

**A REVIEW OF THE ‘AS SUCH’ EXCLUSIONS  
TO PATENTABLE SUBJECT MATTER IN  
THE UNITED KINGDOM:  
LESSONS FOR CANADIAN AND AMERICAN  
COURTS**

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\* Assistant Professor, University of Windsor, Faculty of Law. I would like to acknowledge the generous funding provided by the Foundation for Legal Research (in particular), and the Law Foundation of Ontario (in general), in support of this research. The exceptional editorial work of the students at the *Albany Law Journal of Science & Technology* is also admirably acknowledged.

## ABSTRACT

In this paper, I examine the ‘as such’ exclusions to patentable subject matter found in sub-section 1(2) of the British *Patents Act 1977*. Sub-section 1(2) essentially covers abstract subject matter that is either ephemeral in nature (like discoveries, scientific theories and mathematical methods), or subject matter that is generally covered by the law of copyright insofar as the patent application relates to that those items in-and-of themselves (‘as such’).

This sub-section is of particular interest because it is a statutory codification of certain *a priori* ‘truths’ or ‘skills’ that seem inappropriate to protect through a patent monopoly. These exclusions tend to be found across other countries (like Canada and the United States) – a few of the exclusions are found in statute, but most of the sub-section 1(2) exclusions in Canada and the United States are judicially created. Examining the British approach to these exclusions is instructive of how other Courts might view these exemptions. Especially since British Courts appear to take a strict approach to excluding patents based on subject matter eligibility; and the exclusions from patentable subject matter found in countries like Canada and the United States are overwhelmingly judicially created despite the fact that patent statutes of those countries do not exclude many, or all, of the ‘as such’ exclusions.

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## I. INTRODUCTION

It is said that exclusions to patentable subject matter is driven primarily by the Courts. This is especially true in jurisdictions like Canada and the United States where the statutory exclusions to patentable subject matter are scant, or non-existent. For instance, the Canadian courts have held that higher life forms, methods for doing business, computer programs (*per se*), and medical treatments are all excluded from the definition of an invention<sup>1</sup> under Canada's Patent Act.<sup>2</sup> Despite the fact that Canada's Patent Act defines an invention as "any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter"<sup>3</sup> and only excludes "mere scientific principle[s] or abstract theorem[s]"<sup>4</sup> from patentability, nothing more. Even the US courts, which are known for their liberal and inclusive approach towards patentable subject matter, have recently excluded signals<sup>5</sup> and business methods<sup>6</sup> from patentable subject matter.<sup>7</sup>

However, the situation in the United Kingdom is markedly different. The Patents Act 1977<sup>8</sup> (as amended<sup>9</sup>) governs the law

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<sup>1</sup> See *Harvard Coll. v. Can. (Comm'r of Patents)*, [2002] 4 S.C.R. 45 (Can.) (holding higher forms of life unpatentable); *Tenn. Eastman Co. v. Can. (Comm'r of Patents)*, [1974] S.C.R. 111, ¶¶ 13–14 (Can.) (holding methods of medical treatment unpatentable); *Schlumberger Can. Ltd. v. Can. (Comm'r of Patents)*, [1982] 1 F.C. 845 (Can.) (holding computer programs, if the discovery involved is a method of calculation, are unpatentable).

<sup>2</sup> Patent Act, R.S.C., ch. P-4 (1985).

<sup>3</sup> *Id.* at § 2.

<sup>4</sup> *Id.* at § 27(8).

<sup>5</sup> *In re Nuijten*, 500 F.3d 1346, 1357 (Fed. Cir. 2007), *rev. denied en banc* 515 F.3d 1361 (Fed. Cir. 2008). This case is discussed *infra*.

<sup>6</sup> *In re Bilski*, 545 F.3d 943, 963, 966 (Fed. Cir. 2008).

<sup>7</sup> See also *Lab Corp. v. Metabolite*, 548 U.S. 124, 126 (2006) (Breyer, J., dissenting) (endorsing the exclusions of laws of nature, natural phenomena, and abstract ideas from patentability (citing *Diamond v. Diehr*, 450 U.S. 175, 185 (1981)) and mathematical algorithms and formulae (citing *Parker v. Flook*, 437 U.S. 584, 585 (1978))). The dissent also appears to view mathematical algorithms and formulae as falling under the umbrella of a law of nature. *Id.* at 129–31.

<sup>8</sup> Patents Act, 1977, c. 37 (U.K.).

<sup>9</sup> The Patent Act is current to December 13, 2007, and includes amendments to the 1977 Act made by:

the Copyright, Designs and Patents Act 1988

the Patents and Trade Marks (World Trade Organization) Regulations 1999

of patents in England and Wales. Sub-sections 1(2),<sup>10</sup> 1(3)<sup>11</sup>, 4A<sup>12</sup> and 76A<sup>13</sup> cover patentable subject matter.<sup>14</sup> The statutory

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the Patents (Amendment) Act 2000 [UK]  
 the Patents Regulations 2000  
 the Enterprise Act 2002  
 the Regulatory Reform (Patents) Order 2004  
 the Patents Act 2004  
 the Medicines (Marketing Authorisations etc.) Amendment Regulations 2005,  
 and the Intellectual Property (Enforcement, etc.) Regulations 2006  
 the Patents (Compulsory Licensing and Supplementary Protection  
 Certificates) Regulations 2007  
 the Legal Services Act 2007

UK Intellectual Property Office, Patents Legal Section, The Patents Act 1977 (as amended), Jan. 1, 2010, <http://www.ipo.gov.uk/patentsact1977.pdf> [hereinafter *Patents Legal Section*].

<sup>10</sup> It is hereby declared that the following (among other things) are not inventions for the purposes of this Act, that is to say, anything which consists of—

- (a) a discovery, scientific theory or mathematical method;
- (b) a literary, dramatic, musical or artistic work or any other aesthetic creation whatsoever;
- (c) a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer;
- (d) the presentation of information;

but the foregoing provision shall prevent anything from being treated as an invention for the purposes of this Act only to the extent that a patent or application for a patent relates to that thing as such.

Patents Act, 1977, c. 37 § 1(2) (U.K.).

<sup>11</sup> Implemented by the Patents Regulations 2000 (UK). “A patent shall not be granted for an invention the commercial exploitation of which would be contrary to public policy or morality.” Patent Regulations, 2000, S.I. 2000/2037, art. 1, ¶ 3 (U.K.)

<sup>12</sup> Implemented by the *Patents Act 2004*.

(1) A patent shall not be granted for the invention of—  
 (a) a method of treatment of the human or animal body by surgery or therapy, or

(b) a method of diagnosis practised on the human or animal body.

(2) Subsection (1) above does not apply to an invention consisting of a substance or composition for use in any such method.

(3) In the case of an invention consisting of a substance or composition for use in any such method, the fact that the substance or composition forms part of the state of the art shall not prevent the invention from being taken to be new if the use of the substance or composition in any such method does not form part of the state of the art.

(4) In the case of an invention consisting of a substance or composition for a specific use in any such method, the fact that the substance or composition forms part of the state of the art shall not prevent the invention from being taken to be new if that specific use does not form part of the state of the art.

Patent Act, 2004, c. 16, § 1(4A) (U.K.)

<sup>13</sup> Implemented by the *Patents Regulations 2000* (UK).

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1. An invention shall not be considered unpatentable solely on the ground that it concerns—
    - (a) a product consisting of or containing biological material; or
    - (b) a process by which biological material is produced, processed or used.
  2. Biological material which is isolated from its natural environment or produced by means of a technical process may be the subject of an invention even if it previously occurred in nature.
  3. The following are not patentable inventions -
    - (a) the human body, at the various stages of its formation and development, and the simple discovery of one of its elements, including the sequence or partial sequence of a gene;
    - (b) processes for cloning human beings;
    - (c) processes for modifying the germ line genetic identity of human beings;
    - (d) uses of human embryos for industrial or commercial purposes;
    - (e) processes for modifying the genetic identity of animals which are likely to cause them suffering without any substantial medical benefit to man or animal, and also animals resulting from such processes;
    - (f) any variety of animal or plant or any essentially biological process for the production of animals or plants, not being a micro-biological or other technical process or the product of such a process.
  4. Inventions which concern plants or animals may be patentable if the technical feasibility of the invention is not confined to a particular plant or animal variety.
  5. An element isolated from the human body or otherwise produced by means of a technical process, including the sequence or partial sequence of a gene, may constitute a patentable invention, even if the structure of that element is identical to that of a natural element.
  6. The industrial application of a sequence or partial sequence of a gene must be disclosed in the patent application as filed.
  7. The protection conferred by a patent on a biological material possessing specific characteristics as a result of the invention shall extend to any biological material derived from that biological material through propagation or multiplication in an identical or divergent form and possessing those same characteristics.
  8. The protection conferred by a patent on a process that enables a biological material to be produced possessing specific characteristics as a result of the invention shall extend to biological material directly obtained through that process and to any other biological material derived from the directly obtained biological material through propagation or multiplication in an identical or divergent form and possessing those same characteristics.
  9. The protection conferred by a patent on a product containing or consisting of genetic information shall extend to all material, save as provided for in paragraph 3(a) above, in which the product is incorporated and in which the genetic information is contained and performs its function.
  10. The protection referred to in paragraphs 7, 8 and 9 above shall not extend to biological material obtained from the propagation or multiplication of biological material placed on the market by the proprietor of the patent or with his consent, where the multiplication or propagation necessarily results from the application for which the biological material was marketed, provided that the material obtained is not subsequently used for other propagation or multiplication.

Patent Regulations, 2000, S.I. 2000/2037, art. 1, ¶ 76(A)(1–10) (U.K.).

exclusions are therefore more numerous and legislatively explicit than comparable American<sup>15</sup> or Canadian<sup>16</sup> statutes.

The paper focuses on the exclusions set out in sub-section 1(2) – the ‘as such’ exclusions. Sub-section 1(2) essentially covers abstract subject matter that is either ephemeral in nature (like discoveries, scientific theories and mathematical methods), or subject matter that is generally covered by the law of copyright insofar as the patent application relates to that those items in-and-of themselves (‘as such’). This sub-section is of particular interest because it is a statutory codification of certain *a priori* ‘truths’ or ‘skills’ that seem inappropriate to protect through a patent monopoly. These exclusions tend to be found across other countries (like Canada and the United States) – a few of the exclusions are found in statute, but most of the sub-section 1(2) exclusions in Canada and the United States are judicially created.<sup>17</sup> Examining the British approach to these exclusions is instructive of how other Courts might view these exemptions. Especially since British Courts appear to take a strict approach to excluding patents based on subject matter eligibility; and the exclusions from patentable subject matter found in countries like Canada and the United States are overwhelmingly judicially created despite the fact that patent statutes of those countries do not exclude many, or all, of the ‘as such’ exclusions.<sup>18</sup>

Interestingly, even though the United Kingdom is encumbered with more statutory exclusions to patentable subject matter than other jurisdictions (like Canada the United States), the UK courts appear more willing to construe these exclusions strictly and narrowly, in furtherance of the goals of the patent system itself. I suggest that this is the approach that all courts should take in assessing the patentability of an ‘invention’; since broad

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<sup>14</sup> Several additional works, some of which are not explicitly cited, have been helpful in distilling the recent movements in British law. *See generally* CONTEMPORARY INTELLECTUAL PROPERTY LAW AND POLICY (Hector MacQueen, Charlotte Waelde & Graeme Laurie, eds., Oxford University Press 2008); INTELLECTUAL PROPERTY LAW (Jennifer Davis ed., Oxford University Press 3rd ed., 2008) (2001); INTELLECTUAL PROPERTY PATENTS, COPYRIGHT, TRADE MARKS AND ALLIED RIGHTS (W.R. Cornish ed., Sweet & Maxwell, 6th ed., 2007) (1981).

<sup>15</sup> 35 U.S.C. § 101 (1952).

<sup>16</sup> Patent Act, R.S.C., c. P-4 (1985).

<sup>17</sup> *See* Marc J. Pensabene, Address at the Joint Patent Practice Seminar: Non-U.S. Business Method Patents 1 (2002), *available at* [http://www.fitzpatrickcella.com/images/pub\\_attachment/attachment229.pdf](http://www.fitzpatrickcella.com/images/pub_attachment/attachment229.pdf).

<sup>18</sup> *See id.* at 3.

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categorical exclusions of patentable subject matter by the courts defeat the underlying purposes of the patent system by foreclosing entire avenues of progress *ab initio*. Canadian and American courts should follow the English approach, and place greater attention on the other hallmarks of patentability – novelty, inventiveness and utility – and forgo undue judicial activism in the area of patentable subject matter (especially where the subject matter in question can be made to fit within definition of invention, even if slightly uncomfortably).

Before I examine the jurisprudence surrounding the ‘as such’ exclusions, a word about the actual drafting of the sub-section. Sub-section 1(2) of the *Patents Act 1977* states that “[i]t is hereby declared that the following (among other things) are not inventions . . . .”<sup>19</sup> The phrase “among other things” suggests that there are other types of subject matter that may be excluded from patentability. However, the Court of Appeal in *Chiron Corp v. Organon Teknika, Ltd.*<sup>20</sup> took the opportunity, albeit in *obiter*, to dispel this view, stating:

[W]e do not consider that the words ‘(among other things )’ open up a new range of objections to the conclusion that new is an invention. Rather it is a recognition that that sub-section is not exhaustive and has therefore not changed the law any further than the subsection itself expressly provides. It seems to us that any other conclusion would be inconsistent with the different emphasis apparent in the European Patent Convention.<sup>21</sup>

The Court was undoubtedly correct in adopting this view. Especially since sub-section 130(7) of the *Patents Act 1977* (discussed *infra*.) deems the Act to be equivalent to the corresponding provisions of the EPC.<sup>22</sup> The provision must be read down to state “among other things *within this Act*”, since there are other exclusions from patentability found elsewhere in the Act (namely, sub-sections 1(3), 4A and 76A).

## II. THE ‘AS SUCH’ EXCLUSIONS

The ‘as such’ exclusions to patentability refers to subject

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<sup>19</sup> Patents Act, 1977, c. 37, § 1(2) (U.K.).

<sup>20</sup> [1996] RPC 535.

<sup>21</sup> *Id.* at 606.

<sup>22</sup> Patents Act, 1977, c. 37, § 130(7) (U.K.), *reprinted in* Patents Legal Section, *supra* note 9.

matter excluded under sub-section 1(2) of the *Patents Act 1977*.<sup>23</sup> Sub-section 1(2) essentially covers abstract subject matter that is either ephemeral in nature (like discoveries, scientific theories and mathematical methods), or subject matter that is generally covered by the law of copyright<sup>24</sup> insofar as the patent application relates to that those items in-and-of themselves ('as such'). The underlying policy of this sub-section prevents the strong monopolization<sup>25</sup> of subject matter that lacks a technical result or effect.<sup>26</sup>

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<sup>23</sup> Patents Act, 1977, c. 37, § 1(2), (U.K.), *reprinted in* Patents Legal Section, *supra* note 9. The Patents Act 1949, later repealed by the Patents Act 1977, contained no such exclusions to patentable subject matter. *See generally*, Patents Act, 1949, 12, 13 & 14 Geo. 6, c. 87, §§ 1(1), (2), 6(5) (U.K.), *repealed by* Patents Act, 1977, c.37, § 1(2), (U.K.) (noting the proper application process, but does not mention exclusions to patentable subject matter). As noted earlier, the exclusions to patentability in the Patents Act 1977 were intended to implement Articles 52 and 53 of the EPC. *See* European Patent Convention, Art. 52, 1973, *available at* <http://www.epo.org/patents/law/legal-texts/html/epc/1973/e/ar52.html>; European Patent Convention, Art. 53, 1973, *available at* <http://www.epo.org/patents/law/legal-texts/html/epc/1973/e/ar53.html>.

<sup>24</sup> [A] discovery, scientific theory or mathematical method; . . . a literary, dramatic, musical or artistic work or any other aesthetic creation whatsoever; . . . a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer; . . . [and] the presentation of information [are excluded from patentability]. Patents Act, 1977, c. 37 § 1(2), (U.K.), *reprinted in* Patents Legal Section, *supra* note 9, at 8.

<sup>25</sup> *See* Jon Grossman, *Strategic Licensing by Leveraging Your IP Position*, 706 PRAC. L. INST. 165, 175 (2002). Some of this subject matter is already protected through the law of copyright, designs, and/or sui generis database protection. Hence my reference to the 'strong monopoly' that the patent system produces, as opposed to weaker monopolies, if any, under copyright, designs or database protection.

<sup>26</sup> Although, Justice Pumfrey might disagree with my neat categorization, he recently remarked that excluded subject matter under sub-section 1(2) have nothing in common:

[T]he would-be analyst needs to consider whether the excluded matters have anything in common. In my view, they do not. They are a heterogeneous collection, some of which (aesthetic creations) have their own form of protection, others of which (discoveries, mathematical methods and scientific theories) have never been accepted as suitable subjects for monopolies in themselves, on obvious but different policy grounds. The problems are really caused by (c) and (d), which, by reason of their exclusion only to the extent that the patent relates to the subject-matter as such, are remarkably difficult to assess in cases lying near the boundary, particularly as it is difficult to discern any underlying policy. To take a straightforward example, do we only exclude computer programs as such because computer programs are protected by copyright, like aesthetic creations which can likewise be used

Indeed, sub-section 1(2) was intended to implement Article 52 of the EPC *inter alia* (despite the subtle difference in drafting between the two).<sup>27</sup> The subtle differences, “which must remain shrouded in mystery,”<sup>28</sup> are saved by the provisions of sub-section 130 (7) of the *Patents Act 1977* which states that the provisions “are so framed as to have, as nearly as practicable, the same effects in the United Kingdom as the corresponding provisions of the European Patent Convention.”<sup>29</sup>

British judgments tend to rely upon the original language from the EPC primarily due its transposability with decisions of the European Patent Office, an arm of the European Patent Organisation, which administers the EPC.<sup>30</sup> The European Patent Office provides for a centralization administration, prosecution, opposition, appeals and grant of patents filed under the EPC;<sup>31</sup> although the enforcement and infringement of patents granted under the EPC (“European patents”<sup>32</sup>) are still a left to

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industrially? Or is there a practical objection, in that this is an area which is exceptionally difficult to search? Or is there some other reason? Whatever the reason, it may possibly be that it is not the same as the reason for excluding methods of doing business.

Shopalotto.Com Ltd’s Patent Application, [2006] R.P.C. 7 (Pat.) (U.K.).

<sup>27</sup> *Compare* Patents Act, 1977, c. 37, § 1(2) (U.K.), reprinted in Patents Legal Section, *supra* note 9, at 8 (stating that a discovery or theory, as well as stating specific aesthetic works that are not patentable, activities such as playing a game and the presentation of information are not patentable) with European Patent Convention, Art. 52, 1973, available at <http://www.epo.org/patents/legal/legal-texts/html/epc/1973/e/ar52.html> (stating that discoveries, general aesthetic creations, activities such as game playing and presentations of information are not patentable).

<sup>28</sup> Per Pumfrey J., in Shopalotto.Com Ltd’s Patent Application, [2006] R.P.C. 7 (Pat.) (U.K.). Although, one can speculate that the divergence is merely due to the author’s prerogative, especially in light of sub-section 130(7) of the Patents Act 1977, discussed *infra* Patents Act, 1977, c. 37, § 130(7) (U.K.), reprinted in Patents Legal Section, *supra* note 9, at 79.

<sup>29</sup> Patents Act, 1977, c. 37, § 130(7) (U.K.), reprinted in Patents Legal Section, *supra* note 9, at 79.

<sup>30</sup> See generally EPO.Org, About Us, <http://www.epo.org/about-us/epo.html> (last visited Mar. 24, 2010) (noting that the European Patent Organization was set up based on the European Patent Convention).

<sup>31</sup> EPO.Org, Activities, <http://www.epo.org/about-us/office/activities.html> (last visited Mar. 24, 2010).

<sup>32</sup> Article 2 (1) of the EPC expressly states that “[p]atents granted by virtue of this Convention shall be called European patents,” despite the misnomer that such patents are only enforceable in those Member States designated on the patent application itself, and not ‘European’ wide. European Patent

the Courts of member states.<sup>33</sup> Recently, the House of Lords in *Generics (UK) Ltd & Ors v H Lundbeck A/S*<sup>34</sup> also expressed the view that UK patent law should align itself, “so far as possible,” with the jurisprudence of the EPO, especially where the matter had been referred to, and decided upon, by an Enlarged Board of Appeal.<sup>35</sup>

#### A. DISCOVERIES, SCIENTIFIC THEORIES OR MATHEMATICAL METHODS

The exclusion of pure discoveries, scientific theories or mathematical methods from patentability stems from the fact that these subject matter have always existed. They are ‘truths’ – whether physical, scientific or mathematical. “An invention is a practical product or process, not information about the natural world.”<sup>36</sup> However, akin to the Canadian Patent Act’s use of the

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Convention, Art. 2, 1973, available at <http://www.epo.org/patents/law/legal-texts/html/epc/1973/e/ar2.html>.

<sup>33</sup> Per Article 64(3), “[a]ny infringement of a European patent shall be dealt with by national law.” European Patent Convention, Art. 2, 1973, available at <http://www.epo.org/patents/law/legal-texts/html/epc/1973/e/ar64.html>. The following countries are contracting States to the EPC: Austria, Belgium, Bulgaria, Switzerland, Cyprus, Czech Republic, Germany, Denmark, Estonia, Spain, Finland, France, United Kingdom, Greece, Croatia, Hungary, Ireland, Iceland, Italy, Liechtenstein, Lithuania, Luxembourg, Latvia, Monaco, Former Yugoslav Republic of Macedonia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Sweden, Slovenia, Slovakia and Turkey. EPO.Org, Member States of the European Patent Organization, <http://www.epo.org/about-us/epo/member-states.html> (last visited Mar. 24, 2010). By agreement, the following countries will recognize European patents on request: Albania, Bosnia and Herzegovina, and Serbia. *Id.*

<sup>34</sup> [2009] Bus. L.R. 828, 840 (H.L.) (U.K.).

<sup>35</sup> *Id.* at 829; see *id.* (*Foscote, L.*). The earlier remarks of Lord Hoffman in speaking in the context of section 2 of the *Patents Act 1977*, on novelty:

It is therefore the duty of the United Kingdom courts to construe section 2 so that, so far as possible, it has the same effect as Article 54. For this purpose, it must have regard to the decisions of the European Patent Office (“EPO”) on the construction of the EPC. These decisions are not strictly binding upon courts in the United Kingdom but they are of great persuasive authority; first, because they are decisions of expert courts (the Boards of Appeal and Enlarged Board of Appeal of the EPO) involved daily in the administration of the EPC and secondly, because it would be highly undesirable for the provisions of the EPC to be construed differently in the EPO from the way they are interpreted in the national courts of a Contracting State.

*Merrell Dow Pharm. v. HN Norton & Co.*, [1996] R.P.C. 76, 82 (H.L.) (U.K.).

<sup>36</sup> *Kirin-Amgen Inc. v. Hoechst Marion Roussel*, [2005] R.P.C. 9,196 (H.L.) (U.K.); see also *Genentech Inc.’s Patent*, [1987] R.P.C. 553, 556 (Pat.) (U.K.) (“It

word “mere” in its statutory exclusion, the *Patents Act 1977* precludes the patenting of these things ‘as such.’ Where there is a practical embodiment of a discovery, theory or mathematical method, the subject matter becomes eligible for patentability,<sup>37</sup> even if the manner of devise and use is self-evident.<sup>38</sup> The EPO’s Technical Board of Appeal has also confirmed and endorsed this approach in *VICOM/Computer-related invention*.<sup>39</sup> In *VICOM*, a special algorithm within a computer program was used to enhance the quality of an image. The Technical Board of Appeal held that the application was not directed to a mathematical method ‘as such’ because:

A basic difference between a mathematical method and a technical process can be seen, however, in the fact that a mathematical method or a mathematical algorithm is carried out on numbers (whatever these numbers may represent) and provides a result also in numerical form, the mathematical method or algorithm being only an abstract concept prescribing how to operate on the numbers. No direct technical result is produced by the method as such. In contrast thereto, if a mathematical method is used in a technical process, that process is carried out on a physical entity (which may be a material object but equally an image stored as an electric signal) by some technical means implementing the method and provides as its result a certain change in that entity. The technical means might include a computer comprising suitable hardware or an appropriately programmed general purpose

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is trite law that you cannot patent a discovery, but if on the basis of that discovery you can tell people how it can be usefully employed, then a patentable invention may result”); *Chiron Corp. v. Organon Teknika Ltd.*, [1996] R.P.C. 535, 574–75 (C.A.) (U.K.) (noting there needs to be more than discovery to be patented).

<sup>37</sup> [I]t is helpful to have in mind the principle of patent law, well established before the Act, that an idea or discovery as such is not patentable. It is the practical application of an idea or discovery which leads to patentability. It leads to patentability even if, as frequently happens, the practical application of the discovery is inherent in the discovery itself or is obvious once the discovery has been made and stated.

Gale’s Patent Application, [1991] R.P.C. 305, 323 (Pat.) (U.K.).

<sup>38</sup> See *Genentech Inc’s Patent (Human Growth Hormone)*, [1989] R.P.C. 147, 202 (C.A.) (U.K.); *CFPH LLC’s Patent Applications*, [2006] R.P.C. 5, 269 (Pat.) (U.K.). Both judgments use ‘obvious’ instead of self-evident. I have preferred the latter due to the ‘obvious’ implications for patent infringement and revocation.

<sup>39</sup> *VICOM/Computer-related Invention*, [1987] E.P.O.R. 74, 79. [hereinafter *VICOM*].

computer.

The Board, therefore, is of the opinion that even if the idea underlying an invention may be considered to reside in a mathematical method a claim directed to a technical process in which the method is used does not seek protection for the mathematical method *as such*.<sup>40</sup>

However, biotechnological innovations present unique challenges to the otherwise straightforward exclusion of these types of subject matter from patentable subject matter (discoveries in particular). For instance, the Opposition Division of the EPO permitted relaxin (synthetic H-2 relaxin) to be patented in 1994.<sup>41</sup> Relaxin occurs naturally in the human body, and helps soften the pelvic bone and prepares the uterus for labour.<sup>42</sup> H-2 relaxin is a synthetically derived type of relaxin. The Opposition Division was of the view that:

[I]f a substance found in nature has first to be isolated from its surroundings and a process for obtaining it is developed, that process is patentable. Moreover, if this substance can be properly characterised by its structure and it is new in the absolute sense of having no previously recognised existence, then the substance *per se* may be patentable.<sup>43</sup>

Indeed, the Guidelines for Examination in the EPO go even further, and expressly permit patents on *existing* organisms insofar as they produce a ‘technical effect’:

To find a previously unrecognised substance occurring in nature is also mere discovery and therefore unpatentable. However, **if a substance found in nature can be shown to produce a technical effect, it may be patentable.** An example of such a case is that of a substance occurring in nature which is found to have an antibiotic effect. In addition, if a microorganism is discovered to exist in nature and to produce an antibiotic, the **microorganism itself may also be patentable as one aspect of the invention. Similarly, a gene which is discovered to exist in nature may be patentable if a technical effect is revealed,** e.g. its use in making a certain polypeptide or in gene

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<sup>40</sup> *Id.* at 79.

<sup>41</sup> Howard Florey/Relaxin, [1995] E.P.O.R. 541, 546.

<sup>42</sup> MacLennan AH, *The Role of the Hormone Relaxin in the Human Reproduction and Pelvic Girdle Relaxation*, SCANDINAVIAN J. OF RHEUMATOLOGY Supp. 88: 7–15 (1991), available at <http://www.ncbi.nlm.nih.gov/pubmed/2011710>.

<sup>43</sup> Howard Florey/Relaxin, *supra* note 41, at 548.

therapy.<sup>44</sup>

The European Biotechnology Directive also expressly states that “[b]iological material which is isolated from its natural environment or produced by means of a technical process may be the subject of an invention even if it previously occurred in nature.”<sup>45</sup>

While I favour a permissive approach to subject matter eligibility, the patentability of *naturally* occurring biological material is fraught with philosophical problems. Irrespective of the novelty of the process that isolates naturally-occurring biological material (like genes, cell lines, etc.), there is still the undeniable fact that such materials always existed. They are naturally-occurring. The patent bargain is improperly balanced against the public’s interest, if patents were construed in a manner that protects underlying biological material (which always existed). Artificially derived biotechnological inventions, on the other hands, are the proper subject matter deserving of patent protection by virtue of that artificiality. Since this *is* the type of innovation that the patent monopoly is intended to serve.

#### B. LITERARY, DRAMATIC, MUSICAL OR ARTISTIC WORK OR OTHER AESTHETIC CREATIONS

These exclusions are intended to cover subject matter which might otherwise be protected by the law of copyright and designs. In general, these creations also lack any *technical* contribution or *technical* effect *per se*; their contribution to humanity lies in the advancement of the arts, philosophy, literature and music, *inter alia*. However, when an otherwise aesthetic creation produces a technical effect, it will no longer be excluded from patentable subject matter.<sup>46</sup>

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<sup>44</sup> EUROPEAN PATENT OFFICE, GUIDELINES FOR EXAMINATION IN THE EUROPEAN PATENT OFFICE, Part C, § 2.3.1 (2005), *available at* [http://legis.obi.gr/ESPACE/DVD/legal\\_texts/gui\\_lines/e/c\\_iv\\_2\\_3\\_1.htm](http://legis.obi.gr/ESPACE/DVD/legal_texts/gui_lines/e/c_iv_2_3_1.htm) (emphasis added).

<sup>45</sup> THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION, DIRECTIVE 98/44/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 6 JULY 1998 ON THE LEGAL PROTECTION OF BIOTECHNOLOGICAL INVENTIONS, 31998L0044 (1998), *available at* <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31998L0044:EN:HTML>.

<sup>46</sup> *See* ITS Rubber Ltd’s Application, [1979] R.P.C. 318, 318 (noting the blue colour of a squash ball, although aesthetic in nature, also produced a technical effect by making the ball easier to see).

*C. SCHEMES, RULES OR METHODS FOR PERFORMING A MENTAL ACT, PLAYING GAMES OR DOING BUSINESS, OR A PROGRAM FOR A COMPUTER*

The exclusion of 'pure' mental acts (i.e. mental acts 'as such') from patentability is a sensible one. It essentially prevents the monopolisation of thought. Granting patent rights over *purely* mental steps would be impossible to assess in terms of novelty and practically unenforceable (indeed, it would defeat the truism that there is no right without a remedy (*ubi jus ibi remedium*)).<sup>47</sup> A recent example can be seen in *Halliburton Energy Services, Inc. v Smith International (North Sea) Ltd.*,<sup>48</sup> involving an infringement action relating to drill bits. The two patents in question both claimed monopolies over a method of designing roller cone drill bits by calculating, comparing and adjusting the formation(s) cut by the drill bit in question.<sup>49</sup> Justice Pumfrey declared that the claims, as written, were too broad. Although the invention, in practice, would have operated by means of computer software, he held that there was no such limitation on the claims as drafted.<sup>50</sup>

They were therefore directed towards ways of performing a

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<sup>47</sup> Duhaime.org, Law Legal Information Justice, <http://duhaime.org/LegalDictionary/U/UbiJusIbiRemedium.aspx> (last visited Mar. 24, 2010).

<sup>48</sup> [2006] R.P.C. 2 (Pat.) (U.K.).

<sup>49</sup> *Id.* at 26–27.

<sup>50</sup> Justice Pumfrey, would have permitted the claims to be amended, but he declared that both patents were invalid for insufficiency:

In the present case, claims 1 and 3 are directed purely to the intellectual content of a design process, and the criteria according to which decisions on the way to a design are made. They are not limited in terms to a computer program, although no doubt are so limited as a matter of reality. They are thus firmly within the forbidden region as schemes for performing a mental act. So I think that these claims are bad because they are too broad, but an amendment . . . should dispose of the problem.

It might be supposed that such amendment does not affect the position 'as a matter of substance', but I think this is quite wrong. The objection, in my view, is to width of claim alone when the method has potential industrial utility, that is, a potential technical effect. The objection to the claims in this case are to the form of the claim, not to the substance of the invention.

Both patents are invalid in their entirety for insufficiency. If they had not been insufficient, both patents would probably have survived the attack of obviousness made upon them. At present, both patents cover unpatentable subject matter, but I envisage that this defect could be cured by amendment, were it not for the insufficiency of the disclosure, which I do not believe can be cured in this way.

*Id.* at 93–94, 109.

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mental act.<sup>51</sup> The exclusion against purely mental steps is also commonly addressed in decisions concerning software programs, since software can be viewed as a series of steps (akin to a decision tree) used to automate or arrive at some result/function.<sup>52</sup>

Ways of playing games *per se* are also excluded from patentability.<sup>53</sup> This exclusion stems from the common concern of sub-section 1(2)(c) that patent rights should not be granted to intellectual/strategic activities that do not produce a technical effect as such.<sup>54</sup>

The exclusion was recently dealt with in *Shopalotto.Com Ltd.*,<sup>55</sup> where Justice Pumfrey (again) considered the Comptroller's refusal of a patent application for playing a lottery via the internet. Under the earlier *Patents and Designs Act 1907*,<sup>56</sup> the Intellectual Property Office had actually issued an Official Ruling which permitted the patenting of board games.<sup>57</sup> However, Justice Pumfrey held that this Official Ruling could no longer be relied upon, since it runs contrary to the intent of the

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<sup>51</sup> *Id.* at 93–94.

<sup>52</sup> See *Shopalotto.com Ltd's Patent Application*, [2005] EWHC 2416 (Pat) (discussing the unpatentability of discoveries or ideas as stated in *Fujitsu Ltd. Application*); see also *Dyancore Holdings Corp. v. U.S. Phillips Corp.*, et al, 363 F.3d 1263, 1268–70 (Fed. Cir. 2004)).

<sup>53</sup> Patents Act, 1977, c. 37, pt. I, § 1 (U.K.).

<sup>54</sup> *Id.*

<sup>55</sup> *Shopalotto.com*, [2005] EWHC 2416 (Pat.) (U.K.).

<sup>56</sup> Patents and Designs Act, 1907, c. 29, 7\_Edw\_7, available at [http://www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1907/cukpga\\_19070029\\_en\\_1](http://www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1907/cukpga_19070029_en_1).

<sup>57</sup> *Shopalotto.com*, [2005] EWHC 2416 (Pat) (U.K.) (quoting Mr. Kenrick's argument:

Counter and board games considered in relation to the definition of an invention contained in Section 93 of the Patents and Designs Acts, 1907 and 1919.

The question having arisen upon an Examiner's Report, whether a patent for a game of the above character should be refused where the only novel feature (apart from the rules of the game) lies in the particular character of the markings upon the board, the following Ruling was given:

It may be stated generally that where the claim made in cases such as this is to apparatus for playing a game, comprising one or more playing pieces and a board marked in a particular manner substantially as shown in drawings accompanying the Specification, the playing piece or pieces being moved in accordance with directions furnished in the Specification as to the manner in which the game is to be played, the requirements involved by the definition of an "invention" contained in Section 93 of the Acts will be held to be complied with, and the application will be subject only to such objection as may arise under Section 7 or otherwise in the normal procedure of examination.

current *Patent Act 1977*, which was intended to harmonize European patent law through the EPC.<sup>58</sup> Justice Pumfrey ultimately upheld the rejection of the Hearing Officer, but on different grounds. He held that the invention amounted to nothing more than a general purpose computer programmed to connect to the internet and access a lottery.<sup>59</sup> There was no technical problem that the invention solved.

The real question is whether this is a *relevant* technical effect, or, more crudely, whether there is enough technical effect: is there a technical effect over and above that to be expected from the mere loading of a program into a computer? From this sort of consideration there has developed an approach that I consider to be well established on the authorities, which is to take the claimed programmed computer, and ask what it contributes to the art over and above the fact that it covers a programmed computer. If there is a contribution outside the list of excluded matter, then the invention is patentable, but if the only contribution to the art lies in excluded subject matter, it is not patentable.

....

... An invention may be viewed as a solution to a concrete technical problem. Merely to program a computer so that it operates in a new way is not a solution to any technical problem, although the result may be considered to be a new machine. It follows that an inventive contribution cannot reside in excluded subject matter.<sup>60</sup>

Justice Pumfrey's *ratio* serves as a helpful introduction to the remaining two statutory exclusions, namely methods of doing business, and computer programs. The exclusion of methods of doing business *per se* from patentable subject matter reflects the illusory (but convenient) requirement that patentable subject matter ought to solve a technical problem, or produce a technical effect.<sup>61</sup> Methods of doing business (presumably) solve business problems, not technical ones. In *Merrill Lynch Inc's Patent Application*<sup>62</sup>, the Court of Appeal dealt with an application for an automated, computerized system for trading securities.<sup>63</sup> The Court held that the mere presence of a computer was not fatal to

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<sup>58</sup> *Shopalotto.com Ltd's Pat. App.*, [2006] R.P.C. 7 (P.C.), ¶ 4.

<sup>59</sup> *Id.* at ¶ 12.

<sup>60</sup> *Id.* at ¶¶ 9, 11.

<sup>61</sup> *Id.* at ¶¶ 9–12.

<sup>62</sup> [1989] R.P.C. 561 (C.A.).

<sup>63</sup> *Id.*

the application insofar as there was a technical effect.<sup>64</sup> However, the technical effect in this instance – the automation and improved efficiency of trading securities – was itself excluded as a method for doing business.<sup>65</sup> The technical effect cannot reside in excluded subject matter. Justice Fox, endorsing the decision in *VICOM*, held that:

“[D]ecisive is what the technical contribution the invention makes to the known art.” There must, I think, be some technical advance on the prior art in the form of a new result . . . .

. . . .

. . . [The present invention] is simply a method of doing business. **A data processing system operating to produce a novel technical result would normally be patentable. But it cannot, it seems to me, be patentable if the result itself is a prohibited item under section 1(2).** In the present case it is such a prohibited item.<sup>66</sup>

Shortly after the decision in *Merrill Lynch*, the Court of Appeal again considered the patentability of computer-related inventions in *Gale's Patent Application*<sup>67</sup>. In *Gale's Application* the applicant had devised an improved method of calculating square roots. He embedded his invention on a physical silicon chip; a read-only memory (ROM) unit.<sup>68</sup> The Hearing Officer had initially rejected the application on the basis that it was nothing more than a computer program on a ROM unit.<sup>69</sup> Justice Aldous of the Patents Court allowed the appeal. He held that:

A disc serves as a carrier for a program, as no doubt can a ROM. However a ROM is more than a carrier, it is a manufactured article having circuit connections which enables the program to be operated. A claim to a ROM with particular circuitry, albeit defined by functional steps, cannot to my mind be said to relate to the program or the functional steps as such.<sup>70</sup>

On appeal, the Court of Appeal rejected this line of reasoning. The Court of Appeal held that the technical advance, an improved method of calculating square roots, produced no effect

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<sup>64</sup> *Id.* at 568–69.

<sup>65</sup> *Id.* at 569.

<sup>66</sup> *Id.* (emphasis added).

<sup>67</sup> [1991] R.P.C. 305, 305-06 (C.A.).

<sup>68</sup> *Id.* at 305.

<sup>69</sup> *Id.* at 305–06. The application contained but a single claim. From a claims drafting perspective, and as practitioners are aware, it is incredibly simple to defeat patent applications with few, or a single, independent claim(s). *Id.* at 308.

<sup>70</sup> *Id.* at 317.

outside the computer nor did it solve a technical problem within the computer.<sup>71</sup> There was no doubt that an improved method for calculating square roots was itself un-patentable, and a ROM unit was a well known ‘artefact’ of the computer industry. Justice Browne-Wilkinson summarized the Court’s position:

[A] ROM... is a device of no inherent novelty. The mere incorporation of the programs in the ROM does not alter its nature; it remains a computer program. A computer program remains a computer program whether a [sic] contained in software or hardware... Moreover the result of the incorporation of Mr Gale’s “method of calculation” or “computer program” (both excluded matters) only produces another excluded matter...<sup>72</sup>

In *Fujitsu Ltd.*<sup>73</sup>, the Court of Appeal again examined the patentability of software which allowed chemists to model and design new chemical compounds. At trial, the Patents Court<sup>74</sup> had held that the invention amounted to a software-related invention that implemented a mental act.<sup>75</sup> The Court of Appeal found that the invention was indeed for software “as such”.<sup>76</sup> Justice Aldous adopted the reasoning of the Principal Examiner that:

[W]hat is disclosed is in substance a conventional computer system programmed to display pictures of crystal structures. While crystal structures undoubtedly do lie in a technical field... the pictures displayed are simply substitutions derived by taking part of one picture and superposing it on another picture and it seems to me that this process is not of a technical nature but is no more than a purely intellectual process of substitution... I do not dispute that a designer could use the pictures displayed in the process of designing a new compound..., but it still seems to me

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<sup>71</sup> *Id.* at 327–28. The Court was of the view that improving the speed at which a computer calculates square roots is not a technical problem that needed to be solved *per se.* *Id.*

<sup>72</sup> *Id.* at 333.

<sup>73</sup> *Fujitsu Ltd’s Pat. App.*, [1997] R.P.C. 608 (C.A.).

<sup>74</sup> *Fujitsu Ltd’s Pat. App.*, [1996] R.P.C. 511 (P.C.).

<sup>75</sup> *Id.* at 520–21, 526.

<sup>76</sup> *Fujitsu Ltd.*, [1997] R.P.C. 608, 619 (C.A.). Justice Aldous wrote:

The computer is conventional as is the display unit. The two displays of crystal structures are produced by the operator. The operator then provides the appropriate way of superposition and the program does the rest. The resulting display is the combined structure shown pictorially in a form that would in the past have been produced as a model. The only advance is the computer program which enables the combined structure to be portrayed quicker.

*Id.* at 618–19.

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that the substance of the invention disclosed is simply a conventional computer programmed to display the same images as were previously produced using plastic models and in my view this does not involve a technical advance of the kind which I am required to find.<sup>77</sup>

Justice Aldous also commented, in *obiter*, that the invention amounted to no more than a mental act.<sup>78</sup> Justice Pumfrey recently commented that these exclusions should be interpreted narrowly, as to protect advances in the computer industry<sup>79</sup> and keep the UK in-line, and competitive with, foreign markets and competitors (the US in particular).<sup>80</sup>

Indeed, in *Aerotel Ltd. v Telco Holdings Ltd.*,<sup>81</sup> the Court of Appeal proposed a four (4) part test for determining the patentability of an invention:

- “(1) properly construe the claim[;]
- (2) identify the actual contribution;
- (3) ask whether [the contribution] falls solely within the excluded subject matter;
- (4) check whether the actual or alleged contribution is actually technical in nature.”<sup>82</sup>

The *Aerotel* test is now said to be the “starting point”<sup>83</sup> for any discussion of patentability under sub-section 1(2). *Aerotel* dealt with a conjoined appeal between Aerotel Ltd and Telco Holdings Ltd., and a separate action involving Mr. Neal William Macrossan. Aerotel Ltd’s patent for making telephone calls using a special code was revoked by the judge of first instance in an infringement proceeding against Telco<sup>84</sup> (Aerotel subsequently

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<sup>77</sup> *Id.* at 617 (citation omitted).

<sup>78</sup> *Id.* at 619–21.

[I]t is necessary to look at the substance of the application when dealing with the question of whether it is patentable. A claim to a computer operating in a particular way is no more patentable than a claim to a computer program. A claim to a method of carrying out a calculation (a method of performing a mental act) is no more patentable when claimed as being done by a computer than when done on a piece of paper. Methods of performing mental acts, which means methods of the type performed mentally, are unpatentable, **unless some concept of technical contribution is present.**

*Id.* at 621(emphasis added).

<sup>79</sup> *Research In Motion UK Ltd. v Inpro Licensing SARL*, [2006] R.P.C. 20, ¶ 187 (P.C.).

<sup>80</sup> *Id.* at

<sup>81</sup> *Aerotel Ltd. v Telco Holdings Ltd.*, [2007] R.P.C. 7 (C.A.).

<sup>82</sup> *Id.* at ¶ 40.

<sup>83</sup> *Cappellini & Bloomberg, Re*, [2007] F.S.R. 26, ¶ 2 (P.C.).

<sup>84</sup> *Aerotel Ltd. v Telco Holdings Ltd.*, [2007] E.W.H.C. 997, ¶¶ 1, 22 (P.C.).

settled with Telco regarding the infringement, costs and damages). Macrossan's appeal stemmed from a rejection of Mr. Macrossan's patent application by the Intellectual Property Office (upheld by the judge of first instance).<sup>85</sup> The *ratio* pertaining to Aerotel Ltd. is largely irrelevant to subject matter eligibility. Macrossan's patent application, on the other hand, provided for a computerized means for incorporating a company.<sup>86</sup> The Court of Appeal examined Macrossan's invention its newly proposed four (4) part test. Macrossan's invention was held to be a program 'as such'. According to Justice Jacob:

We turn to the "computer program as such" objection. Here Mann J [the Trial Judge] and the hearing officer were unanimous in saying the exclusion applied and we agree. Applying the structured test, again there is no difficulty over step 1. Step 2 – what is the contribution? – is again straightforward. It is to provide a computer program (in practice probably an interactive website) which can be used to carry out the method. The hardware used is standard and is not part of the contribution. Step 3 – is the contribution solely of excluded matter? – is again easy. The contribution is just the devised program up and running. Step 4 – is that contribution technical? – is again easy. No. So the exclusion applies.<sup>87</sup>

While the Court of Appeal in *Aerotel* embraced the "technical effect" approach to determining the patentability of subject

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<sup>85</sup> *Id.* at ¶ 3.

<sup>86</sup> *Id.* ¶ 58.

We borrow the description of Mr Macrossan's application from Mann J and the hearing officer:

"The application claims a patent for an automated method of acquiring the documents necessary to incorporate a company. It involves a user sitting at a computer and communicating with a remote server, answering questions. Thereafter, in the words of the Decision:

"The essence of the invention is that by means of posing questions to a user in a number of stages, enough information is gleaned from the user's answers to produce the required documents. Questions posed in the second and subsequent stages are determined from previous answers provided and the user's answers are stored in a database structure. This process is repeated until the user has provided enough information to allow the documents legally required to create the corporate entity to be generated. A number of document templates are also stored and the data processor is configured to merge at least one of these templates with the user's answers to generate the required legal documents. The documents may then be sent in an electronic form to the user for the user to print out and submit, mailed to the user, or submitted to the appropriate registration authority on behalf of the user".

*Id.*

<sup>87</sup> *Id.* at ¶ 73.

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matter otherwise excluded under sub-section 1(2) of the Patents Act 1977; the EPO has tended to favour the “any hardware” approach for matters excluded under the corresponding Article 52 (2) of the EPC.<sup>88</sup> The Court of Appeal in *Aerotel* was mindful of this divergence and even suggested that the current President of the EPO (Alain Pompidou) should refer the matter to an Enlarged Board of Appeal for clarification. Mindful of its competence, the Court stated:

It is formally no business of ours to define questions to be asked of an Enlarged Board of Appeal. What we say now is only put forward in case the President of the EPO finds it helpful. If he thinks it pointless or arrogant of us to go this far, he is of course entirely free to ignore all we say. Nonetheless in the hope that there is a spirit of co-operation between national courts and the EPO we ventured to ask the parties what questions might be posed by the President of an Enlarged Board pursuant to Art.112. As we have said the British Comptroller of Patents has encouraged us in this course.

The Comptroller and Mr Thorley provided a joint suggestion and Mr Macrossan helpfully his. Having considered the drafts, the questions which we think might be put are as follows:

(1) What is the correct approach to adopt in determining whether an invention relates to subject matter that is excluded under Article 52?

(2) How should those elements of a claim that relate to excluded subject matter be treated when assessing whether an invention is novel and inventive under Articles 54 and 56?

(3) And specifically:

(a) Is an operative computer program loaded onto a medium such as a chip or hard drive of a computer excluded by Art.52(2) unless it produces a technical effect, if so what is meant by ‘technical effect’?

(b) What are the key characteristics of the method of doing business exclusion?<sup>89</sup>

The President of the EPO at that time<sup>90</sup> declined to refer the

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<sup>88</sup> The various approaches are set out in paragraph 26 of *Aerotel*. *Aerotel Ltd. v Telco Holdings Ltd.*, [2007] R.P.C. 7, ¶ 26 (C.A.).

<sup>89</sup> *Id.* at ¶¶ 75–76.

<sup>90</sup> For a discussion of G 3/08 by then-President of the EPO, Alison Brimelow, see *infra* n.96. For a recent discussion of this, see Noam Shemtov, *The Characteristics of Technical Character and the Ongoing Saga in the EPO and the English Courts*, 4 J. INTELL. PROP. L. & PRAC. 506 (2009).

issue to an Enlarged Board of Appeal.<sup>91</sup>

An example of this divergence can be found in *Pension Benefit Systems Partnership*<sup>92</sup>, where the EPO's Board of Appeal considered an invention aimed at automating the administration of pension funds. The Examining Division had rejected the application as a means of doing business, lacking any technical character (and therefore excluded from patentability of Articles 52 (2) and 52 (3) of the EPC).<sup>93</sup> The Board of Appeal upheld the refusal<sup>94</sup> and re-confirmed that any invention under the EPC inevitably possesses a technical character.<sup>95</sup> However, the Board went further and rejected that a technical feature, or effect, by

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<sup>91</sup>Salutations and headings aside, the entire text of the letter reads as follows:

I am writing to you to let you know that the [Aerotel] decision has led to a discussion within the EPO as to the possibility of referring questions regarding the exclusions to patentability set out in Article 52(2) EPC to the Enlarged board [*sic*]of Appeal.

On the basis of these discussions I have decided that at the moment there is an insufficient legal basis for a referral under Article 112(1 )(b) EPC. Leaving aside Board of Appeal case law the line of reasoning of which has been abandoned by later case law, I believe there are insufficient differences between current Board of Appeal decisions dealing with Article 52 EPC exclusions on important points of law that would justify a referral at this stage.

This of course does not mean that a clarification of certain issues by the Enlarged Board of Appeal would not be welcomed. The EPO will continue to monitor case law closely, whereby I believe the appropriate moment for a referral would be where the approach taken by one Board of Appeal would lead to the grant of a patent whereas the approach taken by another Board would not.

Letter from Professor Alain Pompidou, President, European Patent Office, to Jacob, L.J., *available at* <http://www.ipo.gov.uk/pro-types/pro-patent/p-law/p-pn/p-pn-subjectmatter/p-pn-subjectmatter-letter.htm>.

<sup>92</sup> *Pension Benefit Systems Partnership*, T 931/95 - 3.5.1 (2000), *available at* [http://www.bettinger.de/fileadmin/mediapool/downloads/Rechtsdatenbank/Patent/Urteile/T\\_0931\\_95\\_Pension\\_Benefit\\_System.pdf](http://www.bettinger.de/fileadmin/mediapool/downloads/Rechtsdatenbank/Patent/Urteile/T_0931_95_Pension_Benefit_System.pdf).

<sup>93</sup> *Id.* at ¶ 1.

<sup>94</sup> All the features of this claim are steps of processing and producing having purely administrative, actuarial and/or financial character. Processing and producing such information are typical steps of business and economic methods. Thus the invention as claimed does not go beyond a method of doing business as such and, therefore, is excluded from patentability under Article 52(2)(c) in combination with Article 52(3) EPC; the claim does not define an invention within the meaning of Article 52(1) EPC.

*Id.* at ¶ 3, at 10.

<sup>95</sup> "Having technical character is an implicit requirement of the EPC to be met by an invention in order to be an invention within the meaning of Article 52(1)EPC . . . ." *Id.* at ¶ 6, at 15.

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itself was enough, rather there needed to be a physical apparatus to bring excluded subject matter into the realm of patentability.

[T]he mere occurrence of technical features in a claim does thus not turn the subject-matter of the claim into an invention within the meaning of Article 52(1). Such an approach would be too formalistic and would not take due account of the term “invention” . . . .

. . .

. . . In the Board’s view a computer system suitably programmed for use in a particular field, even if that is the field of business and economy, has the character of a concrete apparatus in the sense of a physical entity, man-made for a utilitarian purpose and is thus an invention within the meaning of Article 52(1) EPC.<sup>96</sup>

This approach was confirmed by the Board of Appeal in *Auction Method/Hitachi*,<sup>97</sup> which concerned an automated means for conducting a Dutch auction over the Internet:

[T]he Board holds that, contrary to the examining division’s assessment, the apparatus of claim 3 is an invention within the meaning of Article 52(1) EPC since it comprises clearly technical features such as a “server computer,” “client computers” and a “network.”

This conclusion is in conformity with [the] decision [in *Pension Benefit Systems Partnership*] . . . .<sup>98</sup>

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<sup>96</sup> *Id.* at ¶¶ 3-5, at 11-13.

<sup>97</sup> *Hitachi, Ltd.*, T 258/03 - 3.5.01 (2004), available at <http://legal.european-patent-office.org/dg3/pdf/t030258ex1.pdf>; see also *Microsoft Corp.*, T 0424/03 - 3.5.01 (2006), available at <http://legal.european-patent-office.org/dg3/pdf/t030424eu1.pdf> (permitting the patenting of Microsoft’s clipboard feature). The Board in *Microsoft Corp./Data Transfer* held:

[T]he Board holds that the claim category of a computer-implemented method is distinguished from that of a computer program. Even though a method, in particular a method of operating a computer, may be put into practice with the help of a computer program, a claim relating to such a method does not claim a computer program in the category of a computer program. Hence, present claim 1 cannot relate to a computer program as such . . . .

. . .

. . . The computer program recorded on the medium is therefore not considered to be a computer program as such, and thus also contributes to the technical character of the claimed subject-matter.

*Id.* at ¶¶ 5.1-5.3, at 10-11.

<sup>98</sup> *Id.* at ¶¶ 3.7-3.8, at 10. The decision in *Auction Method/Hitachi* also confirmed that the EPO Board of Appeal also abandoned its previous “contribution approach”, which asked what contribution did the claimed invention make beyond the state of the art. The Board stated:

The idea behind the so-called contribution approach applied by earlier jurisprudence of the boards of appeal was that the EPC only permitted

The refusal was eventually upheld by the Board for lack of an inventive step (as opposed to being directed at ineligible subject matter).<sup>99</sup>

The divergence among the EPO's approach to software patentability versus that of domestic courts (like the UK) led to the proposed EU Directive on the Patentability of Computer-Implemented Inventions in 2002.<sup>100</sup> The proposed Directive however proved too controversial, and was defeated by a convincing 648 in favour of rejection (14 against rejection, and 18 abstentions).<sup>101</sup> The failure of the Directive also prompted the EPO's President to refer a number of questions on the patentability of computer programs to the Enlarged Board of Appeal:

Question 1[:] Can a computer program only be excluded as a computer program as such if it is explicitly claimed as a computer program? . . . .

. . .

. . . Question 2[:] (A) Can a claim in the area of computer programs avoid exclusion under Art. 52(2)(C) and (3) merely by explicitly

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patenting "*in those cases in which the invention involves some contribution to the art in a field not excluded from patentability*" (T 38/86, OJ EPO 1990,384, headnote II). In other words, for assessing the first requirement, ie the presence of an invention within the meaning of Article 52(1) EPC, a criterion was established which relied on meeting further requirements mentioned in that article, in particular novelty and/or inventive step. Thus, some prior art was taken into account when determining whether subject-matter was excluded under Article 52(2) and (3) EPC:

*"In the above considerations concerning the question whether the claimed invention makes a technical contribution to the art, or involves technical considerations for its implementation which may be regarded as resulting in a technical contribution to the art, any specific prior art (other than general computer art, see point 3.4), for instance DI, has not been taken into account. If this is done, however, nothing in the above considerations will effectively be changed."* (T 769/92, OJ EPO 1995, 525, point 3.8)."

However, in more recent decisions of the boards any comparison with the prior art was found to be inappropriate for examining the presence of an invention . . . .

Hitachi, Ltd. *supra* note 97, ¶¶ 3.2- 3.3, at 10–11.

<sup>99</sup> *Id.* ¶¶ 5.7, 5.9, at 7–8.

<sup>100</sup> Proposal for a Directive of the European Parliament and of the Council on the Patentability of Computer-Implemented Inventions, COD/2002/0047 (proposed Feb. 2, 2002), available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2002:0092:FIN:EN:PDF>.

<sup>101</sup> European Parliament—Legislative Observatory, Procedure File: COD/2002/0047 (July 6, 2005), available at <http://www.europarl.europa.eu/oeil/file.jsp?id=219592>.

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mentioning the use of a computer or a computer-readable data storage medium? (B) If Question 2 (A) is answered in the negative, is a further technical effect necessary to avoid exclusion, said effect going beyond those effects inherent in the use of a computer or data storage medium to respectively execute or store a computer program? . . . .

. . .

. . . Question 3[:] (A) Must a claimed feature cause a technical effect on a physical entity in the real world in order to contribute to the technical character of the claim? (B) If Question 3 (A) is answered in the positive, is it sufficient that the physical entity be an unspecified computer? (C) If Question 3 (A) is answered in the negative, can features contribute to the technical character of the claim if the only effects to which they contribute are independent of any particular hardware that may be used? . . . .

. . .

. . . Question 4[:] (A) Does the activity of programming a computer necessarily involve technical considerations? (B) If Question 4 (A) is answered in the positive, do all features resulting from programming thus contribute to the technical character of a claim? (C) If Question 4 (A) is answered in the negative, can features resulting from programming contribute to the technical character of a claim only when they contribute to a further technical effect when the program is executed?<sup>102</sup>

My own view is that software ought to be excluded from patentability on very narrow grounds. Mindful of the problems with prior art searches in the software field in particular,<sup>103</sup> I

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<sup>102</sup> European Patent Office Referral to the Enlarged Board of Appeal (Oct. 23, 2008), ¶¶ 3.1-3.4 [G 3/08], *available at* [http://documents.epo.org/projects/babylon/eponet.nsf/0/B89D95BB305AAA8DC12574EC002C7CF6/\\$File/G3-08\\_en.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/B89D95BB305AAA8DC12574EC002C7CF6/$File/G3-08_en.pdf) (stating that at the time of writing, July 1, 2009, no ruling had been released by the Enlarged Board of Appeal).

<sup>103</sup> *See generally* GREGORY A. STOBBS, *SOFTWARE PATENTS* 5.01 (2d ed. Aspen Publishers Inc., 2000); *see also* Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CAL. L. REV. 1, 42-44 (2001) ("Because the vast majority of software innovation takes place outside traditional research institutions, many software improvements are recorded in ways that tend to elude the formal system of technical documentation followed in fields more closely linked to the scientific and technical establishment. Innovations in biotechnology, for example, typically are documented in peer-reviewed professional journals, conference abstracts, and the like; software innovations, in contrast, may be documented only via developer specifications or online FAQs. Frequently, the source code itself is never released at all. As a result, priority searches for software patents can be enormously difficult. . . . The disconnect between the traditional patent examination process and software industry documentation practices has equally troubling implications

adopt the current approach of the British Courts that insofar as the software produces a technical result (i.e. that has commercial or industrial application), and otherwise satisfies the other criteria for patentability, then it ought to be protected by letters patent. The presence, or absence, of physical apparatus<sup>104</sup> is irrelevant in my view. Patent law must advance along with the unforeseen inventions it was designed to protect; anything less merely stifles and betrays the public disclosure of new, inventive and useful ‘inventions’ (which is, after all, one of the fundamental purposes of patent law).

Lastly, in the ‘as such’ exclusions (as I have labeled them) is the presentation of information. This exclusion is said to be concerned with the content of information – patent law does not protect the provision of information nor means for expressing it *per se*.<sup>105</sup> In *Townsend’s Patent Application*,<sup>106</sup> the application was directed at solving the intractable problem of family members (and others) from removing candy, toys and treats from an advent calendar.<sup>107</sup> Mr. Justice Laddie held that the statutory

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for infringement litigation. To invalidate an issued patent, an infringement defendant must overcome a strong presumption of validity. If an infringement defendant loses a validity challenge, as most do, the infringement analysis leaves little room for consideration of relevant but uncited prior art. For example, the rule of prosecution history estoppel, under which a defendant may escape a finding of infringement by showing that the patentee surrendered claim to the disputed material during prosecution, necessarily concerns only material of which the examiner had notice. That art is often not the most relevant art available in litigation.”) (citations omitted).

<sup>104</sup> See Emir Aly Crowne Mohammed, *Are Casino Games Patentable In Canada?*, 12 GAMING L. REV. & ECON. 577, 579, 582 (2008) (labelling the “fetish” requirement for tangibility and/or physicality as a “masculine” pre-occupation of patent law).

<sup>105</sup> MACQUEEN, WAELDE & LAURIE, *supra* note 14, at 422; see also *Autonomy Corp. Ltd. v. Comptroller Gen. of Patents, Trade Marks & Designs*, [2008] R.P.C. 16 (P.C.).

<sup>106</sup> *Townsend’s Pat. App.*, [2004] EWHC 482 (P.C.).

<sup>107</sup> The claimed invention is described as follows:

In households possessing an advent calendar and more than one person, it is desirable that the treats are shared equally. However, this is an ideal which in practice is difficult to obtain, especially when the treats comprise chocolate. The problem often arises in a situation where occupants of such a household rise from bed at different times each morning. A person with a propensity to rise early has the opportunity to open the next door on the advent calendar and indulge in the treat before any other person in the household – this being possible because the new day “permits” the next door in the advent calendar to be opened. As a result, an inequitable distribution of the treats [sic] arises and, occasionally, this can lead to disharmony. This situation can arise if a person consistently goes to bed in the early hours, i.e.

exclusion (“[p]resentation of information”) was directed at both the expression of information itself, as well as the manner in which such information is provided.<sup>108</sup> Mr. Justice Laddie accepted the argument of the Comptroller-General that the plain reading of the provision gave rise to both meanings. For instance, the phrase “don’t be greedy,” according to Justice Laddie, is an expression of information, which, when printed on the doors of the advent calendar (as to provide information) would also be excluded.<sup>109</sup> While the decision is fairly uncontroversial, the application could have been denied on other ground (perhaps utility or inventiveness) without the need to resort to subject matter eligibility. Although, I recognize that the British *Patent Act* – unlike the Canadian and American equivalents – does contain a more extensive and enumerated listing of subject matter exclusions for a Court to rely upon.

Likewise, in *Crawford’s Application*,<sup>110</sup> the claimed invention described a display system for buses. Buses could operate in a “boarding” mode, whereby passengers could enter and exit the bus; whereas at other times – most notably, when a series of buses arrive in a row, or shortly after one another – the bus would operate in an “exit” mode, whereby passengers could only disembark, thereby allowing the buses at the front of this succession to proceed with less hindrance, and those at the rear of the succession to be slowed down by the entry of passengers.<sup>111</sup> Justice Kitchin rejected the application since the claimed invention amounted to nothing more than the presentation of information to transit goers, without a technical contribution or effect:

The only advance in the art which is said to be new and inventive is the nature of the information to be displayed on the outside of a bus and the method of operating a bus in exit mode and these are not, individually or collectively, of a technical nature. The information to be displayed is the presentation of information. The method of operating a bus in exit mode is a method of doing business.<sup>112</sup>

The net result of *Crawford* is that presentations of information

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the next day.

*Id.* at ¶ 4 (quotation omitted).

<sup>108</sup> *Id.* at ¶ 11.

<sup>109</sup> *Id.* at ¶¶ 8-10.

<sup>110</sup> *Crawford’s UK Pat. App.*, [2005] EWHC 2417 (P.C.).

<sup>111</sup> *Id.* at ¶ 14.

<sup>112</sup> *Id.*

that are of a technical nature ought to be patentable.<sup>113</sup> This approach is also consistent with decisions of the European Patent Office. In *Koninklijke Philips Electronics N.V. / picture retrieval system*,<sup>114</sup> the Technical Board of Appeal allowed a patent application for a picture retrieval system (involving a read device and functional carrier) stating:

Although the concept of invention used in Article 52(1) EPC was not explicitly defined in a positive sense . . . an invention should relate to a technical field and that the *claimed subject-matter should be a solution to a technical problem*.

The record carrier according to claim 4 related to the field of picture storage and retrieval. Clearly this was a technical field, because the storage was realised in physical properties of the recording medium which properties were to be detected by a technical device and to be decoded and displayed by electronic means. The features of the storage and retrieval system were technical in that the retrieval could not be performed by a human and stored pictures could not be accessed directly via his senses. Moreover the production of record carriers and their information content was an industrial activity.

The technical problem to be solved by the invention was to provide “recorded picture data suitable for easy access to any part (i.e. cut-out) of a picture.”<sup>115</sup>

<sup>113</sup> MACQUEEN, WAELDE & LAURIE, *SUPRA* NOTE 14, at 422.

<sup>114</sup> Koninklijke Philips Elec. N.V., T 1194/97 – 3.5.2 (2000).

<sup>115</sup> *Id.* § IV(ii)(a) (emphasis added). The Board also distinguished between information that was functional in nature, versus information that was aesthetic or cognitive:

In decision T 163/85, Colour television signal/BBC (OJ EPO 1990, 379, reasons point 2), the deciding board considered it appropriate to distinguish between two kinds of information, when discussing its presentation. According to this distinction, a TV signal solely characterised by the information per se, eg moving pictures, modulated upon a standard TV signal, may fall under the exclusion of Article 52(2)(d) and (3) EPC but not a TV signal defined in terms which inherently comprise the technical features of the TV system in which it occurs. The present board regards a record carrier having data recorded thereon as being in this respect analogous to a modulated TV signal and considers it appropriate to distinguish in a corresponding way between data which encodes cognitive content, e.g., a picture, in a standard manner and functional data defined in terms which inherently comprise the technical features of the system (reader plus record carrier) in which the record carrier is operative. The significance of the distinction between functional data and cognitive information content in relation to technical effect and character may be illustrated by the fact that in the present context complete loss of the cognitive content resulting in a humanly meaningless picture like “snow” on a television screen has no effect on the technical working of the system, while loss of functional data will impair the technical operation and in the limit bring the system to a complete

Note again that the application in *Crawford* could have easily been denied for lacking novelty (or inventiveness). As the existence of signage or displays that indicate a bus is full (i.e. in 'exit' mode), or operating normally, is quite familiar to transit goers in major urban centres.

### III. CONCLUSION

The foregoing review of the 'as such' exclusions to patentable subject matter in the United Kingdom (and the accompanying European influences) demonstrate a robust appreciation of the goals of the patent system. Namely, the promotion of disclosure<sup>116</sup> and protection of innovation. Exclusions to patentable subject matter, even when provided for by the statute, are narrowly construed in advancing the economic and commercial interests of the United Kingdom. This is the approach that all courts should take in assessing the patentability of an 'invention'; since broad categorical exclusions of patentable subject matter by the courts defeat the underlying purposes of the patent system by foreclosing entire avenues of progress *ab initio*. Canadian and American courts should follow the English approach, and place greater attention on the other hallmarks of patentability – novelty, inventiveness and utility – and forgo undue judicial activism in the area of patentable subject matter (especially where the subject matter in question can be made to fit within definition of invention, even if slightly uncomfortably). Indeed, as Peter Presecott QC (sitting as a Deputy Judge) recently remarked:

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halt. In particular the board sees no reason to ascribe less technical character to a synchronisation signal recorded as digital data, eg a predetermined binary string, than to an analog synchronisation signal transmitted or recorded as a pulse having a distinctive shape. Both the binary string and the analog synchronisation pulse could be interpreted in an infinite number of different ways in other technical or human contexts, but this does not detract from their technical function of synchronisation in the relevant context, in particular when the record carrier of claim 4 is considered in the context of the picture retrieval system of claim 1. The same applies *mutatis mutandis* to the other functional data features recorded on the record carrier.

*Id.* at § 3.3, at 16–18.

<sup>116</sup> See Adam Mossoff, *Rethinking the Development of Patents: An Intellectual History, 1550-1800*, 52 HASTINGS L. J. 1255, 1294 (2001) (discussing the common law Court's growing insistence upon a "fair disclosure" for the award and enforcement of patent rights); *Boulton v. Bull*, 126 E.R. 651, 657 (1795) (Eng.) ("The specification is the price which the patentee is to pay for the monopoly.").

What is an ‘invention’ . . . is a topic bedevilled by verbal formulae – and by the sweeping of problems under the carpet . . . . But first: does it really matter? Is it merely a sterile argument about the meaning of words? To which I answer that *whoever controls the meaning of ‘invention’ controls what can be patented and hence an important aspect of industrial policy.*<sup>117</sup>

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<sup>117</sup> CFPH LLC’s Pat. Apps., [2006] R.P.C. 5 (P.C.) (U.K.) (emphasis added); see Crawford’s UK Pat. App., [2006] R.P.C. 11, ¶ 9 (P.C.) (U.K.).