (fn. 41), p. 20.

56 TRIPS Article 11.

57 Article 8 of the WCT.

58 The terms Commons and Creative Commons represent certain ideas and values regarding the extent of copyright protection and enforcement of copyright and related rights by the rightsholders. Creative Commons licensing agreements do not displace the classic legal framework of copyright law in force regarding the management of rights on a protected work. Instead, these agreements manage the rights in a way that allows users more access and more liberal terms of use. The goal of CC licenses is to allow faster and easier licensing of protected works in the digital

Also significant are the provisions of Article 11 prohibiting circumvention of technical protection measures or digital rights management technologies.[59] One of the criticisms raised during the discussions that preceded the adoption of this provision was that adopting a wider scope of liability against those who circumvent technical protection measures might in some cases include the liability of those who manufacture devices that can be used to circumvent technical protection measures (*contributory liability*) – for example, compact disc or digital versatile disc copiers (*"burners"*) which might in turn slow down the development of optical storage systems and related technologies.[60] From today's perspective, it is obvious that these fears were grounded in business reality and practices of the period, but ultimately unfounded in terms of technological development. Provisions against imports, manufacture and use of technology that might be used to circumvent technological protection measures existed in national laws as far back as the 1980s.[61] These provisions failed to curb the proliferation of digital piracy or, for that matter, act against technological progress and development.[62]

Article 12 of the WCT contains a definition of data important for digital rights management, as well as sanctions for disabling or circumventing DRM technology[63], which are the first sanctions regarding DRM management in contemporary copyright treaties. Naturally, the provisions regarding DRM technology and sanctions for its disabling or circumventions have become one of the more interesting topics in contemporary copyright law. Also controversial is their effect on the development and protection of market competition.[64]

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domain without jeopardizing the author or hampering the user – within the scope of current copyright laws. See http://creativecommons.org/about, last accessed on January 12, 2015.

59 Article 11 of the WCT.

60 Sheinblatt, *op. cit.* (fn. 50), p. 535.

61 *Ibid.*

62 *Ibid.*

63 Contrary to the relatively straightforward provisions of the WCT regarding the duty of the signatories to implement penal and civil measures against perpetrators of actions prohibited in Articles 11 and 12 of the WCT, there are opinions that the legal framework of the convention only implies a very general duty to implement said provisions without providing a concrete mechanism to verify that signatories have actually done so. See Seville, *op. cit.* (fn. 41), p. 21.

64 P. Magnani and M. L. Montagnani: *Digital Rights Management Systems and Competition – What Developments Within the Much Debated Interface Between Intellectual Prop-*

Based on the provisions of the aforementioned treaties, we can finally provide a firm definition of what DRM technologies are in the legal and technical sense. DRM technologies represent a complex of measures and resources installed on or imbued into a technical medium – computers, game consoles, mobile phones, DVD players, smart television sets and all other kinds of digital content reproducing machines – used by rightsholders to manage and regulate the way their works are used by the users. The term DRM implies not only technical protection measures like encryption or using proprietary devices to authorize access, but also data on rights management used to identify the rightsholder, the author, the work, the rules and conditions of access and use etc. Use of DRM by the publishing industry and its legal regulation in the twenty years following the adoption of the WCT have produced significant legal, economic and social effects.

The legal effects are, primarily, the development of European and national regulations regarding sanctions against the unlawful disabling or circumvention of DRM technology.

The economic effects are the development of novel distribution methods, especially over the Internet. Legal regulation of DRM has allowed and fostered the development of delivery services such as iTunes, a vertically integrated delivery model protected (at least initially) by DRM both on the hardware as well as the software level. When working properly, DRM technology prevents unlawful distribution and reproduction while allowing rightsholders to effortlessly distribute works to millions of users without additional investment or expenses per copy. This has had a significant impact on the development and position of creative industries.[65]

Finally, the regulation of DRM has had profound practical social and political effects. Opposition to legal regulation of DRM has been present decades before the WIPO Internet treaties.[66] However, incidents like the Sony DRM

erty and Competition Law?, International Review of Intellectual Property and Competition Law, Vol. 39, 2008, p. 83.

[65] According to the French consultancy TERA Consultants, the total economic contribution of various creative industries to the European GDP in 2013 was 6.8%, i.e. a little over € 850 billion. At the same time, the industry employed 6.5% of the workforce, or over 14 million people. See http://www.teraconsultants.fr/en/issues/The-Economic-Contribution-of-the-Creative-Industries-to-EU-in-GDP-and-Employment, last accessed on January 12, 2015.

[66] Stallman, *op. cit.* (fn. 4).

incident[67], the Johansen case[68] or the Apple DRM case[69] have both incited and catalyzed the creation of novel rights management schemes like Creative Commons, dedicated to creating simple licence agreement templates regarding the use of works in the digital domain within the current copyright legal framework, as well as political and activist movements like The Pirate Party[70], campaigning to abolish intellectual property laws on general principle.

The WIPO Internet treaties are important for another reason – the solution adopted regarding the term of protection for neighbouring rights. The protection term extension to fifty years is a solution symptomatic of the response to issues presented in the preamble of the Treaty and is in line with the provisions of TRIPS. However, the expected positive effects of this solution, from the perspective of the rightsholder, have been questionable.[71]

Digital piracy is not merely a widespread activity. It is the second leading activity users undertake when using broadband Internet.[72] Interestingly enou-

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67 As a part of its digital rights management, in 2005 Sony used a *rootkit,* a self-concealing program to prevent users from copying digital music distributed on CD and DVD media. This software in turn made possible to create malware to specifically target users using Sony's products and gain unauthorized access to their systems. Sony was targeted by class-action lawsuits and eventually settled out of court.

68 Norway v Johansen, Oslo Court of the first instance, Case no. 02-507 M/94.

69 G. Mazzioti: *Did Apple's Refusal to Licence Proprietary Information enabling Interoperability with its iPod Music Player Constitute an Abuse under Article 82 of the EC Treaty?*, World Competition, Vol. 28, No. 2, 2005, pp. 253 – 275.

70 Most Pirate Parties insist on abolishment of intellectual property in general, not just copyright or software copyright in particular, ignoring the important role intellectual property rights have as the basis of the postindustrial economy. Currently, Pirate Party International is an umbrella organization representing 42 national political parties of varying political, social and economic views and influence, mostly sharing a political platform based around freedom of speech, other basic human and consumer rights in the digital age and, for the purpose of this paper, their outlook on copyright reform. The original pirate party, the Swedish Piratpartiet was founded in 2006 and stems from an organization called Piratbryan, a Swedish thinktank opposed to intellectual property in general and acting as an advocacy group. See http://www.pp-international.net/, last accessed on January 12, 2015.

71 The notion that copyright term extension will somehow substantially improve the position of rightsholders in relation to widespread digital piracy is more a statement of ethical or moral standards than a practical solution. With regard to orphaned works, it was clearly to the detriment of users. Almost twenty years later, it is clear it has not had a desired effect on piracy.

72 Cisco research, *op. cit.* (fn. 9), table no. 12 on data regarding the type of Internet data traffic.

gh, research shows that this activity is, in sheer volume, the most widespread in highly developed and connected countries, all signatories of the WIPO Internet treaties.[73] The volume of transferred data whose character is consistent with the pattern of unlawful distribution is significantly higher in countries with higher penetration of broadband Internet. Even though these countries have signed and are members of all relevant international treaties and agreements, and while some of them have even introduced penal law provisions in an effort to curb digital piracy, this has not forestalled hundreds of millions of internet users to distribute and reproduce protected content on an unprecedented scale.[74]

4. COMPUTER PROGRAMS IN THE EU LEGAL FRAMEWORK

As stated above, content industry (music, movies, software) is one of the leading aspects of the European economy. The European Commission and the Council of Europe have intensively studied the effects of information technology revolution on the system of intellectual property for the better part of the last fifty years. The interface between the legal framework of intellectual property in general, and copyright in particular, with other legal disciplines, most notably competition law and consumer protection, has often been characterized as an evergreen of European private law, mostly due to the fact that progress in the formation of the common European digital content market is practically negligible (ECJ cases such as FA Premier League v QC Leisure and others (C-403/08) and Karen Murphy v Media Protection Services (C-429/08) notwithstanding).

Problems the EU faced in the field of copyright protection stemmed from an uneven level of copyright harmonization between the member countries. Diverse legal traditions, different views regarding the role of copyright, different legal practices (one such practice was the *common law* requirement of formal registration of work before granting protection) and diverging interests are still significant obstacles to EU-wide copyright harmonization and the creation of the common market. One of the earliest documents drafted by the Commi-

[73] *Ibid.,* table no. 10 on geographical location of users using file sharing services, with information regarding the total volume of traffic and relative share of peer-to-peer traffic in total traffic.

[74] In concrete numbers – the annual volume of unauthorized distribution through peer-to-peer networks has grown into the trillion terabyte range (long scale syntax). *Ibid.*

ssion regarding the status of computer programs in copyright law was a 1988 Green Paper *Copyright and the Challenge of Technology*. Even this early document observed how different national provisions concerning copyright affect the common market.[75]

Furthermore, the document revealed that the Commission had understood the need for explicit protection of the new categories of works (computer programs and databases) and its importance for the developing industries as early as in the 1980s. However, this document completely ignored the development of the Internet, although it was already widespread in the academia and education institutions, focusing instead on the unauthorized reproduction and distribution of classical magnetic media as the prevailing model of digital piracy at the time. The initial reception of the paper was understandably critical and hostile, mostly due to the perceived accent on competition issues instead of copyright harmonization.[76] However, the paper served as a foundation for an extensive harmonization undertaking in the next two decades, beginning with Directive 91/250/EEC on legal protection of computer programs and followed by several other Directives which, along with the Berne Convention, TRIPS and WIPO Internet treaties, represent the European legal framework of copyright.

4.1 The Computer Programs Directive, 91/250/EEC

The Computer Programs Directive introduced software as a copyrightable work into the European legal system. At the time of its original inception, the question of harmonizing the protection of computer programs and fostering the growth of the nascent European software industry was an obvious priority. In 1991, only five of the member countries had regulated software as a copyrightable work. Software industry in Europe was just a pale shadow of Silicon Valley giants, and unfavourable trade indicators incited the Commission to reflect on the position of the software industry compared to US. The main goals of the Directive were to offer a sound legal framework for copyright protection of computer programs to be applied in national laws in line with the provisions of the Berne Convention.[77] The legal definition of a computer pro-

[75] European Commission report*: Copyright and the Challenge of Technology,* p. 10, available at: http://ec.europa.eu/green-papers/pdf/green_paper_copyright_and_chanllenge_of_thecnology_com_%2888%29_172_final.pdf, last accessed on January 12, 2015.

[76] Seville, *op. cit.* (fn. 41), p. 27.

[77] *Ibid.*, p. 28, and Article 2 of the Berne Convention.

gram as a copyrightable work was to include all computer programs regardless of their form, including those industrially built into hardware, along with any preparatory documents and other materials that preceded the development of the program provided that the nature of the preparatory work could result in a program at a later stage.[78] These provisions have established the legal status of computer programs in European law, which was the main goal of the Directive. Indirectly, this reaffirmed the position stated in the European Patent Convention regarding the possibility of software patent protection.[79]

The Directive has, for the first time on the European level, harmonized the holder's rights concerning computer programs, including the exclusive distribution right[80], translation and adaptation right and the exclusive right to authorize reproduction.[81]

While the Directive does not explicitly define the status of decompiling[82], the provisions of Article 6 and the general provisions of the Directive and of the Berne Convention imply that the author has an exclusive right to prevent decompilation of a computer program, except in certain cases. The criteria for allowing decompilation are laid down in Article 6 of the Directive, which states that the authorization of the rightholder shall not be required where reproduction of the code and translation of its form are indispensable to obtain the information necessary to achieve the interoperability of an independently created computer program with other programs, provided that certain conditions are met – that these acts are performed by the licensee or by another person having a right to use a copy of a program, or on their behalf by a person authorized to do so, that the information necessary to achieve interoperability has not previously been readily available to the persons referred above and that decompilation is confined to the parts of the original program which are necessary to achieve interoperabi-

78 See Article 1 of the Directive.

79 Article 52.2.c of the European Patent Convention. Meanwhile, the patent systems of the United States, Japan and other countries have, in certain cases, allowed software patents creating an efficient legal barrier for outside competition when entering their respective markets.

80 Limited by the provisions of Article 4 concerning exhaustion of distribution right.

81 Article 4.1 of the Directive.

82 Decompiling is a procedure of translating the executable version of a computer program back into the source code it was compiled from. Decompiling is usually done when access to the source code is needed to clarify a program function, discover the true purpose of the program or develop a way to interface the program. Decompiling is not a precise and exact procedure – the source code is extrapolated and differs from the original.

lity.[83] Furthermore, paragraph 2 of Article 6 forbids decompilation methods to be used for goals other than to achieve the interoperability of the independently created computer program, forbids the decompiled code to be given to others, except when necessary for the interoperability of the independently created computer program and prohibits it to be used for the development, production or marketing of a computer program substantially similar in its expression, or for any other act which infringes copyright.[84]

Finally, in accordance with the provisions of the Berne Convention for the protection of Literary and Artistic Works, the provisions of this Article may not be interpreted in such a way as to allow its application to be used in a manner which unreasonably prejudices the rightholder's legitimate interests or conflicts with a normal exploitation of the computer program. The question this provision poses is how to define a normal exploitation of the computer program. Do criteria established for other categories of works apply? What about the three-step test?

As regards establishing authorship of a computer program, the Directive regulates that the person or persons who have written the program (its source code, not merely compiled the executable code) should be considered authors, unless the program was developed by employees in which case the economic rights[85] belong to the employer.[86] The Directive also introduces certain limitations to the exclusive right concerning the reproduction of a computer program by the licensee allowing him to create a *backup copy* for reasons of data security.[87]

Alongside the Computer Programs Directive, additional Directives that harmonized and regulated aspects of copyright were Directive 2006/115 on rental right and lending right and on certain rights related to copyright in the field of intellectual property (Rental Directive), Directive 2000/31/EC on certain legal aspects of information society services, in particular electronic commerce, in the internal Market (Electronic Commerce Directive), Directive 2001/29 on Copyright and related rights in the Information Society (Information Society Directive), Directive 2006/116/EC of the European Parliament and of the Council of 12 December 2006 on the term of protection of copyright and

83 Article 6 of the Directive.

84 Article 6.1 of the Directive.

85 Articles 18-31 of the CRRA.

86 Article 2.3 of the Directive.

87 Article 5 of the Directive.

certain related rights (Copyright Term Directive), Directive 2004/48/EC of the European Parliament and of the Council on the enforcement of intellectual property right (The Enforcement Directive), and the new Directive 2012/28/EU on certain permitted uses of orphan works (The Orphan Works Directive).

The objective of the Rental Directive with regard to computer programs is summed up by the provision which leaves the Member States free to decide how to deal with the issue.[88] This is a point to be remembered – where most Member States[89] have, for most categories of works, developed a rental scheme, in the case of computer programs, most have chosen to exclude this possibility. When one considers the utilitarian nature of the computer program, the manner and the reason why computer programs are developed in contrast to other categories of copyrighter works, the business model of publishers and developers, and the fast pace of development, this is, of course, the only logical solution.

The Computer Programs Directive itself was amended in 1993 (Directive 93/98/EC on harmonising the term of protection of copyright and certain related rights), only to be repealed and replaced in 2009 (Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs).

4.2 Directive 2009/24/EC on the legal protection of computer programs and Directive 2012/28/EU on certain permitted uses of orphan works

With respect to the questions raised earlier, the 2009 Directive lays out the provisions regarding beneficiaries of protection, exclusive rights of the rightsholder specifically in the case of computer programs, exceptions to the restricted rights, and the cases and conditions where users are allowed to decompile the protected program.[90] These provisions have been dutifully integrated into the Croatian law.

The 2012 Directive, on the other hand, regulates certain aspects of use of orphan works by publicly accessible libraries, educational establishments, museums, as well as archives, film or audio heritage institutions and public service broadcasting organizations in the EU Member States in order to achieve aims related to their public-interest missions.[91] The Directive applies to three

88 Article 6.3 of the Directive.

89 Article 109.2 of the Croatian CRRA.

90 Articles 3, 4, 5 and 6 of Directive 2009/24/EC, implemented as Articles of the CRRA.

91 Article 1 of Directive 2012/28/EU.

distinct categories of work: works published in the form of books, journals, newspapers, magazines or other writings, cinematographic or audiovisual works and phonograms and cinematographic or audiovisual works and phonograms produced by public-service broadcasting organizations, under the condition that they are protected by copyright or related rights and first published or, in the absence of publication, first broadcast in a Member State.[92] The Directive does not mention computer programs as a category of work eligible to be considered an orphan work.

5. COMPUTER PROGRAMS IN CROATIAN LAW

The review so far has shown how computer program regulation in Europe has followed international and general copyright development trends. The status of computer programs in Croatian copyright law is defined by the provisions of the Croatian Copyright and Related Rights Act.[93] First adopted in 2003, the Act has been revised in accordance with recent developments in the European copyright framework, especially during the phase of the Croatian accession to the European Union and the transposition of the European Union *acquis communautaire*.[94] The Act lays out the framework of computer program copyright in Croatian law in a comprehensive manner and in line with the provisions of the European directives. Article 5 regulates the status of computer programs as works protected by copyright. Chapter 8 of the CRRA regulates special provisions for computer programs, including provisions on computer programs created in the course of employment (Article 108), additional limitations on the rightholders' rights compared to other categories of works (Article 110), decompilation (Article 111), and special measures of protection (Article 112).

Additionally, computer programs are regulated in the articles concerning the right of revocation (Article 17, does not apply to computer programs), obligations of the rightholder regarding content limitations on copyright (Article 98, does not apply to computer programs), protection of technical measures (Article 175), and provisions regarding misdemeanours and penal provisions. The newest addition to this regulation is the implementation of the European

92 *Ibid.*

93 See *supra* fn. 38. Unnoficial consolidated version in English available at: http://www.dziv.hr/files/File/eng/zakon_autor_ENG.pdf, last accessed on January 12, 2015.

94 See Article 1a of the Act on Amendments to the Copyright and Related Rights Act, OG 141/13.

Orphan Works Directive, implemented into CRRA in 2014.[95] Like the Directive, the CRRA does not regulate computer programs as works eligible to be considered orphan works. As mentioned earlier, there is a great deal of computer software, developed over the last thirty years, still well within the term of copyright protection as defined by almost universally accepted international copyright conventions and agreements. As information technology progresses, and new systems of hardware and software develop, rightsholders, usually software publishing companies large and small, have no incentive to maintain, fix and distribute older products when new software comes along. Whole operating systems, office programs, games and utility software, to mention but a few general software categories, are abandoned by software publishers in order to develop and maintain newer versions, and incite users to licence new software and finance the next cycle of development.[96] This is an understandable business model that has sustained the software industry basically from the time of its inception. It differs significantly from the models of commercial exploitation of other categories of protected work. With regard to those traditional categories of works, the current paradigm of copyright (issues regarding the creation of the common European digital market, and the territoriality principle with regard to collective management of rights notwithstanding) is still superior to any foreseeable alternative.

6. CONCLUSION

The question remains what happens to users when the rightsholders stop offering support and maintenance for their programs. Naturally, rightsholders use end-user licence agreements to limit any liability regarding the proper function of software. Users may have invested a significant amount of time and money to develop an infrastructure based around a critical software component, only to discover it is no longer supported and has become open to attacks exploiting security vulnerabilities the rightsholder has no incentive to fix. Recent examples of rightsholders ending support after, as per industry

[95] Act on Amendments to the Copyright and Related Rights Act, OG 127/14.

[96] Such software is still protected by copyright. However, it is readily available on peer-to-peer networks and software repository pages usually without the rightsholder's consent. For their part, rightsholders often ignore their *abandonware*, sometimes because they move on to develop new software, have ceased operation, or cannot be identified or contacted etc.

unofficial standards, lengthy[97] or very short[98] periods of time may rekindle the old debate – should software enjoy copyright protection at all or should it be changed to a *sui generis* right.

A further argument in this regard is based around privacy. Without access to the software source code, there is no practical way of establishing the true function and purpose of software. Users are expected to trust rightsholders that licenced software does not contain spyware or enable unauthorized access to their information systems and data.[99] Software development trends like integration and convergence allow modern information systems to integrate and replace functions of previously unconnected and independent devices and services.[100] This is why, now more than ever, access to the source code of software and an independent review are needed to establish its safety for privacy and other personal rights of the user. In order to facilitate this, an addition to current decompilation regulation is required. There are several models for how this could be arranged. The most radical (and controversial option) is the one forwarded by the free software movement and the open source community, which requires distribution of the source code alongside the executable code. The advantages of this solution, already implemented in the provisions of the GNU General Public Licence, Apache Licence and several other open source licence agreements, is that the source code of the program is available to the public, and free to analyse and uncover vulnerabilities and other potential security holes and develop the code to correct them. This option is unacceptable to rightsholders who develop commercial software and base their business model on software licencing income.

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97 Microsoft has officialy ended support of its venerable operating system, Windows XP, twelve years after its initial publication, in 2014. See http://www.microsoft.com/en-us/windows/enterprise/end-of-support.aspx, last accessed on January 12, 2015.

98 Likewise, Google no longer supports 2.x version of its mobile operating system, Android, less than three years after its publication, and has abandoned the parts of its Android 4.1 and 4.2 system less than two years after their publication. See http://www.zdnet.com/article/google-stops-providing-patches-for-pre-kitkat-webview-abandons-930m-users/, last accessed on January 12, 2015.

99 Recent findings, especially cases involving malware such as *Stuxnet*, *Duqu* and *Flame,* or discovery of intentionally inserted weaknesses into programs and services that allow government agencies access to user data and systems graphically describe the need for transparency. See J. Ball, J. Borger and G. Greenwald: *How US and UK spy agencies defeat internet privacy and security*, Guardian, September 2013, available at: http://www.theguardian.com/world/2013/sep/05/nsa-gchq-encryption-codes-security, last accessed on January 12, 2015.

100 Dragičević, *op. cit.* (fn. 34), p. 11.

The other possibility for obtaining copyright protection for a computer program is to regulate an obligation for the rightsholder to deposit the source code with the intellectual property office. The code would be safely deposited and unavailable to the general public, but available for inspection and analysis. This solution resembles the old common law copyright registration requirement, as well as the process of patent approval, especially considering the utilitarian nature of software, as well as the existence of software patents in the US, Japan and other nations, and the practice of the European Patent Office disregarding the provisions of the European Patent Convention.[101] Computer programs, with the exception of only two categories, computer games and audiovisual entertainment software, are utilitarian in nature and, besides the fact that their source code can be printed out on paper and resemble a text, have very little in common with literary works as perceived and protected by the Berne Convention. They are not works of art, their purpose in and of themselves is not to convey an original communication by the author. Instead they are highly sophisticated tools that allow everyday use of computers in the digital environment, such as navigating the Internet, communicating with other users, creating and distributing digital content etc. They are increasingly developed by a great number of co-authors (software developers), both as employees of a company and as independent developers cooperating on common projects.[102] This has legal implications and consequences apparent in the diverging regulation, where laws that regulate copyright such as the Croatian CRRA, increasingly adopt measures that set computer programs apart from other categories of protected works.

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[101] R. Schestowitz: *The European Patent Office is Breaking the Law Regarding Software Patents, German Parliament Finally Complains*, available at: http://techrights.org/2013/05/04/benoit-battistelli-et-al-under-fire/, last accessed on January 12, 2015. See also *German Parliament Sends Message: Stop Granting Software Patents*, available at: http://www.ip-watch.org/2013/04/22/german-parliament-sends-message-stop-granting-software-patents/, original motion available at: http://dip21.bundestag.de/dip21/btd/17/130/1713086.pdf, last accessed on January 12, 2015.

[102] In contrast to the more traditional categories of protected works authored by one or a handful of authors, computer programs can have several hundred or even several thousand co-authors. Researchers from the Massachussetts Institute of Technology have described Open Source projects exceeding over three thousand active developers. J. Lerner, P. A. Pathak and J. Tirole: *The Dynamics of Open-Source Contributors*, American Economic Reivew, Vol. 96, No. 2, 2006, pp. 253 – 275.

In perspective, regarding the future of software copyright, several things may occur. The loosening of decompilation regulations, shortening the term of protection of software to be more in line with rapid obsolescence and the short maintenance and support lifespan, and eligibility for application of orphan work provisions seem very probable. Thus, the process of legally recognizing this category of protected work as something different in comparison to other, traditional categories of works, will continue to move forward.

Sažetak

Tihomir Katulić *

AKTUALNA PITANJA I BUDUĆI RAZVOJ AUTORSKOPRAVNE ZAŠTITE RAČUNALNIH PROGRAMA U EUROPSKOM I HRVATSKOM PRAVU

Zaštita računalnih programa autorskim pravom obilježena je posebnim ograničenjima nositeljevih prava u odnosu na ostale kategorije autorskih djela. Priroda i upotreba računalnih programa kao zaštićenih djela razlikuje se od ostalih kategorija djela zaštićenih autorskim pravom. Poseban karakter računalnih programa i uloga koju računalni programi imaju u okviru informacijske revolucije pruža uvid u odnos prava intelektualnog vlasništva prema tržišnom natjecanju u suvremenom regulatornom okviru. Osvrt na razvoj autorskopravne zaštite računalnih programa podsjeća na ranije predloženu, alternativnu regulaciju, a recentni porast zloupotreba osobnih podataka i općenito privatnosti u digitalnom okruženju zahtijeva transparentniji pristup izvornom kodu i regulaciju dekompilacije kao specifičnog ograničenja prava na računalnom programu.

Ključne riječi: računalni program, autorsko pravo, digitalno upravljanje pravima, dekompilacija, zaštita osobnih podataka

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