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The day after the Computer-Implemented Inventions Directive: who won the battle and when shall the war end?

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Abstract

This article follows the debate about the patentability of software after the demise of the Computer Implemented Inventions Directive, particularly exploring the misconception that software is not patentable in Europe, and the belief that this places the local software industry at a competitive disadvantage and that it is a less attractive place for investment compared to the US and Japan. The article assesses whether there is indeed a need for a change in law or in practice and if so, to ascertain the path that Europe should follow.

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"If people had understood how patents would be granted when most of today's ideas were invented, and had taken out patents, the industry would be at a complete standstill today."[1]

Bill Gates

"There is evidence, in the shape of the mass of US litigation about the excluded categories, that they have produced much uncertainty. If the encouragement of patenting and of patent litigation as industries in themselves were a purpose of the patent system, then the case for construing the categories narrowly (and indeed for removing them) is made out. But not otherwise."

Aerotel Ltd. v Telco Holdings Ltd & Ors [2006] EWCA Civ 1371.

1. Introduction

The demise of the proposed Directive on the patentability of computer-implemented inventions[2] in July 2005[3] signaled the end of one of the most intense lobbying and activist battles in recent years in Europe. It is hard to ascertain if the dissent amongst the European Commission and the European Parliament proved the democratic character of the European legislative procedures or the political role that lobbying has obtained within the EU.

During the approval procedure though, a plethora of arguments were heard for and against the patentability of computer programs, varying between legal justifications, economic data, exaggerated fears and conspiracy theories. The rejection of the Directive leaves the issue open and it is certain that the war on software patents has not ended.

Despite early considerations about the appropriateness of patents to apply to software, in many jurisdictions, such as the United States of America and Japan, it is already patentable, whereas in Europe, even though it is excluded from patentability 'as such', according to the European Patent Convention and the national legislations of the European countries, it can be patented with clever claim drafting[4] and thousands of patents have already been awarded by the European Patent Office and the competent national patent authorities.

Due to this paradox, which leads to the misconception that software is not patentable in Europe, it is believed that its software industry is placed at a competitive disadvantage and that it is a less attractive place for investment compared to the US and Japan.

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[1] From a Memorandum of 1991, available@http://www.bralyn.net/etext/literature/bill.gates/challenges-strategy.txt

[2] Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions (COM(2002) 92 – 2002/0047 (COD))

[3] http://ec.europa.eu/internal_market/indprop/comp/index_en.htm .

[4] See K Beresford, Patenting Software under the European Patent Convention. (2000).

We will try to assess whether there is indeed a need for a change in law or in practice and if so, to ascertain the path that Europe should follow.

2. The protective regime for computer programs

In the early days of personal computers, trade secrets and confidence were considered as a satisfactory framework for the legal protection[5] of computer programs. These means were gradually overshadowed by the introduction of copyright for computer programs in 1980[6] in the US and in 1985 in the UK[7]. The Directive on the legal protection of computer programs[8] in 1991 ensured that protection as "literary works" was provided for computer programs in all the countries of the EU. The law of copyright was thought to be the most suitable legal means to protect information-related products and activities. Software development was considered more of a literary work than an industrial process.

On the other hand it is not that easy and self-evident to classify software as literary or non-literary work, due to its complex and unique nature. If we accept that a computer program is '*a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result*'[9], it is certain that copyright protection should be afforded, as the said instructions are written text, known as source code. Computer programs though are thought as "something of an anomaly"[10], that "perform a function through expression"[11], since the way they operate is a result of the above written text. The source code, in order to be 'comprehended' by the computer, is compiled into object code, and this translated text, comprising of zeros and ones, as a direct result of the source code is arguably also protected[12]. Still, the written code, either source or object, is not the only expression of software; its function is an expression of the source code as well, a non-literary one. But the same function can be achieved by two or more completely different programs as far as the written code is concerned. "*Unlike a patent, a copyright gives no exclusive right to the art disclosed; protection is given only to the expression of the idea--not the idea itself*"[13], as was cited in a US case. This is often referred to as the idea-expression divide or dichotomy. This non-literal aspect of computer programs is problematic and the courts both in the US and the UK have not always been able to diagnose copyright

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[5] W Cornish & D Llewelyn, *Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights*, fifth edn (2003), 762, hereafter referred to as Cornish & Llewlyn.

[6] R Bakels, Working paper of the Directorate-General for Research on the patentability of computer programmes - Discussion of European-level legislation in the field of patents for software Legal Affairs Series, JURI 1xx EN, hereafter referred to as Bakels.

[7] With the Copyright (Computer Software) (Amendment) Act 1985

[8] Council Directive 91/250/EEC of 14 May 1991 on the legal protection of computer programs.

[9] As defined in US Code Title 17, ch 1, s 101

[10] D J M Attridge, "Challenging Claims! Patenting Computer Programs in Europe and the USA", (2001) *IPQ*, 1, 25, hereafter referred to as Attridge.

[11] id.

[12] A Guadamuz Gonzalez, 'The software patent debate', (2006) 1:3 *Journal of Intellectual Property Law & Practice*, pp. 196-206.

[13] *Mazer v. Stein*, 347 U.S. 201, 217 (1954).

infringement for it by applying either the idea-expression dichotomy[14] or the later Abstraction-Filtration-Comparison[15] test.

The dual nature of software is the reason that simultaneous protection by copyright and patents is sought and as we have seen at present generally awarded. The previous protects the specific expression of the program in written text against direct copying, whereas the latter extends the protective regime over the functional elements of the program, that is the underlying principles and ideas.

3. The road from the EPC to the draft Directive on the patentability of computer-implemented inventions

In 1973 the then members of the European Economic Community (EEC) concluded the Convention on the grant of European patents, usually referred to as European Patent Convention (EPC), open to other western European states as well. The convention established a European Patent Office (EPO) in Munich. The system provides for a single application, which does not result to a single patent. The applicant is instead granted, if successful, a bundle of national patents. The majority of the countries in the European Continent are members[16] of the European Patent Convention. The EPC is not EU law, as its scope is wider, while the EPO is not a member of TRIPS.

According to Article 52 (2) (c) of the EPC, computer programs 'as such' are among non-patentable subject-matter. It is noteworthy that apart from the explicit exclusion of computer programs, it is often objected that they relate closely with other non-patentable subject-matter in the EPC, since their "nature [...] is, at its core, merely a series of automated **mental acts** performed by the equivalent of a non-human mind only and that the product of such a process is merely the **presentation of information**"[17]. They are also based on mathematical methods and they are often connected to business methods.

The limitation of the non-patentable inventions to those that relate only 'as such' to the said excluded subject-matter paved the way to a broad interpretation of Article 52 (2) (c).

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[14] *Whelean Associates Inc v Jaslow Dental Laboratory Inc* [1987] FSR 1.

[15] *Computer Associates International, Inc. v. Altai, Inc.* [1992] 982 F.2d 693, interestingly enough following in part *Nichols v. Universal Pictures Corporation*, 45 F.2d 119 (2d Cir. 1930), overturned the previous test for infringement set by *Whelan v. Jaslow* ibid. See also *Ibcos Computers Ltd V Barclays Mercantile Highland Finance Ltd* [1994] FSR 275.

[16] As of June 2007, members of the EPC were Austria, Iceland, Belgium, Italy, Bulgaria, Liechtenstein, Switzerland, Lithuania, Cyprus, Luxembourg, Czech Republic, Latvia, Germany, Monaco, Denmark, Malta, Netherlands, Estonia, Poland, Spain, Portugal, Finland, Romania, France, Sweden, United Kingdom, Slovenia, Hellenic Republic, Slovakia, Hungary, Turkey and Ireland. States recognising European Patents (Extention States) were Albania, Bosnia and Herzegovina, Croatia , the Former Yugoslav Republic of Macedonia, Serbia (legal successor of the former State Union of Serbia and Montenegro into the Co-operation and Extension Agreement). Norway is entitled to accede to the EPC in accordance with article 166 EPC is. Croatia and the Former Yugoslav Republic of Macedonia have been invited to accede to the EPC. Data from EPO, available @ http://www.european-patent-office.org/epo/members.htm .

[17] C D Freeman, "Software and Computer-Related Business-Method Inventions: Must Europe Adopt American Patent Culture?" (2000) *IJL&IT*, 8(285).

The Frontier for a Free Information Infrastructure[18] estimated that by 2004 the EPO had granted 20,000-30,000[19] patents for such inventions "in the core areas of information technology alone, i.e. digital data processing, data recognition, representation and storage..."[20]. Already in the amended 1985 Guidelines for Examination of European patents it was stated that "if, however the subject-matter as claimed makes a technical contribution to the known art, patentability should not be denied merely on the ground that a computer program is involved in its implementation....the subject matter could be patentable if it produced a technical effect."

The current set of Guidelines[21] is consistent with the case law of the Board of Appeal on the issue of patentability of "computer-implemented inventions"[22], as is the newly coined euphemism for software patents[23] in order to avoid the negative meaning that the latter term has acquired. The Guidelines focus mainly on the interpretation of the term "technical" as used in the phrases technical contribution, character or effect. The significance of this issue lies in the fact that computer programs and business methods are considered non-technical, that is that they do not belong to a technical field. So far no relevant case has been referred to the Enlarged Board of Appeal.

The first signs of the change that followed in the EPO case law became evident in *Vicom*[24], where the EPO Technical Board of Appeal distinguished the cases in which the claim to the mathematical method (algorithm) and the computer program are claimed for protection as such from those where they are utilised in a technical process carried out on a physical entity, thus having a **technical character**.

In *Koch and Sterzel*[25] it was held that "the European Patent Convention...does not prohibit the patenting of inventions consisting of a mix of technical and non-technical elements". This principle was adopted in the revised Guidelines, which advocate patent examiners to "disregard the form or kind of claim and concentrate on its content in order to identify whether the claimed subject-matter, considered as a whole, has a technical character"[26], thus allowing claims that involve the use of a computer program.

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[18] http://www.ffii.org/Frequently_Asked_Questions_about_software_patents, FFII is a not-for-profit association of independent developers and companies that played an instrumental role in the campaign against the CII Directive.

[19] http://swpat.ffii.org/patents/stats/index.en.html .

[20] 1994 Annual Report of the European Patent Office.

[21] http://www.european-patent-office.org/legal/gui_lines/pdf_2005/guidelines_2005_e.pdf

[22] EPO Guidelines C IV 2.3.6 "Programs for computers".

[23] See www.ffii.org Software Patents: Round 3, http://en.wikipedia.org/wiki/Software_patent and A Guadamuz Gonzalez, supra note 12.

[24] T 208/84(OJ 1987,14).

[25] T26/86(OJ 1988, 019).

[26] EPO Guidelines C IV 2.2.

The IBM cases *Computer Program Product I*[27] *and Computer Program Product II*[28] with identical reasoning broadened further the limits of patentability for computer programs and limited the "as such" exclusion from patentability to these computer programs that are "mere abstract creations" and therefore lack a technical character. It was held that software can be patentable subject matter not only when it controls an industrial process, but also when the technical effect "goes beyond the 'normal' physical interactions between program (software) and computer (hardware)", as is for example, the flow of electrical current. This "further" technical effect may be known to the prior art, in the view of the Board of Appeal.

The groundbreaking element in these cases was the fact that a patent was awarded not only to a computer when so programmed, but also to a product which held the program on any medium including the Internet. Until then that was thought to be a computer program "as such". It was explained that a computer program product possesses the **potential** to produce a "further" technical effect, when run on a computer, in the sense that it was formerly described. Therefore it has a technical character and is not excluded from patentability. It is indifferent whether the computer program is "claimed by itself or as a record on a carrier"[29]. All the above were incorporated in the new Guidelines.

The grant of such a patent increases greatly the rights of the patent holder; even a party that merely supplies copies of patented software can be found guilty of patent infringement –whereas without it the only possible means of protection would be copyright-, not only in the case when the program uses the same code, but also when for example in *Computer Program product II/ IBM*, it manipulates windows displays in the way claimed in the patent, using different code[30]. It is self evident that such protection exceeds dramatically the one provided by copyright.

Recent case law makes evident that business methods can also be patented under certain circumstances, under technological guise. The claimed invention possesses a technical character "if technical considerations are required" [31] for it to be carried out; these considerations "must be reflected in the claimed subject-matter". The Guidelines furthermore repeat what was held in *Controlling pension benefits system/ PBS PARTNERSHIP*[32], that a method, which specifies technical means for a "purely non-technical purpose" or for processing "purely non- technical" information does not necessarily give a technical character to the method or its steps, but "a computer system suitably programmed for use in a particular field", even if the latter is the one of business or economy, "has the character of a concrete apparatus, in the sense of a physical entity or product", and thus is an invention[33]. The connection of business methods with the patenting of computer programs is obvious: "if the claim specifies computers, computer networks or other conventional programmable apparatus, or a

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[27] T1173/97.

[28] T0935/97.

[29] Following T 163/85, (OJ 1990, 379), *"Colour television signal/BBC"*.

[30] I J Lloyd, *Information Technology Law*, third edn (2000), 306, hereafter referred to as Lloyd.

[31] *General-purpose management system/SOHEI*, T 769/92(OJ 1995, 525).

[32] T931/95(OJ 10/2001).

[33] See T636/88, T1002/92

program therefore, for carrying out at least some steps of a scheme, it is to be examined as a 'computer-implemented invention' "[34].

The main result of *PBS PARTNERSHIP* is that a technical character should be deducted from the novelty and inventive step examination, instead from a separate test before these. Consequently the exclusion of patentable subject-matter by category seems to be phased out, in favour of a case by case assessment of the presence of "an objective technical problem which has been overcome". The solution of the problem constitutes the technical contribution of the invention to the art, and the said contribution gives the subject-matter a technical character; thus it satisfies the requirement for an invention, within the meaning of Art. 52(1). In *Auction Method/Hitachi* the Board of Appeal signified though that it does not intend to further broaden the limits of patentability for business methods. It held that "method steps consisting of modifications to a business scheme and aimed at circumventing a technical problem rather than solving it by technical means cannot contribute to the technical character of the subject-matter claimed"[35]. This limitation to the patentability of business methods cannot guarantee though that the latest trend of patents in financial products in America[36] will not gradually pass the Atlantic, as has happened with all the former so far.

4. The CII Directive

This extremely broad interpretation of the EPC was problematic, because it created ambiguity in patent law in the whole of Europe. This was sufficient justification for the European Commission to propose the Directive in the direction of harmonising the law with the practice of the EPO.

The proposed legislation was received with heavy criticism by free and open source software individual developers and a large part of the European ICT Industry, the negative opinion of which towards patents was already known from consultations and studies[37]. Their response was to give great publicity to the approval procedure and with rational but to a certain extent over-exaggerated arguments they created a movement that organised demonstrations, events and meetings and finally found an ally in the European Parliament –an elected body listens to the people- that became the counter-weight that balanced the Commission's pro patent proposals. The Parliament in the framework of the co-decision procedure[38] adopted a radically divergent approach and amended the text of the Commission to the extent that it became a different proposal; according to the revised position that was voted, patents were not to be awarded to everyday applications running on general purpose

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[34] C IV 2.3.5.

[35] T0258/03.

[36] See for example http://xinkaishi.typepad.com/a_new_start/2007/01/ft_banks_lay_tr.html

[37] See for example Max Planck Institute/ Frauenhofer Institute (September 2001), "Mikro- und makroökonomische Implikationen der Patentierbarkeit von Softwareinnovationen: Geistige Eigentumsrechte in der Informationstechnologie im Spannungsfeld von Wettbewerb und Innovation", Executive Summary, XVIII.

[38] Art 251 EC Treaty OJ C325.

computers, but only to strictly industrial processes, "in terms of both method and result"[39], implemented with the interference of a computer program.

In the next stage of the co-decision procedure, a third body, the European Council adopted a 'common position', which was again a heavily amended text with elements from both the previous proposals and communicated it to the Parliament.

The dissent led to the final voting down of the Directive by the European Parliament[40] and the end of the legislative procedure.

The rejection of the CII Directive was celebrated by those opposed to software patents as a great victory, because the exclusion of Art. 52 EPC remained intact. As a commentator had remarked at an earlier stage of the debate, "a decision not to amend the law is generally regarded as a confirmation of existing practice under the law"[41]. In these terms, since the end of the co-decision procedure, the practice of the EPO has remained the same and the goal of transforming European patent law into law of the EU, which would bring the EPO decisions under the control of the European Court of Justice, was not achieved. In this sense, it seems that it was after all a success of the supporters of software patents.

5. Recent case law

The case law of the EPO and the national courts after the demise of the CII Directive indicates that after all computer implemented inventions that involve a technical effect are indeed patentable.

The definition of "technical" has not been clear though, and the case by case assessment of its existence has not promoted legal certainty on the issue, as in some cases applications that are patently obvious or not novel or non technical have been awarded a patent. In such an impressive ruling, the Board of Appeals of the EPO rejected the initial decision of the Examining Division and allowed claims in a European patent application by games firm Konami[42] for an interactive video game (e.g. a virtual soccer game). It was held that:

> *"While the closest prior art indicates the active player character by displaying a small triangle (m) above its head (D7, Figure 8), characterising feature [a] of claim 1 requires the guide mark (G1 in Figures 6 and 7 of A2) to be ring-shaped and displayed around a foot of the active player character (P1). The aforementioned difference implies an enlarged size of the guide mark which avoids any risk of the mark being concealed by a neighbouring player character. Making a possibly concealed indicator clearly visible on a display screen to the user of an interactive video game does not exclusively address a human mental process but contributes an*

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[39] At this point echoing German jurisprudence, see German Supreme Court, 27 March 1969, GRUR 1969, 672 (Rote Taube).

[40] See n3.

[41] S. Davies, "The Proposed Directive: A User's Comments", (2003) 1 *JILT* 1.

[42] T0928/03 See comment @ http://technollama.blogspot.com/search?q=Game+software+patent+upheld+in+Europe

> *objective technical function to the display. The functional quality is not cancelled by the fact that the visualised information will also enter into a decision of the user interacting with the video game displayed on the screen…",* [to conclude that] *"...the approach is to make sure that non-technical aspects do not support a finding of inventiveness; on the other hand, actual contributions to the technical character by any feature of an invention must be taken into account when assessing inventive step".*

The England and Wales Court of Appeal in Aerotel Ltd. v Telco Holdings Ltd & Ors[43] put forward a new test in 4 steps:

> *"(1) properly construe the claim*
>
> *(2) identify the actual contribution;*
>
> *(3) ask whether it falls solely within the excluded subject matter;*
>
> *(4) check whether the actual or alleged contribution is actually technical in nature".*

The test, as suggested by the Comptroller Colin Birss and approved by Jacob LJ complies with the previous Court of Appeal case of Merril Lynch[44]. In that ruling it was held that:

> *"it cannot be permissible to patent an item excluded by section 1(2) under the guise of an article which contains that item -- that is to say, in the case of a computer program, the patenting of a conventional computer containing that program. Something further is necessary… There must, I think, be some technical advance on the prior art in the form of a new result ".*

It has been observed[45] that after Aerotel, a number of patent applications regarding excluded material have been refused by the UK Patent Office.

6. The arguments on the patentability of computer programs

We shall further assess the arguments for and against software patents in order to examine which path Europe should follow, when the discussion on the issue opens again.

First though we should take a look at the European ICT industry to understand its structure. The backbone of the said industry consists mainly of SMEs[46] and

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[43] *Aerotel Ltd. v Telco Holdings Ltd & Ors Re*v 1 [2006] EWCA Civ 1371 (27 October 2006)

[44] *Merril Lynch* [1989] RPC 561

[45] http://ipkitten.blogspot.com/2007/02/death-of-technical-effect-test-in-uk.html

[46] Commissariat Général du Plan (2002), 'Économie du logiciel : renforcer la dynamique française'.

independent developers and is described as "a very innovative and competitive software industry with low entry barriers"[47].

European software SMEs have so far been indifferent to patenting, in part due to the misconception that computer programs are not patentable, but studies have shown that they do not find patents attractive. Thus, the main body of the patents granted by the EPO already belongs to non-European companies[48]. According to a European Commission document[49] about 75% of the 13,000 software related patents that had been granted at that time by the EPO "...were held by very large non-European companies", "...owing to extensive ignorance of the current legal situation in Europe" by the European software industry.

6.1 Patents & innovation

The main justification for the existence of patents and the monopolies that they create is the incentive to innovate that they are supposed to provide. The example of the US is often used to illustrate how high patenting activity results to success in the software business. It is suggested[50] though, that the opposite could be true as well and that patentability rate might proliferate due to high innovative activity. The majority of the studies that have so far taken place cannot find empirical data to support the argument in the software industry, due to the versatility of software patents[51]. It has been shown though that software patents instead of increasing R&D spending, employment or productivity, have so far led to the contrary results in the US[52]. According to a study[53] "*a software patent, which serves to protect inventions of a non-technical nature, could kill the high innovation rate*"; it further warns that the majority of the European industry is not prepared for such a regime.

Furthermore, a recent study on the reform of the patent system of the US finds that[54] "*the nature of software development is such that inventions often are cumulative and new products generally embody numerous patentable inventions*". The algorithms that are used in each program are under usual circumstances utilised in other programs too, since it is almost impossible to develop a serious program *ex nihilo*. Innovation is

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[47] PricewaterhouseCoopers, "Rethinking the European ICT agenda, Ten ICT-breakthroughs for reaching Lisbon goals" August 2004, 50.

[48] The situation is the same in the US, where of the total of granted software patents only inventors from Germany own 3% and from Great Britain 2%, whereas from Japan 18%, and of course US inventors a vast greater proportion. See J Bessen, R M Hunt, "An Empirical Look at Software Patents", March 2004, 14-15, hereafter referred to as Bessen & Hunt.

[49] Communication from the Commission to the Council, the European Parliament and the Economic and Social Committee. Promoting innovation through patents – The follow up to the Green Paper on the Community patent and the patent system in Europe, available @ http://www.europa.eu.int/comm/internal_market/indprop/docs/patent/docs/8682_en.pdf .

[50] Bakels, 4.

[51] Bakels, 15.

[52] Bessen & Hunt, 39-40.

[53] PricewaterhouseCoopers, "Rethinking the European ICT agenda, Ten ICT-breakthroughs for reaching Lisbon goals" August 2004, 50.

[54] W Schacht, CRS Reportt for Congress "Patent Reform: Issues on the Biomedical and Software Industries".

of a sequential nature in the software segment[55] and the reuse of code is an important element of software development[56]. Thus, it is argued that there is a danger of over-monopolisation for trivial contribution to the state of art, which could hinder further innovation. We are faced with the threat of *the tragedy of the anticommons*[57], namely with the existence of too many rightholders that own software patents on different "blocks of innovation" and thus hinder future research. Small companies, even if a compulsory licence scheme, as was proposed by the European Parliament, allows them to use any combination of algorithms, irrelative of whether it is patented, will not be able to meet the costs of this licensing. It is self-evident that software writing will not be dissimilar to walking on a minefield. Innovation cannot be promoted when the inventor's impetus is restrained in order to consult an attorney on a constant basis. The cost of figuring out the patent holders and negotiating the necessary licences, if they are available can slow down or even kill innovation in the case of fundamental inventions which are "difficult, or even impossible to design around"[58].

6.2 Strategic use of patents

It is suggested that clever use of the patent system can turn SMEs and independent developers to "sizeable indeed major companies"[59]. It is a fact that many start-up businesses have attracted venture capitalists, contracts with the giants of the sector or have been acquired for respectable amounts, because they were visionary enough not only to develop innovative products, but also to patent them.

This though is not always the case. If one goes through the technology news, patent battles are always a headline, much more frequently than the success patent stories.

Patents can prove to be a very effective way for a company to fight competition in terms other than performance. This "phenomenon is ... inherent to any patent system"[60] when the right holders focus less on exploiting the patent themselves and more on preventing others from using it. Even a manifestly unjustified infringement lawsuit, which is impossible to be won by the plaintiff, can prove to be an unbearable burden for an average company. It is needless to say that the small players do not have patent departments or capitals to invest on patents that might never be granted or interesting to anyone to licence, as patents always bear such risks. USPTO statistics of 2000 estimate the average litigation cost at about half a million Euros. The large companies that own impressive patent portfolios are in a privileged position[61], as they can create patent thickets or patent pools and cross-licence in exchange for one another's patents. This of course is problematic from a competition law aspect, but we shall not discuss this here.

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[55] J. Bessen and E. Maskin (2000), "Sequential Innovation, Patents and Imitation", MIT.

[56] See note 75, XVI.

[57] S. Perchaud, "Software Patents and Innovation", (2003) JILT Issue 1.

[58] Bakels, 19.

[59] "The Economic Impact of Patentability of Computer Programs", Intellectual Property Institute, London, available @ http://europa.eu.int/comm/internal_market/en/indprop/studyintro.htm .

[60] Ibid, 20

[61] See n 36, XXIV.

The problem is that it is not only software developers that seek patents in order to improve and protect their presence in the market or attract venture capitals. It has been empirically documented that software patents are acquired primarily by large manufacturing firms in industries known for strategic patenting and that "only 5 percent belong to software publishers"[62]. Along with the software giants that use this practice, there are "parasites" of the system, companies that do not produce anything; these The so-called "patent trolls" buy the rights to already registered patents or register new ones, with claims as broad as possible, so that they can then claim royalties from anyone who uses similar applications.

As was pointed out in Ebay v Mercexchange[63], "an industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees[64] … For these firms, an injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent". Acacia Technologies[65] for instance owns patents that are claimed in such a broad manner that cover almost any kind of streaming media available at the moment. Meanwhile, patent royalties are now the most profitable product line of IBM[66]. An obvious example of broadness is the case of Blackboard[67] against Desire2Learn, where the claimed patent[68] covers the function of any application for implementing education online.

A proper remedy to these tactics is defensive patenting, which is the obtaining of patents as exchange objects for cross-licensing agreements. Another popular strategy is the public disclosure of inventions, which pre-empts patent claims. These activities, even though, to some extent can retaliate the patent regime are consuming time and resources and contribute to the "arms race".

An interesting initiative in the same direction is the "Patent Busting Project" of the Electronic Frontier Foundation (EFF)[69] that aims to challenge invalid patents in the form of a "re-examination request" to the U.S. Patent and Trademark Office. This project could prove to be valuable, especially for SMEs, that due to the high cost of patent litigation, usually are compelled to give in to the so-called "patent trolls" and pay the affordable yet heavy burden of a licence for an invalid patent than to challenge it in court.

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[62] Bessen & Hunt, Abstract

[63] *Ebay Inc et.al. v Mercexchange LLC,* 401 F. 3d 1323, vacated and remanded.

[64] See also FTC, To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy, ch. 3, pp. 38-39 (Oct. 2003), available at http://www.ftc.gov/os/2003/10/innovationrpt.pdf

[65] For more info see http://kwiki.ffii.org/?SwxaiAcaciaEn .

[66] K Rivette and D Kline, "Discovering the new value in intellectual property", Harvard Business Review, January-February (2000).

[67] http://www.theinquirer.net/default.aspx?article=33396 .

[68] http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnetahtml%2FPTO%2Fsrchnum.htm&r=1&f=G&l=50&s1=6,988,138.PN.&OS=PN/6,988,138&RS=PN/6,988,138 .

[69] See http://www.eff.org/patent/

6.3 Patent archives as information resources

It is also contended that the patent system functions as an information source and that "society at large ... reaps benefits from the disclosure of the invention which brings about technological progress upon which other inventors can build"[70]. This aspect should be significant especially for those that do not have the R&D capabilities to design everything "in-house". Empirical evidence[71] has shown though that even firms that are acquainted with the function of the system and own patents, do not consider patents as a source of information. As a study has shown[72] patent archives are considered more valuable as a source of information for legal purposes, rather than for technical ones.

The invalidity of this argument becomes manifest if one considers that the EPO does not "require or examine source codes", as it is "neither necessary nor appropriate for sufficient disclosure"[73].

6.4 The TRIPs Argument

One of the legal arguments on the abolishment of the exclusion of computer programs from patentability is that it contradicts the TRIPs Agreement, which states that *"patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application"*(Art. 27§1), and allows exclusions of certain subject-matter only on the basis of "*ordre public or morality"*(Art. 27§2). A rational counter argument is that if there is no express exclusion, but a strict application of rules, providing for patents for computer implemented inventions in the industrial sense of the term and not for programs running on general purpose computers, as they were proposed by the European Parliament there is no violation of TRIPs. If the field in which the contribution lays is not a technical one, there is no invention. Moreover, if there is an invention, but it is not industrially applicable *stricto sensu* again the problem is solved. In this view, there is no need for further compliance with TRIPs, as it is possible without excluding categories of inventions to achieve what seems as a system without patents for software and business methods.

6.5 Triviality & Quality

The already mentioned issue of triviality is a commonly heard objection against patents for computer-implemented inventions and business methods, especially in the United States; the "triviality" lies in the lack of novelty or inventive step.

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[70] See n 2.

[71] MacDonald, in "Bearing the Burden: Small Firms and the Patent System" (2003) JILT Issue 1, two surveys were conducted in October 1996.

[72] Bakels, 19.

[73] Computer-Implemented Inventions and Patents, Law Practice at the European Patent Office, available @ http://cii.european-patent-office.org/_pdf/cii_brochure_en.pdf

The root of this problem is either the improper application of the rules by the patent offices or the rules themselves. The novelty test in comparatively new fields, such as software and business methods requires knowledge of the state of the art, which is hard to obtain, since the relevant techniques are rarely "documented, even if they are common knowledge-perhaps because they are common knowledge"[74] and business methods are not usually recorded in publicly available documents.

The presence of any "inventive step" does not seem to suffice. A certain degree of inventiveness should be required, in order to justify the award of a patent and not the protection of copyright, where "low-level originality" is adequate. It is thus contended[75] that much of the controversy surrounding the "patent inflation", which is caused by the routine granting of "trivial" patents is more a problem of quality in the patent system as a whole, rather than of the patentability of specific subject-matter. It is suggested that apart from the obvious administrative aspect of the problem, the existing rule of "non-obviousness" should be replaced by a stricter criterion[76].

A new development in the area of patent quality is the Peer-to-Patent Project[77], a project that "seeks to create a peer review system for patents that exploits network technology to enable innovation experts to inform the patent examination procedure" and to ensure that "only worthwhile inventions receive the patent monopoly". It is noteworthy that the United States Patent and Trademark Office (USPTO) has already employed this method in order to improve patent quality.

6.6 The case for business methods

Business methods are also excluded "as such" from patentability in Europe. They are closely related to software patents, as it is the employment of technical means that allows them to become patentable under the EPC. After the *State Street Bank*[78] decision, where it was held that the examination of business methods should not differ from the one applied to other methods or processes, the number of applications for business methods in the US has risen steeply. Patents in this sector are generally regarded with criticism, as they lay in the core of the "abstract idea" notion and the patenting of such methods is believed to have negative effects on competition. A German study[79] advises against the further broadening of patent protection for software-and more emphatically for business methods-, in accord with the US practice. An interesting proposal is to move the business method patents "from the list of subject-matter excluded 'as such' to the category that is excluded 'per se'", such as methods of treatment[80].

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[74] Bakels, 31

[75] Bakels, 32

[76] Id.

[77] Proposed by New York Law School Professor Beth Simone Noveck in Harvard Journal of Law and Technology, Vol. 20, No. 1, p. 123, Fall 2006, See http://dotank.nyls.edu/communitypatent/ and

[78] 149 F 3d 1368, 1375 (Fed Cir 1998).

[79] See note 75, XXIV.

[80] Bakels, 31

6.7 Open Source Software

Free and Open Source Software[81](FOSS) is acknowledged as "a kind of a public good", which through its availability for use by anyone, "in the sense of the new growth theory promotes the general technical progress and therefore innovation dynamics"[82]. Its value is recognised by the majority of the players in the software market[83], and is expected to proliferate as it is the main source from which software developers "borrow" software components[84]. The Achilles' heel of FOSS, lies in its main characteristic, namely that the code of the programs is publicly available for anyone to inspect it for patent infringement and this makes FOSS developers more vulnerable than the ones that produce proprietary software that are usually sheltered behind the distributed "object code".

Gehring[85] suggests the introduction of a "source code privilege"[86] in patent laws as a partial solution. The proposal advocates that "the use of the source codes of computer programs must be granted privileged status under patent law. The creation, offering distribution, possession, or introduction of the source code of a computer program in its various forms must be exempted from patent protection". It is seen as an adaptation of the patent system to "modern software development methods", such as open source. It creates something similar to a fair use defence and developers and users of FOSS are safeguarded against possible litigation if they do not use the code for commercial purposes. A study[87] also proposes such a privilege for non-business uses even in the commercial arena (e.g. free of charge software), it acknowledges though the difficulty of bringing in line national legislations and the TRIPS Agreement. It is noteworthy that IBM[88], MySQL[89] and other major players have declared that they won't use their patents against OSS, and so far despite the extensive patent infringement litigation in the United States there has not yet been any against FOSS projects[90].

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[81] Although Open Source is only one of the various forms of software –others include Free Software and Copyleft- that could be described as "non-proprietary" and with other general terms, such as "Libre" Software, FOSS or FLOSS, we shall use the term open source, since this is the term used by the Directive.

[82] See n 36, XXIV.

[83] Bakels, 4.

[84] See n 36, XXVI.

[85] R A Gehring, "Software Development, Intellectual Property, and IT Security", (2003) JILT Issue 1.

[86] A "source code privilege" for OSS was first proposed in an expertise prepared for the German federal Ministry of Economics and Technology (B. Lutterbeck et al.; 2000)

[87] See n 36, XXV.

[88] http://www.infoworld.com/article/04/08/04/HNdonofirokeynote_1.html .

[89] http://www.mysql.com/company/legal/patents.html .

[90] H Meeker, 'Open Source: The Sky Is Not Falling', Linux Insider (4 July 2005), available @ http://www.technewsworld.com/story/44367.html.

However, if patent holders turn against FOSS-licenced software, it would be possible that developers would find themselves with unenforceable licences because they only cover the copyright aspects of the software[91].

7. Conclusion

As we have already seen, the issue of patentability of computer-implemented inventions is one that Europe has to confront sooner or later in order to achieve legal certainty and to avoid the creation of *de facto* precedents, such as the distortion of the meaning of the EPC by the Technical Board of Appeal of the EPO.

As is obvious from the above analysis, the effect that software patents have in a market, as was shown by the experience in the US has not always been the anticipated prosperity and innovation. In Europe, despite the hijacked way in which software patents have been adopted in practice and apart from a few exceptions, the awarded patents seem to satisfy minimum quality criteria so far.

The arguments for and against patents are neither compelling nor astonishing, as their supporters might think. It is true though, that a handful of companies that want to monopolise pure ideas try to transform patents from negotiating weapons of the weak and an incentive to invest into time-bombs, threatening anyone who wishes to develop a program without consulting his lawyer for every line of code. Moreover the afforded protection is in most cases out of all proportion to the made technical contribution, due to the incremental nature of innovation in the software sector.

What Europe deserves and should pursue, in order to be "the world's most competitive knowledge-based economy by 2010" according to the Lisbon agenda, is certainly not to become a runner-up in an already over-monopolised by US and Japanese firms ICT industry. Long judicial procedures for low quality patents certainly should be considered to stifle rather than to promote innovation.

If higher innovation rates are what Europe seeks, copyright is at the moment the most adequate available form of protection for software. In an era when Intellectual Property Rights are at the forefront of economic growth it is quality that will make the difference and it can be achieved if the inventors focus on their subject to promote science without the barriers of patents and not on the patent archives, consuming their time and skills in order to avoid infringement or to conceive the best idea for a broad trivial patent.

On the other hand, the optimum choice would be if European patent law was amended so that patentable computer-implemented inventions were only stricto sensu industrial applications and not programs for general use, such as the notorious Amazon one-click patent to refer to the peak of the ice-cube. Furthermore, litigation costs should be reduced, and the proposed European Patent Litigation Agreement[92] that proposes a single procedure, instead of separate ones in the national courts each jurisdiction seems to be a move towards the right direction, as the costs are rationalised, but they are still excessive. In addition, it phases out the possibility of contradictory decisions.

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[91] A Guadamuz, "Legal Challenges to Open Source Licences", (2005) 2:2 *SCRIPT-ed* 256 @: <http://www.law.ed.ac.uk/ahrc/script-ed/vol2-2/challenges.asp>

[92] http://www.european-patent-office.org/epo/epla/pdf/impact_assessment_2006_02_v1.pdf .

A better solution towards the same direction would be the formation of independent Alternative Dispute Resolution tribunals, which for a friction of the cost could be employed in cases of infringement and could also be the competent authority for appeals, as the Board of Appeal of the EPO is often accused of pro patent bias. All the above though cannot guarantee the solution of the problem, as history has already taught us in the case of the EPC and the EPO.

The ideal solution would be the creation of a sui-generis right, as has been at times proposed, tailored to the unique nature of software, so that the literal and functional characteristics of software are equally protected. My perception of the idea is a database that serves a double purpose; that of a bank of the source codes of programs for others specialised in the field to consult; and that of a register of the date of the program and the claims for offensive and defensive legal purposes, such as to prove that a patent in another jurisdiction was anticipated. To mould though all these elements in a proposal cannot be achieved by exercises on paper; further consultations should be made with the industry, so that actual suggestions on the form, the term and the available remedies for infringement could be submitted. In my opinion this is the path that should be followed, since after all it is the only way for the traumatised from suspicion and debate European ICT industry to open a discussion on how the interests of all could be better served. It is self evident that such a solution will not bear fruit in the near future, and it is not guaranteed that if and when it is implemented it will be of success, as the recent experience of the sui-generis database right has shown in the EU[93]. It is though worth a chance in order to exit the vicious circle of the debate and to try to form a protective regime that combines the best of the worlds of copyright and patents, leaving out as much of their disadvantages possible.

[93] http://ec.europa.eu/internal_market/copyright/docs/databases/evaluation_report_en.pdf .