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Harmonizing Copyright Rules for Computer Program Interface Protection

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Introduction

Information and communication technologies (ICT) are essentially built on software.¹ Computer program interoperability elements in turn, or interfaces, are the knots which enable a program to communicate with other programs and devices.² Consequently, the protection mechanism of these interoperability elements has an impact on development possibilities of the software and hardware components which together form a workable computer system. The article addresses the question of copyright protection of computer program interfaces. As software markets are international by their nature and because interoperability plays an important role in building platforms for the global information society, one supposes these issues would be resolved internationally in a uniform way.³

¹ Thomas Vesting, The Autonomy of Law and Formation of Network Standards, p. 641-642, German Law Journal Vol. 05 No. 06 2004, p. 639-668.

² See definition in the Council Directive 1991/250/EEC of May 1991 on the legal protection of computer programs or new codified version Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs, preamble.

³(International copyright treaties such as the Berne Convention and the Universal Copyright Convention (Universal Copyright Convention, Adopted at Geneva, 6 September 1952 and revised at Paris, 24 July 1971) were thought to foster creation and international distribution of computer programs. Consequently copyright was selected as a protection for computer programs instead of for example sui generis protection where there were no international treaties yet at place. Hence some level of harmonization was thought important for international distribution to work in a satisfactory manner.

At present, the situation at international level is that both the WIPO Copyright Treaty from 1996⁴ and the TRIPS agreement of the World Trade Organization⁵ require that computer programs are protected as literary works under the Berne Convention⁶. As the World Trade Organization has more than 150 Member States copyright protection of computer programs under the TRIPS agreement has a very international footing. However, the international instruments form a very general level of harmonization. They only set some minimum level of protection for computer programs and they do not address the question of interface protection directly in any way. They leave a broad discretion for contracting states on how to tackle the problem.

In Europe a close harmonization of computer program protection was seen necessary to support the development of computer program industry. The differences at national level were thought to impair a proper functioning of the computer program markets.⁷ Hence, the primary justifications for harmonization were economic by their nature. With these arguments the Software Directive was aimed to make the scope of copyright protection for computer programs uniform within Europe. Moreover, the Directive was meant to resolve the question of interoperability.

There are, however, obstacles in the harmonization of laws.⁸ The differences at the national level in fact show that notwithstanding the aims of European harmonization, national approaches tend to follow their own historical reasoning trajectories. This underlines the evolutionary understanding of a legal change. The legal traditions related to copyright protection seem to be strongly path-dependent. The path-dependence of a legal system can be explained by its links to the surrounding technological, economic and

⁴ WIPO Copyright Treaty adopted in Geneva on December 20, 1996.

⁵ Agreement on Trade-Related Aspects of Intellectual Property Rights, The TRIPS Agreement, Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization, signed in Marrakesh, Morocco on 15 April 1994.

⁶ Berne Convention for the Protection of Literary and Artistic Works of September 9, 1886, completed at PARIS on May 4, 1896, revised at BERLIN on November 13, 1908, completed at BERNE on March 20, 1914, revised at ROME on June 2, 1928, at BRUSSELS on June 26, 1948, at STOCKHOLM on July 14, 1967, and at PARIS on July 24, 1971, and amended on September 28, 1979.

⁷ Council Directive 1991/250/EEC of May 1991 on the legal protection of computer programs, preamble.

⁸ *Gunther Teubner*, Legal Irritants: Good Faith in British Law or How Unifying Law End up in New Divergences, p. 13, *The Modern Law Review* 1998, p. 11-32.

cultural heritage of a nation, among other reasons.⁹ Moreover, legal paradigms are connected to the respective scientific paradigms. Accordingly scientific paradigms influence on legal paradigms, but the change of these is slow.¹⁰

Furthermore, the legal system has dependencies within itself. Coherence of a legal system is an aim which brings different areas of law within one country into a discourse so that these various areas of law form one coherent national system. Coherence is achieved among others through the application of general principles of law which have connections to the deeper justifications of legal culture.¹¹ General principles, legal concepts and the deeper justifications of legal culture which maintain the unity of a legal system are not changed quickly or easily. When the Software Directive was enacted the legal concept of originality, having connections to justifications of copyright protection, was drafted to mean something specific for computer programs. The concept of originality should now in Europe mean one thing for computer programs and something else for other protectable subject matters. The implementation of the Software Directive actually meant that the coherence and consistence of national copyright system would become broken. It is understandable that national copyright system rejects such changes. Consequently, European level of harmonization has not taken place smoothly.

Another question is what level of coherence there should be if any between protection of computer programs and protection of other copyrightable subject matters. Computer programs are by their nature distinct from other literary and artistic works. The main distinctive feature is that computer programs are technology and protection therefore has an impact on technological development. This feature may have an impact on which justification logic is suitable for protection. Before the copyright protection was internationally accepted for computer program protection, some academics recommended *sui generis* protection for computer programs.¹² Current situation resembles to some

⁹ See on a general level *Douglas C. North*, *Understanding the Process of Economic Change*, Princeton University Press 2005.

¹⁰ *Ugo Mattei*, *Comparative law and economics*, p. 25, The University of Michigan Press 1997.

¹¹ Kaaro Tuori, *Oikeuden ratio ja voluntas*, p. 123-124, Wsoypro 2007.

¹² *Pamela Samuelson – Randall Davis – Mitchell Kapor – J.H. Reichman: A Manifesto Concerning the Legal Protection of Computer Program*, p. 2331-2332, *Columbia Law Review* 1994, p. 2308-.

extent sui generis protection as copyright rules need to be tailored to fit for computer program protection. However, the grounding justification logic for protection has not been very openly discussed and molded for the specific purpose, not at least in Europe. If harmonization is sought there should be more in dept international discussion on this issue.

In the present article it will be analyzed how the aims of the harmonization under the Software Directive have been achieved. This is analyzed from the Finnish national perspective and case law but some case law from other European countries will be used as illustrating how interpretations differ in various countries. The article endeavors to open up discussion on possible justifications for differing interpretations in Europe and whether it would be possible to find a common basis for computer program protection. As computer program interface protection is an internationally important question European regulation and case law (Finnish as a national level) will be compared to the regulation and case law of the United States.

As software markets are international by their nature, national states face similar problems when resolving computer program regulation within the room left them in the international instruments. Likewise, national courtrooms confront closely similar disputes waiting for resolution. Legal discourse on the global level has made the legal borrowing easier.¹³ In fact one can trace instances when European regulation has been used as a model when deciding computer program protection cases in the United States as well as the respective regulation of the United States.¹⁴ Similarly the case law of the United States has influenced European case law.¹⁵ The end results in some cases seem to resemble each other. This does not indicate that the responses are similar in all respects.

¹³ *Gunther Teubner*, Legal Irritants: Good Faith in British Law or How Unifying Law End up in New Divergences, p. 13 and 16, *The Modern Law Review* 1998, p. 11-32.

¹⁴ For example software directive's interoperability regulation has influenced several cases in the U.S. such as *Computer Associates International, Inc v. Altai, Inc.* 982 F.2d. 693 (2nd Cir. 1992) and *Sega Enterprises Ltd. V. Accolade Inc.*, 977 F.2d 1510 (9th Cir. 1992). Moreover, the directive has clearly and unfortunately had an impact how Digital Millennium Copyright Act's interoperability exception has been drafted.

¹⁵ *Computer Associates International, Inc v. Altai, Inc.* 982 F.2d. 693 (2nd Cir. 1992) has obviously been used as a model in the Finnish Helsinki Appellate court case R 99/661, 22nd of December 1999.

Even though one can trace a functional equivalence between two different ways to resolve a problem, this does not suggest that these methods of resolving the issue will lead in all cases to similar outcomes. Nor does it connote that the responses have a similar impact on development of computer program technologies. By comparative approach the article endeavors to analyze how different methods used in deciding interface protection diverse from each other and possible links these methods have for justification grounds. The copyright questions covered in the article will be the originality requirement and the idea-expression dichotomy which both define the line between protectable and non-protectable subject matter in computer programs. In this article the question of access to interoperability information will not be covered.¹⁶

The first substantive section discusses deeper justifications for copyright protection and how different countries value these. These deeper justifications of national copyright laws may delay changes which are not in line with the grounding principles of a system. The aim of this section is to give for a reader an understanding on what kind of traditions different countries have in their copyright laws. This enables a reader to question the rationality of these traditions' possible influence on computer program protection. The second substantive section will describe specific characteristics for computer program protection and justifications for specific treatment. The section endeavors to discern the grounding logic for computer program protection and evaluates possibilities for (re)defining the main justification. The third section will discuss the present scope of copyright protection for computer program interfaces. The chapter will elaborate how originality concept (as copyright eligibility criterion) and idea-expression dichotomy are utilized in the case law when demarcating non-protectable elements from protectable in computer programs. The section discusses how these methods are different and possibly problematic under the current regulation. The final section will draw up conclusions and propose ways to develop interpretations for computer program interface (non-)protection.

¹⁶ This question is elaborated in author's article: Are Copyright Rules for Computer Programs Enabling Interoperability in a Sufficient Manner? (Manuscript)

Different Rationales for Copyright Protection and their Presence in National Copyright Systems

There are four main justifications for copyright: 1) natural law 2) just reward for author 3) incentive for creation and 4) public interest. Reward and incentive justifications are mostly economic by their nature while natural law and public interest have different justification logic.¹⁷ The natural law theories concentrate on the individual creator and protection of his or her interests, while the public interest rationale considers wider interests within a society. Under the pure natural law principle a copyright protection would be unlimited in its term.¹⁸ The public interest theory in turn requires that protection is limited.

The natural law justification for copyright argues that rights of an author come from the nature of things. Authors express their personality in their works. The requirement under the Lockean discourse is that authors should have a property right to the fruits of their mental labor.¹⁹ However, labor is not enough for the entitlement of copyright but there is a requirement of personality or in other words originality which needs to be fulfilled.²⁰ In its extreme the creative process has been mystified and creators have been considered geniuses who produce clearly original literal property. On the other end every man's literal productions have been considered to represent personality and to be distinctive from others' works.²¹ Unique personality and how writers express their ideas in a manner peculiar to only themselves has also formed an important part of the German Romantic literary theory.²²

Moral rights of copyright laws are phenomena belonging to the natural law justification logic. Accordingly moral rights emphasize the personal ties between the creator and a

¹⁷ Gillian Davies, Copyright and the public interest, p. 13-15, Sweet and Maxwell 2002.

¹⁸ Sam Ricketson, The Copyright Term, p. 754-755, IIC 1992 p. 753-783.

¹⁹ Gillian Davies, Copyright and the public interest, p. 13-15, Sweet and Maxwell 2002.

²⁰ Rose 1994, p. 114.

²¹ Rose 1994, p. 126-129.

²² In this theory the form of expression becomes essential and is separated from the ideas and content of a work. Mark Rose, Author as a Proprietor, p. 51-52, in Brad Sherman and Alain Strowel, Of Authors and Origins, Essays on Copyright Law, Clarendon Press 1994, p. 23-56.

work.²³ The most important moral rights include author's right to attribution, integrity and divulgation.²⁴ A right to attribution which is also called as a paternity right requires that author's name should be attached to a work. Author has also a right to choose to publish her works anonymously. A right to integrity gives protection against unauthorized publication and a divulgation right gives author control on which form and when a work is published. Author's moral rights can not be assigned as economic rights can. They belong to the initial human being who created a work.²⁵ This feature further emphasizes the ties between the creator and a work.

Closely connected to the natural law justification principle is the reward principle as these both can be traced back to John Locke's ideas.²⁶ Reward principle call for just reward for exploitation of authors' works. Under the principle author's economic rights become important. The incentive principle in turn emphasizes reward's instrumental side using a reward as a stimulus for creativity. Copyright protection is given for the purpose of granting incentives for authors to create new works. Under this argumentation one assumes that without copyright protection there would be no works.²⁷ These two principles are the economic foundations for copyright protection. The difference between these two is that the reward principle concentrates on the author while the incentive principle considers wider interests like cultural and technological development.

The fourth principle emphasizes the usefulness of copyright for the general public. This principle is stipulated even in the U.S. Constitution which provides that "*The Congress shall have power...To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.* Hence, in the U.S. the promotion of science is the primary justification for intellectual property rights. Moreover, exclusive rights are granted for limited time periods. This is because limitations on monopoly are deemed necessary. The public

²³ Daniel Burkitt, Copyrighting Culture – The history and cultural specificity of the western model of copyright, p. 162, Intellectual Property Quarterly 2001.

²⁴ Ricketson p.771.

²⁵ J.A.L. Sterling, World Copyright Law, p. 281-283, Sweet and Maxwell 1998.

²⁶ Natural law justifications could be traced to Immanuel Kant's writings as well, see for example J.A.L. Sterling, World Copyright Law, p. 43, Sweet and Maxwell 1998.

²⁷ Davies 2002, p. 14-15.

interest principle further requires the dissemination of works.²⁸ Even though these four main justifications are interlinked with each other and present at different nations' copyright systems, different nations value and emphasize these differently.²⁹

Nevertheless, it has been argued that there is a difference between justifications in civil law and common law countries. The claim is that the natural law justification is a feature to the civil law tradition whereas the public interest and economic justifications belong more closely to the common law tradition.³⁰ The common law tradition is claimed to be more utilitarian: rights are given if they are useful for the general public.³¹ This instrumentalism has been argued to explain why economics has played a more important role in copyright cases in the United States than in civil law countries.³²

The picture is however not so straightforward. The natural law justification has historically played an important role in England and in the United States as well. But enactment of the United States Constitution and the Supreme Court's decision in *Wheaton v. Peters* from year 1834³³ stressed the utilitarian nature of the copyright system of the United States and made the public interest justification the dominant one.³⁴ The public interest justification plays also today an important role in reasoning copyright cases. For example in the *Feist* decision from 1991 the Supreme Court of the United States stated that "*The primary justification of copyright is not to reward author but to*

²⁸ *Davies* 2002, p. 16-17. In human right conventions one could also trace presence of here mentioned principles. For example Universal Declaration of Human Rights article 27 reads as following (1) "Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits. (2) Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author."

²⁹ *Davies* 2002, p. 17. In human right conventions one could also trace presence of here mentioned principles. For example Universal Declaration of Human Rights article 27 reads as following (1) "Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits. (2) Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author."

³⁰ *Davies* 2002, p. 17.

³¹ *Paul Goldstein*, *International Copyright, Principles, Law and Practice*, p. 3, Oxford University press 2001.

³² But even in the United States economics has played merely a role in computer program cases and in cases of first impression. *Pamela Samuelson*, *Economic and Constitutional Influences on Copyright Law in the United States*, p. 410, *European Intellectual Property Review* 2001, p. 409-422

³³ *Wheaton v Peters*, 33 U.S. 8 Pet. 591 (1834).

³⁴ *Daniel Burkitt*, *Copyrighting Culture – The history and cultural specificity of the western model of copyright*, p. 155, *Intellectual Property Quarterly* 2001.

*promote the progress of science and useful arts. To this end copyright assures authors the right to their original expression, but encourages others to build freely upon the ideas and information conveyed by a work.*³⁵ From the public interest justification logic the promotion of useful arts is the ultimate reason for giving copyright. Therefore, leaving ideas and information free of protection for others to develop them plays an important role in the United States. At the same time the doctrine limits the monopoly power provided by copyright protection.

In England the nature of English copyright and the effect of the Statute of Queen Anne (1710) were at its early dates hotly discussed. The conflict was between the natural law justification and the public interest justification. In the case *Millar v. Taylor* in 1769 (Court of King's Bench)³⁶ the issue was decided in favor to the natural law justification and common law copyright was declared to be perpetual notwithstanding the statutory limitations provided by the Statute of Queen Anne. This decision was however soon overturned in case *Donaldson v. Beckett* in 1774 (House of Lords)³⁷. In this later case it was clarified that copyright for published works was created by the Statute of Queen Anne and there was no perpetual natural right for such works. Hence the limited rights for such works were created purely by regulation.³⁸

In Germany the primary justification for copyright has been and still is natural law. A work represents author's personality and therefore works should be protected by property rights.³⁹ Alongside with Germany the other continental Europe's copyright norms have their basis in natural law.⁴⁰ The natural law justification is often claimed historically to stem from French Revolution. Even though there are today doubts whether the natural law justification played such a significant role in early dates of French author's rights system, author-centrism has become a characteristic feature of French legal culture

³⁵ *Feist Publications, Inc. v. Rural Telephone Service Co. Inc.*, 499 U.S. p. 349-350 (SC 1991).

³⁶ *Millar v. Taylor*, 4 Burr. 2303, 98 ER 201 (1769).

³⁷ *Donaldson v. Beckett*, 4 Burr. 2408, 98 ER 257; 2 Bro PC 129, 1 ER 837 (1774).

³⁸ *Alain Strowel*, *Droit d'auteur and Copyright*, p. 242, in Brad Sherman and Alain Strowel, *Of Authors and Origins, Essays on Copyright Law*, Clarendon Press 1994, p. 235-253.

³⁹ *Davies 2002*, p. 184.

⁴⁰ Gerhard Schrickler, *Urheberrecht, Kommentar 2. Auflage*, p. 7, C.H. Beck'sche Verlagsbuchhaltung 1999.

through moral rights which emphasize personal ties between the author and a work.⁴¹ Finland and Sweden have been close to the German copyright tradition.⁴² In Sweden copyright was even unlimited in earlier which shows a strong natural law rationale.⁴³

In the following it will be analyzed why computer program interfaces are a specific subject matter. The chapter describes the initial reasons for the harmonization of computer program protection in Europe. It will be questioned what kind of role the traditional justification logics should play in protecting such functional technical works as computer programs. Moreover, suitable justification logic for computer program interface protection will be sketched.

Characteristics of Copyright Protection for Computer Programs

Computer programs differ from other copyrightable subject matters in the sense that it is not actually the text which is the most important in programs but the functions created by literal expression i.e. by computer program code. They are functional works by their nature and they belong to the area of technology. Moreover, computer program creation does not resemble the mystified process of artistic creation where geniuses create something out of nothing. In fact programmers employ a wide library of ready-made modules in their work and their options for creation are to great extent limited due to technological requirements.

Moreover, computer programs are also a specific type of technology since the technology is characterized by cumulative development. This means that technological advances follow the earlier advances and build on the top of them: the knowledge cumulates on the earlier knowledge. Most innovations within the software industry are cumulative by their

⁴¹ *Daniel Burkitt*, Copyrighting Culture – The History and Cultural Specificity of the Western Model of Copyright, p. 158-162, *Intellectual Property Quarterly* 2001, p. 146-186.

⁴² See how Kivimäki has written about essence of work and cites broadly German legal literature. *T.M. Kivimäki*, *Tekijänoikeus*, from p. 68, Werner Söderström osakeyhtiö 1948.

⁴³ *Kivimäki* 1948, p. 47.

nature.⁴⁴ Software can also be characterized as a system product. A system product integrates several components which must work together in order for a desired output to take place. Hence, interoperability is an essential feature in such products.⁴⁵ Consequently, computer program interfaces are in a key position within computer program technologies. They may form bottlenecks for future development of relevant technologies. These unique features of computer programs put a copyright protection under a challenge.

In the EU the reasons for the harmonization of copyright protection of computer programs were economic by their nature. The concern was that differences within the protection would have a negative influence on the software markets within the EU. It was also emphasized that computer programs are vital for industrial development of the EU.⁴⁶ These concerns in the preamble show emphasis on the economic rationale of copyright. This might indicate that one aim of the Directive was to make the utilitarian approach prevalent in this area of copyright law.⁴⁷ Firstly, in the Directive there is no sign of natural law. For example the rights granted for the programmer include only economic rights. Moral rights are not mentioned in the Directive. This might connote that its impact should be diminished in the harmonized area of copyright law. Moreover, in practice moral rights have only had a limited role in computer program protection even in countries where they normally are present. For example the original creator of a computer program is rarely mentioned in a program copy. In addition, if computer programs are created under employment agreement, rights are directly under the EU regulation transferred to an employer.

⁴⁴ *Pamela Samuelson – Randall Davis – Mitchell Kapor – J.H. Reichman: A Manifesto Concerning the Legal Protection of Computer Program*, p. 2331-2332, *Columbia Law Review* 1994, p. 2308-.

⁴⁵ *Richard N. Langois, Standards, Innovation, Essential Facilities*, p. 209, in *Jerry Ellig, Dynamic competition and public policy*, Cambridge University Press 2001, p. 193-228.

⁴⁶ Council Directive 1991/250/EEC of May 1991 on the legal protection of computer programs, preamble.

⁴⁷ Similar line of reasoning relating to directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonization of certain aspects of copyright and related rights in the information society see *Kamiel J. Koelman, Copyright Law and Economics in the EU Copyright Directive: Is the Droit d'Auteur Passé?*, p. 603-606, *IIC* 2004, p. 603-638.

The aim of the European Software Directive was that computer programs are protected by copyright in every Member State. Moreover, both the threshold for obtaining protection and the scope of protection were intended to become uniform.⁴⁸ In most Member States the threshold of originality had to be lowered: the high threshold applied in some Member States was no longer permitted.⁴⁹ This change connoted that on aggregate the scope of protectable subject-matter under copyright became broader on the European level. In the U.S. originality is nowadays also a threshold criterion for copyright eligibility. There too the originality test is fairly easy to reach, even though it today differs upwards from the traditional common law originality.

Generally however, copyright has been considered to provide weaker protection than patent.⁵⁰ When the Directive on copyright protection for computer programs was being prepared in Europe the possibilities to strike a balance between competition and fair protection through protection were taken into account.⁵¹ Also in Finland, when the legislative act for giving copyright protection for computer programs was considered, copyright protection was thought to be flexible enough to allow competition in the software markets on one hand while at the same time it was thought to provide sufficient incentives for the development of computer programs on the other hand. The idea-expression dichotomy was thought to serve this end.⁵² Additionally, in the interoperability exceptions in the Directive competition aspects were taken into account.⁵³

⁴⁸ Council Directive 1991/250/EEC of May 1991 on the legal protection of computer programs, preamble. The harmonization of copyright laws within EU has been targeted initially for only those matters that were seen vital for European competitiveness. *Guy Tritton*, *Intellectual Property in Europe*, p. 487, Sweet and Maxwell 2008.

⁴⁹ 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/2000/0199 final, chapters III and V.

⁵⁰ This could provide a good basis for copyright to enable technological development. However, Lemley has recognized that in fact copyright doctrine does not have sufficient mechanisms for providing incentives for those who have improved copyrighted works. *Mark A. Lemley*, *The Economics of Improvement in Intellectual Property Law*, p. 1076, *Texas Law Review* 1997, p. 989-1084.

⁵¹ *Tritton* 2008, p. 490.

⁵² Government Proposal HE 161/1990, p. 16-17. The Finnish legislation is based on the above-mentioned European Directive, but Finland implemented the Directive before its accession to the European Union (European Community at that time).

⁵³ These exceptions are analyzed in author's article: *Are Copyright Rules for Computer Programs Enabling Interoperability in a Sufficient Manner?* (Manuscript)

If we follow the economic justification logic mentioned in the preamble of the Software Directive, one should notice that different strands of economic thought hold a different view on innovations, and what is necessary for such development. Under the prospect theory which can be classified to belong to the mainstream (neoclassical) economics broad intellectual property rights are deemed necessary for sufficient incentives to exist and development to take place.⁵⁴ In Europe economic arguments are often used for justifying stronger protection. The harmonization has generally at least in Europe meant more protection as stronger protection has been seen as indisputable good.⁵⁵

In evolutionary economics, in turn, narrow intellectual property protection is recommended in situations where an intellectual property holder of a key element could control the development of variety of systems. Evolutionary economics deems a competitive situation better for technological changes to take place.⁵⁶ There should be a multiplicity of firms trying alternative ways of doing things in order for new technological paradigms to emerge.⁵⁷ As computer program interfaces may become bottlenecks for development information and communication technologies, the concern should be taken seriously. If we also look the aims of the Software Directive this kind of justification seem to be at least one part of a copyright system. Copyright is assumed to provide flexible protection and at the same enable competition within the industry. In the following it will be analyzed whether narrow scope of protection can be achieved for computer program interfaces.

⁵⁴ See on prospect theory *Edmund Kitch*, The Nature and Function of the Patent System, The Journal of Law and Economics 1977, p. 265-290.

⁵⁵ *Tritton* 2008, p. 488.

⁵⁶ *Robert P. Merges – Richard R. Nelson*, On limiting or encouraging rivalry in technical process: The effect of patent scope decisions, p. 5-6 and 20-21, Journal of Economic Behavior & Organization, Vol. 25 (1994), p 1-24

⁵⁷ *Giovanni Dosi*, Technological paradigms and technological trajectories, A suggested interpretation of the determinants and directions of technical change, p. 157, Research Policy 1982, p. 147-162.

Scope of Copyright Protection for Computer Program Interfaces

There are no specific rules regarding the eligibility of computer program interfaces for copyright protection: instead, the general copyright requirements (for computer programs) need to be applied. Originality thus becomes an essential concept defining what becomes protected in the first place. Hence, from the general outset requirements for interface protection have in the EU lowered and therefore the scope of protection may become broader.

However, there are other rules and doctrines which also define the scope of protection for interoperability elements than the originality test, namely the idea-expression dichotomy. The Directive explicitly refers to the idea-expression dichotomy in case of interface protection. The Directive provides in Article 1.2 that “*ideas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected by copyright under this Directive.*” It is therefore this Article which should be looked more closely for interface protection. Also in the U.S. the idea-expression dichotomy has been utilized when leaving computer program interfaces out of protection. In this article even though it would be occasionally more correct to refer e.g. to principles when discussing about non-protection of some computer program elements, for the sake of simplicity here it will be discussed about ideas and idea-expression dichotomy. In case of computer programs, principles could be understood as referring to programming principles and rules. These cannot receive protection and therefore there are many elements within computer programs which do not merit protection.

If a work is original enough others are not entitled to make copies of a work (or original parts of a work). However, it is still possible that certain elements within a copyrighted work can be utilized by others. The elements which belong to the idea side of a work belong to the public domain. By low originality test copyright gives incentives for creation of new computer programs. Scope of protection is however narrowed by preventing monopoly rights for ideas and principles behind a computer program. This

enables competition within the industry. The concept of originality and idea-expression dichotomy can be seen as linked to each other. When a threshold for protection is low i.e. protection is given easily, the scope of protection should normally be narrow. For example earlier in the U.S. (before Feist case), when functional works qualified even more easily for protection, the copyright protection for these works were thin⁵⁸. This connotes that if copyright protection is easily achievable, idea-expression dichotomy should be utilized in preventing strong monopoly rights and in enabling competition. Moreover, exceptions enabling access to interoperability information can be seen as securing that there is an arena for multiplicity of firms to operate within the software markets and to provide variety of products.⁵⁹ In the following, the European and the U.S. legislation and their interpretations in the case law will be analyzed more closely.

Originality

TRIPS agreement (Article 10) requires that computer programs shall be protected as literary works under the Berne Convention. The protection covers both source code and object code. TRIPS Agreement does not itself describe other requirements for protection. The WIPO Copyright Treaty is similarly general on the issue. The Berne Convention requires that literary and artistic “works” shall be protected, but the text does not define the term. In the Convention text the term “original work” is used but the context refers only to a situation where original works are distinguished from copied works. In the Convention the term “intellectual creations” is applied and this has been interpreted in many national laws that works must be original in a meaning to possess some creativity.⁶⁰ Consequently, at international level the harmonization of threshold for protection is very general.⁶¹

⁵⁸ *Jane Ginsburg*, Creation and Commercial Value: Copyright Protection of Works of Information, p. 1876-1877, *Columbia Law Review* 1990, p. 1865-.

⁵⁹ These exceptions are discussed in the author’s article: An evolutionary economics perspective on computer program interoperability and copyright.

⁶⁰ Guide to the Berne Convention for the Protection of Literary and Artistic Works (Paris Act 1971), p. 17, the World Intellectual Property Organization 1978.

⁶¹ International human rights’ conventions do not set minimum requirements for protection nor do they indicate that protection of author’s right should take place through intellectual property regime. *Tuomas Mylly*, Intellectual Property and Human Rights: Do they Interoperate, p.197, in *Niklas Bruun*, Intellectual Property Beyond Rights, p. 185-229, WSOY 2005.

The Software Directive provides (Article 1.3) that: “*A computer program shall be protected if it is original in the sense that it is author’s own intellectual creation. No other criteria shall be applied to determine its eligibility for protection.*” Before the Software Directive the criteria for obtaining copyright protection was very low in England where sufficient *skill and labor* was enough for entitlement of copyright protection.⁶² The originality requirement of common law countries referred only to a condition that the work needed to originate from the author and that it was not copied from another.⁶³

The other end was Germany where a very strict criterion was applied. In order to receive protection a solution in a computer program needed clearly be above the average programmer’s solution. The initial application area for high creativity standard in Germany was applied art. The justification for higher criterion was that in that area design protection was additionally available. If copyright protection was not reached, the works were protected by design right. However, this higher creativity criterion started to spread into other copyrighted works and the strictest standard was used in relation to computer programs.⁶⁴ The German requirement of “level of creativity” spread also to Nordic countries.⁶⁵ This history of “level of creativity” in Germany demonstrates difficulties in having different originality standards for different copyrightable work classes. The legal system aims to achieve consistency by applying “level of creativity” standard similarly in every situation.

Even though the aim of the Software Directive was to reach a compromise between German and English approaches, some authors were skeptical whether one uniform criterion could be achieved in Europe.⁶⁶ Legal concepts are tightly linked to legal

⁶² *Marjut Salokannel*, Ownership of rights in audiovisual productions, p. 43-44 and 63, Kluwer Law International 1997.

⁶³ *Tritton* 2008, p. 489.

⁶⁴ *Gerhard Schricker*, Farewell to the ”Level of Creativity”, p.42- 43, International Review of Industrial Property and Copyright Law 1995, p. 41-48..

⁶⁵ *Haarmann*, p. 62.

⁶⁶ *Gunnar Karnell*, European Originality: A Copyright Chimera, In Scandinavian Studies in Law, Volume 42, Intellectual Property, Stockholm Institute for Scandinavian Law 2002, p 73-81.

traditions.⁶⁷ In copyright tradition the concept of originality has historically been tightly connected to author's personality. Behind the historical originality concept there is the natural law justification logic.⁶⁸ If the traditional interpretation of a concept is neglected, the past is given more control.⁶⁹ As already stated emphasis of different copyright justifications vary from one country to another. This has an impact also on how originality concept is construed in a country. Consequently, change of an originality concept is a difficult task and even more so if the tradition is not revealed. However, the directive's aim was to harmonize originality. This can not be efficiently done, without discerning the justification logics and changing the traditions.

The intention was only to harmonize the originality criterion for computer programs and to keep the old originality criterion valid for other copyrighted works (originality level for databases and photographs were harmonized later).⁷⁰ As legal system, or more narrowly copyright regulation, within a country tries to reach coherence, one understands that it is difficult to change the concept of originality to mean one thing for computer programs and keep the concept of originality to mean different for other work classes.⁷¹ This does not change the fact that actually literary works, to which category computer programs belong, have qualified fairly easily for copyright protection when for other types of works it has been possibly more difficult to qualify for protection. This connotes that nature of a work influences on protection to some extent. The originality is judged in the context: what is original in the respective art form.⁷² However, the concept of originality and how it is construed also has an impact on what is required for protection.

⁶⁷ Brad Sherman – Lionel Bently, *The Making of Modern Intellectual Property Law*, p. 2, Cambridge University Press 2000.

⁶⁸ Mark Rose, *Authors and Owners, The Invention of Copyright*, p. 114, Harvard University Press 1994.

⁶⁹ Brad Sherman – Lionel Bently, p. 2.

⁷⁰ European software directive contains actually some elements of sui generis protection as copyright rules designed for computer programs differ from other work classes in many respects.

⁷¹ See also Schriker 1995, p. 46, arguing that principle of equal treatment of all categories of work would require use of a similar criterion.

⁷² How originality is dependent on type of work, see also Per Jonas Nordell, *The Notion of Originality – Redundant or not?*, p. 103, in *Scandinavian Studies in Law Volume 42, Intellectual Property*, p. 97-111, Stockholm Institute for Scandinavian Law 2002. However, he also argues that lower originality for some type of works has an impact on originality for other works, p. 100.

The new criterion of the Software Directive called for lowering the requirements for protection in twelve Member States and lifting the requirements in the rest three (at that time) Member States. The Germany has explicitly incorporated the new originality definition in the law.⁷³ The case law has also been said to be in the line with the new standard. The case referred in this issue has been the *Buchhaltungsprogramm*⁷⁴ which has been said to confirm the new lower originality standard incorporated in law.⁷⁵ However, in this case the Supreme Court of Germany actually only stated that less strict criteria than earlier should be used when analyzing the threshold for protection. Lower courts had already confirmed that computer program in question receives copyright protection, even though they had applied the old higher criteria. Therefore, the case did not yet demonstrate how German courts apply the new criteria even though the case made evident that the new criterion is duly recognized.⁷⁶ In one later lower court case the court stated that complex software are assumed to be original enough unless proved to be banal or a creation is achieved only through borrowing from other programmers.⁷⁷ This case indicates clear lowering of the earlier standard.

In England the originality requirement has not been incorporated in law, even though the *skill and labor* differs fundamentally from the concept in the Software Directive. This negligence in incorporation has been feared to result in too broad a protection for computer programs in England.⁷⁸ The Directive's new requirement means not only

⁷³ 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/2000/0199 final, chapter V.

⁷⁴ Federal Supreme Court (Bundesgerichtshof) 14.07.1993 Case No. I ZR 47/91 "Accounting Program" (*Buchhaltungsprogramm*) from IIC 1995 p. 127-134.

⁷⁵ See for example Andreas Raubenheimer, *Implementation of the EC Software Directive in Germany – Special Provisions for Protection of Computer Programs*, p. 617-618, IIC 1996, p. 609-648.

⁷⁶ Lehmann has also commented this decision by saying that it was only a "first step in right direction". He proposed for future that it should only be examined whether a program is one's "own intellectual creation" (not plagiarized) and whether it exhibits some, modest individuality. Michael Lehmann, IIC 1995, p. 133-134.

⁷⁷ *Übertragung von Nutzungsrechten an Computerprogramm nach Insolvenz*, BGH, Urteil vom 3.3.2005 – I ZR 111/02 (OLG Hamm) (Fash 2000), GRUR 2005, p. 860-863.

⁷⁸ 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/2000/0199 final, chapters III and V. Davies has seen that before the harmonization through copyright directives other civil law countries than Germany provided a middle-ground in respect to originality criterion. Davies 2002, p. 345-346.

efforts but some personal and intellectual contribution.⁷⁹ In a quite recent English case *Navitaire Inc. and Easyjet Airline Company Bulletproof Technologies Inc.* one question was whether command code names used in the user interface were eligible for copyright protection. The claim was based on non-literal copying of the source code of the computer program. The court did not in this case discuss about the new originality criterion required by the Software Directive, but used as a threshold criterion sufficient skill and labor. However, these elements of the computer program were not even under this lower criterion protectable as literary works.⁸⁰ The reasoning of the case indicates that the originality criterion required by the Software Directive is not applied by courts in England.⁸¹

In Finland the new originality standard called for lowering the threshold of protection as traditionally interpreted. However, when the requirements of the Software Directive were implemented in Finland the legislation was not changed. The interpretation adopted was that the Finnish legislation was already in compliance with the Directive. It was stated in the government proposal that the purpose of the Directive is to assure that a similar originality criterion is applied for computer programs than for other works. Hence, it would not be possible to set a higher threshold criterion for computer programs than for other works.⁸²

There is no express incorporation of the originality criterion in the Finnish Copyright Act. The Copyright Act only provides that copyright protection will be given to a person who has created a literal or artistic work. The words "created" and "work" have traditionally been interpreted to set a requirement that a copyrighted work has to be the result of

⁷⁹ Hugh Laddie – Peter Prescott – Mary Vitoria – Adrian Speck – Lane Lindsay, *The Modern Law of Copyright and Designs*, p. 1615, Butterworths 2000.

⁸⁰ *Navitaire Inc. and Easyjet Airline Company Bulletproof Technologies Inc.* [2004] EWHC 1725 (Ch), Section 3, 47, 78 and 80.

⁸¹ However, it is not very clear whether the command names were analyzed as part of computer program or as other class of literary work. As these different literary works obtain copyright protection by different threshold criterion it would be reasonable to make a clear distinction between these different classes of works. The case shows the difficulties which arise when only some aspects of copyright laws are harmonized.

⁸² Government Proposal HE 211/1992, p. 3.

creative and original input.⁸³ The situation in Sweden is in this respect very similar to the Finnish one. The Swedish Copyright Act provides a similar provision for copyright eligibility and the interpretation has corresponded with the Finnish interpretations.⁸⁴

As the law in Finland and Sweden does not include a specific originality standard, it is possible to take the Directive's requirements into account in case law. However, it is a clear misunderstanding in the Finnish government proposal that no change in originality requirement was required. In academic literature it has been interpreted that originality in the Software Directive referred to "common law" originality.⁸⁵ In Sweden in the academic literature the originality requirement has been understood to mean that the traditional work threshold or the level of creativity ("verkshöjd") was no longer allowed.⁸⁶ However, the purpose of the Directive was also to lift the standard in *common law* –countries. The new harmonized criterion was intended to be a compromise between the different criteria applied in Europe. Hence, the aim was not to lower the Finnish or Swedish threshold criterion to correspond with the traditional *common law* –level, nor to keep the traditional test.

In one Finnish Supreme Court case (KKO 2003:88) the Appellate court had declared that of-the-shelf-software have traditionally passed the "level of creativity" requirement and been copyrightable. The court did not refer to the Software directive's originality requirement nor analyzed the originality requirement in a more detailed manner, but took for granted that programs were protectable (this issue was not under dispute at Supreme Court level).⁸⁷

There have been some cases at Appellate Court level in Finland after the implementation of the Software Directive where the originality requirement has played a bigger role. In the case from Vaasa Appellate Court (R 03/1245, 17th of May 2005) the court started its

⁸³ Government Proposal HE 161/1990, p. 50. and Committee Report KM 8/1987, p. 177.

⁸⁴ See for example SOU (Statens offentliga Utredningar) 1956:25, p. 66.

⁸⁵ Pirkko-Liisa Haarmann, Tekijänoikeus ja lähioikeudet, p. 62, Talentum 2006.

⁸⁶ Mogens Koktvedgaard – Marianne Levin, Lärobok i Immaterialrätt, p. 82, Norstedts juridik 2004. Similarly in Finland Haarmann 2006, p. 62.

⁸⁷ Swedish Supreme Court has also taken an approach that computer program games which are sold at the market are presumed to be copyright protected. NJA 2000:87.

reasoning by referring to the originality requirement of the Software Directive. Then the court reasoned that originality is manifested in the programmer's selections between alternative programming solutions. If there is only one programming solution available, then the program does not exhibit originality. Copyright protection is neither given for trivial programs which consist from series of self evident procedures for a person skilled in the art nor for commonly used solutions.⁸⁸ The court also stated that a commonly used criterion for originality is that no one else should be independently able to reach a similar solution. Thus, for originality it is not enough that a program is independently created, but it has to exhibit the programmer's personal creativity in solving programming tasks in a manner which justifies giving an exclusive right. In the case this was seen to correspond with the general aim to give protection for original programs without unnecessarily building restrictions for functional and efficient competition.⁸⁹

In this case the court concluded that the differences in programmers' solutions related to unimportant details.⁹⁰ In this programming environment there was no room (for certain functions) for a programmer to independently create an original program. Therefore, the programs could not on these parts be original creations.⁹¹ It followed from this that the possibility to achieve an independent and original programming solution was very restricted. On essential functional parts the alternative solutions in the analyzed programs were similar and these factors were determined from the programming task. The court concluded that the programs or their parts were not protected as original computer programs. It did not matter how much time and resources one had invested in their creation.⁹² The Finnish Copyright Council which gives recommendations and guidance

⁸⁸ These reasoning can also be found from Committee Report (KM 8/1987), p. 177.

⁸⁹ Vaasa Appellate court decision, (R 03/1245, 17th of May 2005) sections 28, 29 and 30.

⁹⁰ Some parts of the program were essentially built on MicroScada's (a third party program) source code with minor changes like alarm delay. Vaasa Appellate court decision, (R 03/1245, 17th of May 2005) sections 31.

⁹¹ The reasons for this were that MicroScada application developer, used programming language SCII, required data transfer between monitoring application and substations, the purpose of monitoring application as a part of waterworks process as well as simplicity of steered equipment among others required certain technological solutions. These technological solutions enabled receiving information, monitoring, controlling and managing processes in waterworks. Vaasa Appellate court decision, (R 03/1245, 17th of May 2005) sections 31 and 32.

⁹² Vaasa Appellate court decision, (R 03/1245, 17th of May 2005) sections 31 and 32.

on copyright issues had also in its earlier decision assessed that the programs were eligible for copyright protection.⁹³

A requirement for originality based on the criterion that no one else should be independently able to reach a similar solution, has been criticized in academic discussion in Europe even before the Software Directive.⁹⁴ But more importantly, this kind of construction of originality concept used by the Appellate Court and the Copyright Council⁹⁵ in Finland does not follow the Software Directive's aim to lower the Finnish originality requirement.⁹⁶ As a matter of fact, the criterion used in Finland seems to be even higher than the standard used in Germany before the implementation of the Software Directive. In Germany, a programming solution only needed to be above average programmer's solution to obtain protection. Moreover, if two programmers have to create a program for a simple function, it is probable that they end-up with similar or closely similar solutions⁹⁷. This connotes that independent double-creation is more probable in case of computer programs than with some other classes of work. Therefore,

⁹³ The expert used by the Copyright Council had reasoned that the programming task required hours or days work (TN 2003:10).

⁹⁴ See for example *Pirkko-Liisa Haarmann*, *Tekijänoikeus ja lähioikeudet*, p. 63, Talentum 2006. About consequences of using this high standard in applied art see e.g. *Marianne Levin*, *Formskydd*, p. 298, Liberförlag 1984. Even though in Germany the strict criterion was used by courts, the explanatory report of German Copyright Act of 1965 explicitly rejects the requirement of "creation of individual character". *Schricker* 1995, p. 46.

⁹⁵ There are also some cases from the Finnish Copyright Council (which gives recommendations and guidelines how Copyright law should be interpreted) where the problematic originality test has been used. In one older Copyright Council's advisory opinion (TN 1996:3) the question was whether a new addition (module) to an existing computer program was original enough to be entitled for copyright protection. The Council expressed that the programming solution was reached mostly with assistance of a manual and by using the properties of a computer program. The selection of fields and their specifications *did not show such creativity and originality that no one else would be able to reach the same solution by using the same computer program for resolving a similar problem*. The programming solution was mostly dictated by the end-result of the program and thus showed merely a mechanical resolution of the problem. The protection was not given. Furthermore, the Copyright Council has utilized the problematic criterion also at least in the following cases which handle computer program protection TN 2005:7 and TN 2003:10. In TN 2005:7 a party explicitly asked whether for originality it is enough that a program originates from author or how the work threshold is to be understood in the case of computer programs. The Council referred to the Software Directive's criterion, but it nevertheless still used the above-mentioned problematic criterion that if no one else is able to reach a similar solution then a work qualifies for protection. It thus seems that the Finnish Copyright Council has not fully recognized the Directive's purpose to lower the originality standard in its way of reasoning cases. Notwithstanding the reasoning, it seems that protection is given fairly easily.

⁹⁶ Compare *Karnell* 2002, p.79-80. He argues that the criterion of independent double-creation would be still allowed notwithstanding the new originality requirement.

⁹⁷ *Diane Rowland – Elisabeth Macdonald*, *Information Technology Law*, p. 29, Cavendish Publishing Limited 2000.

the demand that no one else could reach a similar solution is not a workable criterion in computer programs, even though it might work with other copyrightable subject matters. This kind of threshold for protection requires very high individuality and resembles natural law tradition. However, not even in France it is at present required that computer programs have an imprint of author's personality.⁹⁸

The Finnish court's concern in the above-described case was to protect original expression without unduly restricting competition. There were many factors which arguably justified, from a competition viewpoint, that copyright protection was not granted. These all related to extrinsic factors which limited the availability of different programming solutions. Some of these can be defined as interoperability requirements. This kind of factor was for example the simplicity of steered equipment and the requirement of data transfer between substations and monitoring application. However, the aim in the Software Directive was to lower the originality standard and to bring computer programs widely under copyright protection. This was thought to foster industrial development of software industry.

The Software Directive recognizes that in addition to the originality threshold the idea-expression dichotomy demarcates the protectable from the non-protectable. The elements which did not in the aforementioned case qualify for copyright protection under the originality criterion could have been excluded from protection by using the idea-expression dichotomy. It is actually this doctrine which is stated in the preparatory materials for the Finnish Copyright Act to enable flexible protection for computer programs without necessarily restricting competition.⁹⁹ In the above case it had been possible to state that some features of the analyzed computer programs were due to extrinsic factors and thus merely an expression of the underlying ideas or principles. In the case there were also factors which indicated that the programs were programmed independently. Under these circumstances it had still been possible to conclude that there was no copyright infringement even though the court had decided that the analyzed

⁹⁸ In France the requirement that a work must express author's personality has been abandoned as a threshold criterion for computer programs. *J.A.L. Sterling*, *World Copyright Law*, p. 47, Sweet and Maxwell 1998.

⁹⁹ Government Proposal HE 1990/161, p. 16-17.

programs in their entirety were copyrightable under the originality criterion. The end result had been that the scope of protection is narrow. But it had more closely followed the harmonized originality criterion, where high personality should no longer play a role. This conclusion would also have allowed competing programs with similar functionality.

There is another case from Helsinki Appellate court (S 04/1824, 20th of June 2006) with closely similar facts. Also in this case the question was whether in the given programming environment there was enough room for a programmer to create an original program. The function of the program was to connect operations of different parts of manufacturing line for bakery products together and to monitor the production line. Based on the evidence available in the case the Appellate court reasoned that there were different alternatives available to a programmer and the programming solution was not completely dictated by the end result. The Appellate court took into account the low originality requirement in the Software Directive and concluded that computer programs reach easily copyright protection. The decision of the Appellate court was that computer program was original enough to be eligible for copyright protection. In this decision the problematic originality test was not used and the lower originality test was duly recognized. The Supreme court of Finland retained the Appellate court's decision on this issue (KKO 2008:45, 8th of May 2008).

However, also in this case there were factors indicating that the program included elements which possibly were not protectable due to the Software Directive's idea-expression dichotomy. The expert witness, who was heard by the district court, had reasoned that in case of embedded software technical requirements have an impact that it is highly possible that two programmers reach very similar solutions only with minor differences. Also programming languages provide limited number of control structures which lead to a use of similar solutions. I argue that in this kind of situations it would sometimes be possible to reason that program in its entirety is original enough. However, the elements which are due to technical requirements stemming from the fact that program is embedded software and owing to limitations in control structures could be non-protectable due to the idea/principle-expression dichotomy. These elements could be

used in other programs without copyright infringement. However, in this case this question did not play an important role but the question was whether the program in its entirety was copyrightable.

In Finland there is one more case from Appellate Court level which relates to computer program interoperability from Helsinki Appellate court (R 99/661, 22nd of December 1999). The similarities in two computer programs were among others owing to following factors: 1) user-interface was the same; 2) programs were aimed to fulfill the same functionality; 3) the structure of the used terminal determined how certain elements were implemented and 4) banking and communications standards determined the function of certain storage areas. The court concluded that claimant had not shown that defendants had copied such elements that were original enough to reach a copyright protection. The originality bar was not reached in implementation of these features and protection was not given. Again non-protection was reached by utilization of the originality test and computer program interfaces were basically left without protection. In this case also it had been possible to some extent use the idea-expression dichotomy instead of the originality criterion and to conclude that there was no infringement.

Finland has long been close to German tradition where copyright is regarded as an individual right of an author to her work. A copyrighted work represents author's personality. In Finland especially a Copyright Council seems to reason cases so that required originality is high. The concept of originality is construed to mean that no one else would be able to reach a similar solution. This kind of reasoning is understandable when thinking the natural law justification under which a work is viewed as having an imprint of author's personality. One could argue that traditional justifications within copyright systems have an impact on the argumentation of copyright cases (so it seems at least from Finnish case law). This may also have an impact on the end-results of cases. Notwithstanding the problematic reasoning, it seems that the originality test is quite easily met in Finland. The situation gives an impression that the argumentation logic and the end results of the cases do not meet. The utilized concept of originality does not correspond to the situation how easily protection is given.

Even though we now should have a uniform originality concept for computer programs in the EU, courts and other relevant authorities in some Member States have not fully recognized the requirement of new criterion. Some seem to follow their traditional reasoning trajectories. If one reads the preamble to the Software Directive, one could claim that there were certain aims of harmonizing the originality level within EU. In the preamble it is articulated that computer programs are vital for industrial development of the EU. This can be understood in a way that the intention was to take the economic justification more into account. This may mean that the copyright rules for computer programs would be closer to the common law system.

In the United States evolution of copyright doctrines in determining protectable has also taken place. The traditional *sweat of the brow* criterion was explicitly abandoned by the Supreme Court in 1991 in its *Feist* –decision¹⁰⁰. In the older case law originality meant that a work originated from the author. In *Feist* the Supreme Court declared that a work needed to show at least some minimal degree of creativity in order to be original and eligible for copyright protection. Some other common law countries have also started to require more from originality than traditionally. It is no longer sufficient that a work originates from the author.¹⁰¹

The case *Lexmark International, Inc. v. Static Control Components Inc.* (“Lexmark case”) concerned authentication sequence between Lexmark laser printer toner cartridges and Lexmark printers. The copyright protection of Toner Loading Program was one issue in this case. The microchips of the Static Control Components contained exact copies of Lexmark’s Toner Loading Programs. The Court of Appeals for Sixth Circuit found that the district court failed to consider the scenes a faire and the merger doctrines properly as well as the originality requirement in its analysis on copyright protection of the Toner Loading Program. The compatibility reasons combined with the fact that the Toner Loading Program was used as a lock-out code change of which was testified to be

¹⁰⁰ *Feist Publications, Inc. v. Rural Telephone Service Co.Inc*, 499 U.S. (SC 1991).

¹⁰¹ *William Cornish and David Llewellyn*, *Intellectual property: patents, copyright, trade marks and allied rights*, p. 424, Sweet and Maxwell 2007.

“computationally impossible” justified in this case the copying of the program.¹⁰² Hence, it was not realistic to require independent programming in these circumstances.

The originality is becoming more important part of reasoning in the United States alongside with idea-expression dichotomy. Some have argued that the *Feist*-case has brought the originality criterion closer to the European one and that one could find cases from the United States which could provide more useful guidelines when deciding similar cases in Europe.¹⁰³ At the same time, there have been changes in the European copyright system which make European copyright protection of computer programs closer to the American tradition. One of the changes is the harmonization of originality concept so that lower level of creativity or individuality is required for copyright protection.

Idea-expression Dichotomy

The idea-expression dichotomy means that protection is given only for expression and ideas are free for others to use and develop. This is how the copyright is thought to pursue economic balance so that incentives for the creation of works are not limiting on the public domain too much.¹⁰⁴ This distinction also enables that copyright protection does not cover the entirety of a work, but it still prevents wholesale copying.

Even though some have questioned whether this dichotomy provides any useful guidance between protectable and non-protectable,¹⁰⁵ it is referred to in several international copyright instruments and case law. Article 9.2 of the TRIPS Agreement and Article 2 of the WIPO Copyright Treaty provide the following: "*Copyright protection shall extend to expression and not to ideas, procedures, methods of operation or mathematical concepts as such*". Similarly, the Software Directive provides in Article 1.2 that "*ideas and principles*

¹⁰² *Lexmark International, Inc. v. Static Control Components Inc.*, 387 F.3d 522 (6th Cir. 2004), p. 535-542, 544, 546-547 and 551

¹⁰³ *Estelle Derclaye*, Software Copyright Protection: Can Europe Learn from American Case Law?, p.16, European Intellectual Property Review 2000 parts 1-2, pages 7-16 and 56-68.

¹⁰⁴ *Leslie A. Kurtz*: Speaking to the Ghost: Idea and Expression in Copyright, p. 1223-1224, University of Miami Law Review 1993, p. 1221-XX.

¹⁰⁵ *Hugh Laddie – Peter Prescott – Mary Vitoria – Adrian Speck – Lane Lindsay*, The Modern Law of Copyright and Designs, p. 97, Butterworths 2000.

which underlie any element of a computer program, including those which underlie its interfaces, are not protected by copyright under this Directive.”

In England in earlier cases it was stated that the idea-expression dichotomy is not a recognized principle in the country.¹⁰⁶ However, in newer computer program cases this principle has gained a footing due to harmonization of laws by the TRIPS Agreement and by the EU Directives. The TRIPS agreement and the Software Directive were referred to as applicable legislation in the case *Nova Productions Ltd v Mazooma Games Ltd & Ors*¹⁰⁷ which concerned computer games based on pool. Several elements in the implementation of competing computer games related to idea side of the games and use of such elements did not constitute a copyright infringement. These features were the theme of the pool; the idea of using cue moves round ball under rotary controller; the idea of synchronizing cue with power meter; the idea of row of sighting dots; and the idea of using values near or in pockets.¹⁰⁸ In the case *Navitaire Inc. and Easyjet Airline Company Bulletproof Technologies Inc.* the “business logic” of the program was considered merely as an idea which did not qualify for protection.¹⁰⁹

Even though in Finnish preparatory materials for copyright law the idea-expression dichotomy was thought to serve well the purpose of flexible protection of computer programs while at the same allowing functioning competition in computer program markets, this dichotomy has not been utilized in computer program cases. As described above, in some computer program cases this method had probably served well in defining the line between protectable and non-protectable. However, the focus in Finland is on originality criterion. There is one interesting case about idea-expression dichotomy from Appellate court level from Finland, but the case concerned course materials and not computer programs. In the case (*Kouvola Appellate court R97/713*, 31st of December 1998) it was reasoned that copyright does not protect work’s subject matter, theme, conclusions, principles, used method or facts, even though they had been created

¹⁰⁶ *David Bainbridge*, *Software Copyright Law*, p. 105 and 107, Butterworths 1999.

¹⁰⁷ *Nova Productions Ltd v Mazooma Games Ltd & Ors* [2007] EWCA Civ 219.

¹⁰⁸ *Ibid.* at sections 9 and 10.

¹⁰⁹ *Navitaire Inc. and Easyjet Airline Company Bulletproof Technologies Inc.* [2004] EWHC 1725 (Ch), section 130.

independently. Copyright does not prevent use of these in subsequent works. In this case the expression in two works was different from each other even though the above mentioned non-protectable parts were to great extent similar. However, the use of these did not constitute a copyright infringement. Similar reasoning could be utilized in computer program cases as well and this reasoning could serve as a good model.

The United States Copyright Act 102 (b) provides “*In no case shall protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle or discovery, regardless of the form in which it is described---*” The seminal case in the United States applying the idea-expression dichotomy¹¹⁰ is *Baker v. Selden*.¹¹¹ The case concerned copyright protection of a book where a bookkeeping system was described. The book included among others examples where a new accounting system was utilized. The copyright protection did not cover the system described in the book. In the *Feist*-decision the Supreme Court stated that no one may copyright facts or ideas.¹¹² These two seminal copyright cases are referred to in many computer program cases.

In the case *Computer Associates v. Altai*¹¹³ the court used a three step procedure to separate protectable expression from non-protectable elements in a computer program. This procedure is called abstraction-filtration-comparison. In the abstraction phase the court separated different levels of abstraction in a computer program. The abstraction phase of the procedure resembles reverse engineering in theory. At the lowest level of abstraction a program is looked at in its entirety, consisting of its all instructions. At the highest level of abstraction only the ultimate idea of a computer program would be left. On each level of abstraction the court needs to filter-out the non-protectable elements of a computer program. These would be 1) ideas; 2) elements dictated by considerations of efficiency, so as to be necessarily incidental to that idea (i.e. the merger doctrine); 3)

¹¹⁰ Here I refer to idea-expression dichotomy even in situations where non-protection refers to these other non-protectable elements.

¹¹¹ *Baker v. Selden* 101 U.S. 99 (SC 1880).

¹¹² *Feist Publications, Inc. v. Rural Telephone Service Co.Inc*, 499 U.S. 340 (SC 1991) p. 341.

¹¹³ *Computer Associates International, Inc v. Altai, Inc.* 982 F.2d. 693 (2nd Cir. 1992).

elements, required by factors external to the program itself (i.e. the *scenes a faire*); or 4) elements taken from the public domain.¹¹⁴

Samuelson has seen the merger doctrine as the means through which courts can introduce economic consideration into interpretations of copyright law. In order to avoid giving a monopoly on ideas, courts have given thinnest possible protection for otherwise protectable expression in certain cases.¹¹⁵ The court in *Computer Associates v. Altai* reasoned that since efficiency is an industry-wide goal, there may be only a limited number of efficient implementations for any given program task. Therefore independent double-creation is possible. In these situations similarity between two programs does not suggest that copying took place, and thus in these situations there is no copyright infringement. The court concluded that elements dictated by efficiency should be filtered-out before the similarity comparison. Here the court used the merger doctrine to filter out the non-protectable expression.¹¹⁶ When a program implements a solution that is the most efficient, one could easily argue that the idea and expression have merged.¹¹⁷

A doctrine of *scenes a faire* which has been widely used in the United States has meant for example in novels that certain elements of a story follow necessarily from the idea of the story. One cannot describe a certain historical era without employing standard stock of elements belonging to that time. Therefore use of these stocks does not constitute a copyright infringement.¹¹⁸ In the United States the most important case concerning non-protection of computer program interfaces is *Computer Associates v. Altai*. In that case the court was using traditional *scenes a faire* -doctrine to filter out elements in computer programs which should not be given copyright protection.

In the case the court concluded that many elements within a computer program are circumscribed by extrinsic factors which limit the programmer's design choices. The

¹¹⁴ *Computer Associates International, Inc v. Altai, Inc.* 982 F.2d. 693 (2nd Cir. 1992), p 707.

¹¹⁵ *Pamela Samuelson*, Economic and Constitutional Influences on Copyright Law in the United States, p. 413, *European Intellectual Property review* 2001, p. 409-422.

¹¹⁶ *Computer Associates International, Inc v. Altai, Inc.* 982 F.2d. 693 (2nd Cir. 1992), p. 707-709.

¹¹⁷ *Steven R. Englund*, Idea, Process, or Protected Expression?: Determining the Scope of Copyright Protection of the Structure of Computer Programs, p. 903, *Michigan Law Review* 1990, p. 866-909.

¹¹⁸ *Computer Associates International, Inc v. Altai, Inc.* 982 F.2d. 693 (2nd Cir. 1992), p. 709.

court defined that such elements limiting programmers' solution are "(1) *the mechanical specifications of the computer on which a particular program is intended to run; (2) compatibility requirements of other programs with which a program is designed to operate in conjunction; (3) computer manufacturers' design standards; (4) demands of the industry being serviced; and (5) widely accepted programming practices within the computer industry.*" Elements of a program resulting from these requirements (1-4 relate to interfaces) were excluded from copyright protection.¹¹⁹

In *Computer Associates v. Altai* the court provided that elements of a computer program belong to the public domain if the expression is commonplace or standard in a computer industry.¹²⁰ The court took into account policy considerations behind copyright. It reasoned in accordance with the Supreme Court's *Feist* decision that the purpose of copyright is not to reward industrious persons, but to advance the public welfare. By this case the court also responded to the academic criticism which an earlier case *Whelan Associates Inc. v. Jaslow Dental Laboratory Inc.*¹²¹ had faced. In the *Whelan* case the court had reasoned that behind a computer program there is only one general idea. This kind of reasoning would make computer program interfaces to some extent protectable. In *Computer Associates* the court left interfaces without protection and also took into account the fact the each subroutine in a computer program may have an idea of its own. Hence, there are many non-protectable elements behind one computer program.

Comparison of the Idea-expression Dichotomy and Originality

As already described above, the originality requirement and the idea-expression dichotomy can be seen as the two methods by which the protectable is separated from the non protectable. However, it is not meaningless how these methods are used and which one is selected for saying that there is no protection. If a work (or its module) is not original enough it means that one is free to copy a work as such. If a work is in its

¹¹⁹ Ibid. p. 709-710.

¹²⁰ *Altai* 709-710.

¹²¹ *Whelan Associates, Inc., v. Jaslow Dental Laboratory, Inc.*, 797 F.2d 1222 (3rd Cir. 1986).

entirety original enough it means that wholesale copying is not allowed. In these situations a work could still include many elements which others are free to use.

In the United States if certain elements of a computer program are necessary to implement the idea of a program, these elements are in accordance with the scenes a faire and merger doctrines not protectable. Many elements within a computer program are circumscribed by extrinsic factors which limit the programmer's design choices. If there is only one way to express an idea, then the idea and the expression have merged and this kind of expression is not protectable due to the merger-doctrine. In Finland, it has been stated in the preparatory materials for copyright law that if there is only one programming solution available for a problem and this solution, dictated by extrinsic factors, is reached mechanically, a program does not exhibit programmer's originality and thus the threshold of originality is not reached.¹²²

It seems that if extrinsic factors limit the choices available for a programmer in Finland, the reached solution is not considered original and thus not eligible for copyright protection, as such an element illustrates no creativity. The end result seems to be on its face similar to that reached in the United States: interoperability elements (specifications) are not protected. However, in Finland the absence of protection has been based on the originality criterion whereas in the United States scenes a faire and merger doctrines seem to be used instead. One could conclude that the originality criterion in Finland has served as a functional equivalent to the idea-expression dichotomy (scenes a faire and merger doctrines) of United States when extrinsic factors limit programming choices so that copyright protection cannot be obtained. However, in very rare cases there is only one solution available for a programmer. At least in cases where there is some room for independent creation it would be more proper in Finland to use the idea-expression dichotomy than originality criterion since because of European harmonization one can no longer demand high level of originality.

¹²² Committee Report KM 8/1987 p. 177.

The originality criterion should be formulated from new basis for computer programs in EU to follow the Directive's aim. However, with lower originality criterion there is a threat that occasionally protection is given for elements which do not merit protection. This threat can be mitigated by utilizing the idea-expression dichotomy alongside with the originality criterion. The United States' case law regarding computer programs could serve as a model for how copyright protection can be excluded also through the idea-expression dichotomy. The case law proves that efficiency considerations and requirements of interoperability can be taken into account. The Software Directive enables also this kind of approach by the explicit Articles on the idea-expression dichotomy. This change would make the European copyright protection of computer programs closer to the United States copyright system. By this narrow protection is given while still allowing the competition. This kind of competitive approach can also be argued to be in accordance with the perspective anchored in evolutionary economics which holds that intellectual property owner should not get a broad monopoly rights for elements necessary for development of new programs. Copyright law actually seems at this point to allow interpretations which would be consistent with the evolutionary economics viewpoints.

Concluding Remarks

Copyright protection for computer programs has been aimed to become harmonized. However, it seems that harmonization of laws has faced its natural obstacles. Even though the actual legal texts have been harmonized within EU, the national interpretations in some countries seem to follow the traditional reasoning trajectories. Reason for this may be that legal concepts carry cultural and historical meanings which can not changed easily. Changes seem to be even more burdensome in situations where legal concepts are not clearly included in the actual regulation, but only live in the doctrines of law. Then the concepts may live life of their own and their impact or justification logics are possibly not so openly discussed. Moreover, the coherence and consistence of national legal system influence interpretations so that harmonized texts are

interpreted differently in different national contexts even though uniformity is an aim. Consequently harmonization of laws is a slow process.

The copyright rules for computer programs in the U.S. and Europe attempt to facilitate competition through rules which enable that computer program interfaces can be left without copyright protection. As interoperability information is in a key position in the software industry, these rules are of paramount importance. From the perspective of evolutionary economics, there should not be strong monopoly rights for bottle-neck technologies, but possible intellectual property rights should provide only narrow protection for such elements in a system technology. If intellectual property protection is strong, the legal rules are inefficient since all technological possibilities will not become utilized. The copyright rules provide only narrow protection for computer program interfaces. Consequently current copyright rules defining protectable element in computer programs allow technological changes to take place in the software industry. This connotes that copyright protection of computer programs seems to be a good mode of protection from evolutionary economics perspective.

However, some change in national interpretations in EU may be required. Especially when the lower originality standard is duly recognized, one should not neglect the doctrine of idea-expression dichotomy. The utilization of idea-expression dichotomy serves the purpose of leaving ideas and principles behind the interfaces without copyright protection. By this strong monopoly rights for otherwise easily achievable protection are prevented. However, without open discussion on deeper justification logics for computer program protection a true harmonization cannot be achieved but instead of uniform interpretations there will be diverging national interpretations. Another question is whether this level of harmonization is realistic or even desired.