

# **State Street, Amazon.com, and the Proposal for an EU Directive on the Patentability of Computer-Implemented Inventions**

**– A Comparison of Software Patentability in the United States and the European Union –**

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- A. Introduction
- B. The Current Patent Regimes
  - I. The American Approach
  - II. The European Approach
    - 1. The System under the EPC
    - 2. The System According to the Commission's Proposal
- C. Analysis
  - I. Scrutiny of the Draft Directive
  - II. The American-European Comparison
    - 1. The Differences
    - 2. A Legal-Economic Study
      - a) The Purpose of the Patent System
      - b) Competition Law Aspects and Inhibition of Technological Progress
    - 3. Latest Developments
      - a) In the US
      - b) In the EU
- D. Conclusion and Outlook

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*'If one does not know whether a system "as a whole" ... is good or bad, the safest policy conclusion is to "muddle through" ...'*

Fritz Machlup,  
*An Economic Review of the Patent System,*  
 Washington, D.C., 1958

## A. Introduction

In recent years the patentability of software, business methods and other computer-implemented inventions has been much on the agenda. In particular, in the context of a growing volume of e-commerce business, discussions arose about the pros and cons of patentability of such devices in the United States as well as across the Atlantic in the European Union. As the two regions being the biggest markets in the world, it is worthwhile looking at their respective sets of rules governing the patentability of computer-implemented inventions. While differences in handling software patentability can hamper mutual trade and investment, similar approaches in both areas can facilitate business and stimulate economic growth. This essay will illustrate the two patent regimes with regard to computer-implemented inventions and compare them critically. Firstly, each system as it is applicable today will be briefly described (B). This will also comprise a short introduction to the recent Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions,<sup>1</sup> which will be taken into account throughout the discussion. This illustration of the *status quo* will be followed by a comprehensive analysis (C) that contrasts the two systems and highlights their differences. However, the debate will not so much focus on the ultimate details of the technological aspect of patent law in general or software inventions in particular. That is to say it is the author's opinion that a new and more exact definition of, for instance, a mathematical algorithm or the analysis of what *exactly* happens when binary coded decimals are converted into pure binary figures,<sup>2</sup> is not overly helpful to the problem at hand, i.e. finding a reasonable and balanced solution for the question which software innovations should be granted patentability and which should not. On the other hand, a too technology-fond slant would rather blur a clear view. Here it seems that a more abstract approach is more appropriate because it allows one to look at the patent system in its legal, social and economic context. In the course of this discussion the different approaches will be evaluated from a sound legal basis as to which one better fulfils the requirements of the age of the information society considering in particular the following questions: as law is a permanently evolving matter,

<sup>1</sup> Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions, COM (2002) 92 final; hereinafter: Draft Directive.

<sup>2</sup> See *Gottschalk v. Benson*, 409 U.S. 63 (1972).

the development of which patent system is still (more) in line with its roots? Which system is more beneficial for society? Correspondingly, the argument will concentrate on two main aspects. First, the legal origins and justifications of a system will be scrutinized in which monopolies are granted in the form of patents. This will be applied to the two approaches. Secondly, an answer will be sought by a combined legal-economic examination of the patent system. At this stage, aspects of economic competitiveness, competition law, and the economic analysis of patent law will be explored. Here, insight will be gained by looking at two cases in particular. The first one, *State Street*,<sup>3</sup> has been regarded as a major breakthrough concerning software patentability, especially of software implementing business methods. The second one, *Amazon.com*,<sup>4</sup> has attracted much attention throughout the IP/IT, Internet, and e-commerce community and is based on the rule given in *State Street*. It may be particularly helpful in illustrating the problems of competition law related to software patentability. Finally, the latest developments in both jurisdictions will be considered. But first of all, it is necessary to briefly set out the current patent regimes in the US and the EU respectively.

## B. The Current Patent Regimes

### I. The American Approach

The American Patent Act of 1952 stems from a time when no one could have envisaged the technical possibilities the use of a computer would offer. The relevant provision covering patentability, § 101, reads:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.<sup>5</sup>

Three basic requirements must be ensured for patentability: novelty, utility, and non-obviousness of the invention. Whereas the first is directly derived from § 101 of the Patent Act, the requirement of utility is already mentioned there as well and clarified in § 102; the negative requirement of non-obviousness is taken from § 103(a). Since it came into force the act has never been revised significantly. With the emergence of modern technologies it was up to the courts to keep pace with this development and to restrict an almost pervasive wish by the industry to grant patents. The essence of the landmark decisions will be

<sup>3</sup> *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998); hereinafter: *State Street*.

<sup>4</sup> *Amazon.com, Inc. v. Barnesandnoble.com, Inc. and Barnesandnoble.com, LLC*, 73 F. Supp. 2d 1228 (District Court, Seattle, Wa, 1999); hereinafter: *Amazon.com I*; *Amazon.com, Inc. v. Barnesandnoble.com, Inc. and Barnesandnoble.com, LLC*, 239 F.3d 1343 (Fed. Cir. 2001); hereinafter: *Amazon.com II*; Troy Wolverton, *Amazon, Barnes & Noble settle patent suit*, CNET News.com, 6 March 2002, available at <http://news.com.com/2100-1017-854105.html>.

<sup>5</sup> 35 U.S.C. (1994).

briefly summarized.

The United States Patent and Trademark Office (USPTO) for a long time was against software patentability.<sup>6</sup> It was opposed in this view by the Court of Customs and Patent Appeals (CCPA) and later by the Court of Appeals for the Federal Circuit (CAFC).<sup>7</sup> By appealing against decisions by the USPTO some patent applications containing software elements were successful. However, in the course of this development several applications were denied also success for the reason that they contained non-statutory subject-matter regarding patentability. Calculations by a computer equaling mental steps<sup>8</sup> were identified as being non-statutory as well as pure mathematical algorithms<sup>9</sup> and laws of nature, discoveries of physical phenomena,<sup>10</sup> or business methods.<sup>11</sup> When it appeared that more and more software-related inventions would be filed for patentability, the courts – in the absence of statutory support – tried to develop a two-step-test to distinguish statutory subject-matter in the course of several cases, the so-called Freeman-Walter-Abele-Test.<sup>12</sup> Since the USPTO, after *Gottschalk v. Benson*, equated all computer programs with mathematical algorithms and denied patentability without further examination,<sup>13</sup> this test should tell when an invention containing a software element could still be held statutory. First, the court, in order to determine patentability, asked whether the patent claim directly or indirectly recited a mathematical algorithm and if so, whether this claim “wholly pre-empted that algorithm.”<sup>14</sup> Over *Walter to Abele* this second step was subsequently modified by asking whether the mathematical algorithm in a claimed software invention would “be applied in any manner to physical elements or process steps.”<sup>15</sup> Criticized for being too complicated and for losing sight of § 101<sup>16</sup> the test was dismissed again in *In re Alappat* in 1994.<sup>17</sup> Here it was accepted that a computer programmed with particular software was a “machine” in the meaning of § 101. If now such a machine produced a “useful, concrete and tangible result” it was held patentable in contrast to a disembodied mathematical algorithm.<sup>18</sup> The analysis of the case law culminates in a decision by the CAFC in 1998. In *State Street* it was held

<sup>6</sup> See *Diamond v. Diehr*, 450 U.S. 175, 218 (1981); *Gottschalk v. Benson*, 409 U.S. 63, 72 (1972).

<sup>7</sup> See *In re Prater*, 415 F.2d 1393, 1403-1404 (C.C.P.A. 1968); see generally *John T. Soma et al.*, *Software Patents: A U.S. and E.U. Comparison*, 8 U. Balt. Intell. Prop. J. 1999/2000, p. 1.

<sup>8</sup> *Gottschalk v. Benson*, 409 U.S. 63 (1972).

<sup>9</sup> *Parker v. Flook*, 437 U.S. 584 (1978).

<sup>10</sup> *Gottschalk v. Benson*, 409 U.S. 63 (1972).

<sup>11</sup> *Loew's Drive-In Theatres v. Park-In Theatres, Inc.*, 174 F.2d 547, 552 (1st Cir. 1949); *In re Grams*, 888 F.2d 835, 837 (Fed. Cir. 1989).

<sup>12</sup> See *In re Freeman*, 573 F.2d 1237 (C.C.P.A. 1978); *In re Walter*, 618 F.2d 758 (C.C.P.A. 1980); *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982).

<sup>13</sup> See *Soma et al.*, *supra* note 7, at p. 10.

<sup>14</sup> *In re Freeman*, *supra* note 12, at p. 1245.

<sup>15</sup> *In re Abele*, *supra* note 12, at p. 907.

<sup>16</sup> See *C. Reed & J. Angel*, *Computer Law* (4th ed.), London, 2000, p. 141 et seq.

<sup>17</sup> *In re Alappat*, 33 F.3d 1526, at p. 1539 (Fed. Cir. 1994).

<sup>18</sup> *In re Alappat*, *supra* note 17, at p. 1545; see *In re Warmerdam*, 33 F.3d 1354, at p. 1361 (Fed. Cir. 1995).

that:

... the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it non-statutory subject-matter unless, of course, its operation does not produce a useful, concrete and tangible result.

... The question of whether a claim encompasses statutory subject-matter should not focus on which of the four categories of subject-matter a claim is directed to – process, machine, manufacture, or composition of matter – but rather on the essential characteristics of the subject-matter, in particular, its practical utility.<sup>19</sup>

In addition, the court did away with the business method exclusion explaining that in the past cases in which business methods were discussed they were decided on the reason of obviousness.<sup>20</sup>

The *State Street* ruling was confirmed and the scope of patentable subject-matter was further extended in *AT&T Corp. v. Excel Communications* where it was held that a patent claim containing a mathematical algorithm need not implicate a physical transformation or conversion of subject-matter from one state into another to be deemed patentable subject-matter.<sup>21</sup> This opened up the possibility for patent applications claiming mere software on a carrier.<sup>22</sup>

## II. The European Approach

The above-mentioned proposal by the European Commission to pass legislation on software patentability represents the first attempt on the European Union level to introduce legislation on computer-implemented inventions. Until now, patentable subject-matter had been determined by relevant provisions of the European Patent Convention<sup>23</sup> and by national laws of its contracting parties, which have basically implemented the EPC provisions into their domestic legal systems. The Convention entered into force on 7 October 1977. Before that, European legal systems in general opposed the patentability of computer programs. It was common opinion that a computer programmed with software performed nothing more than working steps that otherwise could be performed just as well by a human being, but not as quickly.<sup>24</sup> Accordingly, computer programs were considered performing mental steps and thus rejected from

<sup>19</sup> *State Street*, *supra* note 3, at p. 1375.

<sup>20</sup> *State Street*, *supra* note 3, at p. 1376.

<sup>21</sup> *AT&T Corp. v. Excel Communications, Inc. et al.*, 172 F.3d 1352, at p. 1357 et seq. (Fed. Cir. 1999), thereby dismissing its earlier decisions *In re Grams*, *supra* note 11, and *In re Schrader*, 22 F.3d 290 (Fed. Cir. 1994), as “unhelpful”.

<sup>22</sup> See *Soma et al.*, *supra* note 7, at p. 30.

<sup>23</sup> European Convention on the Grant of European Patents, Munich, 5 October 1973; hereinafter: EPC.

<sup>24</sup> *J. Betten*, Patentschutz von Computerprogrammen (Patent protection of computer programs, translation by the author), GRUR (Gewerblicher Rechtsschutz und Urheberrecht – Industrial Property and Copyright), 1995, p. 777; *Soma et al.*, *supra* note 7, at p. 40.

patentability. Among the major European markets, British law represented one exception to this rule. Here, it was a development comparable to the one in the US, however this changed when the United Kingdom joined the EPC.<sup>25</sup> Today, it is the Convention and the case law based on it that determine patentability of computer-implemented inventions.

## 1. The System under the EPC

The relevant provision of the European Patent Convention regarding patentability is Art. 52; sections (1)-(3) read:

(1) European patents shall be granted for any inventions which are susceptible of industrial application, which are new and which involve an inventive step.

(2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:

- (a) discoveries, scientific theories and mathematical methods;
- (b) aesthetic creations;
- (c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;
- (d) presentations of information.

(3) The provisions of paragraph 2 shall exclude patentability of the subject-matter or activities referred to in that provision only to the extent to which a European patent application or European patent relates to subject-matter or activities as such.

Again, three basic requirements must be met: novelty, susceptibility of industrial application, and inventive step [Art. 52(1) EPC]. In addition, the negative catalogue of excluded subject-matter in paragraph 2 is eye-catching.

Without going into the depth of the EPC one significant drawback can already be established at this point. Although all signatory states have to apply the patent regime as agreed in the Convention, the system has, to some extent, been fragmented and inconsistent.<sup>26</sup> This is partly due to developments of different speed in the member states and partly due to the lack of a common European patent court which would have the final power of decision to ensure uniform interpretation of the Convention. The result has been a combination of legal uncertainty, due to a lack of predictability whether a certain patent application could turn out successfully, and lack of practicability. With the current legislative initiative these defects should be remedied. A mere revision of the EPC, although envisaged,<sup>27</sup> would not be an effective way to come to

<sup>25</sup> *Soma et al.*, *supra* note 7, at p. 30 et seq.

<sup>26</sup> See *W.R. Cornish*, *Intellectual Property* (4th ed.), London, 1999, p. 193.

<sup>27</sup> See *W. Tauchert*, *Patent Protection for Computer Programs - Current Status and New Developments*, 31 I.I.C. 2000, pp. 812, 822; see on the most recent development regarding the

terms with a harmonized system on the Community level since not only the EU member states form part of the Convention but 28 European states in total<sup>28</sup> and negotiations could turn out to be difficult and lengthy. Moreover, it must be borne in mind that only by EU legislation can the European Court of Justice (ECJ) be established as the last resort in patent matters on a Community level.<sup>29</sup>

Reading, in particular, Art. 52(2)(c) of the EPC on first view makes one wonder how software can ever be a patentable subject-matter under the Convention. A second look extends the range of vision to Art. 52(3), which changes the picture. Thus, if computer programs “as such” were claimed in a patent application, patentability would have to be denied. In fact, the European Patent Office (EPO) has already granted more than 20,000 software-related patents. During the last years there were about 1,500 patent files involving software elements per year and only five to ten of them in total numbers are regularly turned down.<sup>30</sup>

In the past, the key to understanding has been the interpretation of the attribute “as such” at the end of Art. 52(3) EPC.<sup>31</sup> In combination with the additional requirements mentioned in Art. 52 EPC – especially “inventive step” and “susceptibility for industrial application” – one has to conclude that the claimed invention must be technological to represent patentable subject-matter.<sup>32</sup> Also, the enumerated areas of excluded subject-matter in Art. 52(2) EPC seem to imply that these concepts all are particularly non-technical.<sup>33</sup> Perhaps it is not that obvious regarding computer programs; however, the once prevailing opinion of computers performing mental steps through the use of

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EPC, A. Duffus, *The Proposal for a Directive on the Patentability of Computer-implemented Inventions*, 16 *International Review of Law, Computers & Technology* 2002, pp. 331, 334. After a draft revision further negotiations and a decision have been postponed once more. For details regarding the status of the negotiations see [http://www.european-patent-office.org/epo/dipl\\_conf/documents.htm](http://www.european-patent-office.org/epo/dipl_conf/documents.htm).

<sup>28</sup> As of 1 June 2004, in addition to most of the EU member states, Bulgaria, Liechtenstein, Monaco, Romania, Switzerland, and Turkey are members of the EPO. Several further states are expected to accede to the EPC in the near future among which those EU member states that have recently acceded to the EU but are not members of the EPO yet, i.e. Latvia, Lithuania, and Malta.

<sup>29</sup> Independent of the discussion about software patentability, a legislative initiative with that very purpose has been launched by the Commission most recently. See European Commission, Press Release IP/04/137, 2 February 2004, Brussels; cf. further *infra* at D.

<sup>30</sup> Statistics until and including 2000 given by K. Beresford, *Patenting Software under the European Patent Convention*, London, 2000, foreword; statistics until 1994: 11,000 software-related patents granted, about 100 rejected, basically since 1984, see J. Betten, *Patentability of Software in Europe: The German Perspective* (Part 1), 13 *Comp. Lawyer* 1996, no. 8, p. 1; Betten, *supra* note 24, at p. 775.

<sup>31</sup> Soma *et al.*, *supra* note 7, at p. 40; Tauchert, *supra* note 27, at p. 812; W. Tauchert, *Patentierung von Programmen für Datenverarbeitungsanlagen – neue Rechtsprechung und aktuelle Entwicklungen* (Granting patents to programs of data processing devices – recent jurisdiction and current developments (translation by the author)), *JurPC* (Internet Journal for Legal Informatics), Web-Document No. 40, para. 2, 2001; available at <http://www.jurpc.de/aufsatz/20010040.htm>.

<sup>32</sup> Tauchert, *supra* note 27, at p. 812.

<sup>33</sup> See EPO Guidelines for Examination in the European Patent Office, Part C, Chapter IV, 2.1, revised and republished in July 1999, in Beresford, *supra* note 30, at p. 204.

software has already been illustrated. From this it may be inferred that the excluded subject-matter of Art. 52(2) EPC needs to be connected to some kind of process or product of technical character to be more than just the concept “as such.”<sup>34</sup> This conclusion is confirmed by Rules 27(1)(a) and 29(1), (6), and (7) of the Implementing Regulations to the European Patent Convention, which speak of the “technical field to which the invention relates”, and of the “technical features of the invention” respectively.

However, as of yet not much ground has been gained. The EPC does not provide a definition of “technical character”. Basically, three different approaches in the context of computer programs are imaginable – two extreme positions and one taking the middle ground. One extreme position was settled when the former opinion, that any kind of software involvement would render a claim non-patentable subject-matter, was not included in the text of the EPC. More recently, the opposite position seems to have found more supporters in Europe. According to such proponents a computer program, which controls steps of electronic data processing, is always technical in character.<sup>35</sup> This view has not been adopted yet by the EPO or European courts as evidenced by failed software patent applications. But what exactly defines technical character is unclear. A coherent line in the case law of the EPO cannot be found.<sup>36</sup> Giving examples does not help to understand how the system works when one wants to file a particular patent application. (This exemplifies the problem mentioned above – the lack of predictability under the EPC.)

What can be said, however, about the technical character is the following. The technical effect claimed by the invention is examined under the requirement of “inventive step.” An inventive step is considered to be present if, having regard to the state of the art, the invention is not obvious to a person skilled in the art (Art. 56 EPC). It can be derived from several of the cases that went to the Boards of Appeal of the EPO that the requisite technical character must make a contribution to the state of the art. This contribution can be manifested in different ways. The underlying technical *problem* can be solved by the invention,<sup>37</sup> alternatively the *means* of the solution can have technical character,<sup>38</sup> or the *effects* achieved by the solution can be of a technical kind.<sup>39</sup> If evidence of any of these links can be found in the patent claim, the filed software invention does not rest any longer on the computer program “as such”

<sup>34</sup> Common opinion; see only *Betten*, *supra* note 30, at p. 1.

<sup>35</sup> See *id.*; see also *Betten*, *supra* note 24, at p. 777.

<sup>36</sup> See *Angel & Reed*, *supra* note 16, at p. 133. Due to the limited space available the author refrains from another summary of facts and decisions. An extensive overview is given by *Angel & Reed*, *supra* note 16, at pp. 123-133.

<sup>37</sup> See *IBM/Computer-Related Invention*, O.J. EPO, 1990, p. 30.

<sup>38</sup> See *Vicom's Application*, O.J. EPO, 1987, p. 14; *Koch & Sterzel*, O.J. EPO, 1988, p. 19; *IBM/Data Processor Network*, O.J. EPO, 1990, p. 5.

<sup>39</sup> See *Vicom's Application*, *supra* note 38; cf to these three steps in general EPO Guidelines for Examination in the European Patent Office, Part C, Chapter IV, 1.2, (ii), and 2.2 - Programs for Computers, in *Beresford*, *supra* note 30, at pp. 203, 206; *Betten*, *supra* note 24, at p.779; *Angel & Reed*, *supra* note 16, at p. 133.



and the invention is patentable. Decisions by German and French courts confirm this rule.<sup>40</sup> Only the British courts, as already mentioned, have taken a slightly different approach. They agree with the rest of Europe that the invention must have technical character. However, their interpretation of s. 1(2) of the UK Patent Act 1977 which basically equates to Art. 52(2), (3) EPC seems to be different. While the continental courts interpret the exclusion narrowly – which represents the common technique of legal interpretation of statutory exceptions – they understand the exceptions more broadly. Continental courts look for the technical character first. If they can establish it in a software-related invention they conclude that the patent is not claimed for a computer program “as such.” In contrast, the British courts first look at whether one of the excluded subject-matters is contained in the claim. If that is the case, so the argument goes, the invention cannot possess the necessary technical character.<sup>41</sup> This well demonstrates that decisions under the same Convention can lead to different results in different countries and is a proof for the lack of harmonization in the EPC member states.

There is one more problem in connection with the EPC that needs to be mentioned at this point. It comes in the form of Art. 27(1) TRIPS Agreement. According to that provision patents shall be available in WTO member states “in all fields of technology”. At the same time, it is a common opinion that a provision that excludes subject-matter “as such” in a field of technology does not conform to that rule.<sup>42</sup>

The latest development within the EPC shows patents granted for pure software claims, i.e. software stored on a carrier without direct connection to hardware.<sup>43</sup> This has to be understood in context with the difference of scope in the TRIPS Agreement just mentioned, which was considered in the case. Recently, the UK Patent Office has announced that it would amend its practice

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<sup>40</sup> For Germany see: *Bundespatentgericht* (Federal Patent Court), Decision of 28 July 2000, JurPC, Web-Document No. 195 (2000) (*Data Processing Device As Such*), available at <http://www.jurpc.de/rechtspr/20000195.htm>; *Bundesgerichtshof* (Federal Supreme Court - BGH), Decision of 13 December 1999, JurPC, Web-Document No. 72 (2000) (*Logic Verification*) available at <http://www.jurpc.de/rechtspr/20000072.htm>; BGH, O.J. EPO, 1992, p. 798 (*Chinese Characters*); for France see: *Paris Cours d'Appel* (Court of Appeals), Judgment of 15 June 1981 (*Schlumberger*), 1981 PIBD Vol. III 175, cited in *L.Tellier-Loniewski & A. Bensoussan*, *Europe Extends Patent Protection to Software, IP Worldwide*, September/October 1996.

<sup>41</sup> See *Merryl Lynch, Inc.'s Application*, R.P.C., 1988, p. 1 (Patents Court 1987); R.P.C., 1989, p. 561 (Court of Appeal 1989); cf also *Fujitsu's Application*, R.P.C., 1996, p. 511 (Patents Court 1996); see more detailed on the British position, Soma et al., *supra* note 7, at p. 41.

<sup>42</sup> See *D. Schiuma*, *TRIPS and Exclusion of Software “as Such” from Patentability*, 31 I.I.C. 2000, p. 36, providing detailed evidence; see *Tauchert*, *supra* note 27, at p. 822, and *Duffus*, *supra* note 27, at p. 334, both giving information about the envisaged reform of the EPC which will consider this; see also *J. Straus*, *Implications of the TRIPS Agreement in the Field of Patent Law*, in *F.-K. Beier & G. Schricker* (eds.), *From GATT to TRIPs – The Agreement on Trade-Related Aspects of Intellectual Property Rights*, Weinheim, 1996, pp. 160, 181 et seq.

<sup>43</sup> *IBM/Computer Program Product I*, O.J. EPO, 1999, p. 609; *IBM/Computer Program Product II*, R.P.C., 1999, p. 861.

accordingly.<sup>44</sup>

## 2. The System According to the Commission's Proposal

As there has not been any harmonized EU patent law, legislation on the subject-matter had been demanded for a number of years. In 1997 the Commission announced that it would take action and presented the Green Paper on the Community patent and the patent system in Europe.<sup>45</sup> Part of this plan was to pass legislation on the patentability of computer-implemented inventions. The Commission engaged in research and invited the public to comment on a discussion paper published on the Internet particularly aimed at software patentability.<sup>46</sup> It was thought that the views of people in relevant undertakings should be taken into consideration before the subsequent initiation of a legislative procedure. More than 1,400 responses by private individuals, experts, companies, professional associations, and lobby groups of the IP/IT business reached the Commission, which were subsequently analyzed by external experts.<sup>47</sup> On February 20<sup>th</sup>, 2002, the European Commission finally presented its proposal for a Directive on the patentability of computer-implemented inventions. (In the meantime the European Parliament has demanded several amendments, which have been partly incorporated on a provisional basis after the first reading. This will be discussed *infra*.) The original proposal was very compact with only eleven articles. Of these Articles 2, 4 and 5 are of particular concern for the purpose of this paper.

- Article 2 gives definitions of frequently used terms and contains the first interesting changes to the current regime. On the one hand computer-implemented inventions are defined as meaning any invention implemented on a computer or comparable device which is achieved by a computer program.<sup>48</sup> It is of worthy note, that here it is sufficient according to Art. 2(a) Draft Directive if the invention shows "prima facie" novelty to fall under the scope of the Directive. This means that actual novelty need not be proven yet but remains to be examined later in the examination process under "inventive step".
- For the first time in the history of European intellectual property law, there is

<sup>44</sup> UK Patent Office, Claims to Programs for Computers, available at <http://www.patent.gov.uk/patent/notices/practice/computer.htm>. See Explanatory Memorandum to the Draft Directive, COM (2002) 92 final, p. 13; hereinafter: Explanatory Memorandum.

<sup>45</sup> Promoting innovation through patents: Green Paper on the Community patent and the patent system in Europe, COM (1997) 314 final, 24 June 1997; followed by: Promoting innovation through patents: The follow-up to the Green Paper on the Community patent and the patent system in Europe, COM (1999) 42 final, 5 February 1999.

<sup>46</sup> The patentability of computer-implemented inventions: consultation paper by the services of the Directorate-General for the Internal Market (19 October 2000), available at [http://europa.eu.int/comm/internal\\_market/en/indprop/softpaten.htm](http://europa.eu.int/comm/internal_market/en/indprop/softpaten.htm).

<sup>47</sup> R. Hart et al., The Economic Impact of Patentability of Computer Programs, 24 July 2001, available at [http://europa.eu.int/comm/internal\\_market/en/indprop/softpatanalyse.htm](http://europa.eu.int/comm/internal_market/en/indprop/softpatanalyse.htm).

<sup>48</sup> See Explanatory Memorandum, *supra* note 44.

a definition of “technical contribution” in Art. 2(b) of the Draft Directive: it shall be a contribution to the state of the art in a technical field which is not obvious to a person skilled in the art.

- Article 4 lays out the conditions of patentability. Paragraph 1 contains the usual requirements of patentability, i.e. susceptibility of industrial application, novelty, and inventive step. Paragraph 2 now blends together these conditions with what has been prepared by Art. 2: the claimed computer-implemented invention [Art. 2(a)] has to make a technical contribution [Art. 2(b)] as a requisite of the inventive step. The contribution to the prior art must be of technical character to which the same conditions apply as under the EPC.<sup>49</sup> Article 4(3) provides for consideration of the invention as a whole. A weighting of, if need be, technical and non-technical contributions, or an approach as taken by the UK Patent Office in the past (cf. *supra*), is thereby prevented.
- Article 5 finally determines the range in which computer-implemented inventions may occur. It can be noticed that the mention of a software product stored on a carrier or on a computer harddrive is lacking in this enumeration.

## C. Analysis

In the course of the analysis of the American system of software patentability, the European system under the EPC and under the originally proposed Directive, the following points emerge. Firstly, it will be examined in how far the proposed EU system would be able to deal with the problems that occurred under the existing EPC system. Secondly, the differences between the European and American positions will be analyzed. The questions presented at the beginning of this essay will be answered, i.e. it will be illustrated which system is more in line with the idea of a patent system, and which one is more beneficial for society.

### I. Scrutiny of the Draft Directive

The Commission has announced that the scope of what is patentable under the proposed Directive should remain the same as under the EPC.<sup>50</sup> An examination of the wording will have to show whether there is a reason to suspect that this could change in the future. But does the proposed EU system also abolish the problems of the EPC regime on the Community level? Three main disadvantages of the EPC system have been identified above – legal uncertainty, disharmonious jurisdiction across Europe, and non-consistency with Art. 27(1)

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<sup>49</sup> See Explanatory Memorandum, *supra* note 44, at pp. 14, 15.

<sup>50</sup> European Commission, Press Release IP/02/277, 20 February 2002, Brussels.

### TRIPS Agreement.

The harmonization problem is certainly the least difficult one. Once the Directive will have entered into force the ECJ will have jurisdiction over the subject-matter. In other words, the currently missing European patent court will become a reality without further legislation being necessary; at least in so far as computer-implemented inventions are concerned.

The Commission itself refers to compliance with the TRIPS requirements several times. Recital (6) of the proposal explicitly refers to Art. 27(1) TRIPS Agreement and expresses the wish of the European legislator to comply with that provision for the future.<sup>51</sup> Substantially, it had to be secured that hereafter inventions in *all* fields of technology would have access to patent protection, which is not the case as long as computer programs are excluded as such. Especially Art. 3 and 5 of the proposal address the issue. On one hand, Art. 3 guarantees that computer-implemented inventions will actually be accepted as belonging to a field of technology,<sup>52</sup> and Art. 5 aims at protecting the true core of the invention whether it is embodied in a product or a process. However, the Commission deliberately did not include computer-implemented inventions in stored form on a carrier, although even the EPO and lately the UK Patent Office embraced this possibility. The Commission feared that such an inclusion could open the doors for patent claims regarding software “as such”.<sup>53</sup> This is worthy of note. At first glance, the refusal to open up the possibility of patents for software in stored form in combination with this reasoning appears to contradict the expressed wish to comply with the TRIPS Agreement in the future. Yet, the restriction “as such” does not appear in the text of the Draft Directive, nor does the proposal contain a negative catalogue comparable to Art. 52(2) EPC. Hence, an exclusion of certain fields of technology for themselves cannot be established. But there is another reason why the fears by the Commission are unfounded. This Directive, if passed in this form, will eventually fortify the position of “technical character.” The – in its form unique – definition of “technological contribution” in Art. 2(a) of the original proposal is the best proof of the Commission’s best intentions in that regard. As long as the EU clings to the requirement of technical character, the Commission’s fears are baseless. Nevertheless, even with the inclusion of the definition of “technological contribution” the interpretation of “technical character” remains two-edged. As could be observed regarding the decisions by the EPO, the content of the concept has changed over the years. It cannot be ruled out once and for all that under new influences a further development will take place that would allow for a dilution of this safeguard of patentability. Yet this shift is not to be foreseen.

It seems worth mentioning at this point that the Commission itself included another safeguard in Art. 8 of the proposal. That is that the Commission will have to report to the European Parliament about the development of software patentability within three years of the implementation of the Directive into the

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<sup>51</sup> See also Explanatory Memorandum, *supra* note 44, at p. 7.

<sup>52</sup> See *id.*, at pp. 13, 14.

<sup>53</sup> See *id.*, at p. 15.

national laws of the member states.

One can, therefore, summarize that the European Commission in its original proposal has appropriately addressed the problems the EPC presented in the recent past. The question regarding the interpretation of the “technical character” addressed further above has been answered according to the current standard. Further areas of conflict cannot be detected yet.

## II. The American-European Comparison

### 1. The Differences

According to what has been explained above, the American test asks for novelty, utility and non-obviousness of the invention, whereas the European requirements are novelty, susceptibility of industrial application, and inventive step. One could now turn to Art. 27(1) TRIPS Agreement to find out which test is more consistent with the almost world-wide legal framework provided therein. Curiously, however, a look at footnote 5 of this provision shows that:

[f]or the purposes of this Article the terms ‘inventive step’ and ‘capable of industrial application’ may be deemed by a Member to be synonymous with the terms ‘non-obvious’ and ‘useful’ respectively.

However, whether the terms can truly be used synonymously remains to be examined.

The concepts of novelty basically equate each other. The invention is new when it has not been known, used, or patented before.<sup>54</sup> The American notion is somewhat narrower as it excludes explicitly every matter already patented or published abroad.<sup>55</sup> Utility, compared to susceptibility of industrial application, does not impose high barriers to patentability in the US regardless of whether one tends to understand the first criterion more widely than the second one.<sup>56</sup>

The distinction lies in the concept of “non-obviousness” on the one hand in contrast to “inventive step” on the other. In the US, an invention is not patentable when the difference between the claimed invention and the prior art is obvious to an ordinary person skilled in the art.<sup>57</sup> The difference to the prior art must consist of a technical contribution.<sup>58</sup> Inventive step in Europe, though, is only accepted if a technical contribution can be established in the sense of what has been explained above, i.e. the technical problem must be solved, the feature of the invention must be technical, or the invention must cause a technical effect. *In addition* non-obviousness according to the same definition as in the US must

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<sup>54</sup> Cf 35 U.S.C. § 102 (1994) for the US and Art. 54 EPO for the EPC.

<sup>55</sup> A. Samuel Oddi, *Beyond Obviousness: Invention Protection in the Twenty-First Century*, 38 Am. U. L. Rev., 1989, pp. 1097, 1121.

<sup>56</sup> See *Soma et al.*, *supra* note 7, at p. 62.

<sup>57</sup> See 35 U.S.C. § 103 (1994).

<sup>58</sup> See *In re Warmerdam*, *supra* note 18, at p. 1361; see also *Angel & Reed*, *supra* note 16, p. 148.

be shown.<sup>59</sup> The essence is a qualified test of the technical contribution of the invention. This means that the mere fact that every computer program interacting with the hardware on which it is running produces physical entities in the form of electrical signals is not sufficient.<sup>60</sup> This aspect of the European position is not in line with the development the legal frame in the US has taken since the decisions in *Alappat*, *State Street*, and *AT&T* (cf. *supra*). Especially the latter case, in which it was held that no physical transformation whatsoever is required any longer, illustrates the difference. The decisions of the EPO in *Computer Program Product I* and *II* are not openly contradictory with this result. In those two exceptional cases it was held that the technical effect caused by the software when run on a computer was sufficient to establish a technical contribution.<sup>61</sup> These cases were decided shortly after it was realized that there could be a problem with Art. 27(1) TRIPS Agreement. However, according to the Draft Directive, which strengthens the element of technical contribution, such a result seems unlikely to be repeated in the future.

Further differences of software patentability stem from the fact that the EPC, in contrast to the American act, contains a negative catalogue of excluded subject-matter. This has consequences for the mathematical algorithm and business methods contained therein and for respective patent applications that also developed or occurred under the American system. In Europe, at first, the technical character test was applied to inventions. Only if this test failed, was software excluded either as embodying a mathematical algorithm or a business method as such. In the US these exclusions were created by the courts. However, when the exclusions were again abandoned, there were no further obstacles to be overcome before software could be held patentable. The result was that computer-implemented inventions, i.e. software, is more likely to be granted patent status in the US than in the EU. Now that these differences have been illustrated it can be asked which system is to be preferred.

## 2. A Legal-Economic Study

Patents are monopolies granted by the state. Products and processes protected by a patent can be exploited economically; every competitor infringing the patent can be prevented from doing so by legal means. In return for the monopoly the inventor has to disclose his invention to society. Differences in the patent regimes become clarified by looking at the purpose of the patent system.

### a) *The Purpose of the Patent System*

Essentially, there have been five different approaches to justify the system which can be grouped into two distinct categories. On one hand, patents have been

<sup>59</sup> See *M. North*, *The U.S. Expansion of Patentable Subject Matter: Creating a Competitive Advantage for Foreign Multinational Companies?*, 18 B. U. Int'l L. J. 2000, pp. 111, 122, 123.

<sup>60</sup> *J. Newman*, *The Patentability of Computer-Related Inventions in Europe*, E.I.P.R. 1997, pp. 701, 703; later confirmed in *IBM/Computer Program Product II*, *supra* note 43, at p. 870.

<sup>61</sup> *IBM/Computer Program Product II*, *supra* note 43, at p. 871.

justified on moral grounds; on the other, economic reasons have been accentuated.<sup>62</sup> Both ways of thinking make use of the theory of justice. But while moral grounds are more concerned with a just solution for the individual, the economic approach rather envisages society as a whole.<sup>63</sup>

Within moral theories, the notion of a patent as a natural right comes into existence alongside the intellectual creation, which then has to be respected by society.<sup>64</sup> Its roots date back to the time shortly after the French Revolution. Only a few years later, however, it had already been heavily criticized.<sup>65</sup> Yet it was not only the underlying idea of the natural right theory, i.e. that a person could receive a monopoly for an idea, that was questioned; moreover, a logical break was detected in this system: How could a natural right ever expire after an arbitrary period of, for instance, twenty years?

It was then sought to justify the patent system by rewarding the inventor with a monopoly in proportion for his contribution to the common wealth of society,<sup>66</sup> an approach still regularly found today.<sup>67</sup> But again, it was questioned whether a monopoly granted by the state was necessary. It was argued that the inventor would always have a head start and could use this advantage *vis-à-vis* his competitors. Nevertheless, a head start in software market placement does not necessarily help much. Software is the first product that can be perfectly copied without any loss of quality in almost no time.<sup>68</sup> Furthermore, this justification would lead to inconsistent results. Some inventions would be under-rewarded, others might be over-rewarded. Moreover, the reward could turn out independently from the benefits the invention brings for society.<sup>69</sup> Finally, prizes and awards for inventions can be more beneficial for society to incite research than patents.<sup>70</sup> This follows from the very fact that innovation would not be tied to monopoly rights. Among other points, especially administrative costs such as litigation costs would be significantly lower.<sup>71</sup>

Economically, it has been sought to explain the necessity of patents by the so-called profit-thesis. This approach mirrors the idea of the reward-thesis from

<sup>62</sup> See *E. Tilton Penrose*, *The Economics of the International Patent System*, Baltimore, 1951, at p. 20; *Oddi*, *supra* note 55, at pp. 1107-1112.

<sup>63</sup> *Penrose*, *supra* note 62.

<sup>64</sup> *Id.*, at p. 21 et seq.

<sup>65</sup> *T. Jefferson*, Letter to Isaac McPherson, 13 August 1813, Monticello, available at <http://odur.lct.rug.nl/%7Eusa/P/tj3/writings/brf/jef1220.htm>. Thomas Jefferson was the first United States Patent Commissioner.

<sup>66</sup> See already *id.*

<sup>67</sup> See *A. Kamperman Sanders*, *Unfair Competition Law*, Oxford, 1997, p. 102; *P.L.C. Torremans*, *Holyoak & Torremans Intellectual Property Law* (3rd ed.), London, 2001, p. 39.

<sup>68</sup> See *C.S. Cantzler*, *State Street: Leading the Way to Consistency for Patentability of Computer Software*, 71 *U. Colo. L. R.* 2000, pp. 423, 429; *M. Perelman*, *Software Patents and the Information Economy*, 2 *Mich. Telecomm. Tech. L. Rev.* 1996, pp. 93, 101, available at <http://www.mtlr.org/voltwo/perelman.pdf>.

<sup>69</sup> *Penrose*, *supra* note 62, at p. 27.

<sup>70</sup> *S. Shavell & T. Van Ypersele*, *Rewards versus Intellectual Property Rights*, 44 *J. Law & Econ.* 2001, pp. 525, 545.

<sup>71</sup> *Id.* at p. 544; *Perelman*, *supra* note 68, at p. 98.

the perspective of society. Society as a whole needs technical progress, and thus inventions.<sup>72</sup> Only by offering the perspective of future profits by exploiting a temporarily limited monopoly could inventors be stimulated to commit themselves to research and the creation of new products and processes. But this approach has also been criticized for its inconsistency. On one hand, it is argued that today it is mostly employees in technological enterprises that do the research. Their incentive, however, is probably their salary. On the other hand, according to this theory it would be rather an incentive than an equitable reward inducing research.<sup>73</sup> Companies compete in a race to the register the outcome of which almost resembles a lottery,<sup>74</sup> as is best illustrated by the case of *Genentech's Patent*,<sup>75</sup> in which five companies worked on the same invention but only one could be rewarded with a patent. This leads to the next argument against this approach. Time invested in research is wasted when several individuals work towards the same breakthrough.<sup>76</sup> Finally, certain inventions would simply be made even without a view to future profits.<sup>77</sup>

The last of the typical approaches in the discussion about the pros and cons of patents is the thesis that only with the incentive of a patent inventors can be induced to disclose their creations.<sup>78</sup> However, this thesis too can be contested. First, there are some inventors that simply *like* to publish their products. Secondly, even if an inventor decided not to disclose an invention, others would come up with the same result.<sup>79</sup>

The most recent attempt to provide a justification for the patent system came in form of the so-called "prospect theory".<sup>80</sup> This theory combines elements of the reward theory and the economic approaches. Its name was derived from the prospectors who were holders of nineteenth-century mining claims to which *Kitch* drew an analogy. Converted to patent terms this would mean that the first person to receive the patent would get the right to exploit the respective area of his patent for the future.<sup>81</sup> According to the theory, this would lead to the most efficient allocation of technological opportunities. The underlying thought is taken from the economic analysis of law: technological information is valuable since technological progress is desirable for society. The most effective way to treat such information, *Posner* argues, is to regard it as property and thus

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<sup>72</sup> *Penrose*, *supra* note 62, at p. 34.

<sup>73</sup> *Oddi*, *supra* note 55, at pp. 1109, 1110.

<sup>74</sup> See *F.M. Scherer*, *Industrial Market Structure and Economic Performance*, Chicago, 1970, p. 389.

<sup>75</sup> *Genentech's Patent*, R.P.C., 1989, pp. 147, 281.

<sup>76</sup> See *Penrose*, *supra* note 62, at p. 36.

<sup>77</sup> *Torremans*, *supra* note 67, at p. 40.

<sup>78</sup> *Penrose*, *supra* note 62, at p. 32.

<sup>79</sup> *Oddi*, *supra* note 55, at p. 1110.

<sup>80</sup> *E.W. Kitch*, *The Nature and Function of the Patent System*, 20 *J. L. & Econ.* (1977), p. 265, see also *Oddi*, *supra* note 55, at p. 1110 et seq.; *J. Cohen & M. Lemley*, *Patent Scope and Innovation in the Software Industry*, 89 *Calif. L. Rev.* 2001, pp. 1, 14 et seq.

<sup>81</sup> See *Oddi*, *supra* note 55, at p. 1110, 1111; *Cohen & Lemley*, *supra* note 80, at p. 14.



maximize its benefits.<sup>82</sup> This approach was praised abandoning the “orthodox” perception of patents as rewards.<sup>83</sup> However, the way in which the theory tries to incorporate this insight has to face strong criticism.<sup>84</sup> In particular, it is argued that the mere prospect of economic success as such could not lead to patentability. Rather than looking at technical solutions for technical problems provided by patents this theory would treat the patent application as an investment.<sup>85</sup> Furthermore, the thesis that maximization of benefits can best be realized by treating the information as private property is not uncontested. Economic theory suggests that goods should sell for their reproduction costs rather than the costs it takes to receive the information.<sup>86</sup> Finally, commercial success always remains an irrelevant factor in the determination of patentability.<sup>87</sup> The mere fact that a product sells successfully does not mean that its technical contribution is sufficient according to the rules enunciated above; while a patent does not, *per se*, guarantee economic success.

Hence, all attempts to justify the patent system as such find themselves in a difficult position. Their ability to provide acceptable reasons for software patents in particular is very moderate. A first inference for the present problem of software patentability is therefore that a system with so few pre-eminent advantages should stay under supervision and should not be unrestricted. However, before a final conclusion there are five more points which remain to be considered.

#### *b) Competition Law Aspects and Inhibition of Technological Progress*

Since patents grant monopolies, patents and free competition represent a typical conflicting area in law. While monopolies as such are not necessarily considered bad, the abuse of a monopoly is.<sup>88</sup> Case law provides interesting examples of how enterprises try to (mis-)use patents to gain a bigger market share. One of the most imminent is the *State Street*<sup>89</sup> case. Here, the factual background of this case is important, especially the part that cannot be found in the case reports. At the time of the lawsuit, State Street Bank & Trust, Co. had 44% US market share in the financial services sector. Signature Financial Group, Inc. was significantly smaller. The latter were granted the disputed patent for a computer-implemented business method; they refused to give a license to State Street, and tried to cut into State Street’s market share by alleging patent infringement.<sup>90</sup> However, this

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<sup>82</sup> R.A. Posner, *Economic Analysis of Law* (5th ed.), Aspen, 1998, p. 38.

<sup>83</sup> See R.P. Merges, *Commercial Success and Patent Standards: Economic Perspectives on Innovation*, 76 Calif. L. Rev. 1988, pp. 805, 840.

<sup>84</sup> Id. at pp. 840, 841.

<sup>85</sup> Id.

<sup>86</sup> Perelman, *supra* note 68, at p. 97.

<sup>87</sup> Merges, *supra* note 83, at pp. 838, 839.

<sup>88</sup> See Kamperman Sanders, *supra* note 67, at p. 116.

<sup>89</sup> *State Street*, *supra* note 3, at p. 1368.

<sup>90</sup> See W.T. Ellis & A.C. Chatterjee, *A Seismic Federal Circuit Precedent Makes Patents a Potent Financial Services Weapon*, IP Magazine, November 1998.

case does not provide a legal basis to directly attack the consistency of the conduct of the undertaking with competition law; rather it serves to illustrate the aggressive use of patents.

In comparison, the case of *Amazon.com v. Barnesandnoble.com*<sup>91</sup> can possibly offer more grounds to contest such behavior of companies on the basis of competition law. Here, the leading online-bookseller challenged its competitor for patent infringement less than a month after the patent was granted.<sup>92</sup> The claimed invention was a "1-Click-Shopping"-feature on Amazon's website. Barnesandnoble.com used a similar method. IP and IT experts alike strongly criticized the issue of this patent which they think was obvious.<sup>93</sup> Consequently, the CAFC vacated and lifted the District Court's injunction for this very likelihood.<sup>94</sup> Unfortunately for lawyers, the case has now been settled confidentially.<sup>95</sup> However, although sometimes overlooked, US antitrust case law provides some interesting working points for this case. A combination of the findings of two decisions may shed some light on a possible solution to the problem of Amazon's attitude that the court might have considered. In *Morton Salt, Co. v. G.S. Suppiger, Co.* it was held that patent misuse can be established on grounds of public policy.<sup>96</sup> What exactly is covered by public policy was later explained in *Mallinckrodt, Inc. v. Medipart, Inc.*: The patent misuse doctrine was created:

to restrain practices that did not in themselves violate any law, but that drew anti-competitive strength from the patent right, and thus were deemed to be contrary to public policy.<sup>97</sup>

The *ratio* of these two cases means that the use of anti-competitive strength derived from the patent right contravenes public policy. As illustrated above, this is exactly what happened in *Amazon.com*. In 1988 though, Congress passed the Patent Misuse Reform Act in response to criticism from the industry, introducing a rule of reason safeguard.<sup>98</sup> Whether the present case would meet these criteria and fall under the safeguard is unknown. The District Court did not consider this possibility; and the CAFC did not have reason to do so since it doubted the non-obviousness in the first place.<sup>99</sup> While this case has now settled, in future cases it would be worthwhile keeping the patent misuse option in mind.

<sup>91</sup> See *Amazon.com I* and *II*, *supra* note 4.

<sup>92</sup> See *C. King*, *Abort, Retry, Fail: Protection for Software-Related Inventions in the Wake of State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 85 *Cornell L. Rev.* 2000, pp. 1118, 1157, note 260.

<sup>93</sup> *S. Shulman*, *Software Patents Tangle the Web*, *Tech. Rev.*, March/April 2000, available at <http://www.technologyreview.com>, cited in *King*, *supra* note 92.

<sup>94</sup> *Amazon.com II*, *supra* note 4.

<sup>95</sup> See *Wolverton*, *supra* note 4.

<sup>96</sup> *Morton Salt Co. v. G.S. Suppiger Co.*, 314 U.S. 488, 491, 492 (1942).

<sup>97</sup> *Mallinckrodt, Inc. v. Medipart, Inc. and Jerry A. Alexander*, 976 F.2d 700, 703 (Fed. Cir. 1992).

<sup>98</sup> See 35 U.S.C. § 271(d)(5).

<sup>99</sup> But see former US Deputy Attorney General for Economics in the Antitrust Division, Richard Gilbert, cited in *S.P. Reynolds*, *Antitrust and Patent Licensing: Cycles of Enforcement and Current Policy*, 37 *Jurimetrics J.* 1997, pp. 129, 147, 148.

Closely connected with the question of fair competition is the issue of competitiveness as a pre-condition of every true competition. Occasionally, it is argued that the broader scope of patentability in the US brings a competitive advantage for foreign companies, which can get American patent protection for software products, while US enterprises are unable to receive comparable protection abroad.<sup>100</sup> Although evidence has been produced that overall the opposite is true,<sup>101</sup> this may be correct in single cases and is not further contested here. The more important effect, though, is the readiness of companies to invest in research and development in a particular market, which is accompanied by the creation of jobs and social wealth.<sup>102</sup> Here it can be observed that investment tends to go where patentability is wider.<sup>103</sup> The effect described by *North* is not very realistic. Companies in the relevant market first file their patent applications in the US before they come to Europe. This is also confirmed by the fact that it is mainly the big industry players who account for almost all patent applications in computer-related inventions.<sup>104</sup> On the other hand, with regard to small and medium sized enterprises (SMEs), the procedure is very cost intensive for them, leaving them at a comparative disadvantage. Therefore, the patent system does not favor American or European companies but *large* companies in comparison to smaller ones.

This leads to the problem of cross-licensing. Since SMEs do not have the means to file every invention for patent issue and since it is also not possible to re-invent the wheel, they are dependent to a large extent on what has been patented before. Hence, they will always come into conflict with a patent belonging to one of the big companies.<sup>105</sup> Questioned whether they would rather face lengthy and costly patent infringement suits, or agree to cross-licensing with their own product, most of them take the latter option.<sup>106</sup> This leads to a permanent buy-out of the SMEs' know-how. The gap to the big players and *their* comparative advantage becomes bigger and bigger.

The last question raised by *Amazon.com* is whether software patents slow down innovation. It can briefly be answered in the affirmative. This is the result of the complex combination of copyright and patent protection for software at the same time and the technological basis underlying it. Industrial progress is

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<sup>100</sup> *North*, *supra* note 59, at p. 137.

<sup>101</sup> *J. Bessen & R.M. Hunt*, An Empirical Look at Software Patents, Working Paper No. 03-17, Federal Reserve Bank of Philadelphia, August 2003, p. 2, available at <http://www.researchinnovation.org/swpat.pdf>.

<sup>102</sup> This is also considered by the Committee on Legal Affairs and the Internal Market, see *McCarthy*, Report on the Proposal for a Directive of the European Parliament and of the Council on the Patentability of Computer-implemented Inventions, A5-0238/2003 final, Explanatory Statement, at p. 22.

<sup>103</sup> *Hart et al.*, *supra* note 47.

<sup>104</sup> *Id.*; *Bessen & Hunt*, *supra* note 101.

<sup>105</sup> See *Perelman*, *supra* note 68, at p. 98.

<sup>106</sup> Cf impressive example given by *R. Stallman*, The Danger of Software Patentability, Speech at Cambridge University, 25 March 2002, available at <http://lpf.ai.mit.edu/Patents/danger-of-software-patents.txt>; see also *C.R. Ramos & D.S. Berlin*, Three Ways to Protect Computer Software, 16 *Comp. Lawyer* 1999, no. 1, p. 16.

usually ensured by the duty to disclose the invention to the public. This enables others to work on improvements and reverse-engineer the invention. With software patents this is different though. Not all parts of a computer program, even in the US, enjoy patent protection. Only the actual invention is patentable; source or object codes are protected by copyright.<sup>107</sup> The description in the patent claims satisfying the duty of disclosure to the public is not useful for further development of software. Reverse-engineering though is not lawfully possible because this would constitute a copyright infringement.<sup>108</sup> Since broad claims often reserve a whole area for the patentee in which others would not be able to operate, the granting of patents for new software therefore slows down innovation. With the extension of patentability to business methods this is especially relevant for e-commerce.<sup>109</sup>

### 3. Latest Developments

So far the two systems in the US and in the EU have been depicted as they are in force today, including the European Commission's proposal for a Draft Directive as view of possible future legal development. The American approach to software patentability is more liberal than the European one. However, in both jurisdictions new developments have recently taken place.

#### a) In the US

At first, the American practice and in particular the decision in *AT&T Corp. v. Excel Communications* faced scholarly criticism.<sup>110</sup> In the meantime, there is also an ascertainable trend in US government thinking leading towards a more restrictive treatment of software patent applications. The Federal Trade Commission (FTC) has published a report discussing the proper balance between patent law on one hand and competition law on the other.<sup>111</sup> While maintaining the need for strong patent rights in this report the FTC argues much in favor of the reversion to a proper balance between the use of patents and fair competition. It acknowledges that this match has become uneven in the recent past. One reason for this development is the extension of patentable subject-matter as demonstrated in this article. *Cretsinger* has suggested that the subject-matter test should not be relied on exclusively. Further emphasis should be placed on the novelty and non-obviousness tests.<sup>112</sup> In fact, this is what

<sup>107</sup> Comprehensively *Cantzler*, *supra* note 68, at p. 423 et seq.

<sup>108</sup> See *Cohen & Lemley*, *supra* note 80, at pp. 23-26.

<sup>109</sup> Too short-sighted therefore *M.A. Haynes*, *Black Holes of Innovation in the Software Arts*, 14 *Berkeley Tech. L. J.* 1999, pp. 567, 574.

<sup>110</sup> *C.E. Cretsinger*, *Berkeley Technology Law Journal Annual Review of Law and Technology I, Intellectual Property, B. Patent, AT&T Corp. v. Excel Communications, Inc.*, 15 *Berkeley Tech. L. J.* 2000, pp. 165, 180 et seq.

<sup>111</sup> *Federal Trade Commission*, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*, October 2003, available at <http://www.ftc.gov/os/2003/10/innovationrpt.pdf>.

<sup>112</sup> *Cretsinger*, *supra* note 110, at p. 182 et seq.

happened after the US Court of Appeals for the Federal Circuit had reversed and remanded<sup>113</sup> the first instance decision in *AT&T Corp. v. Excel Communications*.<sup>114</sup> The US District Court for the District of Delaware on remand from the Federal Circuit detected a lack of novelty and in addition found the disputed patent claim obvious.<sup>115</sup> The FTC's suggestions now aim in the same direction. Hence, the FTC stresses that the grant of a patent on an obvious invention can harm competition.<sup>116</sup> It arrived at this conclusion after hearings in which representatives of different industries and stakeholders were interviewed and in which software companies in particular raised concerns regarding poor quality patents.<sup>117</sup> This is also very well illustrated by a submission Oracle Corporation made to the USPTO when this government agency requested opinions on software patentability in January 1994.<sup>118</sup>

The engineering and mechanical inventions for which patent protection was devised are often characterized by large "building block" inventions that can revolutionize a given mechanical process. Software, especially a complex program, seldom includes substantial leaps in technology, but rather consists of adept combinations of many ideas. Whether a software program is a good one does not generally depend as much on the newness of a specific technique, but instead depends on the unique combination of known algorithms and methods. Patents should not protect such methods of innovation.<sup>119</sup>

The danger of, *inter alia*, poor software patents lies, according to the FTC, in the potential for the holder of a questionable patent to suppress competition by blocking competitors from research through overbroad or invalid patents. This method can even be used as an aggressive tool as evidenced by the *Amazon.com* case. A second effect noticeable is the phenomenon of "defensive patents".<sup>120</sup> As also explained by *Jerry Baker* of Oracle (cf. *supra*) it is not possible in software development to re-invent the wheel over and over again. Accordingly, enterprises use existing technology and build upon it. However, using this technology is not allowed if it is protected by another patent, or, as explained, by copyright. That is why many companies strive to have own products patented so that they have something to offer in negotiations with others and can bargain for

<sup>113</sup> *AT&T Corp. v. Excel Communications, Inc. et al.*, *supra* note 21.

<sup>114</sup> *AT&T Corp. v. Excel Communications, Inc. et al.*, 1998 U.S. Dist. LEXIS 5346, No. CIV.A.96-434-SLR (D. Del. Mar. 27, 1998).

<sup>115</sup> *AT&T Corp. v. Excel Communications, Inc. et al.*, 1999 U.S. Dist. LEXIS 17871, 52 U.S.P.Q.2D (BNA) 1865 (D. Del. Oct. 25, 1999), 67 et seq.; cf. the obiter dictum by Judge Gerald E. Rosen considering a similar thought in *Electronic Planroom, Inc., and Essential Research, Inc. v. The McGraw-Hill Companies, Inc. et al.*, 135 F. Supp. 2d 805, 2001 U.S. Dist. LEXIS 4799 (Mar. 30, 2001).

<sup>116</sup> See only *FTC*, *supra* note 111, Executive Summary, at p. 3.

<sup>117</sup> *Id.* at p. 5, note 16.

<sup>118</sup> *USPTO*, Public Hearings on Software Patents, Transcripts, available at <http://www.uspto.gov/web/offices/com/hearings/#software>.

<sup>119</sup> *J. Baker*, Oracle Corporation – Patent Policy, Official Policy Statement Issues by Oracle Corporation, available at [http://www.uspto.gov/web/offices/com/hearings/software/sanjose/sj\\_baker.html](http://www.uspto.gov/web/offices/com/hearings/software/sanjose/sj_baker.html).

<sup>120</sup> *Id.*

licenses or cross-licenses. These patents would not be sought, though, if not for the sole purpose of the acquisition of increased bargaining power.<sup>121</sup> All these methods, as the FTC explains, contribute to extremely high patent costs in the form of license fees, legal counsel fees and litigation costs – funds that are prevented from being invested into R&D.<sup>122</sup> In the end, the FTC makes several recommendations as to what steps should be taken in the future to ensure a high standard of the patent system as well as to balance conflictive aspects of patent and competition law. In particular, the FTC proposes the consideration of the effects the grant of a certain patent will have on competition before extending the patentable subject-matter<sup>123</sup> and to tighten the legal standards used to evaluate whether a patent is obvious.<sup>124</sup>

### b) In the EU

In the more restrictive European system there was a tendency towards a more and more liberal handling of software patent claims culminating in the *IBM/Computer Program Product* decisions (cf. *supra*). In addition, while accepting the necessity of computer-implemented inventions the European Commission wanted to maintain the scope of patentability under the EPC, however clarify the conditions for patentability for the sake of legal certainty. With the latest changes introduced after discussions in the Legal Affairs and Internal Market Committee of the European Parliament and after a heated debate in the plenary, which shall not be concealed, the Commission's attempt is now running the risk of being thwarted. Intensive lobbying outside the parliament fueled the atmosphere; as did press declarations published shortly before the debate by several stakeholders such as the open-source community or the anti-globalization movement.<sup>125</sup> Members of the European Parliament complained that never before had they been subject to such intense lobbying.<sup>126</sup> If finally accepted in this form,<sup>127</sup> the amendments would not increase legal certainty. Instead the Directive would create new confusion. At this point, the most disturbing amendments shall briefly be illustrated.

- The concise rule of Art. 2 of the original draft has been inflated. The *prima facie* test was abandoned. Instead the amended Art. 2(b) speaks of confusing four elements to establish patentability. Furthermore, instead of sticking to

<sup>121</sup> Id; *FTC, supra* note 111, at p. 6; cf also *J. Seoane Pascual & R. García Fernández*, Software Patents and Their Impact in Europe, December 2000, available at [http://jungla.dit.upm.es/~joaquin/report\\_en.pdf](http://jungla.dit.upm.es/~joaquin/report_en.pdf).

<sup>122</sup> *FTC, supra* note 111, at p. 7; cf also *Bessen & Hunt, supra* note 101, at p. 21.

<sup>123</sup> *FTC, supra* note 111, at p. 14.

<sup>124</sup> Id., at p. 10.

<sup>125</sup> Cf for example, *Attac*, Open Letter to the German Members of the European Parliament, 1 September 2003, available at <http://www.attac.de/geig/mdep-brief.php>.

<sup>126</sup> *B. Kahin*, Why Europe Should Be Wary of Software Patents, MIP, December 2003/January 2004, p. 16.

<sup>127</sup> European Parliament, Minutes of 24/09/2003, Patentability of computer-implemented inventions, P5\_TC1-COD (2002) 0047.

the traditional European test of novelty, susceptibility of industrial application and inventive step (of which the test of non-obviousness was a partial, inherent element, cf. *supra*), the article now speaks of four requirements mentioning non-obviousness separately.

- “Processing [...] of information do[es] not belong to a field of technology, even where technical devices are employed for such purposes”, Art. 2(b) (new).
- Consequently, “innovations in the field of data processing” are not considered inventions, Art. 3 (new).
- Further consequently, “Member States shall ensure that the [...] processing [...] of information [...] can never constitute direct or indirect infringement of a patent”, Art. 7, para. 3 (new).

This list could be extended even further. That was alarming for the Council of Ministers and for the Commission to which the amended draft was forwarded again according to the co-decision procedure of Art. 251 EC Treaty. Consequently, the Irish Presidency of the Council published yet another version of the Draft Directive as a basis for a compromise.<sup>128</sup> This was necessary as the amendments proposed by the European Parliament are not only obscure and convoluted but threaten to undermine decades of developed case law under the EPC and would be completely inconsistent with national patent laws and traditional tests for patentability. Countless patents in the areas of telecommunications, digital video compression, video recorders or digital cameras, to name but a few, could be rendered worthless.<sup>129</sup> Parallel to the rights provided for by the EPC a new patent right *sui generis* could accrue from this directive.<sup>130</sup> The Presidency’s proposal, which reverses the direction of the Draft Directive again, has been discussed at the meeting of the Competitiveness Council on 17/18 May 2004.<sup>131</sup> After, once more, intense negotiations in the Council a new compromise was found strengthening the Presidency’s move back towards the Commission’s original proposal.<sup>132</sup>

<sup>128</sup> The Presidency, Council of the European Union, Proposal for a Directive of the European Parliament and of the Council on the patentability of computer-implemented inventions, COD (2002) 0047, 5570/04, Brussels, 29 January 2004.

<sup>129</sup> See comprehensively *A. Batteson*, Draft directive on the patentability of computer-implemented inventions: the European Parliament’s amendments – have the proposals been wrecked?, 20 *Comp. L. & Tech. Rep.* 2004, p. 12; *A. Batteson*, MIP, December 2003/January 2004, pp. 14, 15.

<sup>130</sup> *Batteson*, *supra* note 129, 20 *Comp. L. & Tech. Rep.* 2004, p. 15.

<sup>131</sup> Council of the European Union, Press Release 9081/04 (Presse 140), 2583<sup>rd</sup> Council Meeting, p.16.

<sup>132</sup> *Id.*

## D. Conclusion and Outlook

The differences between the American and European approaches to patentability of software inventions have been illustrated. It has been shown which areas of conflict there are according to the rules currently in force in both systems, which mean a wider scope of patentability of computer-implemented inventions in the US compared to Europe. While some sources have suggested that in the US the test of non-obviousness will be reconsidered more thoroughly again in the future to ensure a minimum standard of original contribution,<sup>133</sup> patent law in the US seems to have returned to the right path. The development in Europe, however, has been less satisfying most recently. The once well-intended – and rather well-drafted – proposal for a directive has been changed significantly. Some of the fears – such as the fear of patents being used to block or attack competitors – that the opponents to the original draft expressed are understandable as the critical examination of the patent system has shown. The existence of a patent system always involves distortions. Even more problems would emerge if the currently existing system in the EU was extended to new areas that brought with them such huge problems for fair competition and innovation as illustrated. Consequently, the question cannot be to introduce the most liberal software patent law ever. It is – and always has been according to the Commission's proposal – *a priori* limited. It can only be asked whether for the sake of legal clarity and certainty and to stimulate R&D there should be patents for inventions *using* new software, i.e. computer-implemented inventions.

In history, there once was a comparable situation to the current one. After the rise of patent systems in Europe in the late eighteenth and early nineteenth century they faced strong criticism throughout most of the nineteenth century and the Dutch patent law was even repealed in 1869.<sup>134</sup> This was mainly due to only minor progress in science from which a high number of simple mechanical patent claims followed.<sup>135</sup> Here the analogy can be drawn to the present problem: what simple mechanical devices stood for in the age of industrialization are minor software improvements for the age of the information society.<sup>136</sup>

Of course, it is not the abolition of the patent system that is advocated here. In a legal system that presently acknowledges the right of a patent it would be irresponsible to abolish that system since the consequences could not be predicted.<sup>137</sup> On the other hand – to make it very clear –, the fears of the

<sup>133</sup> See *FTC*, *supra* note 111, at p. 10; *Cretsinger*, *supra* note 110, at p. 182.

<sup>134</sup> *Penrose*, *supra* note 62, at p. 15. For an extensive discussion on the movement of patent abolitionism, in particular in Britain, see *M.D. Janis*, Symposium: Patent System Reform: Patent Abolitionism, 17 *Berkeley Tech. L. J.* 2002, p. 899.

<sup>135</sup> *Cornish*, *Intellectual Property*, *supra* note 26, at p. 130.

<sup>136</sup> See *Hart et al.*, *supra* note 47; cf also *McCarthy*, *supra* note 102, Explanatory Statement, at pp. 21, 22.

<sup>137</sup> *F. Machlup*, An Economic Review of the Patent System, Study of the Subcommittee on Patents, Trademarks, and Copyrights, Committee on the Judiciary, United States Senate,



opponents to the current legislative initiative are exaggerated in so far as they suggest that a gateway would be opened leading to a flood of trivial software patents. The condition of a “technical contribution” has been stressed and strengthened by the original Draft Directive. The Commission has always made clear that it wanted to build upon the EPO’s case law and at the same time comply with the requirements of Art. 27(1) TRIPS Agreement – a goal that would also be jeopardized again. It seems that in comparison to the latest European developments the US has learned from past experiences and has drawn conclusions. The ultimate goal must be a balanced solution between the maximum of advantages offered by a patent system and the minimum of negative consequences emanating from it for competition; and a balance between individual and group interests.<sup>138</sup> The European Commission has tried to do so when it took into consideration the responses to the discussion paper. It was probably hard to resist the pressure by lobby groups imposed during the draft period. Of the numerous drafts that have been submitted in the meantime the Commission’s original one was legally and technically the best, and from what can be predicted it also corresponded best with the demands of such legislation. The future development remains to be seen. The Council’s latest results will now be referred back to Parliament for second reading, which will not take place soon. In any case, the see-sawing in the development of the Draft Directive has already done much damage. Right now, the position is even more confused and troublesome than when the first draft was launched. Fortunately, the Commission has already announced that it deems the amendments inserted by Parliament unacceptable.<sup>139</sup> It even went so far to threaten to withdraw the proposal completely.<sup>140</sup> In that case the struggle for harmonization of the rules governing the patentability of computer-implemented inventions would be lost at least for the moment. Legal certainty for inventors and developers not only in the software industry but in all areas dealing with new technologies could then not be restored. For the time being, the question of patentability would continue to be governed by the EPC. Salvation could come in the form of a – general – European Community patent. A few months ago, a draft regulation regarding such a legal instrument was submitted.<sup>141</sup> In combination with the proposal to introduce a European Patent Court<sup>142</sup> and to establish the European Court of Justice as the last resort in patent matters<sup>143</sup> this new system could at some point in the future take over the whole interwoven framework of EPC, intended Draft Directive and national patent laws for the territory of the European Union. This

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Washington, D.C., 1958.

<sup>138</sup> *Penrose*, *supra* note 62, at p. 20, note 1.

<sup>139</sup> *Batteson*, *supra* note 130.

<sup>140</sup> See *id.*

<sup>141</sup> Council of the European Union, Proposal for a Council Regulation on the Community patent, Brussels, 11 June 2003, 2000/0177 (CNS).

<sup>142</sup> Proposal for a Council Decision conferring jurisdiction on the Court of Justice in disputes relating to the Community patent, COM (2003) 827 final.

<sup>143</sup> Proposal for a Council Decision establishing the Community Patent Court and concerning appeals before the Court of First Instance, COM (2003) 828 final.

would prevent the emergence of a potential software patent as a right *sui generis*. Moreover, in a legislative process to harmonize patent law in general on the EU level opponents to the disputed Draft Directive would not be able to exert as much pressure as in this specialized area. Thus, given the history and development of the disputed proposal, waiting for the Community patent would probably not be a bad alternative. However, unfortunately in the same Council meeting that agreed on the terms of a new compromise for the Directive on computer-implemented inventions it was also decided that at the moment expectations and attitudes towards the Community patent are too diverging, and thus the matter has been postponed for an indefinite period of time.<sup>144</sup> European governments sending their representatives to the Council of Ministers should become aware of what is at stake here rather quickly. Computer technology and the software industry are not any longer economic branches by themselves. The examples have shown that new technologies and software applications have penetrated almost every conventional industry. As the debate has shown to date, it is crucial that accurate information is provided as basis for decision-makers in such a specialized area. The floor should not be left to interest groups on either side that want to work for their own end, polemicize and – sometimes knowingly, sometimes with good intentions but in lack of correct information – misinform the public.

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<sup>144</sup> Council of the European Union, *supra* note 131, at p. 17.