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The Progress of Science and the Useful Arts: Misadventures in Canadian Law on Patent- Eligible Subject-Matter

*Ken Bousfield**

ABSTRACT

Patent-Eligible Subject-Matter in Canada

The law of patent-eligible subject-matter in Canada has become badly muddled. There has been repeated confusion of subject-matter issues with non-subject-matter issues such as novelty, obviousness, and utility. There has also been repeated confusion within the following group of issues pertaining to whether subject-matter is patent-eligible: whether a claim is for a mere idea or aggregation or for a patentable invention; whether claimed subject-matter falls within science and the useful arts; and whether claimed subject-matter falls within the statutory classes listed in the definition of “invention”. Echoes of older UK-based cases, relating to statutory provisions found in England, but not in Canada, continue to entangle subject-matter inquiries under the Canadian *Patent Act*.

The structure of the *Patent Act* is based on logical, sound principles that have not changed in two centuries. The statute itself establishes an order of steps that, if followed, would resolve many controversial issues. That order starts with the requirement for subject-matter in ss 27(4) and 27(3), followed by consideration of the definition of “invention” in s 2. The *Patent Act* itself requires subject-matter first qualify as an art or science, where art means “useful art”, a point apparently not presented or discussed in recent case law.

The significance of the recent *Amazon.com* case is not its effect on the particular applicant, but its treatment of, and apparent divergence from, sound principles of patent law. It had been hoped that *Amazon.com* might be an opportunity to set the law back on a straight course. In the end, the Federal Court of Appeal did not answer the question asked of it, and appears not to have reduced the confusion of previous case law.

Closer adherence to the provisions of the *Act*, to the history and purpose of the *Act*, and to long-standing, sound, fundamental patent principles, might go a great distance toward untangling the law of patent-eligible subject-matter in Canada.

Abbreviations

Throughout this paper abbreviations have the following meanings:

- (a) SCC — Supreme Court of Canada
- (b) FCA — Federal Court of Appeal

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- (c) FC — Federal Court
- (d) PAB — Patent Appeal Board
- (e) USSC — United States Supreme Court
- (f) Fed Cir — United State Court of Appeal for the Federal Circuit
- (g) CCPA — US Court of Customs and Patent Appeals
- (h) AMFL — Appellant's Memorandum of Fact and Law
- (i) RMFL — Respondent's Memorandum of Fact and Law
- (j) IMFL — Interveners' Memorandum of Fact and Law

The PAB — Explanatory Note

In Canada, review of a final rejection by an Examiner is undertaken by the Patent Appeal Board. The PAB is appointed by the Commissioner and exists to aid the Commissioner in deciding whether finally to reject a case under s 40 of the *Patent Act*. Although the PAB has no formal or explicit statutory existence, it has existed for many years, and its recommendations invariably become the decisions of the Commissioner.

I. INTRODUCTION

(a) The Context of *Amazon.com*

In Canada, a patent may only be granted in respect of an invention meeting the requirements of patent-eligible subject-matter as mandated by the *Patent Act*. Although only a few cases in the last half century have considered patent eligibility of subject-matter, the law has become badly tangled. The need for reconsideration has been heightened by controversy arising from the decisions of the United States Supreme Court (USSC) in *Diamond v Chakrabarty*,¹ of the Court of Appeal for the Federal Circuit (Fed Cir) in *State Street Bank & Trust Co v Signature Financial Group Inc.*,² and more recently of the USSC in *Bilski v Kappos*.³ Determination of the boundaries of patent-eligible subject-matter, and, in particular, as pertaining to software and business methods, under Canadian law has been an issue of significant commercial importance.

In that light, the appeal in *Amazon.com Inc, Re* had been eagerly awaited. There are many questions raised by the 24 November 2011 Federal Court of Appeal (FCA) decision⁴ allowing the appeal of the AG from the decision of the Federal Court (FC).⁵ The respondent, Amazon.com, appeared to prevail on every issue of law, and yet the result would have sent Amazon.com back where it started more than ten years ago. In a rather startling reversal of fortune, the Commissioner then allowed, without amendment, the very same claims against which the Commis-

¹ *Diamond v Chakrabarty*, 447 US 303, 100 S Ct 2204 (1980) [*Diamond*].

² *State Street Bank & Trust Co v Signature Financial Group Inc*, 149 F 3d 1368, Rich J (Fed Cir, 1998) [*State Street Bank*].

³ *Bilski v Kappos*, 130 S Ct 3218, 177 L Ed 2d 792 (2010) [*Bilski*].

⁴ *Amazon.com Inc, Re*, 2011 FCA 328, 97 CPR (4th) 171 [*Amazon, FCA*].

⁵ 2010 FC 1011, 86 CPR (4th) 321 [*Amazon, FC*].

sioner had appealed.⁶ In the end, the outcome in the FCA, and the subsequent allowance have come as a great disappointment. A golden opportunity to untangle the law appears to have been lost.

This paper provides a discussion of the history of issues related to interpretation of the definition of “subject-matter” and “invention” in the *Patent Act*; a discussion of case law leading up to *Amazon.com*, a discussion of the FCA decision in *Amazon.com* and the problems arising from it, and provides some comment on a logical framework based on patent fundamentals for addressing the continuing problems with interpretation of the definition of “invention”.

(b) Statutory Subject-Matter under the Patent Act

The fundamental bargain of the *Patent Act* is the grant of the claim required by s 27(4) in return for the description in s 27(3). The requirement for patent-eligible subject-matter is found at the heart of that bargain:

27. (4) The specification must end with a *claim or claims defining* distinctly and in explicit terms *the subject-matter of the invention* for which an exclusive property or privilege is sought.⁷ (Emphasis added.)

It is the subject-matter of *the* invention, and it is *defined by the claim* — and nothing else. It cannot be defined by anything else because, as noted, patents exist only by statute, and the only invention pertinent to the patent grant is the one claimed as required by the statute.

The other side of the bargain is established by s 27(3), which requires, *inter alia*:

27. (3) The specification of *an invention* must

...

(b) set out clearly the various steps in a process, or the method of constructing, making compounding or using a machine, manufacture, or composition of matter, in such full, clear, concise and exact terms as to enable any person skilled *in the art or science to which it pertains*, or with which it is most closely connected, to make, compound, construct or use it; . . .⁸

First, the words “an invention” can only be “the invention” of the claim of s 27(4). The alternative is to imply that the *Act* creates a requirement for a claim for one invention, and a description of something else. Second, s 27(3) establishes the statutory requirement that the invention of the claim must pertain to an art or science. The meaning of “art or science” is discussed below. The same requirement of “art or science” is found in s 28.3:

28.3 The *subject-matter defined by a claim* in an application for a patent in Canada must be subject-matter that would not have been obvious on the claim date to a person skilled *in the art or science to which it pertains*,

⁶ CA 2,246,933 Notice of Allowance 23 December 2011; Final Fee paid 28 December; Issued 17 January 2012.

⁷ *Patent Act*, RSC 1985, c P-4, s 27(4).

⁸ *Ibid*, s 27(3).

having regard to . . .⁹ (Emphasis added.)

The permissible statutory classes of that “art or science” of the “invention” are found in the definition of invention in s 2 of the *Patent Act*, which currently reads as follows:

2. Definitions — In this *Act*, except as otherwise provided,
 . . . “invention” means 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.¹⁰

Thus the fundamental underlying bargain of the *Patent Act* is the exchange of a grant of a claim for the subject-matter of an invention in “art or science” falling within one of the statutory classes, in return for which a detailed description is provided in the disclosure.¹¹ It is an explicit, unavoidable, statutory requirement. It establishes two questions: (1) is the subject-matter “art or science”; and, if so, (2) does it fall within one of the statutory classes? The first question is a pre-requisite to the second question.

(c) The Meaning of “Art or Science”

When looking for the meaning of “art or science”, it may be helpful to consider the history of the statutory provisions in Canada. The first post-Confederation *Patent Act of 1869* was based on earlier statutes in Upper Canada and Lower Canada, which, in turn, were copied in relevant parts nearly word-for-word from US law. As in Canada, US patents exist only by statute. To that end, Article 1, section 8 of the US Constitution provides:

Congress shall have the power . . . to promote the progress of *Science and the useful Arts* by securing, for limited times, to authors and inventors the exclusive right to their writings and discoveries.¹² (Emphasis added.)

The first US *Patent Act, 1790*, Ch 7, 1 Stat 109-112 (10 April 1790) provided:

Chapter VII. — An Act to promote the progress of useful Arts

1. *Be it enacted* . . . That upon the petition of any person . . . setting forth, that he . . . hath . . . invented or discovered any *useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used*, and praying that a patent may be granted therefor, it shall and may be lawful to and for the Secretary of State, [etc.] . . . , if they shall deem the invention or discovery *sufficiently useful and important*, to cause letters patent to be made out in the name of the United States, . . . (Emphasis added.)

⁹ *Ibid*, s 28.3.

¹⁰ *Ibid*, s 2.

¹¹ *Consolboard Inc v MacMillan Bloedel (Saskatchewan) Ltd*, [1981] 1 SCR 504 at 517 per Dickson J See also *Whirlpool Corp v Camco Inc*, 2000 SCC 67, [2000] 2 SCR 1067, [2000] SCJ No 68, ¶37. See also *Cadbury Schweppes Inc v FBI Foods Ltd*, [1999] 1 SCR 142, per Binnie J at para 46.

¹² US Const art I, §8, cl 8.

Sec 1 was amended by the *Patent Act of 1793*, Ch 11, 1 Stat 318-323 (21 February 1793), Ch 11:

1. Be it enacted . . . That when any person . . . , shall allege that he or they have invented any *new and useful art*, machine, manufacture or composition of matter, or any new and useful improvement on any art, machine, manufacture or composition of matter, not known or used before the application, and shall present a petition . . . , it shall and may be lawful . . . , to cause letters patent to be made out . . . , reciting the allegations and suggestions of the said petition, and giving a short description of the said invention or discovery.

The US Act of 1790 had required examination, but the duty of examination had fallen on the high officials of state, who lacked the administrative resources to cope with the task. Thus the 1793 *Act* established a registration system in which the verification of compliance would fall upon the courts. That decision was reversed in the great patent reform of 1836, which introduced a system of substantive examination in the US Patent Office. The definition of the statutory classes was carried over from the Statute of 1793:

US *Patent Act of 1836*, Ch 357, 5 Stat 117 (4 July 1836)

CHAP CCCLVII. — An Act to promote the progress of *useful arts*, and to repeal all acts and parts of acts heretofore made for that purpose.

§(a) — Be it enacted . . .

6. *And be it further enacted*, That any person or persons having discovered or invented *any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement on any art, machine, manufacture, or composition of matter*, not known or used by others before his or their discovery or invention thereof, and not, at the time of his application for a patent, in public use or on sale, with his consent or allowance, as the inventor or discoverer; and shall desire to obtain an exclusive property therein, may make application. . . .

But before any inventor shall receive a patent for any such new invention or discovery, he shall deliver a written description of his invention or discovery, and of the manner and process of making, constructing, using, and compounding the same, *in such full, clear, and exact terms, avoiding unnecessary prolixity, as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use the same*; and in case of any machine, he shall fully explain the principle and the several modes in which he has contemplated the application of that principle or character by which it may be distinguished from other inventions; *and shall particularly specify and point out the part, improvement, or combination, which he claims as his*

own invention or discovery. . . . (Emphasis added.)¹³

The word “art” was eventually replaced by the word “process” in the *Patent Act* amendment of 1952, yielding the current form of 35 USC 101:

35 USC 101: 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.¹⁴

Process, itself, is defined in 35 USC 100(b): The term “process” means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.

The written description requirement of ss 27(3)(b) of the Canadian *Patent Act* is nearly word-for-word that of s 6, para 2 of the US *Act of 1836*, whence it originates. Similarly, the statutory classes of the definition of “invention” in s 2 of the Canadian *Act* is very nearly word-for-word that of s 6, para 1 of the US *Act*, which is unchanged from the US *Act* of 1793.

In the 1836 requirement for written description, the “art or science” can only be the “Science and the useful Arts” of the US Constitution: there would be no point having a requirement for a description of an “art” for which Congress was not constitutionally competent to grant a patent. Just as with the definition of the statutory classes, “art” cannot have greater scope than the “useful Arts”.

(d) The Meaning of “Science” — US Constitution and Copyright

In the US Constitution, the objective is progress of “Science and the useful Arts”. Congress therefore lacks the power to grant patents for anything that is neither “Science” nor a “useful Art”. The 1790 meaning of the term “Science” has been interpreted to mean today, roughly, “anything but science”; “discoveries” means “inventions”, and not discoveries (of e.g., natural laws); and “useful Arts” means anything that is technological or scientific.¹⁵ This is explained in *Application of Bergy*:¹⁶

Scholars who have studied this provision, its origins, and its subsequent history, have, from time to time, pointed out that it is really two grants of power rolled into one; first, to establish a copyright system and, second, to establish a patent system. . . . Their conclusions have been that the constitutionally-stated purpose of granting patent rights to inventors for their discoveries is the promotion of progress in the “useful Arts,” rather than in science. In enacting the 1952 Patent Act, both houses of Congress adopted

¹³ The US wording was amended in 1952 to “in the art to which it pertains”. See 35 USC 112, first para

¹⁴ Inventions Patentable, 35 USC §101 (2006).

¹⁵ *In re Comiskey*, 499 F 3d 1365 (Fed Cir, 2007) at 1374–75: “The Constitution explicitly limited patentability to the national purpose of advancing the useful arts — the process today called technological innovation.” *Paulik v Rizkalla*, 760 F 2d 1270 (Fed Cir, 1985) at 1276: “The exclusive right, constitutionally derived, was for the national purpose of advancing the useful arts — the process today called technological innovation.” [*Comiskey*].

¹⁶ *Application of Bergy*, 596 F 2d 952 (Cust & Pat App, 1979) at 958, 959 [*Bergy*].

in their reports this construction of the Constitution in identical words, as follows:

The background, the balanced construction, and the usage current then and later, indicate that the constitutional provision is really two provisions merged into one. The purpose of the first provision is to promote the progress of *science* by securing for limited times *to authors* the exclusive right to their *writings*, the word “science” in this connection having the meaning of knowledge in general, which is one of its meanings today. The other provision is that Congress has the power to promote the *progress of useful arts* by securing for limited times *to inventors* the exclusive right to their *discoveries*. The first patent law and all patent laws up to a much later period were entitled “Acts to promote the progress of useful arts.” (Emphasis ours.)

It is to be observed that the Constitutional clause . . . merely empowered Congress, if it elected to do so, to secure to inventors an “exclusive right” for an unstated “limited” time for the stated purpose of promoting useful arts. We have previously pointed out that the present day equivalent of the term “useful arts” employed by the Founding Fathers is “technological arts.” (Internal citation omitted.)

Both old and relatively new US case law limits patentability to the “useful Arts”.^{17, 18} In terms of contemporary understanding, in which matters of science and applied science plainly fall within the *Patent Act*, the term “useful Arts” apparently encompasses both (i) what used to be called “natural science”; and (b) the useful arts. Despite the enthusiasm of various courts and authors¹⁹ for equating “useful Art” with “technological art”, that equivalence may not be exact.

First, the conclusion that “Science” in the US Constitution supports only Copyright does not square with the written description requirement in s 6 of the 1836 *Act* which refers to “*the art or science to which it appertains*”. Thus, whatever may have been thought in 1952, “science” in 1790 must have included scientific inquiry,

¹⁷ *Dolbear v American Bell Tel Co*, 126 US 1 (1888) at 533: “[I]t is only the useful arts — arts which may be used to advantage — that can be made the subject of a patent.” This would seem to imply that something which is “science” but not a useful art, is not patent eligible.

¹⁸ *Application of Waldbaum*, 457 F 2d 997 (Cust & Pat App, 1972) per Baldwin J at 1003: “With regard to the “mental steps” rejection, whether appellant’s process is a “statutory” invention depends on whether it is within the “technological arts.” The phrase “technological arts,” as we have used it, is synonymous with the phrase “useful arts” as it appears in Article I, Section 8 of the Constitution.”

¹⁹ See: Lutz, “*Patents and Science*”, 18 Geo Wash LR 50 (1949-1950); Coulter, “*The Field of the Statutory Arts*”, 34 J Pat Off Soc 487 (1952); Rich, “*Principles of Patentability*”, 28 Geo Wash LR 393 (1959-1960). See also Pollack, “*Multiple Unconstitutionality of Business Method Patents*” 28 Rutgers Comp & Tech LJ 61 (2002); Seidel, “*The Constitution and a Standard of Patentability*”, 48 J Pat Off Soc 5 (1966); Walterscheid, “*The Early Evolution of the United States Patent Law: Antecedents, (Part 1)*”, 76 J Pat Off Soc 697 (1994).

at least as early as s 6 of the 1836 *Act*, and at least as late as 1908.²⁰ It would be odd, too, if the 1836 “art or science” description requirement was only for general knowledge or learning, when the point of the written description is to provide precise, substantive knowledge about the particular invention for which a patent is sought.

Second, if “Science” equated only to “Learning” or “Knowledge” generally, it is odd the first US *Copyright Act* is entitled “*An Act for the Encouragement of Learning*” (*Copyright Act of 31 May 1790*), following the British *Copyright Act of 1709* (the “*Statute of Anne*”) “*An Act for the Encouragement of Learning*”.²¹ If the *Act of 1790* was drafted contemporaneously with the US Constitution, why did the Constitution not refer to “*The Progress of Learning and the useful Arts*”, for example? It implies that “Science” had then only the single, general, meaning of “Learning” or “Knowledge” and did not then have, or include, a second meaning, the current meaning, namely that of “natural science” or of scientific inquiry.

Third, it is anomalous that the term “Science”, even if it only has the meaning of “Knowledge” or “Learning” is used as a basis for finding Copyright, in which the contemporary right is predominantly, if not exclusively, about form of expression of creative works, and which expressly excludes any monopoly on underlying facts or function — i.e., the very stuff of learning or knowledge — yet does not extend to patents, which are not about form but about substantive knowledge: what the invention is, and how to practice it.

Although US case law, like *Bergy*, maps “technological arts” onto “useful Arts”, there are “arts” that encompass patent-eligible subject-matter that would not be thought colloquially to be “technology”. For example, there is no answer in the case law of where “biology” ends, and “biotechnology” starts, or where “science” ends, and “applied science” begins. There is no explanation why “Science” does not include “science”, or why the original meaning did not capture more than merely general knowledge or learning. The USSC has ruled that Congress has al-

²⁰ For over a hundred years the USSC interpreted “art or science” in s 6 without any suggestion that “science” in s 6 was not “Science” in the Constitution. See: *Continental Paper Bag Co v Eastern Paper Bag Co*, 210 US 405 (1908) — “The foundation of the argument of the petitioner is, [. . .], the policy of the patent laws executing the purpose of the Constitution of the United States to promote the progress of science and useful arts by securing for limited times to inventors the exclusive right to their respective discoveries. The right which a patentee receives does not need much further explanation. We have seen that it has been the judgment of Congress from the beginning that the sciences and the useful arts could be best advanced by giving an exclusive right to an inventor.” See also: *Seymour v Osborne*, 78 US 516 (1870); *Cohn v US Corset Co*, 93 US 366 (1876); *Downton v Yaeger Milling Co*, 108 US 466 (1883); *Bene v Jeantet*, 129 US 683 (1889); *Consolidated Electric Light Co v McKeesport Light Co*, 159 US 465 (1895); *General Electric Co v Wabash Appliance Corporation*, 304 US 364 (1938); *Great Atlantic & Pac Tea Co v Supermarket Equipment Corp*, 340 US 147 (1950).

²¹ Full title: “*An Act for the Encouragement of Learning, by vesting the Copies of Printed Books in the Authors or purchasers of such Copies, during the Times therein mentioned*”.

most infinite latitude to decide how best to promote “Science”.²² Nonetheless, to conclude that “Science” necessarily does not include “natural science” remains odd. Further, if “technological arts” and “useful Arts” are equivalent, then the original language is still good. If not equivalent, then “technological Arts” is merely an inaccurate gloss. As seen herein, unwise glosses have been the source of trouble in the patent-eligible subject-matter cases, whether in Canada, the US, or the UK and Commonwealth. Far better to omit the gloss, and to make a better effort to understand the sound concepts and principles of the original language instead.

The original wording “Science and the useful Arts”, stripped of the awkward overlay of Copyright, and with the present-day understanding of Science, captures the idea much better that patentable subject-matter can range from work with a very high proportion of theoretical content to work with almost no theoretical content at all, and, in the continuum of science there is no bright line of demarcation. Whether it equates exactly to “technological arts” is irrelevant. What matters is that it clearly excludes things that are not “science and the useful arts”.

(e) The Plural Meanings of “Useful” and “Art”

The choice of the term “useful Arts” in the US Constitution was a response to then-current problems with the need to stretch interpretation of “the sole working or making of any manner of new manufactures” under the British *Statute of Monopolies* (21 Jac 1, c 3, s 6) to include methods and processes,²³ exemplified by the Watt steam engine cases.²⁴ There have always been arts that do not fall within the scope of the *Patent Act*, in both the British and US understandings of patents — e.g., the “fine arts” or the “liberal arts”. Although raised in earlier US Court of Customs and Patent Appeals (CCPA) cases, the Constitutional requirement seems to have been overlooked by the majority in the USSC in the exuberance of *Chakrabarty*. It is not addressed by five judges in *Bilski*. It is, however, the cornerstone of the opinion of four judges in *Bilski*,²⁵ who, on this point, were not a minority. Rather, on this point the number of judges holding that there was a Constitutional bar to subject-matter not falling within the “useful arts” was equal to the number of judges who denied that there was a bar to methods of doing business

²² See *Eldred v Ashcroft*, 537 US 186 (2003), a case in which the plaintiff challenged the right of Congress to extend Copyright (and implicitly, Patent) term.

²³ *In re Bilski*, 545 F 3d 943, 88 USPQ 2d 1385 (Fed Cir 2008), p 5 of Linn opinion.

²⁴ *Boulton & Watt v Bull* (1795), 2 H Bl 463, 126 ER 651; *Hornblower v Boulton* (1799), 8 Term Rep 95.

²⁵ *Bilski*, *supra* note 3 per Stevens J:

“The Constitutionally mandated purpose and function of the patent laws bolster the conclusion that methods of doing business are not processes under s 101.” . . .

“The Constitution allows Congress to issue patents “[t]o promote the Progress of . . . useful Arts,” Art I, s 8, cl 8. This clause is both a grant of power and a limitation *Graham*, 383 US at 5. . . . “This is the standard expressed in the Constitution and it may not be ignored. And it is in this light that patent validity “requires reference to [the] standard written into the Constitution.”

under 35 USC 101 — itself a slightly different question.²⁶ As seen, the US statutes referred only to the promotion of the “useful arts”, which apparently includes all of what would be understood today as science. The statutes of 1790, 1793 and 1836 were explicitly directed toward “the progress of the useful arts”.

Further, the US statute of 1790 refers first to “any *useful art*, manufacture, engine, machine, or device, or any improvement therein . . .”, and then subsequently indicates that the invention or discovery must be “sufficiently *useful* and important”. The word “useful” has been used in two different ways. First, *useful* modifies only “art”. It does not modify “manufacture, engine, machine or device”. We know that *useful* only modifies *art* in the first instance because of the subsequent requirement that the invention be *sufficiently useful*. The first instance distinguishes “useful art” from any “art” more generally, consistent with the US Constitution. Here *useful* is unrelated to the utility of any specific invention. The second *useful* established the requirement of utility specific to the particular invention for which a patent is sought.

The phrasing in the 1790 *Act* was problematic because it established no basis upon which to assess whether an invention was “sufficiently” useful, or “sufficiently” important. Use of the modifier “sufficiently” in respect of the word “useful” achieved very little. First, in ends to be achieved by inventive means, usefulness tends to be a binary state issue: either something is useful, or it is not. Second, the word “important” was itself uncertain even without the addition of the equally indefinite modifier “sufficiently”. Thus, in the 1793 *Act*, there is no requirement that the invention be important, let alone sufficiently important, and the requirement that it be sufficiently useful was eliminated: any usefulness was sufficient.

In the 1790 *Act*, section 1 also required that the invention not be “previously known or used”, a requirement that followed the listing of the statutory classes. In the 1793 *Act*, this requirement has been transformed to “not known or used before the application”. The open-ended “previously known or used” in the 1790 *Act* is a requirement for novelty. The 1793 “not known or used before the application” is an administrative requirement placing a statutory bar on disclosure prior to application. The 1793 *Act* does not dispense with novelty, but rather, by adding the word “new” re-locates it to precede, rather than follow, the statutory classes.

When the word “new” was introduced to precede “useful”, the word “and” was also added, giving “new *and* useful”, thus changing the emphasis. However, while it was intentional that inventions be new, it is not clear that it was intended to change the meaning of *useful* from (a) permitting patents for inventions in the “useful arts”, to (b) permitting patents for invention in any art, so long as the invention was useful. I.e., the *invention* might be useful (in the sense of utility), or that the *art* might be useful (in the sense of industrial), or both. If, by addition of “and” it was attempting to say that *any* art is patentable if new and useful, it would have been *ultra vires* as no longer limiting inventions to the “useful Arts” of the US Constitu-

²⁶ Scalia J joined the others in holding that the Bilski claims were abstract under 35 USC 101, but declined to join in Part II-B-2 of the Kennedy opinion. He similarly joined only in Part II of the concurring opinion of Breyer J thus leaving the court evenly divided on whether methods of conducting business were constitutionally excluded from patentability. Scalia J expressed no opinion on whether methods of doing business were also excluded as a class either under s 101 or constitutionally.

tion. In his landmark treatise, Robinson side-stepped the confusion of the two meanings by implicitly equating “useful art” with “industrial art”,²⁷ and then requiring that the industrial art be useful in the sense of having specific utility. While there is discussion of art in Canadian case law, e.g., in *Shell Oil*,²⁸ whether a “use” is an art; and in the *Refrigerating Equipment*²⁹ case as to whether a method or a process is an art, there is little or no discussion of what constitutes a “useful art”.

A “new and useful machine” or a “new and useful manufacture” is quite logical and consistent. The phrase might have been “any new and useful machine, manufacture, or useful art, [etc.]” except that indicating that a “useful art” is useful would seem redundant, unless the double meaning is understood: that the invention belongs in the useful arts and has utility specific to the particular invention. The problem is that in the 1793 wording “any new and useful art”, the word “useful” must now carry both meanings — the general meaning of “useful arts”, and the particular meaning of utility specific to one invention. Unhelpfully, the confusing double meaning only applies to one statutory class, i.e., the useful arts, and not to the classes of machines, manufactures and compositions of matter, which are either science or, redundantly, which fall within the penumbra of the useful arts anyway.

Similarly, “art” has multiple meanings. “Art” means, first, “useful art”. Congress had no constitutional power to make it otherwise: “Shoemaking is one of the useful arts”. Art has a second meaning, namely that of the statutory class as distinguished from machine, apparatus or composition of matter: “My method of shoemaking falls in the statutory class of being an “art”, not a “machine”. “Art” has a third meaning, that of the specific art of a particular claim: “I claim the art of making a shoe, comprising the steps of . . .” Finally art has a fourth meaning, namely that of “prior art”. In the first instance, being a “useful art” is a fundamental prerequisite for patent eligibility. In the second instance, “art” defines a statutory class pigeon-hole. In the third instance, “art” pertains to a specific claim and its elements. In the fourth instance, it is used in the sense of material for comparison in assessing novelty and obviousness. Which meaning applies depends on context. The plural meanings of “useful” and “art” have led to confusion.

(f) Promotion of the Progress of the Useful Arts Comes to Canada

The first Canadian Patent statutes were those of Lower Canada and Upper Canada respectively: 4 Geo IV, c 25 (1823), LC “*An Act to promote the progress of useful arts in the Province*” and 7 Geo IV, c 5 (1826) UC “*An Act to encourage the progress of the useful arts within this Province*”. Clearly, given the titles of the two Acts, it cannot now rationally be argued that the Canadas adopted the US provisions with any different purpose in mind than the US purpose of promotion of the

²⁷ Robinson, WC, *The Law of Patents for Useful Inventions*, (Boston: Little Brown & Co, 1890), Ch 2, s 157, page 229. “Every invention in the industrial arts is either an operation or an instrument.” From there on, in Robinson’s entire discussion of “art” the modifier “industrial” is unspoken, yet plainly assumed.

²⁸ *Shell Oil Co v Canada (Patent Commissioner)*, [1982] 2 SCR 536, 67 CPR (2d) 1 [Shell Oil].

²⁹ *Refrigerating Equipment Ltd v Waltham Systems Inc*, [1930] 4 DLR 926, [1930] Ex CR 154.

progress of the useful arts. That central, essential, purpose has never changed, despite any recent glosses. The preambles of those *Acts* have the definition of the statutory classes found in all subsequent patent statutes in Canada:

Whereas it is expedient for encouragement of *genius and of arts* in this Province to secure an exclusive right to the invention of *any new and useful art, machine, manufacture or composition of matter* . . .

The word “process” was added to the definition in the 1923 *Patent Act* revisions.

Further, the wording of s 6, para 2 of the 1836 US *Patent Act* reflecting the premise that claimed subject-matter must pertain to “art or science”, can be compared to the parallel wording of current section 27(3)(b) of the Canadian *Act*, above. The language of s 27(3)(b) was introduced in 1935, as then s 35. That the invention fall in the “useful arts” or in “art or science” (which, apparently, amounted to the same thing) has been a constant principle of patent law in Canada since at least as early as 1823.

It can only be presumed that when Canada copied the words of the US statute the intention was to copy their meaning and scope. As such, the meaning of the statutory classes cannot be broader than “science and the useful arts” authorized in Art 1, s 8 of the US Constitution. Thus, the meaning imported (a) relates to “science and the useful arts”; (b) is based on the US *Patent Act of 1793* whose purpose was the promotion of the “useful arts”; and (c) carries the hidden plural meanings of “useful” and “art” the US *Patent Act of 1793* from which section 6 of the US *Patent Act of 1836* inherited the statutory classes.

Canadian case law does not consider the plural contexts of the words “useful” and “art”, or that the definition of invention in s 2 supports, and is subordinate to, the requirement for claims having subject-matter under s 27(4). Instead, it considers the novelty of the word “new” and it considers the specific utility in the context of the new art of the particular invention claimed, but it does not consider whether the “art” itself is one of the “useful arts”. Further, since there is no constitutional limitation on the type of patents the Crown can grant in Canada, the origin of the statutory classes in the “Science and useful Arts” of the US Constitution has been forgotten. That origin, and the double meaning, was also forgotten by Congress in the 1952 amendment, replacing “art” with “process”. The term “useful art” carries a meaning that “process” does not.³⁰ The useful arts exclude, e.g., methods of conducting a business, and processes related to the conduct of a profession. An “art”, and a “useful art” are not limited to processes or methods. There are fruits of the “useful arts” that may not necessarily be “science”, and that may be, or may yield, physical objects such as machines or products. In the example above, shoemaking is an art. Following the methods or processes of that art yields physical objects, namely shoes. The word “art” thus includes, but is not limited to, a series of steps to be performed. Generically, it has broader meaning.

The distinction between the two questions, does the invention fall within “Science and the useful Arts?”, and the more administrative, “Into which pigeon-hole defined by the statutory classes does that invention fit?” is the difference between *Chakrabarty* and *State Street*. The issue in *Chakrabarty* was whether a life-form,

³⁰ See *Application of Musgrave*, 431 F 2d 882 (Cust & Pat App, 1970) [*Musgrave*].

namely bacteria for digesting oil, undeniably the result of scientific research (and therefore unquestionably within the “natural science” portion of “Science and the useful Arts”), fit into one of the statutory classes. In that context, the class definitions are correctly given an expansive definition: it would defeat the cornerstone, constitutionally mandated principle of the statute “to promote the progress of the useful arts” to deprive a valuable scientific invention of protection merely because it falls between two stools.³¹ Hence, the incautious use in *Chakrabarty* of “anything under the Sun made by man” is about avoiding the possibility of meritorious inventions falling down an administrative crack.³² By contrast, *State Street* was not about finding the correct pigeon-hole, but rather whether anything in the claims satisfied the threshold requirement of falling within “Science and the useful Arts”. Two separate issues.

Although Stern reported that “The Supreme Court has never addressed the meaning of “useful Arts”, although over 100 of its opinions mention the phrase”,³³ it had been addressed in lower court decisions, notably *Musgrave*,³⁴ and was subsequently the basis of both the concurring opinion of Mayer J in the re-hearing *en banc* in the Federal Circuit in *Bilski*, and the reasons of Stevens J writing for himself, Ginsburg, Breyer and Sotomayor JJ in *Bilski*.³⁵

In summary, in analyzing patent-eligible subject-matter, first, the imported meaning is circumscribed by “Science and the useful Arts”; second, both “useful” and “art” have plural meanings; third, there is a first question being asked (Is it within “science and the useful arts”?), followed by a second question (Does it fit into one of the statutory class pigeon holes?); and fourth, inasmuch as Canada copied the US provisions, it would require peculiar logic to suggest that the terms were intended to have a different meaning or scope.

³¹ The same point is made in the dissent in *Harvard Mouse* at 44-45: “We should not encourage the Commissioner to try to circle each of the five definitional words with tight language that creates arbitrary gaps between, for example, “manufacture” and “composition of matter” through which useful inventions can fall out of the realm of patentability. To do so would conflict with this Court’s earlier expression of a “judicial anxiety to support a really useful invention”: [*Consolboard Inc* . . . at p 521, citing *Hinks & Son* . . .]. The definition of invention should be read as a whole and expansively with a view to giving protection to what is novel and useful and unobvious.”

³² The out-of-context use of “anything under the Sun made by man” has been criticised by several authors, including Stevens J in *Bilski v Kappos*, as being opposite to the actual meaning.

³³ Richard H Stern, “Being Within the Useful Arts as a Further Requirement for US Patent Eligibility”, [2009] EIPR 6,10, fn 57.

³⁴ See *Musgrave*, *supra* note 30, one of the few cases touching on the Constitutional meaning of “useful arts” directly: “All that is necessary, in our view, to make a sequence of operational steps a statutory “process” within 35 USC § 101 is that it be in the technological arts so as to be in consonance with the Constitutional purpose to promote the progress of “useful arts.” Const Art 1, sec. 8.”

³⁵ *Bilski*, *supra* note 3 per Stevens, p 1: “Rather than making any broad statements about how to define the term “process” in s 101 or tinkering with the bounds of the category of unpatentable, abstract ideas, I would restore patent law to its historical *and constitutional* moorings.” (Emphasis added.)

(g) The Act of Invention

All patentable inventions require as a pre-requisite that there be an act of invention. An inventive act requires a mental element and a non-purely-mental element: an idea, or conception; and a practical way of realizing that conception.³⁶ The mental element is a creative act of the named inventor.³⁷ The mental portion has two components — an idea of an inventive object, and an idea of a means (“a way of carrying it out”) to attain that object.³⁸ The mental portion may be very

³⁶ *Permutit v Borrowman*, [1926] 4 DLR 285, 43 RPC 356 (PC) as approved in *Rice v Christiansi & Nielsen*, [1930] 4 DLR 401, [1930] SCR 443: “It is not enough for a man to say that an idea floated through his brain; he must at least have reduced it to a definite and practical shape before he can be said to have invented a process. . . . The conception of the idea “coupled with the way of carrying it out” and “reduced to a definite and practical shape” constituted the invention of his process . . .” [i.e., in respect of processes in particular.]

See also in *Rice*: “The holding here, therefore is that by the date of discovery of the invention is meant the date at which the inventor can prove he has first formulated, either in writing or [orally], a description which affords the means of making that which was invented. There is no necessity of a disclosure to the public.” . . . “The conception of the idea “coupled with the way of carrying it out” and “reduced to a definite and practical shape” constituted the invention of his process, . . .” (Internal citations omitted).

³⁷ Subsequent searching of prior art may show that the claim, while new to the applicant himself, had previously been known or used by others — a routine prospect facing every patent applicant. However, the type of subject-matter of a claim found to be potentially patent-eligible for the purposes of searching does not change once anticipatory art is found. Subject-matter remains as it was, but the claim is unpatentable because it does not meet the other “conditions and requirements of this title”, in 35 USC 101. See also *Patent Act* s 27(1): The Commissioner shall grant a patent for an invention to an inventor . . . if an application for the patent in Canada is filed in accordance with this Act and all other requirements for the issuance of a patent under this Act are met.” (Emphasis added.)

³⁸ See *Diversified Products Corp v Tye-Sil Corp* (1991), 35 CPR (3d) 350 (Fed CA) at pp 364-365, in particular quoting from *Hickton’s Patent Syndicate v Patents & Machine Improvements Co* (1909), 26 RPC 339 [*Hickton’s*]:

“In my opinion, invention may lie in the idea, and it may lie in the way in which it is carried out, and it may lie in the combination of the two; but if there is invention in the idea plus the way of carrying it out, then it is good subject-matter for Letters Patent.” [i.e., in respect of inventions generally]

Per Fletcher Moulton LJ at p 348: “. . . but I think you are losing grasp of the substance and seizing the shadow when you say that the invention is the manufacture as distinguished from the idea. It is much more true to say that the patent is for the idea as distinguished from the thing being manufactured. No doubt you cannot patent an idea, which you have simply conceived, and have suggested no way of carrying out, but the invention consists in thinking of or conceiving something and suggesting a way of doing it . . .” [i.e., in respect of inventions generally]

slight.³⁹ However slight, the creative component must be accompanied by something else that (i) is not a purely mental act, and (ii) is not otherwise dependent upon the use of non-reliably-repeatable human judgment or skill.⁴⁰ That “something else” converts the purely mental act or idea into something practical by which the idea of means is accomplished. In Canada, the requirement for practicality is met if the claim encompasses an embodiment⁴¹ for which the specification provides a description enabling a person of skill to practice that invention. In US law, it is the basis of the requirement of reduction to practice. It is a form of objective evidence that the invention has some definable substance, and that the necessary non-purely-mental inventive act is complete. An inquiry into whether a process is merely a series of purely mental steps is not an inquiry into whether that process falls within “Science and the useful Arts”.⁴² Purely mental steps may relate to the useful arts or any other art. However it may be, purely mental operations or processes, alone, are not patent-eligible in Canada.⁴³

Equally, a listing of means without a mental act or idea also fails to constitute an act of invention. This is the problem of “mere aggregation” as opposed to inventive combination. A mere aggregation of parts not in themselves patentable and producing no new result is unpatentable. As recently as *Free World Trust*,⁴⁴ the law on aggregation was taken to be that of *R v Uhlemann Optical Co*⁴⁵ that “The inven-

³⁹ “There must be a substantial exercise of the inventive power or inventive genius, though it may in cases be very slight. Slight alterations or improvements may produce important results and may disclose great ingenuity. . . . A new combination of well known devices, and the application thereof to a new and useful purpose may require invention to produce it, and may be good subject-matter for a patent.” — *Canadian General Electric Co v Fada Radio Ltd*, [1930] 1 DLR 449 (Canada PC) per Lord Warrington at 451-452, quoting Maclean J with approval. See also *Hickton’s*, *supra* note 38.

⁴⁰ The person of skill must be able to practice the claimed invention without the exercise of inventive skill. Therefore the invention claimed must be reliably repeatable, based on the instructions found in the specification. Success cannot then depend on subjective individual judgment or skill to produce something within the claims.

⁴¹ The inventor is not limited to claims that cover only the embodiments described by the inventor: *Rice*, *supra*, note 36. “Bayer invented a new principle and a practical means of applying it. He “was not bound to describe every method [i.e., every embodiment] by which his invention could be carried into effect.”

⁴² See *In re Musgrave*, *supra* note 30, where the concurring opinion is fixated requiring that the invention be physical, when the majority is deciding the case on the completely different constitutional ground.

⁴³ See *Schlumberger Ltd v Canada (Patent Commissioner)*, *infra* note 61.

⁴⁴ *Free World Trust c Électro Santé Inc*, [2000] 2 SCR 1024 [*Free World Trust*].

⁴⁵ *R v Uhlemann Optical Co* (1951), [1952] 1 SCR 143: “With this interpretation of the specification and of the claims it is clearly shown that Uhlemann’s invention consists in combination and it matters not therefore whether as contended by counsel for the appellant the elements thereof are old and were already known in the art as separate entities. As was pointed out by this Court in *Baldwin International Radio Co of Canada Ltd v Western Electric Co Inc et al.*, on this branch of the case viz anticipation the only point is whether the actual combination is new. It is idle to repeat that antici-

tion lies in the particular combination provided it is not mere aggregation or juxtaposition of known contrivances.” An inquiry into aggregation is not an inquiry into whether all of the admittedly known elements are found in a single reference,⁴⁶ or whether a person of skill would have made the combination. It is an inquiry into whether the combination, *once made*, yields something, a result, that is more than the sum of the parts.⁴⁷ It does not matter that all of the elements are known in the art — in the traditional arts most claims are for combinations of old elements. Aggregation is not an issue of novelty. It is not an issue of obviousness. It is an issue of lack of an act of invention.

The same issue is the focus of the recent USSC decision in *Mayo Collaborative Services v Prometheus Laboratories, Inc.*⁴⁸ The court summarised: “To put the matter more succinctly, the claims inform a relevant audience about certain laws of nature; any additional steps consist of well understood, routine, conventional activity already engaged in by the scientific community; and those steps, *when viewed as a whole, add nothing significant beyond the sum of their parts taken separately*. For these reasons we believe that the steps are not sufficient to transform unpatentable natural correlations into patentable applications of those regularities”.⁴⁹ (Emphasis added.)

The USSC requires the claims to be viewed *as a whole*, not as a collection of separate elements to be analysed individually for subject-matter. Second, the Court is looking for something that is more than the sum of the parts. As above, the “sum of the parts” inquiry is not an inquiry into whether all of the elements are found in a single prior reference, and it is not an inquiry into whether a person skilled in the art would have made the combination. It is an inquiry into whether the combination, once made, yields that “something more”.

It is the integration of the idea and the practical elements that matters. Artificially dressing up a mere idea with pre-solution or post-solution steps is not suffi-

pation is not established by what may be qualified the imaginary assemblage of separate elements gathered from glosses selected here and there in several and distinct anterior specifications. The invention lies in the particular combination provided it is not mere aggregation or juxtaposition of known contrivances.”

⁴⁶ In *Shell Oil*, *supra* note 28, all of the elements were found in a single item of prior art, yet the use, alone, was sufficient for the combination to meet the test of invention.

⁴⁷ *Free World Trust*, *supra* note 44 at para 27. See also *HersHKovitz v Tyco Safety Products Canada Ltd*, 2009 FC 256 at para 148: A combination of elements is patentable but a mere aggregation of elements is not. The difference is that in an unpatentable aggregation, the elements do not cooperate and interact to give a novel unified *result*, whereas in a patentable combination, there is cooperation or interaction of elements so as to yield a novel, unobvious and advantageous result that is more than the sum of what the elements taken individually would generate: see RH Barrigar, *Canadian Patent Act Annotated*, 2nd ed (Aurora: Canada Law Book, 2008) at PA-28.11-12; *Domtar Ltd v McMillan Bloedel Packaging Ltd* (1977), 33 CPR (2d) 182 (Fed TD) at 189–91; affirmed (1978), 41 CPR (2d) 182 (Fed CA). (Emphasis added.)

⁴⁸ *Mayo Collaborative Services v Prometheus Laboratories, Inc.*, 132 S Ct 1289 (2012) [*Mayo*].

⁴⁹ *Ibid.*, per Breyer, page 11, lines 1–10. See also Robinson, *supra* note 27.

cient.⁵⁰ This point is captured in the USSC *Mackay Radio* case: “While a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created *with the aid of* knowledge of scientific truth may be”.⁵¹ (Emphasis added.) What matters is the whole.⁵²

Substantially the same point is made in Anglo-Canadian case law well before 1949. In *Klaber’s Patent*,⁵³ Lord Davey observed:

A proper combination for a patent is the union of two or more integers, every one of which elements may be perfectly old, for the production of one object which is either new, or at any rate is for effecting an old object in a more convenient, cheaper, or more useful way. *But the point in a combination patent must always be that the elements of which the combination is composed are combined together so as to produce one result.* (Emphasis added.)

Similarly, in *Wright v Brake Service Ltd*,⁵⁴ Maclean J wrote:

According to long established principles, a combination may be composed of elements wholly new or wholly old, or partly new and partly old.⁵⁵ In each case the combination is a means distinct from the elements, whether new or old. It is an instrument or operation, formed by uniting two or more subordinate instruments or operations, in a new idea of means.⁵⁶ It is the combination of individual functions, so as to constitute a common function. A combination in a mechanism must consist of distinct mechanical parts,

⁵⁰ *Diamond*, *supra* note 1 at 192: “Similarly, insignificant post-solution activity will not transform an unpatentable principle into a patentable process. To hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject-matter eligible for patent protection. On the other hand, when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (e. g., transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101.” and “In my opinion, it equally requires rejection of Claim 11 because the pre-solution activity described in that claim is admittedly a familiar part of the prior art”.

⁵¹ *Mackay Radio & Telegraph Co v Radio Corporation of America*, 306 US 86 (1939) at 94 [*Mackay*].

⁵² *Diamond*, *supra* note 1: “In determining the eligibility of respondents’ claimed process for patent protection under §101, their claims must be considered *as a whole*. It is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis. This is particularly true in a process claim because a new combination of steps in a process may be patentable even though all the constituents of the combination were well known and in common use before the combination was made. The “novelty” of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.” (Emphasis added).

⁵³ *Klaber’s Patent* (1906), 23 RPC 461 (HL) at 469.

⁵⁴ *Wright v Brake Service Ltd*, [1925] Ex CR 127 (Can Ex Ct) at 130; affirmed [1926] SCR 434 (SCC) [*Wright*].

⁵⁵ See *Halle v Johnson*, 23 OG 2411 at 2412, cited in Robinson at s 1455, p 219, fn 1.

⁵⁶ See Robinson, *supra* note 27 at s 155 p 216.

having some relation to each other, and each having some function in the organism. *When these elements are so united that by their reciprocal influence upon each other, and by the joint and co-operating action of all the elements with respect to the work to be done, or in furtherance thereof, new or additional results are obtained, the union is a true combination.*⁵⁷ Altogether the authorities seem to support the proposition, that if in a new combination, an arrangement of known elements produces a new combination, or if it forms a new machine of distinct character or formation due to the co-operative action of all the elements, or if the several elements produce a new and useful result or an old result in a cheaper or entirely advantageous way, this is evidence of invention and fit subject-matter for a patent.^{58, 59} (Footnotes added.)

Finally, the requirement for an act of invention is a prerequisite for subsequent substantive analysis for novelty, utility, or obviousness. The question of whether there has been an inventive act sufficient to define a date of invention to establish entitlement to priority as between two competing inventors in *Permutit v Borrowman* and in *Rice v Christiani & Nielsen* is not an inquiry into whether the invention of that act is novel or obvious. Under a conflict proceeding in Canada, or a US interference proceeding, the question of inventorship, and therefore entitlement, turned on date of invention — an inquiry to which art-based issues of validity were irrelevant. Whether subject-matter is statutory is a question of the *nature* of the inventive act. It is either statutory, or it is not. The *nature* of an invention is not a question of *breadth*. The allowable limits of claim scope, i.e., *breadth*, are determined, first, by the requirement of support in the application as filed under s 27(3), and, second, given such subject-matter support, by the territory already occupied by the prior art under anticipation and obviousness. Determining the nature of an invention is an inquiry that is entirely separate from determining the breadth of claim scope to which that invention is entitled.

(h) “Business Methods” and “Methods of Doing Business”

The common use of “business methods” since *State Street*, does not appear to have the same meaning as “a method of doing business” in older, pre-1960, pre-software, cases, under which “methods of doing business” were, typically, schemes or plans for doing business.⁶⁰ More recently, “business methods” has often been applied to computer implemented methods.

In the “method of doing business” cases, the rationale for exclusion can be any one of (a) failure to fall within “Science and the useful Arts”; (b) falling within the

⁵⁷ See Robinson, *supra* note 27 at s 155 p 219.

⁵⁸ See *Stephenson v Brooklyn Cross-Town R Co*, 114 US 149 (1885) (Canada PC) at 157 per Woods J cited in Robinson at s 155, p 219, fn 1 31 OG 263 at 265.

⁵⁹ Courts in Canada have long relied on patent principles found in US law. Maclean J was an outstanding patent judge, and this decision, clearly echoing parallel US jurisprudence, was affirmed by the SCC long ago.

⁶⁰ For example, under US law: *Hotel Security Checking Co v Lorraine Co*, 160 F 467 (2d Cir, 1908); *In re Wait*, 73 F 2d 982 (Cust & Pat App, 1934); *Loew's Drive-In Theatres v Park-In Theatres*, 174 F 2d 547 (1st Cir, 1949) (Drive in theatres); Under English law: *Cooper's Application* (1902), 19 RPC 53 (AG).

exercise of professional skill; and (c) being dependent upon the use of human judgement or skill, and so therefore (i) not necessarily resulting in something falling within the claims, and (ii) not being something for which a fully enabling disclosure has been provided. It may be noted that these rationales all partially overlap each other. By contrast, the issue of whether something is merely an “abstract idea” pertains to determining whether there has been a completed act of invention. That question is unrelated to whether the activity fails to fall within Science and the useful Arts.

II. THE ROAD TO AMAZON

The meaning of four earlier cases was contested in *Amazon.com*, chronologically:

- (a) *Lawson v Canada (Commissioner of Patents)*⁶¹
- (b) *Schlumberger Ltd v Canada (Patent Commissioner)*⁶²
- (c) *Shell Oil Co v Canada (Patent Commissioner)*,⁶³ and
- (d) *Progressive Games Inc v Canada (Commissioner of Patents)*⁶⁴

A discussion of these cases follows, starting with *Lawson*.

(a) *Lawson*

The *Lawson* application was filed on 11 March 1963 — before the information technology era. The claims concerned division of land into champagne-glass shaped building lots. Only dependent claim 5 was under appeal. It is shown as Appendix item 1. The issue was whether the plan of land development could be patent-eligible subject-matter. However, rather than determining whether the claims pertained to an art or science within the *Patent Act*, the reasons focus on whether the plan was an “art” in s 2. Basing himself on the Australian case *National Research Development Corp v Commissioners of Patents*⁶⁵ [NRDC] Cattanch J wrote:

It is obvious from the concluding portion of the above quotation [from NRDC] that *professional skills* are not the subject-matter of a patent . . .

It seems to me that a method of describing and laying out parcels of land in a plan of subdivision . . . [is] the skill of a solicitor and conveyancer and that of a planning consultant and surveyor. It is an art which belongs to the pro-

⁶¹ *Lawson v Canada (Commissioner of Patents)* (1970), 62 CPR 101 (Can Ex Ct) per Cattanch J [*Lawson*].

⁶² *Schlumberger Ltd v Canada (Patent Commissioner)* (1981), 56 CPR (2d) 204, [1982] 1 FC 845 [*Schlumberger*].

⁶³ *Shell Oil*, *supra* note 28.

⁶⁴ *Progressive Games Inc v Canada (Commissioner of Patents)*, 177 FTR 241 (TD); *aff'd* (2000), 9 CPR (4th) 479 (Fed CA) [*Progressive Games*].

⁶⁵ *National Research Development Corp v Commissioners of Patents* (1960), [1961] RPC 135 (Australia HC) [NRDC].

fessional field and is not a manual art or skill.⁶⁶

I, therefore, conclude that the method devised by the applicant herein for subdividing land is not an art within the meaning of that word in s 2(d).⁶⁷

Cooper's Application (1902), 19 RPC 53 (AG) (Emphasis added.)

This professional skills *ratio* was reinforced by rejecting the position of the US Board of Patent Appeals and Interferences (BPAI) in the corresponding US case, and preferring instead the examiner's reasoning in the UK case *ESP's Application, Re*.⁶⁸

It is clear from this claim and from the description and drawings that the alleged invention is, in essence, merely an architect's plan or design for the layout of the individual houses in a row of houses. It has never been the practice of this Office to regard such plans as "manners of new manufacture" within the meaning of s 93 and to grant patents for them would . . . be an unfair restraint on the normal use of an architect's designing powers in the exercise of his profession . . . The sole advantages alleged . . . are matters which . . . belong to the province of the architect rather than the manufacturer.

Cattanach J buttressed his approach by finding that:

. . . the words "manner of manufacture [in the English, Australian and N.Z. cases] are merely a compendious way of expressing the same ideas contained in the words "art, process, machine, manufacture or composition of matter.

Therefore it is accepted in principle that the requirements with regard to subject-matter of a patent are co-extensive under the British and Canadian statutes and that the jurisprudence established by the Courts of the United Kingdom is authoritative in Canada.⁶⁹

This holding allowed adoption of the ratio in *NRDC* as law in Canada on the limits of "art" in respect of the exercise of professional skill.

(b) Lawson — Physical Agents and Physical Objects

Despite having been decided on the issue of professional skill and judgment, *Lawson* lives on for the *obiter* statement:

An art or operation is an act or series of acts performed by some physical agent upon some physical object and producing in such object some change either of character or of condition. It is abstract in that, it is capable of contemplation of the mind. It is concrete in that it consists in the application of physical agents to physical objects and is then apparent to the senses in con-

⁶⁶ The distinction between professional skill and manual labour is rarely found in North American case law. It was more common in older English cases. One rationale was that the professions should not be hobbled by monopolies.

⁶⁷ *Lawson*, *supra* note 61 at p 111.

⁶⁸ *ESP's Application, Re* (1945), 62 RPC 87.

⁶⁹ *Lawson*, *supra* note 61 at p 111. This statement was criticised sharply by Gordon Henderson in the editorial note in 62 CPR at pp 102-103. Fox's view was firmly rejected by Pigeon J in the *Tennessee Eastman Co v Canada (Commissioner of Patents)* (1972), [1974] SCR 111 appeal, as discussed below.

nection with some tangible object or instrument.

In the troubled history of subject-matter cases in the US, UK, and Commonwealth, a special place belongs to the subsequent *obiter* discussion in which Cattanach J explained why, having found physical change to be necessary, the land was not a “manufacture” because it was physically unchanged. Cattanach J analogised a physical change under s 2 of the *Patent Act* to a physical change in land for the purposes of taxation as inventory of a business, or as a capital asset, citing his own decision in *Moluch v Minister of National Revenue*⁷⁰ under the *Income Tax Act*. Thus did the basis of “physicality” arrive in Canada.

(i) *Origin in Robinson on Patents*

That all claims must have “physicality” is not a requirement of the statute, nor was it a requirement in older cases.⁷¹ The *Lawson* paragraph does not originate in the *Patent Act*, or, apparently, in Canadian law. The *Lawson* definition of “art”, came, without citation, almost verbatim from Robinson, where art is anything other than the classes relating to instruments.

An art or operation is an act or series of acts performed by some physical object, and producing in such object some change either of character or of condition. It is also called a “process”, or a “mode of treatment” and it is said to require that “certain things be done with certain substances in a certain order”. It is so far abstract that it is capable of contemplation by the mind apart from any one of the specific instruments by which it is performed. It is so far concrete that it consists in the application of physical force through physical agents to physical objects, and can thus become apparent to the senses only in connection with some tangible instrument and object.⁷²

Robinson continued:

It has, however, always been the settled law of this country that any artificial operation performed by physical agents and producing physical effects *within the domain of the industrial arts*, is a true invention, and can be patented as such without reference to the specific instruments engaged or the specific objects in which the effects may be produced.⁷³ (Emphasis added.)

Robinson’s inclusion of the word “physical” was a gloss on the USSC case *Cochrane v Deener*,⁷⁴ which Robinson had cited in support:

A process is a mode of treatment of certain materials to produce a given

⁷⁰ *Moluch v Minister of National Revenue* (1966), [1967] 2 Ex CR 158, [1966] CTC 712 [*Moluch*].

⁷¹ In the steam engine cases the defendants complained that Watt’s claims did not include an apparatus (admittedly old), but only a method. A similar issue arises in *Westinghouse Electric Corp, Re* (1983), 6 CPR (3d) 58. The computer program was a method of operating machinery more efficiently — and well within the useful arts.

⁷² Robinson, *supra* note 27, s 159 at pp 230-231. Although the *Lawson* paragraph is clearly based on Robinson, Cattanach J did not cite the source. The same quasi-quotation was used, with citation, in *Tennessee Eastman* at 62 CPR 130, footnote 2.

⁷³ *Ibid*, s 163, p 242-244.

⁷⁴ *Cochrane v Deener* (1876), 94 US 780 per Bradley J at 788 [*Cochrane*].

result. It is an act, or series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If [also] new and useful, it is just as patentable as is a piece of machinery.

Although cited with approval as recently as *Diamond v Diehr*,⁷⁵ *Cochrane v Deener* is no longer good law in the US in light of the rejection of the machine-or-transformation test⁷⁶ as definitive by six members of the court⁷⁷ in *Bilski*. In any case, *Cochrane v Deener* said nothing about a *physical* object, force, or effect. Nonetheless, Robinson's gloss was picked up in *Lawson* and made a central point in the subsequent FCA analysis in *Amazon.com* — without basis in the *Patent Act*, and without basis in the underlying, un-cited, US, case law, which, itself, has now been overturned by the USSC on the point.

The quotation in *Lawson* is from Chapter II of Robinson, concerning the statutory classes. Robinson starts by indicating that “Every invention in the industrial arts is either an operation or an instrument”,⁷⁸ That is, the claim has already been presumed to fall within the “industrial arts”, (i.e., the useful arts), before considering which pigeon-hole is correct.

(ii) *Origin in British and Commonwealth Law*

In British, Australian and New Zealand law the “tangible object” language appears to come via *NRDC*, quoting from the Australian case, *Maeder v Busch*.⁷⁹ *Maeder v Busch* is also quoted at length in *Tennessee Eastman*.⁸⁰ It is from this source that the prohibition of patenting a “disembodied idea” is drawn. According to keyword searching, prior to *Tennessee Eastman*, there is no reported Canadian patent case that uses the words “disembodied idea”. The words appeared in *NRDC*, quoting from *Maeder v Busch*.

Maeder v Busch concerned whether a method of giving hair a “permanent” constituted patentable subject-matter. The source for both “tangible thing” and “disembodied idea” is a quote “Applications of old things to a new use, accompanied by the exercise of inventive power are often patentable, though there be no production of a new thing. But in every case the invention must refer to and be applicable to a tangible thing. A disembodied idea is not patentable. (Edmunds and Bentwich, *Copyright in Designs*, 2nd Ed (1908) pp 20, 21.)” However, pages 20-21 of the *Edmunds and Bentwich* discuss prerequisites for the registration of industrial

⁷⁵ *Diamond*, *supra* note 1 at 182-183.

⁷⁶ *Bilski*, *supra* note 3, per Kennedy J at p 7: “It is true that *Cochrane v Deener* . . . explained that a process is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.” More recent cases, however, have rejected the broad implications of this dictum; and, in all events, later authority shows that it was not intended as an exhaustive or exclusive test.” (Citations omitted).

⁷⁷ The majority supporting the Kennedy opinion, plus Breyer J who wrote a concurring opinion on the point.

⁷⁸ Robinson, *supra* note 27 at section 157, page 229.

⁷⁹ *Maeder v Busch* (1938), 59 CLR 684 [*Maeder*].

⁸⁰ *Tennessee Eastman Co v Canada (Commissioner of Patents)*, [1970] Ex CJ No 14, 62 CPR 117 [*Tennessee*].

designs under the UK *Designs Act* of 1907.⁸¹ It is unrelated to patents for inventions. Rather it explains that a Design is not registrable unless applied to a physical object. Yet language of the 1907 UK *Designs Act*, interpreted in cases (a) for a hairdressing permanent in 1938; and (b) for drawing land lots like champagne glasses, has (as seen below) metamorphosed half a century later into a basis for excluding software and business methods from patent eligibility under s 2 of the Canadian *Patent Act*.

The *Lawson* claims were unpatentable for the most fundamental of reasons: they were not directed to subject-matter within “science and the useful arts.” However *Lawson* skipped to the second question, under s 2, rather than asking the more fundamental question first.

That the “physical” gloss was ill-founded can be confirmed by considering that, if it had been applied, neither the Armstrong claims for FM radio (CA 218,281), nor the Rantzen claims for using radio signals (GB 587,447), nor claim 5 of US RE 117 of Morse for Morse Code, nor the Chatfield claim for multiple program processing optimization would be patentable under Canadian law.^{82, 83} While neither the Armstrong, nor Rantzen, nor Morse, nor Chatfield claims, found in the Appendix at items 2, 3, 4 and 5, would meet a physicality requirement, they would, however, meet almost any other test based on subject-matter being in the industrial arts, or “science and the useful arts”, pertaining to the application of scientific learning or knowledge.

Furthermore, the patentability of a claim cannot automatically be precluded because the inventor has used a virtual element rather than an unquestionably physical mechanical or electro-mechanical equivalent. The patentability of an invention cannot change merely because software is used in place of a functionally equivalent electro-mechanical relay, or because a memory chip stores information rather than a Hollerith card. Absent an unexpected result or advantage, patent eligibility cannot logically turn on whether functional equivalents are “physical” or not.

In the end, there is perhaps more merit in looking to the practical application of learning in the industrial arts or “science and the useful arts” for an understanding of the boundaries of patent-eligible subject-matter, which bears a logical relationship to patent fundamentals, and has a clear basis in the origin, purpose, and history of the *Act*.

III. SCHLUMBERGER

(a) What Did Schlumberger Really Claim?

Schlumberger was an attempt to obtain claims for data processing of well bore down-hole log data. The published reasons are not overly helpful: they conjure up the image of a method of sensing, transmitting and processing data to yield some

⁸¹ The same provisions being found in the corresponding Australian and New Zealand statutes.

⁸² Nor would the claims in CA 1,180,813 of Dialog Systems. See (1984), 5 CPR (3d) 423.

⁸³ See also Morse RE 117, claim 4; *Ex Parte McNabb and Voss*, 127 USPQ 456 (Pat Off Bd App, 1960) (detection of defects in wooden objects); *Ex Parte Kahn*, 124 USPQ 51 (Pat Off Bd App, 1960) (method of insect control using recordings of female insects).

specific output result from which the company drilling the bore can determine, e.g., if there is water, oil, or gas there. However, the *Schlumberger* claims, found at item 6 of the Appendix, were not so directed. As can be seen, a person skilled in the art could not really tell what these claims are directed toward calculating. Claim 1 amounts to:

1. Measuring something down a borehole, and “machine combining” that something to compute some kind of output parameter.

The “machine combining” appears to mean feeding the data into a computer and doing automated calculations to yield a result, although when read literally it also encompasses use of a steam-powered abacus. There is no genuine claim. Claim 1 amounts to a claim for using a computer for anything having to do with well data. Schlumberger amended the claims during prosecution to include claim 46, which amounts to, roughly “46. Applying a computer of any kind to analyse well logging data of any kind.”

(b) Where Are The Formulae?

Contrary to the impression that might be given by the FCA reasons in *Amazon.com*, not only was there no *novel* formula in either claim 1 or claim 46, there was no formula at all.

Both independent claims in *Schlumberger* give rise to the usually mutually inconsistent rejections of (a) being indefinite; and (b) being obvious.⁸⁴ In respect of (a), it is impossible to say the claims are really limited to anything, such that no person of skill would know where the scope of the claims really starts or ends. In respect of (b), it is easy to see that the claim draftsman was trying to draft limitations-that-are-not-limitations, such that when all the non-limiting limitations are swept away, all that remains is the application of computer processing to well log data. As Pratte J correctly observed, given the nature of computers, the use of a computer for data reduction is obvious. All three rejections should have been made. Oddly, the Office chose to object only to lack of patent-eligible subject-matter under s 2, and not for indefiniteness or obviousness.

(c) The Unstable Feedback Loop of Schlumberger

The Examiner having raised the wrong rejection, the Patent Appeal Board (PAB) pursued an inquiry under s 2 and then-section 28(3), including a lengthy analysis of US law on the patentability of computer programs. However, as can be seen by reading the claims, Schlumberger was *not* seeking claims for a computer program. The PAB found, *inter alia*:

- (i) A computer program may be thought of as that portion of computer ware which may be written or printed on paper in an alphanumeric source language, magnetically recorded on tapes, or used with punch cards or in

⁸⁴ A rejection for indefiniteness, or ambiguity, implies that the claim does not meet the requirements of the *Act* because it cannot be understood. If a claim cannot be understood, then it is inconsistent to reject the same claim as being obvious. Therefore the two rejections are usually considered mutually exclusive.

computer acceptable form. In other words it provides the working directions for the computer hardware.

(ii) An algorithm is, in general, a set of rules or processes for solving a problem in a finite number of steps.

(iii) In our view the basic reason why the program itself is not patentable is that a program is analogous in form to a printed or design matter, and if the novelty lies solely in the intellectual connotations of the printed or design matter, it is not patentable. On this point we refer to *British Petroleum Co Ltd's Application*, Official Journal of Patents (1968) where it is stated: "... the intellectual content of a punched tape [computer program] is clearly not patentable ..."

(iv) What happens in the main is that a typical program-related application poses a problem. It describes the development of an algorithm to solve that problem, converts the algorithm to a computer program per se, and then claims are couched or clothed in obscure language designed to ward off objections that the application is directed to an algorithm or computer program. *In our view the development of algorithms and computer programs, however difficult, is nothing more than the expected skill of a programmer and therefore not patentable.* Assuming, arguendo, that a programmer has used his creative skill in designing a specific unobvious program, the novelty lies solely in the intellectual connotations of the printed matter and is not, in our view, patentable. Many matters involving great creativity are just not encompassed by Section 2 of the *Patent Act*. (Emphasis added.)

(i) is uncontroversial. (ii) is also correct, but *every* method claim ever granted also falls within this definition. (iii) arises from a misunderstanding of the British "printed forms" cases in *BP*, (a UK case roughly equivalent to *Schlumberger*) leading to the rather strange third and fourth sentences of (iv). One might as easily say that the skill of Engineers is engineering, and so nothing invented by Engineers is anything more than the expected skill of an Engineer.

First, there has been confusion between (a) the purpose of Patent law, in respect of protection of *functional* subject-matter; and (b) the purpose of Copyright and Design law to protect the *form* of presentation. Second, there has been confusion between (a) the patentability of a method with (b) the medium of expression of the intellectual content of the method.

(d) Algorithms and Methods: Often Synonymous

Virtually all methods that can be implemented by machine, can be expressed as algorithms, and converted into computer code. The words "algorithm" and "method" are often synonyms. Neither the conversion of the logical steps of a method into an algorithm, nor into a computer program, nor into machine code, should have any bearing on the patent eligibility of a method or process. An otherwise patentable method does not become less (or more) patentable when converted into an algorithm, any more than if translated into German or Chinese. The focus on the word "algorithm" seems to have started with the US case *Gottschalk v Ben-*

son.⁸⁵ In *Benson* the methods pertained to conversion of numbers from a decimal format in base 10 to a digital format in base 2 (i.e., “binary coded decimal”, or BCD). The Court found that:

The conversion of BCD numerals to pure binary numerals can be done mentally through use of the foregoing table. The method sought to be patented varies the ordinary arithmetic steps a human would use by changing the order of the steps, changing the symbolism for writing the multiplier used in some steps, and by taking subtotals after each successive operation. The mathematical procedures can be carried out in existing computers long in use, no new machinery being necessary. And, as noted, they can also be performed without a computer.⁸⁶

The court then noted the three existing standard US exceptions: (a) “An idea of itself is not patentable”⁸⁷ (b) “A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented as no one can claim in either of them an exclusive right”.⁸⁸ (c) Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basis tools of scientific and technological work.⁸⁹

Benson has been problematic. The court used the word “algorithm” for procedures for solving problems by computer.⁹⁰ It then found the process (not the algorithm) “so abstract and sweeping” as to cover known and unknown uses, and to do so without even requiring any apparatus.⁹¹ On the basis that an idea may not be patented, the Court balked at granting a patent that would “wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself”.⁹² Noting concerns that computer programs were unsearchable,⁹³ the court then asked Congress to act.⁹⁴

However, the method was not abstract. It was a simple procedure for performing pure arithmetic. It could be performed with a pencil if desired. The Court used “algorithm” as if every algorithm is merely basic arithmetic. However, an algorithm for converting numbers from one form to another is far different from an algorithm for controlling multi-fractional distillation in an hydrocarbon cracker. The *Benson* claims were directed to purely mental acts — the Court found as much. There was no completed inventive act. The issue was the patentability of the method. The mode of expression was irrelevant. Nonetheless, from *Benson* has come the idea that computer programs are algorithms, and algorithms are (a) ab-

⁸⁵ *Gottschalk v Benson*, 409 US 63 (Cust & Pat App, 1972) [*Benson*].

⁸⁶ *Ibid* at 67.

⁸⁷ *Rubber-Tip Pencil Co v Howard*, 20 Wall 498 (US, 1874) at 507, cited in *Benson* [*Rubber-Tip*].

⁸⁸ *Le Roy v Tatham*, 14 How 156 (US, 1852) at 175.

⁸⁹ *Benson*, *supra* note 85 at 67.

⁹⁰ *Ibid*.

⁹¹ *Ibid*.

⁹² *Ibid*.

⁹³ *Ibid*.

⁹⁴ *Ibid*.

tract; and (b) not patentable.

(e) The Medium is not the Method

The patentability of software has never lain in the form of the recording medium. Holes punched in a tape or in computer cards, magnetic recordings on tape; bumpy ridges on a vinyl disc; holes in wooden slats in a loom; Morse code dots and dashes, binary code, hexadecimal code, or optical data on a laser-readable disc: All have been used as recording media. The form does not affect patentability of the substantive steps of the method.⁹⁵ An otherwise patentable method cannot be disqualified merely by the form of expression.

If an algorithm were used to determine which pixels of a display screen to illuminate, when, and with what electrical current, there would be no question that the algorithm embodies potentially patent-eligible subject-matter.⁹⁶ It is no different from identifying the addresses of Amazon.com's customers; the selection of which pixels to illuminate is no different from correlating an object to be sold and a location for delivery (or billing); and the determination of current or voltage is fundamentally no different from sending a signal proportional to price, to charge a capacitor, or to raise an hydraulic lift. Nonetheless, the statement in (iii), above, has led, as in (iv), to a rule that computer programs are, *per se*, unpatentable.

The patentability of all inventions lies in the intellectual content. The intellectual content is in the method. However, the fact that the method finds embodiment in a computer program does not make it unpatentable.

As might be said, "The medium is *not* the method."

(f) Schlumberger in the FCA

Perhaps realizing that the Office had mis-cast the grounds of rejection, the FCA reasons in *Schlumberger* are brief, running exactly two pages. Revealingly, in a comment resembling *Diehr* in respect of pre- and post-processing steps, Pratte J wrote: "Now it is *obvious*, I think, that there is nothing new in using computers to make calculations of the kind that are prescribed by the specifications. It is precisely in order to make that kind of calculation that computers were invented." (Emphasis added.) The FCA found that the discovery was "various calculations" and "formulae". As noted, none of those calculations or formulae appear in either claim 1 or claim 46. It is doubtful that such an approach would now be acceptable under purposive construction. According to the FCA:

(i) If those calculations were not to be effected by computers but by men, the subject-matter of the application would clearly be mathematical formulae and a series of purely mental operations; as such, in my view, it would not be patentable. A mathematical formula must be assimilated to a "mere scientific principle or abstract theorem" for which ss 28(3) of the

⁹⁵ Although the form itself may be patentable, irrespective of the method. See Morse US Patent RE 117, claim 5.

⁹⁶ *Seiscom Delta Inc, Re* (1985), 7 CPR (3d) 506. The PAB held the subject-matter to be statutory, but strongly suggested it was obvious. On remand to the Examiner, the case was allowed as CA 1,196,082.

Act prescribes that “no patent shall issue.” As to *mental operations and processes*, it is clear, in my view, that they are not the kind of processes that are referred to in the definition of invention in s 2.

(ii) If the appellant’s contention were correct, it would follow that the mere fact that the use of computers is prescribed to perform the calculations . . . would have the effect of transforming into patentable subject-matter what would, otherwise, be clearly not patentable.⁹⁷

(iii) I am of the opinion that the fact that a computer is or should be used to implement discovery does not change the nature of that discovery.⁹⁸

(iv) “What the appellant claims as an invention here is merely the discovery that by making certain calculations according to certain formulae, useful information could be extracted from certain measurements. That is not, in my view, an invention within the meaning of s 2.” (Emphasis added.)

As indicated in quotations (ii) and (iv), the FCA *ratio* was under s 2, not under then s 28(3), that calculations carried out by mental operations and processes do not constitute patent eligible *processes* under s 2. While the claimed invention was within the useful arts, and was to a method, it failed for lack of an act of invention. Even the *obiter* does not stand for the principle that “all computer programs are unpatentable”. The *obiter* says that a mathematical formula is a mere scientific principle or abstract theorem under then s 28(3), and that they do not become any more (or less) patentable if a computer is used. The court in *Schlumberger* did not equate computer programs with scientific principles or abstract theorems.

IV. SHELL OIL AND PROGRESSIVE GAMES

In the FC in *Amazon.com* FC, Phelan J characterized *Shell Oil* as: “. . . unequivocally the starting point for the definition of a patentable art”.⁹⁹ The FCA appeared to approve the FC commentary. *Shell Oil* remains the last word of the SCC on patent-eligible subject-matter.

Shell Oil involved an admittedly old compound employed for a new use, namely as a weed-killer. The claim at issue in *Shell Oil*¹⁰⁰ is shown as Appendix item 3. The case is famous for the finding that a “use” which may fall neither within “*machine, manufacture, or process*”, does fall within s 2 under the wider compass of the “art”.¹⁰¹ The invention lay in the four words “a plant growth regulant” found in the claim preamble.

Several statements by Wilson J in *Shell Oil* are of interest in the present discussion:

(i) I think the word “art” in the context of the definition must be given its

⁹⁷ In essence the same rationale as in *Diehr* against trivial pre- and post-solution activity.

⁹⁸ Again, in substance the same as *Diehr* and *Prometheus*.

⁹⁹ FC, *supra* note 5, para 50.

¹⁰⁰ Canadian Patent 1,160,073.

¹⁰¹ From a drafting standpoint, it is a bit surprising that the Commissioner did not object to the format of the claim as failing distinctly to indicate that the claim was for a use.

general connotation of learning or knowledge as commonly used in expressions such as “the state of the art” or “the prior art.”¹⁰²

(ii) . . . “art” [is] a word of very wide connotation and was not to be confined to new processes or products or manufacturing techniques but extended as well to new and innovative methods of applying skill or knowledge provided they produced effects or results commercially useful to the public.¹⁰³

From its context, the quotations discuss the reach of the statutory pigeonhole of “art” under s 2, as opposed to the underlying, unquestioned, prerequisite that the invention pertain to an art or science, i.e., a “useful art”. That weed killers fall within “science and the useful arts” is never discussed: nobody would doubt that chemistry qualifies. The requirement of a “commercially useful result”, however, has its origin in English case law, and the need to interpret “manufactures” as encompassing methods. The “Science and the useful Arts” language of the US Constitution was adopted to overcome that problem. It is not a requirement under the Canadian *Patent Act* that an invention relate to “trade, industry, or commerce”.¹⁰⁴ The *Patent Act* requires that inventions be “useful”, not “commercially useful”.

(iii) This is not a case where the inventive ingenuity is alleged to lie in the combination; the combination is simply the means of realizing on the new discovery potential of the compounds. *This is a case where the inventive ingenuity is in the discovery of the new use and no further inventive step is required in the application of the compounds to that use.*¹⁰⁵ (Emphasis added.)

The importance of this statement is that it affirms that an invention need not have any physical element, and that (a) all the elements can be old; and (b) their combination can be old, yet that does not preclude patentability of the new use. The discovery of a new use does not cause a physical change in the compound, yet the new use is still a patentable invention.¹⁰⁶

On a point that has come to have subsequent resonance, it is not uncommon for CIPO to issue Office Actions in which there is an enumeration of the features of the claim and a discussion, sometime fairly lengthy, of how each element is obvi-

¹⁰² *Shell Oil*, *supra* note 28 at 10.

¹⁰³ *Ibid* at 11.

¹⁰⁴ *Consolboard*, *supra* note 11, per Dickson J quoting from Halsbury’s Laws of England, (3r ed), v 29, at 59: “. . . the practical usefulness of the invention does not matter, *nor does its commercial utility*, unless the specification promises commercial utility, nor does it matter whether the invention is of any real benefit to the public, or particularly suitable for the purposes suggested.” (Emphasis added.)

¹⁰⁵ *Shell Oil*, *supra* note 28 at 11.

¹⁰⁶ *Ibid* at 12-13 quoting Wilson J quoted with approval from *Hickton’s Patent*, *supra* note 38. Query whether direct infringement would occur by mere sale labelled as “Weed Killer” whether ever sprayed on crops, and, if sprayed, if it killed a single weed, or if, by contrast, the label “Weed Killer” is merely inducement of infringement by the end purchaser. The economic damage to the patentee is done when a sale is made, not when the weeds are sprayed.

ous, culminating in a rejection under s 2. As seen below, this occurred in the *Amazon.com* case, for example. However, under *Shell Oil* the obviousness of individual elements is not relevant to a determination under s 2:

When once the idea of applying some well-known thing for a special and new purpose is stated, it may be very obvious how to give effect to that idea, and yet none the less is that a good subject-matter for a patent.¹⁰⁷

Shell Oil also includes:

It is true . . . that once it is decided that these compounds are to be applied to plants, no inventive step is involved in selecting the appropriate carriers; they are common knowledge in the field. But I think this is to miss the point. A disembodied idea is not per se patentable. But it will be patentable if it has a method of physical application.¹⁰⁸

As noted above, this statement is based in part on the citation from *Edmunds & Bentwich*. It states a sufficient condition for patentability. One may note that *Shell Oil* does not indicate that “physical application” is a necessary condition.

Shell Oil, like *Lawson*, entangles unrelated rationales. For example, a comment pertaining to *Tennessee Eastman*, noted:

In effect, [the use of the surgical or medical adhesive tape of claimed in *Tennessee Eastman*] was not patentable because it was essentially non-economic and unrelated to trade, industry, or commerce. It was related to the area of professional skills.¹⁰⁹

As noted above, there is no requirement under the *Act* that an invention be related to “trade, industry, or commerce”. An invention based on “professional skills” does not become more, or less, patentable by being related to “trade, industry, or commerce”. Likewise, that an invention is related to trade, industry, and commerce, does not mean that it does not involve professional skills.

Finally, in discussing *Lawson*, the court in *Shell Oil* pointed out that the case was not decided on the basis of lack of a physical change, but rather:

The application [in *Lawson*] was rejected, again, not because the subject-matter of the application was not an “art” within the meaning of the definition in the Act but because, like the new use for the adhesive in *Tennessee Eastman*, it related to professional skills rather than to trade, industry or commerce.¹¹⁰ (Emphasis added.)

Notwithstanding the mixing of “trade industry or commerce” with “professional skills”, the importance of the point is that the SCC was indicating that the discussion of physical change in *Lawson* was *obiter*. Wilson J then quoted the now-famous passage of *Lawson*, and followed that quotation with a warning, also from

¹⁰⁷ *Ibid* at 12.

¹⁰⁸ *Ibid* at 14.

¹⁰⁹ This finding is based on the reasons of the Ex Ct, not the later reasons of the SCC, in which professional skill was ignored, and the method was instead excluded under (then) s 2(d) as being ancillary to the (now repealed) prohibition on patents for methods of medical treatment under s 41.

¹¹⁰ *Shell Oil*, *supra* note 28 at 15.

Lawson, about confusing ends with means:

However, it is now accepted that if the invention is the means and not the end, the inventor is entitled to a patent on the means. Wilson J, concluded that a new use for an old compound is “no more a disembodied idea than the applicant’s discovery of a method of equalization of thread consumption in Hickton’s Patent. It is a newly discovered means of regulating the growth of plants and is accordingly a “new and useful art” . . . I find no obstacle in s 36 or any other provision of the Act to the grant of a patent to the appellant on these compositions.¹¹¹

*Progressive Games*¹¹² involved a method of playing poker. The importance of *Progressive Games* was the filtering of the *Shell Oil* reasons to yield a three-part test:

“There are thus three important elements in the test for art as articulated by Wilson J:

- (i) it must not be a disembodied idea but have a method of practical application;
- (ii) it must be a new and inventive method of applying skill and knowledge; and
- (iii) it must have a commercially useful result.”

However, the *Progressive Games* distillation diverges a bit from *Shell Oil*. Item (i): (a) pertains to the *Shell Oil* *compound* claims, not the *use* claim; (b) originates in the 1907 UK *Designs Act*; and (c) it is not what Wilson J said when discussing the definition of “art” in the context of the use claims. The comment by Wilson J was not about the definition of an “art”, but whether there was an invention, art or otherwise.¹¹³ Item (ii) confuses anticipation and obviousness with subject-matter eligibility. What Wilson J said was: “I think the word “art” in the context of the definition must be given its general connotation of learning or knowledge as commonly used in expressions such as “the state of the art” or “the prior art”. Wilson J did not say that to reach the patent-eligibility threshold of *being an art* required novelty, unobviousness or utility.¹¹⁴ As discussed above, item (iii) is not found in the statute and is contrary to SCC precedent in *Consolboard*.

Filtering *Shell Oil* through the distorting lens of the lower court in *Progressive Games* has not been helpful. The claims in *Progressive Games* could have been rejected on many grounds, and the Examiner, the PAB, the FC and the FCA all came to that result. However, the path followed bears observation.

First, there is clear precedent that methods incorporating steps requiring the exercise of human judgement or skill are not patentable. This was the ratio in *Lawson*; in *Tennessee Eastman*; and in a number of the English and Australian cases reviewed in *Tennessee Eastman*.

¹¹¹ *Ibid*.

¹¹² *Progressive Games*, *supra* note 64 at para 16.

¹¹³ See *Shell Oil*, *supra* note 28 at page 14, lines 37–39.

¹¹⁴ *Ibid* at 10, last three lines; and her conclusion that the particular art of the claimed invention is a “new and useful” art is found on page 11, lines 1–7.

Second, “card games” can be played entirely by human memory without the cards themselves. As in *Schlumberger*, there is nothing patentable in the mental process of calculating the probability of certain card combinations occurring.

Third, the claims could have been rejected as not pertaining to art or science as required by s 27(3). The claims in *Progressive Games* fail many other tests for subject-matter proposed in Canada and elsewhere. They are not related to an industrial or technological matter, or to a “manufacture”, or to producing a “vendible product”. The claimed invention is not a matter of industry, trade, and commerce, or an advance in an industrial art. It does not meet the increasing knowledge of science and technology concept in *Swift & Co’s Application (New Zealand)*, *Re*, [1961] RPC 147 (NZSC) where Barrowclough CJ said:

In my view the processes described in the present applicant’s complete specification though not within the ordinary everyday concept of “manufacture” are clearly a “manner of manufacture” as the phrase must be interpreted in relation to a modern world’s ever expanding and increasing knowledge of science and technology. . . .^{115, 116} (Emphasis added.)

Despite the alternatives under Canadian law, the *Progressive Games* final rejection read:

The *Patent Act* is designated to protect processes that have novelty, utility, inventive ingenuity and are susceptible of industrial application. Methods of playing games do not produce results in any way associated with trade, commerce or industry, nor may they be, “worked on a commercial scale” as required by Sections 66, 67, 68 and 69 of the *Patent Act*. Therefore it is not in the public interest to grant patents for methods of playing games. Claims 1-35 are rejected.

Other than the last six words, the first sentence is a reasonable statement of principle. However it lacks a basis for rejection under s 2. The “susceptibility of industrial application” seems to be drawn from the EPC, rather than Canadian law. The second sentence almost echoes *Shell Oil*, but instead of giving professional judgement or skill as the issue, speaks of the unrelated issue of working on a commercial scale. Finally, the *Patent Act* does not create a power to reject claims on the basis of the Commissioner’s view of the public interest.

The PAB did not rely on British and Commonwealth cases as being authoritative. Echoing *Shell Oil*, the PAB found that it “is now accepted that the invention is the means and not the end”, but then, instead of applying the law from *Lawson*, *Tennessee Eastman*, or *Schlumberger*, the PAB chose to cite *Fox*. Rather than focusing on the issues of human judgment and mental calculations, the PAB found

¹¹⁵ *R v Patents Appeal Tribunal*, [1962] 1 All ER 610, [1962] RPC 97 [*Swift*]. Corresponding litigation in *Swift’s Application* occurred in both Australia and the UK, where patent eligibility was affirmed.

¹¹⁶ A similar statement is made in *London Rubber Industries Ltd Patent, Re* (1967), [1968] RPC 31 [*London Rubber*], per Lloyd-Jacob, J: “In more recent times attention has been directed to the importance of realising, in the light of the rapid development of science and technology, that a widening conception of a manner of new manufacture may be necessary if patent law is to continue to serve its primary purpose of encouraging developments in the useful arts.” (Emphasis added.)

that:

In carrying out this method there is no change in the character or condition of material objects. It cannot be said that there are two elements — the procedure and the material to which it is applied. *It is more of an abstract idea directed to the means of playing a game, comparable to the rules of playing golf, for example.*¹¹⁷ (Emphasis added.)

As might be noted, the rejection was under s 2, not s 27(8). The “physical” gloss issue has been discussed above. Given the licensing fees,¹¹⁸ it was certain the claimed methods were neither an abstract idea nor lacking in practical application. The PAB continued by pointing out that the method tilts the game in favour of the house. While possibly true, it is irrelevant to any inquiry under the *Patent Act*. The decision ends:

Whether or not to choose to pay out using, for instance, the Ace-King combination as the criterion, is, in the opinion of the Board, a combination of a mathematical calculation of the odds of the appearance of a certain combination and what edge or advantage the Applicant wishes to give to the house/banker. In other words Applicant’s method is the result of mere mathematical calculation *rather than the exercise of the inventive faculty resulting in the discovery of some previously unknown advance in human knowledge* by the exercise of human intellect.¹¹⁹

The first sentence is correct, as are the first twelve words of the second sentence. However the italicized portion is problematic. Subject-matter eligibility under s 2 is *not* a prior-art based (i.e., “previously unknown”) test, *i.e.*, a test of scope.

On appeal, the FC equated processes with methods, and found both to be “art”. The Court quoted the “disembodied idea” paragraph from *Shell Oil*, and made the three-step distillation noted above. The court found the failure of the PAB to consider the definition of the word “art” in *Shell Oil* to be legal error. However, it may be recalled that *Shell Oil* was about the need to fit *use* into one of the statutory class pigeon-holes. No such issue arose in *Progressive Games*.

The FC found that the method claims are “not simply a disembodied idea; there is in fact a practical application as those changes involve the physical manipulation of cards; . . .”. Yet the cards could have been virtual. They had no inherent *physical* function. The FCA merely affirmed, without comment.

This is where the law stood prior to *Amazon.com*.

V. AMAZON.COM SEEKS A PATENT

(a) Background

On 11 September 1998, Amazon.com filed an application for a “Method and System For Placing a Purchase Order Via a Communication Network”, now CA 2,246,933. Simply expressed, the application concerned an improved remotely-ac-

¹¹⁷ Decisions of the Commissioner of Patents, Decision No 1290, *In re: Application 2,246,933*, 5 March 2009.

¹¹⁸ *Progressive Games*, *supra* note 64 at 18.

¹¹⁹ PAB, *supra* note 117.

cessible electronic cash register.^{120, 121} The claims relate to a “1-click” shopping apparatus and method that facilitates sales to customers over the internet and that eliminates several steps of more cumbersome previous systems by automatically correlating customer payment and address data to a customer operated product selection process. Appendix item 9 shows representative claims 1 and 44.

It is fundamental to peripheral claim drafting that the validity of a claim rests only on its own claim language, and is not limited to a single embodiment shown or described. According to the commentary provided by Amazon.com in the RMFL, in a typical embodiment falling within the fence defined by the claims, the server is a computer system used to operate a commercial Web site from which customers can order products. The “client” is the computer system of a customer. The client and server communicate with each other via a tele-communications network, such as the Internet.^{122, 123} Provided there is such a communications system able to send and receive, its nature is irrelevant.

When a client first visits a vendor’s website, the client enters identification, billing and shipping information (purchaser-specific account information). The server creates a “client identifier” for the client and stores it on the client’s computer in a file called a cookie.^{124, 125} The nature of the cookie is irrelevant.

On a client’s subsequent visit to the Web site, the server recognizes the client identifier located on the client’s computer as belonging to that client. The client may then browse items and decide to buy an item by a single action (e.g., a single mouse click on a “button” presented on a Web page).¹²⁶

The single action sends the request to the server to order the item along with

¹²⁰ Memorandum from the Attorney General of Canada & Commissioner of Patents (Appellant) and Amazon.com, Inc (Respondent) (3 March 2011) Appellants Memorandum of Fact and Law, Court File No A-435-10 [AMFL].

¹²¹ The AMFL did not characterize its invention as a cash register. However, Amazon.com’s own website employs a shopping cart icon, and a “proceed to check out” process. The reference cited in prosecution by the Examiner was: “*Creating the Virtual Store*”. A store, and its cash register, are clearly “things”. Further, both the specification and the appellant’s MOFL in the FCA refer to the “shopping cart” model.

¹²² The internet is an example of such a network. In principle, it could be telegraph, a semaphore or heliostat system, or signal flags. It need not be computer-operated, or even that it be digital. It could, presumably, be analog.

¹²³ Memorandum from the Attorney General of Canada & Commissioner of Patents (Appellant) and Amazon.com, Inc (Respondent), (4 April 2011) Respondents Memorandum of Fact and Law, Court File No A-435-10 [RMFL].

¹²⁴ *Ibid*, page 2, para 9.

¹²⁵ A cookie is not conceptually so different from a numerically indexed, computer-accessible Rolodex (tm), or a Christmas card address list. Nor is it so different from the Royal Navy in Nelson’s day having code numbers for names, ships, ports, or frequently used instructions, and storing flags for those code number, tied together beforehand, in a pigeon-hole for quick use later. In its most basic form, the code numbers perform the same function as the client identifier “cookie”. It could be flags, a punched code, a bar code, a series of pre-set electro-mechanical relays or switches, or a set of optical or electro-magnetic registers.

¹²⁶ RMFL, *supra* note 123, page 3, para 10.

the client identifier. The server receives the purchase request, retrieves the purchaser-specific account information using the client identifier, and combines the retrieved account information to generate the order. The result is that a user can order an item through, e.g., a single mouse click, without having to provide additional information or to perform additional steps.^{127, 128}

The claims on appeal were submitted to the Patent Office on 27 November 2002. After prolonged prosecution, all 75 claims were given a “Final” refusal on two bases, namely obviousness under s 28.3 of the *Patent Act*, and lack of statutory subject-matter under the definition of invention in s 2 of the *Patent Act*. This refusal to grant a patent was upheld in 2009 by the PAB.¹²⁹ It was agreed that the invention was novel,¹³⁰ and the PAB did not uphold the Examiner’s finding of obviousness. Amazon.com appealed to Federal Court.

(b) The Rejections Before the Board — Obviousness

(i) Obviousness

All claims were rejected by the Examiner under s 28.3 of the *Patent Act* as obvious given pages 118 to 121 and 326 of “*Creating the Virtual Store*” by M. Ye il,¹³¹ in view of the common knowledge of a person of skill. The PAB overturned the obviousness rejections. The 56 page PAB reasons include an 82 paragraph discussion¹³² of obviousness considering, at length, (a) the terminology of the claims, and (b) the differences between the claims and the cited art.^{133, 134} The Board made findings on the knowledge of persons skilled in the art — also citing Ye il as an authority.¹³⁵ The Board considered: “Web Tracking Terms”; “Collecting Customer Information”; “Cookie Technology”; “Magic Cookies”. There was thus an

¹²⁷ *Ibid*, page 3, para 11.

¹²⁸ In earlier times, this might have been done with a single coded signal by a telegraph key, or a telex keyboard. Now the remote signal interface is a computer terminal. It is not the existence or use of a computer that is essential. It is the existence of a remotely located sending and receiving station capable of sending the coded signal. Again, this is not unlike a single flag or semaphore signal that “England” expects . . . , or perhaps “come to my aid”. A single signal conveys a longer, more complicated message without the cumbersome exercise of repeatedly sending the entire signal, one letter at a time.

¹²⁹ PAB, *supra* note 117.

¹³⁰ *Ibid* at 94. There is no suggestion in the prior art to modify a subscription-based shopping model such that with one click, an identifier (cookie) is sent in conjunction with the product ordering information, thus retrieving purchaser-specific account information, so that the order is instantly placed. [95] The advantages of such a streamlined ordering process pointed out by the Applicant are indicative of some ingenuity (or inventive step) . . .”

¹³¹ Magdalena Yesil, *Creating the Virtual Store* (np: John Wiley Sons, 1996).

¹³² Commencing at page 9, at para 27 and ending at page 32 para 109.

¹³³ Commencing at page 17, paragraph 51 and continuing to page 22, paragraph 65.

¹³⁴ Para 72 and para 73 to para 95.

¹³⁵ Yesil, *supra* note 131 at pages 122, 112–115, 118, 121, 145–125, 113–115, and 112.

extensive factual record on the meaning of claim terminology and differences from the prior art. The detailed obviousness analysis proceeded without a preliminary discussion of purposive construction. There was no suggestion interpretation was in dispute.

(ii) *Patentable Subject-Matter*

The Examiner's rejection for lack of patentable subject-matter under s 2 of the *Patent Act* reads as follows:

There is no new learning or knowledge contributed to the state of the art or the prior art that is not already taught or known by Ye il and the Journal of Design Science to the art of Internet technology. The underlying technical features of the system remain the same. Adding the option to purchase an item with a single-click is considered to be a mere change in the ordering scheme or business model adhered to while using existing client/server systems. The single click is simply a feature within a common system, it is not a system itself and it is done using common computer and Internet technology. As such, the subject-matter of this application as a whole is not patentable under section 2 of the *Patent Act*.

Claims 1 to 45 and 51 to 75 describe methods for ordering items using a computer system. None of these methods are a method of operating an inventive machine or a method of manufacturing or building a vendible product. The claims do not describe methods that produce an essentially economic result in relation to trade, commerce, or industry, in the meaning given those words by the Courts.¹³⁶ The Office considers a method to produce an essentially economic result in relation to trade, commerce, or industry, etc., when that method is a method of operation of an inventive machine or when that method manufactures or construct a vendible product. None of the methods described by these claims are a manual or productive art (they are what have usually been labelled by the Courts as professional skills), and none of these methods constitute "art" under section 2. The fact that conventional computer systems are used to implement the item ordering scheme (claims 46 to 50) does not change the nature of the subject-matter. As stated by the Court, the fact that a computer is or should be used does not add to nor subtract from the patentability of a discovery. A method that does not produce an essentially economic result in relation to trade, etc., cannot be made patentable by merely having it carried out by a computer. The subject-matter of claims 1 to 75 is therefore non-patentable, and is rejected under section 2 of the *Patent Act*.¹³⁷

As can be seen, the first paragraph had attempted to base a rejection for lack of subject-matter on issues of novelty and obviousness, not on issues of subject-matter, and also spoke of "the subject-matter of *this application as a whole* is not patentable", rather than of the claims. By a letter to the Applicant of 30 July 2008,

¹³⁶ The Examiner did not, apparently, cite any case law to support this comment.

¹³⁷ Among the many points, Applicant's reply correctly pointed out that the Examiner's commentary was really an attack on obviousness, and that the suggestion that the claimed invention was non-commercial was without merit.

the Board added:

The Board is of the view that the rejection under Section 2 is based on whether the essence of the claimed invention, or what has been added to human knowledge (in this case: what has been added to online ordering technology) is non-statutory because it does not fall into one of the categories of invention. This matter should be considered by the Applicant as an entirely separate ground from the tests for novelty and/or obviousness.

In upholding this rejection, the PAB concluded:

1. That, per *Lawson*, a patentable art must cause a change in character or condition of some object.¹³⁸
2. Non-technological subject-matter is non-statutory (“Each of the five categories of invention inherently relate to subject-matter that is technological in nature. It follows that subject-matter that is not technological is not statutory subject-matter”).¹³⁹ An “act or series of acts that do not constitute a practical application of scientific or technological knowledge do not fit the definition of a patentable art. A practical application of knowledge necessarily implies an act or series of acts resulting in a change of character or condition of a physical object”.¹⁴⁰
3. Business methods are excluded subject-matter and are unpatentable in Canada.¹⁴¹

The PAB did not suggest that purposive construction was not required, or dispute the law of purposive construction. What the PAB did do, without reference to purposive construction, was to add a test, apparently specific to s. 2, requiring independent assessment of the “substance” of the claims.¹⁴² “The approach to assess the substance is to fully understand the nature of the claimed invention, and determine what has been added to human knowledge”.¹⁴³

(c) Decision of the Federal Court — Phelan J

The FC allowed Amazon.com’s appeal, comprehensively criticizing, and overturning, nearly every point of the refusal. The PAB’s reasoning was held “inappropriate and wrong in law”,¹⁴⁴ and “many of the Commissioner’s errors stem from her adoption of a policy role and the importation of policies not concordant with

¹³⁸ PAB, *supra* note 117, p 38, under the heading “Change of character or condition”.

¹³⁹ *Ibid.*

¹⁴⁰ *Ibid.*, p 42, para 137.

¹⁴¹ *Ibid.*, p 44, para 148.

¹⁴² Another incarnation of this approach is found in the “Inventive Concept” analysis proposed by CIPO in the draft practice notices of 2 April 2012.

¹⁴³ PAB, *supra* note 117, p 38. This must be an incorrect approach. Determination that there is something added to human knowledge is a question of the content of prior art, i.e., a question of, at least, novelty, not subject matter.

¹⁴⁴ FC, *supra* note 5 at 36.

Canadian law”.¹⁴⁵ The court noted that “the Commissioner is . . . bound by Canadian Patent regime and its interpretation by the courts”.¹⁴⁶ The FC found that the Commissioner’s two step “form and substance” and “what has been discovered” approach “confusing and unnecessary” and “. . . a departure from the clear direction of the Supreme Court to apply purposive construction universally”.¹⁴⁷ The FC held that:

The Commissioner has simply adopted a novel legal test by which to assess patentable subject-matter. It is not supported by recent Canadian jurisprudence or the *Patent Act*. This is an error of law and far outside the Commissioner’s jurisdiction.¹⁴⁸

Phelan J concluded:

The absolute lack of authority in Canada for a “business method exclusion” and the questionable interpretation of legal authorities in support of the Commissioner’s approach to assessing subject-matter underline the policy driven nature of her decision. It appears as if this was a “test case” by which to assess this policy, rather than an application of the law to the patent at issue.¹⁴⁹

(d) Points of Law Nominally Upheld by the FCA

Citing *Harvard Mouse*,¹⁵⁰ the FCA held that the grant of a patent was, without discretion, entirely governed by the *Patent Act*, not public policy, and not by foreign laws as proposed by the AG. In the result the FCA nonetheless held that “The Appeal is allowed, and the judgement of the Federal Court is set aside”, and also held that “The appeal of Amazon.com, Inc, of the decision of the Commissioner of Patents is allowed”. On each of the following points, and on the issues of the applicable standards of review, the FCA seemed to uphold, the FC:

- (1) it was legal error to adopt legal principles from foreign jurisdictions (UK and EPC) where key differences exist in the legislation on patentable subject-matter;
- (2) it was legal error to adopt a “form and substance” approach to claims construction and to fail to apply the proper test set out in SCC and FCA jurisprudence;
- (3) it was legal error to apply an overly restrictive test for patentable “art” and to fail to apply the proper test as set out in SCC and FCA jurisprudence;
- (4) there is no general exclusion in s 2 of otherwise patentable business methods;

¹⁴⁵ *Ibid* at 37.

¹⁴⁶ *Ibid*.

¹⁴⁷ *Ibid* at 39.

¹⁴⁸ *Ibid* at 47.

¹⁴⁹ *Ibid* at 78.

¹⁵⁰ *Harvard College v Canada (Commissioner of Patents)*, 2002 SCC 76, Bastarache J at paras 144-145 [*Harvard*].

- (5) there is no “technological” test in Canadian jurisprudence;¹⁵¹
- (6) even if there were a “technological” test, Amazon.com’s claims would meet it;¹⁵²
- (7) there is no discretion under s.27(1) to refuse a patent if all requirements of the *Act* have been met;¹⁵³
- (8) it is *the claims* of a patent that are to be subject to purposive construction;¹⁵⁴
- (9) in making a purposive construction one is not to parse claims into their novel and obvious elements;¹⁵⁵
- (10) citing *Shell Oil*,¹⁵⁶ that, to have patentable subject-matter the invention of a claim:
 - (i) must not be a disembodied idea but have a method of practical application;
 - (ii) must be a new and inventive method of applying skill and knowledge; and
 - (iii) must have a commercially useful result;
- (11) citing *Progressive Games*,¹⁵⁷ it is not necessary for the material objects in question physically to change into another thing, but rather that “practical application” can be satisfied in light of today’s technology where there is a manifestation or effect or change of character.¹⁵⁸

VI. THE FEDERAL COURT OF APPEAL

(a) The Issue on Appeal

The appeal concerned whether the Commissioner of Patents had grounds to reject the Applicant’s claims under the definition of “invention” in s 2 of the *Patent Act*, specifically whether the Applicant’s claims fall within one of the statutory categories of a “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.” That was the only issue on appeal, and thus the only issue requiring an answer.

¹⁵¹ FCA, *supra* note 4 at paras 56–58. “In my view, this test should not be used as a stand-alone basis for distinguishing patentable from non-patentable subject-matter”.

¹⁵² *Ibid.*

¹⁵³ *Ibid* at 27–31.

¹⁵⁴ *Ibid* at 39–41, 47.

¹⁵⁵ *Ibid* at 43.

¹⁵⁶ *Shell Oil*, *supra* note 28, per Wilson J at 554-555.

¹⁵⁷ *Progressive Games*, *supra* note 64.

¹⁵⁸ FCA, *supra* note 4 at 66 but adding that “Justice Phelan is here acknowledging that because a patent cannot be granted for an abstract idea, it is implicit in the definition of invention that patentable subject-matter must be something with physical existence, or something that manifests a discernible effect or change. I agree.”

(b) How the Parties Framed the Appeal

On appeal the government framed the issues as:

- (1) What, within the scope of the claims, have the inventors actually invented?
- (2) Does that invention fall within the statutory definition of “invention”?

Amazon.com framed the issues as:

- (1) whether Phelan J erred in finding and applying the law of purposive construction when construing the claims for the purpose of determining whether those claims are directed to patentable subject-matter.
- (2) whether Justice Phelan erred in finding and applying the test for patentable “art” under the law.

(c) The Original Logic of the Commissioner’s Position

The Commissioner’s rejection was based on the proposition that the definition in s 2 of the *Patent Act* includes an inherent exclusion, or prohibition, on the patenting of “business methods”. (The term “business method”, itself, being nowhere defined.) There was no rejection on appeal under any other section of the *Patent Act*. In particular, there was no rejection under s 27(3); s 27(4); s 27(8);¹⁵⁹ s 28.2; or s 28.3. The Commissioner, (i.e., PAB), had conceded that the invention was novel and was not obvious. The PAB had to have construed the claims to find that they were method claims.¹⁶⁰ There was no dispute on appeal about any of these points. Nor was there a dispute about the logical order of analysis. That is, the consideration of whether “business methods”, as a class, were excluded subject-matter followed *after* preliminary determination that the claims otherwise fell within one of the enumerated classes of art, process, machine, manufacture, composition of matter, or improvement of any one of them.¹⁶¹

(d) The Commissioner’s Proposed Test Under s 2

The Commissioner did not nominally challenge the primacy of purposive construction. However, at least for assessing subject-matter under s 2, another kind of interpretation was also proposed, in which essential elements were to be identified

¹⁵⁹ The Commissioner did not dispute patentability under s 27(8), at the PAB, before the FC or before the FCA.

¹⁶⁰ FC, *supra* note 5 at 24: “In considering the first step, she [i.e., the Commissioner] refused to be limited by only the “grammatical sense” of the claims, as this would prefer form over substance. She found that the method claims were in form related to a process and the system claims in form to a machine. However, in substance the claims were the same: both described a method.”

¹⁶¹ That this must be the logical order is reflected in repealed s 28(3). Before an “illicit object” could be relevant the invention had to have been otherwise patentable. See s 28(3) “No patent shall issue for an invention that has an illicit object in view, or for any mere scientific principle or abstract theorem.” RSC 1970, Ch P-4, s 28(3); current s 27(8) “No patent shall be granted for any mere scientific principle or abstract theorem.”.

and a determination made whether each fell within the statutory classes. The government argued, further, that there was a scientific or technological requirement, but without a convincing basis in the *Act* or in case law.¹⁶² The AMFL acknowledges that the Lower and Upper Canada statutes were based on the 1793 US Act, but then says: “The Canadian statutes, on the other hand, must be understood in the context of the British common law, according to which, it has been noted, the inducement for the grant of a patent was and is “. . . the introduction of a new trade or a new manufacture within the realm”.¹⁶³

UK case law does not have greater force in law than the provisions of the Canadian *Patent Act*. The object of the 1823 and 1826 *Acts* was explicitly the promotion of the progress of the “useful arts”. The statutory classes did not change with the post-Confederation *Patent Act of 1869*. Third, the words “to promote the progress of Science and the useful Arts” do not merely identify the object of the US *Patent Act*. They are (a) the words by which Congress is empowered to legislate in respect of patents; and (b) the words by which the power of Congress is limited.¹⁶⁴ Fourth, the AMFL contradicts *London Rubber*¹⁶⁵ that the pre-1977 purpose of UK patent law was the promotion of the useful arts. Fifth, Fox’s view, upon which the AMFL relies, was ridiculed by the SCC in *Tennessee Eastman*.^{166, 167} The AMFL

¹⁶² AMFL, *supra* note 120 at 74 refers to “numerous references to the correspondence between patentable inventions and technology”. AMFL fn 69 cites paras 150–161 of the PAB decision. This argument might have been developed. However the AMFL cites nothing of weight in Canadian law other than two phrases in *Pope Appliance Corp v Spanish River Pulp & Paper Mills Ltd*, [1929] 1 DLR 209 (PC); and *Tennessee Eastman* (Ex Ct); and a statement in *Harvard Mouse* that the *Patent Act* protects advances in technology, without defining what is, or is not, technological, and without establishing that it excludes non-technological advances — a rather different point.

¹⁶³ *Ibid* at 29, citing Harold George Fox, *Canadian Law and Practice Relating to Letters patent for Inventions*, 4th ed (Toronto: Carswell, 1969) [Fox].

¹⁶⁴ *Graham v John Deere Co of Kansas City*, 383 US 1 (Mo, 1966) at 5.

¹⁶⁵ See *London Rubber*, *supra* note 116 per Lloyd-Jacob J: “. . . if patent law is to continue to serve its primary purpose of encouraging developments in the useful arts.”

¹⁶⁶ *Tennessee Eastman Co v Canada (Commissioner of Patents)* (1972), [1974] SCR 111 at p 120 per Pigeon J.

¹⁶⁷ In rejecting the reliance on the interpretation of “*new manufactures*” under the *Statute of Monopolies* 1623, s 6 as found in *Swifts Application*, [1962] RPC 37, assessing statutory subject-matter under s 2, Pigeon J wrote:

Counsel for the appellants heavily relied on [UK, NZ and Australian decisions] . . . Concerning those cases, I would first observe that I doubt whether decisions dealing with the patentability of inventions under the U.K. Act are entitled in Canada to the weight which authors such as Fox seem to think they should have. There are substantial differences between the British and Canadian statutes which need not be enumerated . . .” The full quotation continues: “In *Hoffmann-Laroche & Co Ltd v Commissioner of Patents* [8], Kerwin CJ, . . ., said (at p 416): The difficulty in the appellant’s way is not only that the Act does not so provide but s 2(d) and s 35(2) demand a negative answer. . . . as to the English practice . . . in view of our statutory provisions that

view was rejected by the SCC nearly forty years ago.¹⁶⁸

Not only on this point was the AMFL enigmatic. For example, the assault on purposive construction¹⁶⁹ contrary to SCC precedent, was puzzling. The FC and FCA had little difficulty rejecting the arguments made for a technological requirement, possibly because the AMFL seems not to have advanced a basis in law upon which either Court could have found otherwise. The AMFL appears to have sought to find a technological requirement¹⁷⁰ variously in (i) the classes in s 2; (ii) the PAB decision in *Amazon.com* at paras 150–161; (iii) the unsupported assertion that holding “non-technological subject-matter is patentable would clearly represent a radical departure from historical understandings”; (iv) a phrase in *Tennessee Eastman*; (v) the “technical problem and solution” of Rule 80(1)(d);¹⁷¹ and (vi) the “Agreement on Trade-Related Aspects of Intellectual Property.” The AMFL did not mention that the requirements for subject-matter, written description, and that subject-matter be in “art or science” are found at the heart of the *Act* in ss 27(4), 27(3)

practice cannot be followed here. [Abridged] In *Commissioner of Patents v Winthrop Chemical Co Inc*, Estey J noted at p 49 “the Canadian Act is not modelled on the British Act”, Kellock J referred to the meaning of the French version, a meaning that would be irrelevant on the assumption that decisions respecting subject-matter under the British statute are controlling, Rand J said (at p 57): “the intention of a legislature must be gathered from the language it has used and the task of construing that language is not to satisfy ourselves that as used it is adequate to an intention drawn from general considerations or to a purpose which might seem to be more reasonable or equitable than what the language in its ordinary or primary sense indicates.

¹⁶⁸ Fox had written, at p 6, that “. . . in this sense [of the philosophic basis of the grant] the patent law of Canada is a direct inheritance from the common law of England, and, although it bears upon its face the impress of its borrowings from the United States patent statutes, this is only a minor influence. That this view is sound is demonstrated by the fact that the law of Great Britain is accepted as authoritative in interpreting that patent law of Canada, save where the statutory provisions of the two countries have diverged, and that United States decisions are accepted only on very particular points where the relevant statutes make similar provision” citing *Hunter v Carrick* (1885), 11 SCR 300. Fox also cited Lord Tomlin in *Rice*, *supra* note 36: “It may be true that the framers of the earlier Canadian statutes relating to patents looked for a model towards the American law rather than towards the English law, but there are marked differences between the American and Canadian statutes, and an examination of the development of American patent law is not of assistance in construing the language of the statute now under consideration.” Given that the relevant provisions were directly copied from US law, Fox’s statement was not correct, and Pigeon J’s dry understatement followed.

¹⁶⁹ *Amazon.com*, FCA, *supra* note 4 at 23.

¹⁷⁰ AMFL *supra* note 120 at 74.

¹⁷¹ Rule 80(1): “The description shall (d) describe the invention in terms that allow understanding of the technical problem, even if it is not expressly stated as such, and its solution.” Rule 80(1)(d) is, itself, curious as it seems to impose a substantive requirement not found within s 27(3).

and 28.3,¹⁷² or rely upon the opinions, directly on point, by Stevens J and Mayer J in *Bilski* in the USSC and Fed Cir, respectively, or upon any US decision interpreting the language of the statutory classes and their meaning.

(e) The Intervener's Submissions

The AMFL was filed on 3 March 2011. The RMFL was filed on 4 April 2011. The RMFL was a model of draftsmanship, and might easily have been expected to have carried the day. The Interveners, namely the Canadian Life and Health Insurance Association and the Canadian Bankers Association, may have had a similar view. On 8 April 2011 the FCA granted leave to intervene.¹⁷³ The *Amazon.com* result appears strongly to reflect the Interveners' efforts.¹⁷⁴

The Interveners' memorandum of fact and law (IMFL) commences: "The Interveners start with the proposition that not "everything under the sun that is made by man is patentable; and that ideas, mental steps, mental processes, schemes and formulae are among the things under the sun that are not patentable."

It was undoubtedly true. On this point there was unanimity in the SCC in *Harvard Mouse*.¹⁷⁵ However, Amazon.com had never advocated that "everything under the sun that is made by man" was patentable.

The phrase "everything under the sun that is made by man" does not originate in Canadian law, but in Congressional testimony on the 1952 US Patent amendments, quoted out of context¹⁷⁶ in *Diamond v Chakrabarty*.¹⁷⁷ In *Chakrabarty* the USSC ruled that the courts should not read into the patent laws limitations and conditions which the legislature had not expressed, and concluded that the words of 35 USC 101 were to be interpreted so expansively that they included everything under the sun that is made by man — an interpretation that effectively cast aside the wording of the statute, and the US Constitution.¹⁷⁸

The end of the Intervener's sentence is equally uncontroversial. It is plain that ideas, mental steps, mental processes, schemes and formulae are not patentable under Canadian law. Nobody suggested otherwise. Yet it was presented as if the Respondent disagreed.

¹⁷² FCA, *supra* note 4 at 53, the Court chides the AG: "The focus should remain on principles to be derived from the jurisprudence", and, presumably, the provisions and principles found in the *Patent Act*.

¹⁷³ Decision of Trudel JA, 8 April 2011, (2011 FCA 127).

¹⁷⁴ The fairness of allowing this intervention might be a subject for reflection. Third party intervention in Canada is extremely rare, and especially so in cases before courts other than the SCC. Here, the Interveners had no special connection to the case, and there was no general call for other third parties to advance *amicus curiae* briefs that might have balanced the Interveners' submissions, or perhaps have provided a different view.

¹⁷⁵ Interestingly, counsel for the Interveners was also counsel in *Harvard Mouse*, then arguing for patentability.

¹⁷⁶ See *Bilski*, *supra* note 3.

¹⁷⁷ *Diamond*, *supra* note 1.

¹⁷⁸ 35 USC 101 does not say "everything under the sun". It mandates explicit statutory classes: "... any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, ...".

The next sentence of the IMFL reads: “The *Patent Act* exhaustively defines the limits of patentability in section 2.” Of course, (leaving aside ss 27(3), 27(4) and 27(8)), that had been the Respondent’s strenuously argued position all along, though it was not theretofore the position of the Commissioner. Yet it is presented as if the Respondent disagreed.

The IMFL continued: “What is not included is excluded, and any extension of new subject-matter should be left to Parliament.” Again, uncontroversial. The Respondent took the same position. Throughout the IMFL the supposition is that to allow Amazon.com’s claims is to *extend* the meaning of s 2 to new subject-matter, to make s 2 include something that it did not include before.¹⁷⁹ It raises the specter of *State Street*.¹⁸⁰

What the Respondent, Amazon.com, requested all along was that its claims be interpreted according to the existing law. It did not request that the definition of s 2 be expanded, or changed. By contrast the Commissioner had argued throughout that a new, inherent, exclusion of “business methods”, should be read into s 2. It was the Commissioner who proposed a change in the law. Yet, in the IMFL, Amazon.com was cast as attempting to *extend* s 2.¹⁸¹

In the next paragraph, paragraph 4, the Interveners submitted that if the decision of Phelan J were upheld the consequences would be dire:

... the result would be to circumvent the accepted prohibition on the patenting of ideas, or mental steps. ... this could result in the patenting of:

- (a) the methods, and steps involved in the creation, use, and analysis of financial data;
- (b) methods for managing financial portfolios and investments;
- (c) methods for creating and managing insurance contracts;
- (d) methods used to calculate risk and to analyze actuarial, mortgage, or underwriting data;
- (e) financial models and investment strategies;
- (f) methods for conducting on-line banking; and
- (g) accounting and tax schemes. (annotation and indentation added.)

In paragraph 5, the Interveners say:

5. Under the test espoused in the *Amazon.com* decision [i.e., of the FC], what would otherwise constitute purely mental steps, could be converted into patentable subject-matter simply by the insertion of incidental or known computer tasks as part of the patent claim. The adoption of this test would put Canada into a legal position that is consistent with the U.S. position post *State Street*, a position that was expressly rejected by the

¹⁷⁹ See also paras 19 and 20. “The categories of patentable subject-matter would thus be vastly extended . . .”

¹⁸⁰ *State Street Bank & Trust Co v Signature Financial Group Inc*, 149 F 3d 1368 (Fed Cir, 1998) [*State Street*].

¹⁸¹ On the point of “expanding” the law see *Harvard Mouse* per Binnie J at p 34, lines 35 et seq.

U.S. Supreme Court . . . in *Bilski*.¹⁸²

Paragraph 5 omitted to mention that it is already Canadian law that purely mental steps are not patentable subject-matter. It is also already the law that mere adoption of a computer will not turn unpatentable purely mental steps into patentable subject-matter — the one certain result of *Schlumberger*. If items are truly incidental then they (a) cannot be “essential” elements of the claim; (b) cannot alter the purposive construction of the claim into a different kind of subject-matter; (c) may give rise to substantive rejections for obviousness; and (d) cannot yield a combination that is more than the sum of the parts anyhow. Nonetheless, the *in terrorem* line was echoed in paragraphs 8 and 25 to 37.

Returning to paragraph 4 the assertion implied that Amazon.com’s claims were merely ideas or purely mental steps — which had been consistently contradicted by the findings of the examiner, the PAB, and the FC; and by the lack of any rejection under s 27(8). The problem with Amazon.com’s claims was that they were not purely mental steps or mere ideas. They were altogether practical: they relate to an improved, remotely accessible, electronic cash register.

The fear mongering in paragraph 4 (repeated in paragraphs 9, 20 and 38(a), and in footnote 21) is instructive. Items (a), (b), (c), (d), (e) and (g) are already non-patentable subject-matter involving the exercise of professional judgement or skill. Item (f) was a fear that the Interveners might have to pay a royalty to a patentee for an improved, remotely-accessible electronic cash register. It is difficult to see a basis in the *Act* for exempting either the banking or health insurance industries from the claims of cash register patents simply because the cash registers are either remotely accessible or electronic.

Paragraph 6 of the Interveners’ memo starts with “The interveners wish to discuss the practical consequences of any test for subject-matter patentability and to suggest a framework for such a test . . .” The “practical consequences” reference invites exactly the result-oriented approach prohibited by *Whirlpool*.

In paragraph 7 the Interveners suggest that *Schlumberger* considers the question of patentable subject-matter with reference to a computer. As discussed above, in *Schlumberger* (a) the use of a computer to do calculations was obvious; and (b) the use of a computer, or not, was irrelevant to patentability. In paragraph 12 the Interveners asserted that *Schlumberger* held that “there is nothing new in using computers to implement ideas.” That is not quite what *Schlumberger* says. *Schlumberger* says that using computers to do mathematical *calculations* is, alone, obvious — the same as it is obvious to use a shovel to dig, or a broom to sweep.

Although the only question formally before the court was whether s 2 of the *Act* included a prohibition against “business methods” being patent-eligible, the IMFL does not ever mention the term “business method”. The Interveners rather slyly directed their commentary only toward, e.g., “computer implemented steps”,¹⁸³ and sought their exclusion from patentability as a class. However, “computer implemented steps” can relate to: (a) the *Schlumberger* situation, where unpatentable mental operations or processes could not be made more or less patenta-

¹⁸² *Bilski*, *supra* note 3.

¹⁸³ See, for example, IMFL, page 3, para 7.

ble by the obvious use of a computer; (b) true unpatentable methods of doing business in the older sense, to which the inclusion or exclusion of a computer is irrelevant; and (c) quite legitimate inventions that involve computers or software. In this non-sequitur fog, the Interveners appear to have made a deftly-timed and rather shrewdly judged invitation to the FCA to conclude that since (a) and (b) are unpatentable, therefore any invention that involves computer implemented steps, as in (c), must also be unpatentable.

There are three points to be made. All applicants, including Amazon.com, have the right:

- (i) to have the patentability of their claims determined under *Canadian* law;
- (ii) to have their claims assessed under the *Patent Act*, not some other law; and
- (iii) to have their patents granted, or not, on the basis of their own claims, not the *Bilski* claims, not the *State Street* claims, not the claims of some other US patent or abandoned Canadian application.¹⁸⁴

Nearly the entire argument of the Interveners was not about the Amazon.com claims, but about *Bilski*. The Interveners implicitly invited the Court to ignore existing law. The Interveners' argument was nakedly results-oriented, and was largely successful.

(f) The Result

On the appeal, the FCA held that there is no inherent statutory exclusion for “*business methods*” under s 2 of the *Patent Act*. The FCA went further to:

- (a) imply that all computer programs are merely unpatentable algorithms;¹⁸⁵
- (b) find that “*business methods*” are not patentable unless found in a combination with other “essential” elements of a claim;¹⁸⁶
- (c) find that although purposive construction is a matter of law, the Federal Court did not have a sufficient factual basis in evidence upon which to make a purposive construction of the claims;¹⁸⁷ and
- (d) refuse, on the basis of (c), formally to answer the central question in the case, namely whether the Amazon.com claims comprised patent-eligible subject-matter under s 2 of the *Act*, and to return the question to the Commissioner.¹⁸⁸

The FCA decided the first issue as framed by the AG, pointing out that the

¹⁸⁴ The IMFL did not provide the application or patent numbers of the examples at IMFL paras 34 and 36.

¹⁸⁵ FCA, *supra* note 4 at 63.

¹⁸⁶ *Ibid* at 61.

¹⁸⁷ *Ibid* at 71, 72 and 74.

¹⁸⁸ *Ibid* at 72, 73 and 74.

Commissioner's duties are defined by the *Patent Act*, and noting that the *Act* requires the Commissioner to examine the claims, rather than the "invention".¹⁸⁹

In respect of the second issue as framed by Amazon.com, the FCA agreed that Phelan J had found the right test, but then diverged from that test and qualified its determination as to whether the FC interpretation of the test was fully correct.¹⁹⁰ In respect of the first issue as framed by Amazon.com, the FCA did not decide whether Phelan J had applied the test correctly, but, quite unexpectedly, reversed instead not on the basis of an error of law, but rather on the ground that Phelan J had erred in making his own purposive construction, at all, without, in the FCA's view, a sufficient factual basis. Finally, on the second ground framed by the AG, the FCA refused formally to answer the question on appeal (the rejection under s 2), as the court was "unable to discern from the record what the Commissioner would have concluded about the patentability of the claims in issue based on the correct principles" and replaced the decision of the FC "with a judgment that allows Amazon's appeal of the Commissioner's decision and requires the Commissioner to re-examine the patent application on an expedited basis in accordance with these reasons".¹⁹¹ On this basis the FCA returned the case to the Patent Office.

VII. COMMENTARY ON AMAZON.COM

(a) Factual Basis For Purposive Construction in the FC

The referral back to the Commissioner rested on FCA paragraph 72 reading, in part:

In my view, it was not appropriate for Justice Phelan to undertake his own purposive construction of the patent claim in view of the available record in this case. . . .

(i) *Facts Required to Construe Claims*

The issue of whether the record provided a sufficient factual basis for making a purposive construction was not briefed on appeal, and was not a ground of appeal advanced by the Commissioner. It is neither mentioned in the AMFL, nor even in the mischievous IMFL.

The FCA reasons in *Amazon.com* do not point to anything in the available public record showing that (i) the claim terms were unclear; or (ii) there was doubt about what the claim terms meant to persons of ordinary skill. There is no suggestion that the Applicant, the Examiner, the PAB, the FC, or the FCA itself, had any difficulty in understanding the meaning of the claims.

¹⁸⁹ *Ibid* at 39–41. Even this has an equivocal gloss. See para 39, "*That choice was made for the following reasons.*" and para 41 where the FCA finds "*no reason why*" patentable subject-matter, utility, and statutory exclusions should not refer to the claims — as if by default only. Section 27(4) mandates that patents be granted for the claimed subject-matter. It is fundamental that the only "invention" is the one defined in the claims. That is how the public knows where it is safe to tread.

¹⁹⁰ *Ibid* at 69.

¹⁹¹ *Ibid* at 75.

(ii) *Explicit Findings Made by the PAB*

Given that the court determined there is no general prohibition of “business methods”, the only critical fact-dependent finding was whether the claims fit into one of the enumerated classes of s 2 of the *Act*. On that issue, there must have been a sufficient factual basis because the PAB itself made the explicit finding that the claims were in substance method claims. If there had not been a Notice of Allowance, would it have been open to the Commissioner to make a new, inconsistent, finding that the claims are not, in substance, method claims?

(iii) *Decision is a Glossary of Terms*

FCA paragraph 73 commences: “Anyone who undertakes a purposive construction on a patent must do so on the basis of a foundation of knowledge about the relevant art, and in particular about the state of the relevant art at the relevant time. . . .”

As noted above, the PAB decision ran 56 pages and included an 82 paragraph discussion of obviousness. In discussing the *Ye il* reference, the PAB provided definitions and explanations for a wide range of pertinent terminology.¹⁹² Along the way there is a discussion of each of the points of distinction raised in argument.¹⁹³ There seems not to have been a lack of factual basis:

- (i) in respect of the meaning of the terms as they would be understood by a person of ordinary skill in the art; and
- (ii) in respect of features considered essential to the patentability of the claims under any construction, purposive or otherwise.

(iv) *Summation on Shortage of Facts*

The factual record provided in Decision of the Commissioner No 1290 is difficult to square with the holding by the FCA that there was insufficient factual basis either (a) for the FCA to decide the issue under s 2; or (b) upon which Phelan J could purposively construe the claims. Lack of sufficient factual basis to make the necessary pre-requisite step of construing the claims does not seem to have impeded either the examiner or the PAB.

(v) *Consistent With Prior Cases?*

There is no shortage of prior case law in which the FC has purposively construed claim language. Can it be said all of those cases had a more developed factual record than in Decision 1290? Much was made in the *Amazon.com* appeal of the *Schlumberger* case. However, there is no indication that Pratte J had the expert evidence now required by the FCA in *Amazon.com*.

(b) Order-of-Operations under the Patent Act

FCA paragraph 38 reads “I do not propose to try to list all of the issues im-

¹⁹² Commencing at para 53 on page 18, and continuing, ultimately, to the conclusion in respect of obviousness at paragraph 99 on page 28.

¹⁹³ Commencing at para 72, and continuing to para 98.

plicit in subsections 27(3), (4) and (8) and the statutory definition of “invention” that must be considered by the Commissioner, but it seems to me that they would include at least the following (*which need not be considered in any particular order*): . . .” (Emphasis Added.)

The parenthetical portion appears to not sit with SCC precedent: “The first step in a patent suit is therefore to construe the claims. Claims construction is antecedent to consideration of both validity and infringement issues”.¹⁹⁴

The logic of the *Act* dictates that interpretation precedes substantive analysis.¹⁹⁵ The initial question must be whether the claims “define distinctly and in explicit terms the subject-matter of the invention for which an exclusive privilege or property is claimed”.¹⁹⁶

Purposive construction comes before assessment of whether the claims meet the patent-eligible subject-matter threshold of s 2;¹⁹⁷ and before assessing whether the subject-matter is excluded under s 27(8). Utility can be assessed either before or after anticipation and obviousness. Anticipation under s 28.2, ought generally to precede an analysis for obviousness under s 28.3 since a finding of anticipation generally obviates the need for an assessment of obviousness. That is the logical order of analysis under the *Patent Act*. There is only one purposive construction of the claims for all purposes: “. . . However, it has always been a fundamental rule of claims construction that the claims receive one and the same interpretation for all purposes”.¹⁹⁸

Purposive construction cannot be results-oriented:

“(a) . . . A patent must not of course be construed with an eye on the allegedly infringing device in respect of infringement or with an eye to the prior art in respect of validity to avoid its effect: *Dableh v Ontario Hydro*, [1996] 3 FC 751 at pp 773-74 (CA). *Claims construction cannot be allowed to become a results-oriented interpretation*, but there is nothing in Lord Diplock’s speech that would support such an erroneous approach.”¹⁹⁹ (Abridged, emphasis added.)

Amazon.com may have changed the law of (a) what constitutes “art” under s 2;

¹⁹⁴ *Whirlpool Corp v Camco Inc*, [2000] 2 SCR 1067, 194 DLR (4th) 193.

¹⁹⁵ If a claim is ambiguous, or indefinite, under s 27(4), and so cannot be interpreted, it cannot be analysed for subject-matter, anticipation or obviousness *Markman* hearings in the US also precede trials on validity and infringement. See 517 US 370, 116 S Ct 1384; 134 L Ed 2d 577; 1996 US LEXIS 2804; 64 USLW 4263; 38 US PQ 2d 1461; 96 Cal Daily Op Serv 2788; 96 Daily Journal DAR 4642; 9 Fla L Weekly Fed S 540. However, courts in Canada have rejected the idea of holding separate *Markman*-style hearings: *Bourgault Industries Ltd v Flexi-Coil Ltd* (1998), 80 CPR (3d) 1 (Fed TD); aff’d (1999), 86 CPR (3d) 221 (Fed CA). *Realsearch Inc v Valon Kone Brunette Ltd*, 2004 FCA 5, [2004] 2 FCR 514.

¹⁹⁶ *Patent Act*, *supra* note 7, s 27(4).

¹⁹⁷ The evolving US approach appears to be that the 35 USC 101 subject-matter inquiry is a low-threshold pre-requisite test that precedes inquiries under 35 USC 102, 35 USC 103, and 35 USC 112. This was the view of the majority per Newman J in *Klassen v Biogen* (31 August 2011), although there is a dissent by Moore J.

¹⁹⁸ *Whirlpool*, *supra* note 194 at 49.

¹⁹⁹ *Whirlpool*, *supra* note 194 at 49, subpara (a).

and (b) whether there is a “physicality” requirement under s 2, but resolution of that issue could not alter SCC precedent governing purposive construction.

FCA paragraph 63 includes: “In my view, the task of purposive construction of the claims in this case should be undertaken anew by the Commissioner, with a mind open to the possibility that a novel business method may be an essential element of a valid patent claim”.

Nothing about the downstream s 2 issues of whether algorithms or business methods were “abstract”; or whether computer programs were merely mathematical formulae could have had any effect on the upstream question of whether the claims had been correctly purposively construed. A change in the law of patentable subject-matter under s 2 could not then require (a) the taking of additional evidence; or (b) a new, different, purposive construction of the claims. Yet the FCA decision in *Amazon.com* suggests that a change in law pertaining to a downstream issue (assessment under s 2) affects a prior upstream occurrence (purposive construction), apparently contrary to both the statute and *Whirlpool*.

(c) Purposive Construction — “Grounded in” the Claims

In paragraph 43 the FCA acknowledges that the SCC in *Free World Trust* and *Whirlpool*, “requires the Commissioner’s identification of the invention *be grounded in* a purposive construction of the patent claims.” (Emphasis added.)

At the same time, notwithstanding s 27(4), according to FCA paragraph 42, while the Commissioner must examine the subject-matter defined by the claims this “does not mean that the Commissioner cannot ask or determine what the inventor actually invented, or what the inventor claims to have invented. On the contrary, these are relevant and necessary questions in a number of contexts, including novelty, obviousness and patentable subject-matter. . . .”

The Commissioner’s powers and duties are defined exhaustively by the *Patent Act*. Under s 27(2) it is the inventor or the inventor’s legal representative who must meet the requirements of the *Act* under s 27(1). The requirement for claims is established by s 27(4). The exclusive property or privilege is claimed *by the applicant*, who is required (a) to submit the specification; (b) to end the specification with claims; and who is entitled (c) to the grant of a patent under s 27(1) if the requirements of the *Act* are met.

The Commissioner is not empowered by the *Act* to decide what the invention is.²⁰⁰ The Commissioner’s duty is to determine whether the requirements of the *Act* have been met in respect of the claims as presented by the applicant. The entire inquiry starts with, and is driven by, the subject-matter of *the invention as claimed by the applicant*. Seeking the “actual” invention is irrelevant to, and outside of, the Commissioner’s duties and powers under the *Act*.

The SCC requires purposive construction of the claims. The law does not require interpretation of an invention “grounded in” the claims, but rather purposive construction of the invention “*in*” the claims, consistent with the requirement of s

²⁰⁰ When the court in, e.g., *Consolboard*, *supra* note 11, says that the first step in construction is to decide what has been invented, the court is asking “what is the invention *in this claim?*” i.e., the claim presented by the Applicant. It is not the Commissioner’s duty, or right, to draft the Applicant’s claims.

27(4). *Free World Trust* says:

The claims language will, on purposive construction, show that some elements of the *claimed invention* are essential and others are non-essential. The identification of elements as essential or non-essential is made:

...

(iv) *according to the intent of the inventor, expressed or inferred from the claims*, that a particular element is essential, irrespective of its practical effect;

(v) *without, however, resort to extrinsic evidence of the inventor's intention*. (Emphasis added.)

See *Whirlpool*.²⁰¹ “[t]he key to purposive construction is therefore the identification by the court, with the assistance of the skilled reader, of the particular words or phrases *in the claims* that describe *what the inventor* considered to be the “essential” elements of his invention.” (Emphasis added.)

While the claims must be read in the context that would be understood by a person of ordinary skill having read the specification as a whole, it is contrary to law to rely on the specification to define the essential elements of an invention: “If the words of the claim are plain and unambiguous it will not be possible to expand or limit their scope by reference to the body of the specification. In such a case “recourse to the body of the specification for explanation, qualification or extension is neither required nor is legitimate”.²⁰²

Courts have said “*resort to the specification is limited to assisting in comprehending the meaning of words or expressions contained in the claim* but not to changing the meaning; . . .”²⁰³ (Emphasis added.) In construing the claims in a patent recourse to the remainder of the specification is (a) permissible only to assist in understanding terms used in the claims; (b) unnecessary where the words of a claim are plain and unambiguous; and (c) improper to vary the scope or ambit of the claims”.²⁰⁴

The issue is what the inventor claimed the subject-matter of his invention to be, as required by statute.

(d) Practicality and Physicality in the FCA and in the FC

The issue of relative emphasis to put on practicality and physicality was highly contentious, with the FC favouring practicality, and the FCA emphasizing physicality.

According to FCA paragraph 71:

As I understand Justice Phelan’s construction of claims 1 and 44, he adopted what is essentially a literal construction, based on his conclusion that the requirement of physical existence or manifestation of a discernible

²⁰¹ *Whirlpool*, *supra* note 194 at 45.

²⁰² *Kramer v Lindsay Specialty Products Ltd* (1986), 9 CPR (3d) 297 (Fed TD) at 310.

²⁰³ (*Reliance Electric Industrial Co v Northern Telecom Ltd* (1993), 47 CPR (3d) 55 (Fed TD) at pp 61-61; *Hi-Qual Manufacturing Ltd v Rea’s Welding & Steel Supplies Ltd* (1994), 55 CPR (3d) 224 (Fed TD) at 241.

²⁰⁴ *Procter & Gamble Co v Calgon Interamerican Corp* (1982), 61 CPR (2d) 1 (Fed CA).

effect or change implicit in the statutory definition of “invention” was met because use of a computer is an essential element of the claim.

This may be compared with the reasons of Phelan J at FC paragraphs 73 and 75:

The court finds that a purposive construction of the system claims (e.g., claim 44 and its associated dependent claims) clearly discloses a machine which is used to implement Amazon.com’s one-click ordering system. The described components (e.g., a computer) are essential elements in implementing an online ordering process. This is not merely a mathematical formula” which could be carried on without a machine, or simply a computer program. . . .

And at FC paragraph 75: . . .

The new learning or knowledge is not simply a scheme, plan, or disembodied idea; it is a practical application of the one-click concept, *put into action through the use of cookies, computers, the internet* and the customer’s own action. Tangibility is not an issue. The “physical effect”, transformation, or change of character resides in the customer manipulating their computer and creating an order. (Emphasis added.)

The term “physicality requirement” was introduced in FCA paragraph 65, in discussing Phelan J’s analysis of *Lawson*. Discarding the “apparent to the senses” portion of the famous paragraph in *Lawson*, FCA para 65 abbreviates the test to “physicality requirement”. What Phelan J said was:

The practical application requirement ensures that something which is a mere idea or discovery is not patented — it must be concrete and tangible. This requires some sort of manifestation or effect or change of character. However *it is important to remain focused on the requirement for practical application rather than merely the physicality of the invention*. The language of *Lawson* must not be interpreted to restrict the patentability of practical applications which might, in light of today’s technology, consist of a slightly less conventional “change in character” or effect that [is effected] through a machine such as a computer.²⁰⁵ (Emphasis added.)

As can be understood from the commentary on *Lawson*, even at the outset, discussion of “practicality” and “physicality” in *Amazon.com* was based on two misconceptions. The first was that there was, or is, a competition between “practicality” and “physicality”. To repeat, “practicality” is a requirement of a completed act of invention. “Physicality” related to Robinson’s discussion of “art” as a statutory class pigeon-hole. These are unrelated questions. Second, “physical” was Robinson’s gloss, not found in *Cochrane v Deener*; and, even without the gloss, *Cochrane v Deener* is itself no longer good law. Thus the discussion of “physicality” was based on mistaken assumptions.

(e) Business Methods, Computer Software and Abstract Ideas

FCA paragraph 61 addresses business methods:

. . . it does not necessarily follow, as Justice Phelan seemed to suggest, that a business method that is not itself patentable subject-matter because it is an

²⁰⁵ FC para 53.

abstract idea becomes patentable subject-matter merely because it has a practical embodiment or a practical application. In my view this cannot be a distinguishing test, because it is axiomatic that a business method always has, or is intended to have, a practical application.

Phelan J was writing about cases from other jurisdictions cited by the Commissioner as non-patentable business methods. Phelan J pointed out that they were found to be non-patentable subject-matter “[not] because they were business methods, but because they were “mere schemes” or disembodied ideas. To put it in a Canadian context, they did not have a practical application. In this sense a mere business scheme will have no practical embodiment and, like any other abstract idea or theorem, will of course be non-patentable. That is not the case with the business method claimed in the present case.”

What Phelan J was saying was that a practical application is a necessary, but not necessarily sufficient, condition for the existence of patentable subject-matter, following Wilson J in *Shell Oil*.²⁰⁶ Phelan J also apparently recognized that “business method” is not a term synonymous with “mere schemes” but that methods of doing business in previous case law included species of “mere schemes”. As seen above, though, the rationale for excluding “mere schemes” of doing business is that they do not pertain to art or science. The rationale for excluding “disembodied ideas” is that they do not constitute a completed inventive act. As in previous cases, separate issues have been intermingled.

FCA paragraph 61 continues:

And in this case, the difficulty with a bare “practical application” test for distinguishing patentable from unpatentable business methods is highlighted because the particular business method — itself an abstract idea — is realized by programming it into the computer by means of a formula or algorithm, which is also an abstract idea.

First, this portion of paragraph 61 reflects the same confusion of issues. “Practical application” concerns the act of invention, not whether a “business method” falls within a statutory pigeon-hole under s 2. Second, as discussed, Phelan J did not articulate a “bare” practical application test. He followed *Shell Oil*. Third, the finding that “the particular business method”, [of Amazon’s claims], is “itself an abstract idea” is odd. Neither the Examiner nor the Board treated it as an abstract idea when examining for obviousness, but rather as something rather workaday, practical, and pragmatic. The finding is made despite FCA paragraph 60: *The [AG] . . . has not denied that the Commissioner has granted patents for claims similar to those in issue in this case*. At the pertinent time the Commissioner had admitted there was no blanket prohibition on business methods.²⁰⁷

²⁰⁶ *Shell Oil*, *supra* note 28 at p 549 quoted by Phelan J at FC para 50.

²⁰⁷ See FC, *supra* note 5 para 62 “On the contrary, it seems that until quite lately the Patent Offices’s policy was to grant patents for business methods so long as they were an art within the meaning of section 2 of the *Patent Act*. The previous [MOPOP], 12.04.04 (re v Feb 2005) stated that business methods are “not automatically excluded from patentability, since there is no authority in the *Patent Act* or Rules or in the jurisprudence to sanction or preclude patentability based on their inclusion in this category”. The manual required that they be assessed like any other invention. The evidence indicates this practice was followed.”

If the holding that the business method in the claims in question “is realized by programming it into the computer by means of a formula or algorithm, which is also an abstract idea.” i.e., and therefore unpatentable, is combined with (a) the holding that the “particular business method” of Amazon’s claim is not patentable as an abstract idea; and further combined with (b) “it is implicit in the definition of “invention” that the patentable subject-matter must be something with physical existence, or something that manifests a discernible effect or change”,²⁰⁸ then there seems to have been little left in Amazon’s claims to hold patentable.

The effect on the patentability of software is seen again in paragraphs 67–69. “I do not necessarily accept” says Sharlow JA, Phelan J’s statement, quoted above, that “The language in Lawson must not be interpreted to restrict the patentability of practical applications which might, in light of today’s technology, consist of a slightly less conventional “change in character” or effect through a machine such as a computer.”

“If these statements are meant to suggest that our understanding of the nature of the “physicality requirement” as described in paragraph 66 above may change because of advances in knowledge, then I would agree.” It continues:²⁰⁹ “The claims in Schlumberger were not saved by the fact that they contemplated the use of a physical tool, a computer, to give the novel mathematical formula a practical application.”

(f) Two Choices

FCA paragraphs 62 and 63 are central to the FCA decision in Amazon.com. They read in relevant parts:

[62] *Schlumberger* exemplifies an unsuccessful attempt to patent a method of collecting, recording and analyzing seismic data using a computer programmed according to a mathematical formula. That use of the computer was a practical application, and the resulting information was useful. But the patent application failed for want of patentable subject-matter because the Court concluded that the only novel aspect of the claimed invention was the mathematical formula which, as a “mere scientific principle or abstract theorem”, cannot be the subject of a patent because of the prohibition in subsection 27(8).

[63] It is arguable that the patent claims in issue in this case could fail on the same reasoning, depending upon whether a purposive construction of the claims in issue leads to the conclusion that *Schlumberger* cannot be distinguished because the only inventive aspect of the claimed invention is the algorithm — a mathematical formula — that is programmed into the computer to cause it to take the necessary steps to accomplish a one-click online purchase. On the other hand, it is also arguable that a purposive construction of the claims may lead to the conclusion that *Schlumberger* is distinguishable because a new one-click method of completing an online purchase is not the whole invention but only one of a number of essential elements in a novel combination. In my view, the task of purposive construction of the claims in this case should be undertaken anew by the Commissioner, with a

²⁰⁸ FCA, *supra* note 4 at para 66.

²⁰⁹ *Ibid* at 68.

mind open to the possibility that a novel business method may be an essential element of a valid patent claim.

As seen above, contrary to FCA paragraph 62, there was no rejection under s 27(8) in *Schlumberger*, and there was no mathematical formula in the Schlumberger claims. The use of a computer was not relevant to the outcome. The calculations in *Schlumberger* had a practical, technological, application with or without the computer. The rejection was upheld on the basis of the claims being directed to purely mental operations or processes.

Paragraph 63 establishes two choices. Under the first choice, which would have excluded Amazon's claims outright under s 2, computer programs and algorithms are both equated with mathematical formulae; and the Court indicates that since all mathematical formulae (and therefore all computer programs and algorithms) are merely scientific theorems or abstract ideas no claim that is a computer program, or algorithm, can, alone, constitute patent eligible subject matter. Under the second choice, the claim could be patent eligible, but only if the method of completing an online purchase were not the whole invention, but only one of a number of essential elements in a novel combination. Given FCA paragraph 61 and the conclusion of para [63], neither the business method nor the computer could, alone, define essential features on which patentability could rest, the FCA seemed also to have foreclosed the second choice.²¹⁰ Largely incorporating the approach of the Commissioner,²¹¹ by indicating that some elements (business methods and computer program, for example) might be essential elements for some purposes, but not for others (such as subject-matter eligibility), the FCA also implicitly endorsed a two-step element-by-element interpretation exercise for assessing subject-matter eligibility despite acknowledging that purposive construction is required by law.²¹² There is no requirement that a claim have more than one "essential" element. The issue is whether the subject-matter defined by the claim *as a whole* meets the requirements of the *Act*.

Methods, by themselves, have been patentable without the inclusion of physical apparatus for over 200 years. The court in Watt's steam engine cases²¹³ indicated that patents for mere methods had existed for many years prior to 1795. Yet in *Amazon.com* the FCA suggests that some kinds of methods — namely "business methods" — cannot stand alone, and must include apparatus. While making such a distinction, though, the FCA does not indicate how to differentiate a "*business method*" from any other method.

This is the problem identified by Stevens J in *Bilski*. On the parallel point in *Bilski* the majority took the position that:

The concept of hedging, . . . is an unpatentable abstract idea, just like the

²¹⁰ That a Notice of Allowance would issue, preventing appeal to the SCC — seems not to have been foreseen. The reason why a Notice of Allowance issued therefore remain unknown. Unlike the US, there are no "reasons for allowance", so there is no public record on the issues the Commissioner was instructed to address by the FCA.

²¹¹ FCA, *supra* note 4 at paras 61–63.

²¹² *Ibid* at 43 and 47.

²¹³ *Boulton & Watt v Bull* (1795), 2 H Bl 463, 126 ER 651; *Hornblower v Boulton* (1799), 8 Term Rep 95.

algorithms at issue in *Benson* and *Flook*. Allowing petitioners to patent risk hedging would pre-empt use of this approach in all fields, and would effectively grant a monopoly over an abstract idea.

The statement implies that the *nature* of the subject-matter claimed might have changed to become patent-eligible if restricted to hedging a single commodity of a single source at a single place, to avoid pre-emption, as if nature is a question of breadth. However, the problem with *Bilski*'s claim was neither that it was abstract, nor an issue of breadth, but rather that it could not reasonably be interpreted as falling within the "useful Arts". Stevens J wrote:

The patent before us is not for a principle, in the abstract, or a fundamental truth. . . . Nor does it claim the sort of phenomenon of nature or abstract idea The court, in sum, never provides a satisfying account of what constitutes an unpatentable abstract idea The Court essentially asserts its conclusion This mode of analysis (or lack thereof) may have led to the correct outcome in this case, but it also means that the Court's musings on this issue stand for very little.²¹⁴

In summary, arbitrarily stretching the word "abstract" to encompass subject-matter that is plainly not abstract cannot be a correct solution.

The *Amazon.com* claims concerned an improved cash register, and way of operating a cash register. Several old functions were combined in one convenient place and method of operation. It was completely automatic — it did not involve human skill or judgment. The elements of the claims could hardly have been more commonplace or mundane. Every element had at least one, and usually several, very well-known, and long-known, mechanical or electro-mechanical equivalents. That it was practical, had commercial application, and was clearly understood, is undoubted. The Patent Office conceded that the claimed combinations were new, and not obvious. There was no suggestion by the Office that it was theoretical or abstract.

The FCA in *Amazon.com* concluded that *Schlumberger* stands for the proposition that anything programmed into a computer is unpatentable as a "formula or algorithm, itself an abstract idea",²¹⁵ and applied that conclusion to the *Amazon.com* claims.

Schlumberger stands for the proposition that using a computer to do calculations that are mere mental processes makes them neither more nor less patentable. If every algorithm is merely "a scientific principle or abstract idea" then no software is patentable in itself. That seems a dubious proposition.²¹⁶ Some

²¹⁴ *Bilski*, *supra* note 3, per Stevens J at pp 8-9.

²¹⁵ FCA, *supra* note 4 at para 61.

²¹⁶ See the US case *Application of Chatfield*, 545 F 2d 152, 191 USPQ 730 (Cust & Pat App, 1976), cited with approval *In re Iwahashi*, 888 F 2d 1370 (Fed Cir 1989): "Over-concentration on the word 'algorithm' alone, for example, may mislead. The Supreme Court carefully supplied a definition of the particular algorithm before it [in *Benson*], i.e., '[a] procedure for solving a given type of mathematical problem.'" The broader definition of algorithm is "a step-by-step procedure for solving a problem or accomplishing some end." *Webster's New Collegiate Dictionary* (1976). . . . It would be unnecessarily detrimental to our patent system to deny inventors patent protection on the sole ground that their contribution could be broadly termed an "algorithm".

software may involve millions of lines of code, and as much engineering as it took a century ago to design a locomotive. Neither the Commissioner nor the PAB relied upon any such broad ground of exclusion in respect of software in making the rejection, and it was not an issue on appeal. To conclude that doing calculations by computer, alone, is unpatentable, and therefore the use of a computer cannot make anything else patentable would exclude from patentability inventions such as found in the US *Chatfield*²¹⁷ case.

Finally, the FCA was uncertain that the claims in *Amazon.com* were distinguishable from those in *Schlumberger*: “As explained above, the claims in issue in this case may or may not be distinguishable from the claims in *Schlumberger*, depending on how they are construed”.²¹⁸

The claims in *Schlumberger* were about purely mental calculations. The computer was used to do calculations, which, in *Diehr*-like fashion, Pratte J found to be obvious. The claims in *Amazon.com* were about a remotely accessible electronic cash register and a method of operating that cash register. The computer in *Amazon.com* was not used for calculations but as a sending and receiving terminal that (temporarily) stores information. It could be replaced by a telegraph key, a code book, a pad of paper and a pencil.²¹⁹ The comments in *Schlumberger* concerning calculations and formulae were not relevant to *Amazon.com*.

(g) “Solely on the basis of the inventive concept”

In paragraph 47, the FCA states: “I agree with Justice Phelan that in determining subject-matter *solely* on the basis of the inventive concept, the Commissioner adopted an incorrect analysis in law.” (Emphasis added.)

The issue of concern to Phelan J was not that the Commissioner had determined subject-matter “solely” on the basis of the “inventive concept”. Phelan J objected to the Commissioner’s proposition that “a claimed invention is not patentable if what makes it new and unobvious comprises non-statutory subject-matter”,²²⁰ leading to the proposition that “an analysis of patentability of what is

²¹⁷ Even the CIPO draft practice notice of 2 April 2012 implicitly recognized this point. See “*Statutory Subject Matter under the Patent Act*”, CIPO, 2 April 2012, page 3, “Computer-implemented inventions”, third paragraph.

²¹⁸ FCA, *supra* note 4 at 69.

²¹⁹ *Application of Chatfield*, 545 F 2d 152. Chatfield’s claim was to a method of operating a computer more efficiently by allowing the computer to process several programs with dynamically changing priority. A similar Canadian example is *Honeywell Information Systems Inc, Re* (1986), 13 CPR (3d) 462 (Can Pat App Bd & Pat Commr) now CA 1,216,072. In *Chatfield*, the claim had been rejected as to an algorithm, and therefore unpatentable. The CCPA reversed. The method of operating the machine more efficiently did not become unpatentable simply because it was called an “algorithm”. See *Diamond v Diehr*, 450 US 175 (1981) at 187: “Our earlier opinions lend support to our present conclusion that a claim drawn to subject-matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer.” According to *Diehr*, the “purely mental steps” prohibition no longer exists in US law.

²²⁰ FC, *supra* note 5 at 14.

new, apart from the invention as a whole, is required”.²²¹ He rejected the Commissioner’s return to an inquiry of “what has been discovered” as being “confusing, unnecessary, and a departure from the clear direction of the Supreme Court to apply purposive construction universally”.²²²

Phelan J wrote: “It is thus not wrong to speak of “what has been invented” so long as this is determined with reference to the essential elements as disclosed through purposive construction of the claims, rather than a subjective, secondary consideration by the Patent Office as to the “substance of the invention”.²²³ As discussed above, it is problematic to suggest that “what has been discovered” stands apart from the claims as a whole. This is particularly so where the Commissioner has found that what is claimed is novel . . . and not obvious.²²⁴ It is contrary to settled law to purport to look at “what was invented” and “substance” by failing to look at the invention [i.e., of the claims] as a whole”.²²⁵

Phelan J objected to any reliance on finding an invention outside of the claims.²²⁶ Further, the Commissioner had not relied upon “inventive concept” as a basis for rejection for lack of statutory subject-matter under s 2. The only reference by the PAB to “inventive concept” related to the Examiner’s obviousness rejection — which the PAB overturned.

(h) “Inventive Concept”

By coincidence the USSC has used the terminology “inventive concept” in the recent decision of *Mayo Collaborative Services v Prometheus Laboratories, Inc.* It appears that the USSC meaning, (pertaining to the existence of an act of invention), is not the same as the UK meaning of “inventive concept”, (pertaining to patentability over prior art), and, consequently, future confusion may be expected when reference is made to either. Further still, neither the UK term “inventive concept” nor the US term “inventive concept” has the same meaning as “single general inventive concept” in Rule 36 of the *Patent Rules* and hence under s 36 of the *Patent Act* (whether the claims permit a single search). Each of these meanings of “inventive concept” is distinct, and is used for a different purpose. It is important that they not be confused.

The origin of the UK “inventive concept” found in *Amazon.com*²²⁷ lies in *Windsurfing International Inc v Tabur Marine (Great Britain) Ltd.*²²⁸ The issue was whether a windsurfer design was obvious. There was no subject-matter issue. The holding in *Windsurfing* was subsequently corrected, in part, in *Pozzoli SpA v*

²²¹ FC, *ibid* at 15.

²²² FC, *ibid* at 39.

²²³ FC, *ibid* at 40.

²²⁴ FC, *ibid* at 42.

²²⁵ FC, *ibid* at 43.

²²⁶ Phelan J did not use the term “inventive concept” at all.

²²⁷ FCA, *supra* note 4 at 47; FC discussion at paras 40–44, 58; and PAB paras 73, 100, 101.

²²⁸ *Windsurfing International Inc v Tabur Marine (Great Britain) Ltd* (1984), [1985] RPC 59 [*Windsurfing*].

BMDO SA.²²⁹ *Pozzoli* was cited by the SCC in *Sanofi-Synthelabo Canada Inc v Apotex Inc*.²³⁰ Unfortunately this relied on UK statutory language, not the language of the Canadian *Patent Act*. The relevant UK provision was s 32(1)(f) of the UK *Patents Act* (1949). However, the terminology “inventive step” has crept into Canadian jurisprudence, both before²³¹ and after²³² the enactment of s 28.3, perhaps without receiving appropriate scrutiny.

In *Windsurfing*, “inventive concept” was incorrectly equated to “inventive step,”²³³ a prior-art-based exercise,²³⁴ not a subject-matter inquiry. The *Windsurfing* headnote placed the steps in an easily copied, numbered, sub-paragraph format, facilitating the spread of the errors. *Pozzoli* tried to limit the damage by pointing out that the “inventive concept” analysis is, ultimately, optional, and dispensable.

Despite the statement in *Pozzoli* that “it is not even practical to try to identify a concept” in a chemical claim,²³⁵ the “inventive concept” four step test has been cited in subsequent Canadian drug litigation. The *Pozzoli* “inventive concept” is not relevant to the upstream question of whether subject-matter is statutory, an issue decided before consideration of prior art.

In *Sanofi* the SCC adopted the *Pozzoli* formulation of the four step *Windsurfing* test. The issue in *Sanofi* was whether “obvious to try” exists in patent law in Canada. In subsequent cases the “inventive concept” terminology has been used in the context of obviousness analyses. It was used by the PAB in *Amazon.com* only in this way.²³⁶

As noted above, in *Amazon.com* the Commissioner did not make the subject-matter rejection on the basis of inventive concept, in the FC there was no discussion of “inventive concept” and at the FCA the court found it to have been incorrect in law to have determined “subject-matter solely on the basis of the inventive concept”.²³⁷ However, the term “inventive concept” was central to the new examination guidelines for patent-eligible subject-matter proposed by CIPO on 2 April 2012.

“Inventive concept”, intended to be equivalent to “inventive step” under UK law, is based on an error in UK case law. It has no basis in the Canadian statute, and appears to be contrary to the requirements of s 27(4). It creates potential confusion with the requirement of purposive construction and perpetuates the confusion

²²⁹ *Pozzoli SpA v BMDO SA*, [2007] EWCA Civ 588 [*Pozzoli*].

²³⁰ *Sanofi-Synthelabo Canada Inc v Apotex Inc*, [2008] 3 SCR 265, 2008 SCC 6.1 [*Apotex*].

²³¹ *Skelding v Daly*, [1941] SCR 184 seems to be an early example.

²³² *Apotex*, *supra* note 230, is but one of many recent examples.

²³³ See *Windsurfing*, *supra* note 228 at p 71, lines 30–35.

²³⁴ *Ibid*, page 67, lines 16–18.

²³⁵ *Pozzoli*, *supra* note 229, at para 20.

²³⁶ The PAB obviousness analysis in *Amazon.com* runs from para 41–109. “Inventive concept” appears only in paras 73, 100 and 101. It does not appear after para 101. Patent-eligible subject-matter commences at para 110 and runs to para 195.

²³⁷ The Commissioner did rely on another four step test for making the subject matter rejection: that of *Aerotel Ltd v Telco Holdings Ltd*, [2006] EWCA Civ 1371, which the FC held to have no basis in Canadian law.

of issues of subject-matter under s 2 with issues of obviousness under s 28.3. It has great potential to cause confusion with (a) “inventive concept” under US law; and (b) “single general inventive concept” under Rule 36, each of which has a different meaning. Its history in *Pozzoli* is unrelated to analysing patentable subject-matter on a first principles basis. It does not appear to serve a useful purpose in Canadian law.

(i) Order of Analysis

Examination as required by law starts and ends with the claims. The *Patent Act*, and every determination of validity and infringement, is based on the claims defining the invention. The law requires that claims be read in their entirety and as a whole. The law prohibits both (i) reading features into a claim, and (ii) reading features out of a claim. This serves the public notice function.

Canada has a peripheral claiming system, not a sign-post system. The claim language defines the “fence”. In a peripheral claiming system, there can be no basis in law for an “invention” other than as found in the claims, and only in the claims. Were it otherwise, how could the public know where it is safe to tread? The suggestion that there is some “other” invention is inconsistent with the language of the *Patent Act*.

The *Act* requires that the claims be supported by the specification. S 27(3) says “The specification of an invention must . . .” Thus every requirement of the specification is referenced to the claimed invention. To make this assessment it is necessary to start with the claims, and then determine whether the claimed invention is supported by the specification as required by sub-sections (a)–(d) of s 27(3).

The approach of the Patent Office, given life by the FCA in *Amazon.com*, is to decide by reading the specification what the “actual” invention is, and then to see if the claims conform to the claims as the Commissioner would have drafted them. This approach is the opposite of what is required by the *Patent Act*, and is outside the powers of the Commissioner.

(j) The Role of the Commissioner

Consider FCA paragraph 27: “. . . The object of the Commissioner’s examination of a patent application, understood in its broadest possible sense, is to determine whether the terms of the bargain [i.e., between the inventor and the public] are met. That determination requires the Commissioner to interpret and apply the *Patent Act*.”

The Commissioner’s powers and duties are defined, exhaustively, by the *Patent Act*.²³⁸ The object of the Commissioner’s examination is not to determine whether the public bargain has been met, but whether the Applicant has met the requirements of the *Act* for the grant of a patent. That duty is defined by s 27(1) and s 40. While perhaps little different in outcome, it is greatly different in concept: a vague general idea as opposed to the rule of law.

Similarly, consider FCA paragraph 33: “In a certain sense, when the Commissioner is assessing a patent application under subsection 27(1) to determine whether

²³⁸ *Patent Act*, *supra* note 7, s 4.

all of the statutory requirements are met, the Commissioner is determining validity. That is, the Commissioner is essentially determining whether, if the patent application is granted for the patent claims as set out in the patent application, the resulting patent would be valid.”

Counter-intuitive as it may seem, it is neither the Commissioner’s duty to decide whether patent claims are valid, nor does the *Act* empower the Commissioner to do so. The Commissioner’s duty is to determine whether the claims meet the requirements of the *Act* for the grant of a patent. That is where the Commissioner’s duty — and powers — end. Determining validity is, ultimately, an issue for the courts. That is why issued claims are not *per se* valid, but rather have only a presumption of validity.²³⁹ At a fundamental level it is, again, the difference between (a) a general desideratum; and (b) the rule of law.

(k) The Role of the Examiner

The FCA stated at paragraph 73:

Anyone who undertakes a purposive construction of a patent must do so on the basis of a foundation of knowledge about the relevant art, and in particular about the state of the relevant art at the relevant time. For the Commissioner, that assistance comes in the form of submissions from the patent applicant and, I assume, from staff at the patent office with the appropriate experience.²⁴⁰

First, the FCA refers to “purposive construction of a patent” when it must have meant purposive construction *of the claims* of a patent.

Second, patent examiners are persons of ordinary skill in the art of patent examining, not in the arts being examined. Examiners do not make “submissions”; are not qualified as experts to make submissions; are not subject to cross-examination on either qualifications or knowledge as an expert; and cannot be impeached during prosecution for lack of qualifications or knowledge as an expert.

Patent examiners have a double role. First, patent examination being *ex parte*, examiners have a duty to exercise the fair-minded skepticism of a reasonable man to protect the public from unmerited claims. That is done by ensuring compliance with the *Act*. Second, they have a duty to see that the applicant is not cheated. Systematically cheating inventors out of their rights undermines the integrity of the public bargain of the *Patent Act* just as surely as allowing unmerited claims. The second role of the examiner is quasi-judicial: to see that allowed claims are fair as between the inventor and the public.²⁴¹ It is required by law in *Consolboard*; it is how progress in the useful arts is promoted; and it is also how the dignity and

²³⁹ *Patent Act*, s 43(2) — After the patent is issued, it shall, *in the absence of any evidence to the contrary*, be valid . . .

²⁴⁰ FCA, *supra* note 4.

²⁴¹ According to CIPO: “The [PAB] is an advisory body made up of senior Patent Office officials. In carrying out his duties, the Commissioner of Patents makes decisions that are quasi-judicial in nature. Since 1970 the Board has been mandated by the Commissioner to conduct independent reviews, provide recommendations and advise him when making such quasi-judicial decisions which principally concern the review of rejected applications, . . .” Clearly, if the Commissioner’s duty is to behave in a quasi-judicial

integrity of the Office as a public institution are maintained.

The Examiner's duty is to be inquisitive, while being even-handed. As Pigeon J, said: "It does not seem to me that inventors are to be looked upon as Shylock claiming his pound of flesh".²⁴² The duty is that of an unbiased investigator, not a partisan. That quasi-judicial role is inherently inconsistent with the suggestion that examiners make "submissions".

(l) Blurring the Statutory Provisions

A recurring problem in subject-matter cases is the mixing of unrelated issues. Recall paragraph 38:

I do not propose to try to list all of the issues implicit in subsections 27(3), (4) and (8) and the statutory definition of "invention" that must be considered by the Commissioner, but it seems to me that they would include at least the following (which need not be considered in any particular order): . . .

- (a) Patentable subject-matter . . .
- (b) Novelty . . .
- (c) Utility . . .
- (d) Obviousness . . .
- (e) Statutory prohibition . . .

Patentable subject-matter is addressed in the definition of s 2; Novelty is in s 28.2(1); Utility is in the definition of invention in s 2; Obviousness is in s 28.3; explicit statutory prohibitions are addressed in s 27(8). The suggestion that there are "*issues implicit*" in each of sections 27(3), 27(4), 27(8), and in the s 2 definition of invention smudges separate and distinct issues together and causes confusion. The issues need to be untangled, not blurred.

VIII. A FRAMEWORK BASED ON PATENT FUNDAMENTALS

(a) Lessons from Amazon.com

One of the more important lessons from *Amazon.com* is to observe how the amplitude of incremental divergence from fundamental principles of patent law can accumulate in successive cases. Commencing from that already-off-kilter starting point of *Lawson*, there is a kind of bit-by-bit accumulating serial distortion of the law: (a) purposive construction is now to include an analysis of individual essential elements to determine which ones fall within the categories of patent eligible subject-matter,²⁴³ contrary to the central idea of purposive construction; (b) implicitly,

manner, that duty must also apply to his appointed delegates in the examining corps who stand in the Commissioner's shoes during examination.

²⁴² *Burton Parsons Chemicals Inc v Hewlett-Packard (Canada) Ltd* (1974), 17 CPR (2d) 97 (SCC) per Pigeon J at 106.

²⁴³ Now referred to by CIPO as an "Inventive Concept" analysis. However, the term "inventive concept" as used by CIPO should not be confused with the term "inventive concept" as used by the USSC in, for example, *Mayo v Prometheus*. They have different meanings and origins.

a downstream decision pertaining to the definition of invention under s 2 can alter the upstream purposive construction of the claims; (c) the invention need merely be “grounded” in the claim, rather than “in” the claim; and (d) it is necessary for the Commissioner to identify what the inventor really invented, apparently different from what the inventor claimed, and apparently contrary to the *Act* and long-standing SCC precedent.

Further, it is said that there is no order of operations in determining whether claims meet the requirements of the *Act*, notwithstanding the logic of the *Act* itself, and SCC precedent. The powers and duties of the Commissioner are characterized in a manner that seems inconsistent with the *Act*. The duties of an examiner are mis-cast. Undefined “implicit” requirements are said to exist in the statutory provisions of the *Act*. The basis of previous decisions is misread. SCC precedent is apparently not followed. More still, this occurs at the invitation in the AMFL of the chief law officer of Canada, with the willing encouragement of the Interveners.

With each turn of the wheel the wobble that originated in *Lawson* increases in amplitude. Where incremental distortion is allowed to accumulate, it ultimately affects the rights of tens of thousands of applicants, across all fields of technology. The accumulated distortion ends up obscuring the basic principle that it is the right of all Applicants to have patentability assessed on the basis of their own claims, judged according to law.

(b) Rejecting Old Misconceptions

Perhaps it might be a start to recognise previous false paths for what they were.

(I) There is no basis in the Canadian *Patent Act* for a “physicality” requirement. There is a long-established requirement for “practicality”. A better approach is to ask, as did the SCC in *R v Uhlemann Optical Co*, and the USSC in *Mayo Collaborative Services v Prometheus Laboratories, Inc*, if the claimed combination is a mere aggregation, or if something about it makes it more than merely the sum of its parts.

The requirement for “physicality” in the FCA reasons in *Amazon.com* would render the claimed Armstrong, Rantzen, Morse, and Chatfield subject-matter non-statutory. An approach perhaps more consistent with precedent and fundamental patent principles is that an inventive act must have a non-purely-mental component that presents itself in objective evidence observable by (i.e., apparent to the senses of) persons of ordinary skill. The proposition that the existence of patent-eligible subject-matter cannot be premised on software or business method steps, alone, for lack of physicality, but is to be found by a piece-meal analysis of elements deemed essential to the claim is inconsistent with purposive construction. By contrast, the approach, as in *Mayo Collaborative Services v Prometheus Laboratories, Inc*, and in *Wright v Brake Service Ltd* as affirmed by the SCC, making a “greater than the sum of the parts” analysis of the claim *as a whole* (i) is consistent with purposive construction; (ii) does not rely on an artificial physicality requirement that would have excluded electronic signal inventions; and (iii) is consistent with earlier SCC precedent.

(II) It is important to stop confusing the patent eligibility of subject-matter with other issues. The decisions in *Schlumberger* and *Amazon.com* both involved rejections that were perhaps not the rejections that might have been made. Issues of

patent-eligible subject-matter were confused, and inter-mixed with, issues of obviousness. Whether the claim is for an act having mental and non-purely-mental components is unrelated to whether it (a) falls within science and the useful arts, and if so, one of the statutory classes; (b) is new; (c) has utility; or (d) is obvious. Those are each separate and independent issues.

(III) There is no basis in law for rejecting a claim for the sole reason that it is a method implemented by a computer, or because the method is expressed in the form of software. Likewise, there is no basis in law for rejecting a claim merely by calling it “an algorithm”, whether implemented by computer or otherwise. “Algorithm” is just another word for “method”.

(IV) Stretching the word “abstract” to cover things that are not abstract at all is not helpful. The Office and the Courts already appear to apply a “science and the useful arts” standard, even when they do not articulate it well, or apply it in the guise of something else.²⁴⁴ As Stevens J observed, the elastic reliance on finding claims “abstract” when the issue is really that they are not within the “useful arts” is an exercise that leads to absurd and arbitrary results.

(V) There is no clear definition of “business method” in either Canadian or US law by which to distinguish “business methods” from ordinary methods. Whether explicitly or implicitly, the exclusion of the older “methods of doing business” arises because they are neither “science” nor “the useful arts”, a pattern seen in the cases. If those methods require the exercise of human judgement or skill, they also fail for lacking a repeatable completed inventive act supported by a fully enabling disclosure. It would be better to cease using the term “business method”; and to ask, instead, whether the claim falls within the “useful arts”. It is no more difficult to define “useful art” than “business method”, and, by contrast, “useful arts” has a basis in the fundamental principles, statutory provisions, and history of the *Patent Act*.

(c) Abiding by the Rule of Law

The root problem in the *Amazon.com* case arose from a change in the approach of the Office to “business methods”. That change in approach appears to have led to the effort to promote adoption of the *Aerotel*²⁴⁵ four-step approach described in the PAB and FC reasons — a process originating in the EPC, and without a basis in Canadian law. It may be that rejections might have been raised under s 27(8); it may be that greater effort might have been made to find prior art upon which to advance rejections on the basis of anticipation or obviousness. Whatever the case, it was neither appropriate to disregard the law, nor to alter the law on the basis of *in terrorem* arguments of a third party Intervener. The *Patent Act* creates a rules-based system. It is premised on the Rule of Law. It cannot function properly otherwise.

²⁴⁴ See the cases listed in s 8(e) herein. Courts have applied implicit “useful arts” tests for a long time.

²⁴⁵ *Aerotel Ltd v Telco Holdings Ltd*, [2006] EWCA Civ 1371.

(d) The Interveners' Alternative: Prohibition by Technological Field

The alternative preferred by the Interveners was that neither business methods nor computer software should, by itself, be patentable. This result is largely obtained in the FCA reasons in *Amazon.com*. Even if there were support under s 2 for such an exclusion, it needs to be seen in the context of our economy.

According to the FCA in *Amazon.com*, the output of what is now, but was not in the time of *Schlumberger*, less still *Lawson*, a significant portion of our economy is to be excluded from the principal arm of government related to the advance of commerce and industry. The FCA considers the work-product of these software and systems engineers to be nothing more than abstract theorems and scientific principles, and the Patent Office considers their work not to be scientific or technological. There is no other branch of Engineering, i.e., of applied science, that is systemically or categorically to be excluded from the statutory regime established by the *Patent Act*.

The effect of *Amazon.com* is to exclude software from the patent regime. The purpose of the patent system is to encourage the disclosure of advances in science and the useful arts. The addition to the store of knowledge then acts as a stepping-stone prompting further advances. The objective of the *Patent Act* is not to reward inventors. It is to promote the sharing of knowledge in the useful arts and sciences, and thereby to spur economic advance.

Some would prefer to see computer programming, i.e., “software”, as merely “mathematical formulae”, even as in our times the software industry has had a transformative effect on society. It is everywhere about us — unavoidably, and in broad daylight. There is hardly an aspect of our society or our lives that has not been transformed.

Over the long term, rises in productivity depend on technological innovation. The Patent Office is the arm of industry, trade and commerce, that deals with technological advance — what was once called progress in science and the useful arts. Yet there are those who would exclude from the purview of the *Patent Act* one of the most transformative fields of technology of our times. Thus, in the Patent Office, and apparently now in the FCA, software is the technology that dare not speak its name.

How can that possibly make sense?

(e) Return to Patent Fundamentals — The Logical Order of Inquiry

Perhaps there is a better approach, based on patent fundamentals. There is a logical hierarchy, or order, to the inquiries required to establish patentability. On the assumption that the Applicant is the person entitled to seek protection for the subject-matter of the claims:

1. The first step is that the claims must be purposively construed to ascertain their meaning to a person of ordinary skill in the art.
 - (a) Does the claim have a clear meaning to a person of ordinary skill in the art having a mind willing to understand?
 - (b) Is the subject-matter of the claims, according to that clear meaning, both disclosed and enabled by the specification as filed on the claimed priority date as required by s 27(3) of the *Patent Act*?

(c) Is the interpretation fair as between the inventor and the public?²⁴⁶

2. As purposively construed, is the claimed invention:

(i) more than merely an idea that floated through the inventor's brain, i.e., more than a purely mental idea?

(ii) more than a mere aggregation of parts?

(iii) an idea or conception; and a practical way of realizing the idea?

(iv) directed toward something greater than the sum of the parts?

(a) If there is no mental portion, even if there is a physical embodiment, there can be no invention. A mere aggregation is unpatentable. The mental portion need only be very slight.

(b) If there is no non-purely-mental, practical portion, or if the claim is to an end, rather than to a practical means to achieve an end, or if the claim depends upon the exercise of human judgment or skill,²⁴⁷ then there is no invention, and all that has been done is to arrive at a mental process. Instructions to perform mathematical calculations are purely mental processes.

3. If there has been an act of invention:

(a) Does the claimed invention fall within "science and the useful arts"? Activity within neither science nor the useful arts cannot be statutory.

(b) Does the invention fit in one of the statutory class divisions? I.e., is it a useful art, a process, a machine, or a composition of matter, or an improvement of any one of them?

(i) Does the invention pertain to an instrument (i.e., an apparatus, a combination, a machine, a device, a manufacture, a composition of matter, or a product-by-process) whose existence is objective evidence of invention?

(ii) If not, and the invention pertains to operations (e.g., a process, a method, a list of steps, an algorithm, or a use), then is there practical evidence that it is not purely mental, but is perceptible to the senses?

Demonstration of a physical transformation of matter is a sufficient, though not necessary, condition to meet this test.

(c) A non-exhaustive list of examples of non-statutory arts²⁴⁸ includes:

The fine arts, such as methods of playing musical instruments; executing sculptures, drawings, portraiture; theatrical presentation;

²⁴⁶ *Consolboard*, *supra* note 11.

²⁴⁷ *In re Comiskey*, *supra* note 15.

²⁴⁸ The cases are from Canada, US, UK, Australia and NZ case law, collectively. A general theme shines through.

Literary compositions²⁴⁹
 Methods of practicing a profession,²⁵⁰ such as
 Methods of surveying land²⁵¹
 Plans of architecture²⁵²
 Methods of practicing law²⁵³
 Methods of drafting patent specifications²⁵⁴
 Schemes or plans for conducting a business^{255, 256, 257}
 Plans for becoming rich²⁵⁸
 A plan for the better government of a State²⁵⁹
 A plan for the efficient conduct of business²⁶⁰
 A plan for cooperative trading²⁶¹
 A plan for securing the payment of a discount²⁶²
 Methods involving book-keeping or financial transactions:
 Methods of accounting and book-keeping^{263, 264}
 Methods of conducting an auction²⁶⁵

²⁴⁹ *Cooper's Application* (1902), 19 RPC 53 at 54 (AG). Oddly, Cooper's invention was mechanical and functional, and the case was probably decided on the wrong ground. The English "printed forms" cases may be treated with caution since they turn on "vendible manufactures". For example, *Application of Kelvin & Hughes Ltds* (1954), 71 RPC 103, rejecting claims for aircraft navigational chart, may be doubted.

²⁵⁰ See *Shell Oil*, *supra* note 28, and also *NRDC*, *supra* note 65.

²⁵¹ *Lawson*, *supra* note 61.

²⁵² *ESP's Application, Re* (1945), 62 RPC 87.

²⁵³ *NRDC*, *supra* note 65: "... the skill of a solicitor and conveyancer".

²⁵⁴ A fundamental self-evident truth.

²⁵⁵ *In re Wait*, 73 F 2d 982 (1934) [*Wait*].

²⁵⁶ *Loew's Drive-In Theatres v Park-In Theatres*, 174 F 2d 547 [*Drive-In Theatres*]

²⁵⁷ *Application of Maucorps*, 609 F 2d 481 (1979) Computer program model of sales organization.

²⁵⁸ *Cooper's Application* (1902), 19 RPC 53 at 54 (AG). One might also expect problems with lack of completed inventive act, lack of enablement; collection of royalties, and enforcement.

²⁵⁹ *Ibid.*

²⁶⁰ *Ibid.*

²⁶¹ *Ibid.*

²⁶² *Ibid.*

²⁶³ *Hotel Security Checking Co v Lorraine Co*, 160 F 467 (2d Cir, 1908).

²⁶⁴ *Ex Parte Murray*, 9 USQ2d 1819 (PTO Bd Pat App, 1988); *Dann v Johnston*, 425 US 219, 189 USPQ 257 (1976) (ostensibly decided on 35 USC 103 grounds); *In re Patton*, 127 F 2d 324 at 327, 53 USPQ 376 at 379 (Cust & Pat App, 1942).

²⁶⁵ *In re Schrader*, 22 F 3d 290, 30 USPQ2d 1455 (Fed Cir 1994).

Methods of buying and selling securities²⁶⁶

Methods of hedging risks in commodities trading²⁶⁷

Calculating values of holdings in an investment portfolio²⁶⁸

A personal financial management system²⁶⁹

Methods of tax planning²⁷⁰

Methods of making checks on credit applications²⁷¹

Method of detecting fraud in a credit card transaction²⁷²

Methods of medical treatment²⁷³

Arrangement of information on a chart²⁷⁴

Methods of taste testing beverages²⁷⁵

4. If otherwise statutory, is it subject to an explicit exclusion under s 27(8)?

(a) Is it merely an abstract idea?

(b) Is it merely a scientific principle?

5. Is the invention new, i.e., is it novel under s 28.2 of the *Patent Act*?

6. Is the invention obvious, i.e., even if it is subjectively creative to the inventor, does it meet the requirements of section 28.3 of the *Patent Act*?

7. If there is statutory subject-matter that has not been excluded, then does that subject-matter have utility?

This logic separates the grounds of rejection that have frequently been confused, and it does so on the basis of the statute and the sound patent fundamentals

²⁶⁶ Wait, *supra* note 255.

²⁶⁷ Bilski, *supra* note 3.

²⁶⁸ *Fogo, Re* (1983), 2 CPR (3d) 483 (Can Pat App Bd & Pat Commr) at 487. The PAB struggles for pages to deny the obvious: it was a financial system for valuing portfolios, and therefore not a useful art.

²⁶⁹ *Patent Application No 564,175, Re* (1999), 6 CPR (4th) 385 (Can Pat App Bd & Pat Commr).

²⁷⁰ *Fort Properties v American Master Lease* (Fed Cir 2012): “A method of creating a real estate investment instrument adapted for performing tax-deferred exchanges, comprising: . . .” The grant (US 6,292,788) raises substantial concerns about quality of examination.

²⁷¹ *Dealertrack v Huber* (Fed Cir 2012) US 7,587,841 and US 7,181,427. Quality of examination?

²⁷² *Cybersource v Retail Decisions* (Fed Cir 2011) US 6,029,154. Quality of Examination?

²⁷³ *In re Meyer*, 688 F 2d 789 (1982) Method of giving neurological examination; however, a use for a medicine, for example, can be claimed in Canada, and a use may sometimes yield broader protection than a method.

²⁷⁴ *Application of Kelvin & Hughes* (1953), 71 RPC 103.

²⁷⁵ *Joseph E Seagram v Marzall*, 180 F 2d 26 (1950).

underlying the statute.

IX. CONCLUDING COMMENTARY — THE MISSED OPPORTUNITY

Determination of the boundaries of patent-eligible subject-matter is an area where the law has diverged from the needs of the economy. It has needed an unravelling of the skein of confusion between issues of obviousness and issues of statutory subject-matter for nearly half a century. The profession has been waiting fifteen years for a suitable case on communications technology to reach the Supreme Court. *Amazon.com* should have been that opportunity.

There was an opportunity to present a case based on the history of the *Patent Act*, and on provisions still extant in the *Patent Act* that require that patents be granted only for subject-matter pertaining to science and the useful arts. It was an opportunity to sweep aside the errors of the past, and, instead, to put determination of statutory subject-matter back on a sound footing based on the fundamental principles of patent law that have served well for two centuries.

The outcome in *Amazon.com* is doubly unfortunate. First, the FCA reasons do not aid in untangling the existing muddle. Second, the lack of an appeal to the SCC can only be seen as a disappointment. Cases on patent-eligible subject-matter rarely reach the SCC. It may be many years before that happens. A rare opportunity has been lost.

Appendix

1. The Claim in *Lawson*

1. In the art of municipal development the improvement which consists in a subdivided parcel of building land comprising a plurality of individual building lots each of which is of at least a minimum predetermined area and has at least a minimum access frontage, said parcel being defined by metes and bounds including an access frontage line running along at least the length of one side of said parcel, and a rear line running along the other side of said parcel, a substantial proportion of the total number of said lots extending between the frontage line and the rear line, each lot of said substantial proportion having a major frontage and a minor frontage, the said major and minor frontages alternately coinciding with said frontage line and said rear line, the side lines of said lots extending between the ends of said major and minor frontages whereby to provide building sites on said lots which are of variable depth from said frontage line.

5. A subdivided parcel of land as defined in claim 1 wherein the side lines of said substantial proportion of said lots are circular, the portions of the side lines intersecting the major frontage of a lot springing from a point substantially on the centerline of said lot, the portions of side lines intersecting the minor frontage of said lot springing from points on the centerlines of lots on either side of said lot, the circles defining a given side line having a point of conjunction in the region of the median of the depth of said lot, and a common tangent at said point of conjunction, whereby the side lines are generally “S” shaped, and said lot has the general configuration of a champagne glass.

2. Armstrong’s FM Signal Patent — Canadian Patent 218,281

Armstrong’s patent has a total of 9 independent claims. None of the claims recites any physical component. The corresponding US patents, including US 1,342,885, were the subject of litigation lasting more than 20 years.

1. The method of amplifying and receiving high frequency electrical oscillatory energy which comprises, combining the incoming energy with locally generated high frequency continuous oscillations of a frequency differing from said incoming energy by a third readily-amplifiable high frequency, converting the combined energy by suitable means to produce said readily-amplifiable high frequency oscillations, and detecting and indicating the resulting amplified oscillations.

2. The method of amplifying and receiving high frequency electrical oscillatory energy which comprises, combining the incoming energy with locally generated high frequency continuous electrical oscillations of a frequency differing from said incoming energy by a third readily-amplifiable high frequency, rectifying the combined energy to produce said readily-amplifiable high frequency oscillations, amplifying the said third high frequency oscillations, and detecting and indicating the resulting amplified oscillations.

3. The method of amplifying and receiving high frequency damped wave oscillatory electrical energy which comprises, combining the incoming

energy with locally generated high frequency continuous electrical oscillations of a frequency differing from said incoming energy by a third readily amplifiable high frequency, converting the combined energy by suitable means to produce said readily-amplifiable high frequency oscillations, amplifying the said third high frequency oscillations and detecting and indicating the resulting amplified oscillations.

7. The method of receiving and amplifying high frequency oscillations whereby the incoming energy is utilized to produce oscillations of a different locally predetermined high frequency which are then amplified and the resultant energy utilized to produce oscillations of a second different, locally predetermined, high frequency, which are then amplified, detected, and indicated.

3. Rantzen's Case: GB 587,447 issued 25 April 1947

The claims in the English case *Rantzen's Application, Re* (1947), 64 RPC 63:

1. "Method of transmitting simultaneously over an electrical communication system a main signal having a relatively wide frequency range and a subsidiary signal in a relatively narrow range of low frequencies, which method consists in removing from the main signal of wide frequency range the components in a relatively narrow frequency band, preferably so placed in the frequency spectrum that its absence has a minimum audible effect on the main signal, transmitting over a common communication channel the remaining frequency components of the main signal simultaneously with a tone having a frequency within said frequency band, said tone being modulated with the subsidiary low-frequency signal and being maintained at a level so low that it is practically inaudible in the received signals, and reading said subsidiary low-frequency signal by applying the received signals to a receiver having a selective amplifier tuned to said tone."

6. Apparatus for transmitting simultaneously over an electrical communications system a complex oscillation consisting of a main signal having a relatively wide frequency range and a subsidiary signal of one or more low frequencies, the apparatus including at a transmitter means for removing from the main signal the components in a relatively narrow frequency band, means for generating a tone having a frequency within said band, means for modulating said tone with said subsidiary signal, means for mixing the remaining frequency components of the main signal with the modulated tone to produce a combined oscillation and for maintaining the tone at a relatively low level, and a receiver adapted to be fed with said combined oscillation a selective amplifier tuned to said tone, and means for broadcasting, converting into sound or recording the combined oscillation in the form in which it was received, the arrangement being such that the said level of the tone is so low that the subsidiary signal is practically inaudible when the combined oscillation is converted into sound.

4. US RE 117 of Morse, claim 5:

5. The system of signs consisting of dots and spaces, and of dots, spaces, and horizontal lines for numerals, letters, words or sentences, substantially as herein set forth and illustrated, for telegraphic purposes.

5. Chatfield

1. A method of operating a computing system upon more than one processing program concurrently for improving total resource utilization, said computing system comprising at least one central processing unit, having a logic and main memory function and an interrupt capability, and a plurality of peripheral resources capable of functioning in parallel with the central processing unit, comprising steps for:

- (1) accumulating system utilization data for at least one processing program for at least one resource, said system utilization data comprising resource activity and/or resource degradation data;
- (2)(a) at spaced intervals interrupting the processing programs and analyzing the system utilization of at least one processing program;
- (2)(b) based on this analysis regulating resource access by assigning an individual resource access priority and/or preventing resource access altogether in an unlike manner to at least two resources for at least one processing program to increase throughput;
- (3) resuming the operation of the computing systems on the processing programs; and,
- (4) continually repeating steps (1) to (3).

2. A method according to Claim 1 in which the regulation in step (2)(b) comprises regulating resource access substantially to favor the more overlapped programs, said overlapped programs being those that can use two or more resources in parallel.

6. The Claims in *Schlumberger*

Claim 1 as prosecuted:

1. A machine operated method of processing well logging data, comprising:
 - (a) deriving a plurality of measurements representative of characteristics of an earth formation at selected depth levels over a section of a borehole;
 - (b) machine combining at least some of said derived measurements from at least some of said selected depth levels over said borehole section to compute at least one input parameter for said borehole section;
 - (c) machine combining at least some of said plurality of derived measurements from at least some of said selected depth levels with at least one input parameter to compute at least one output parameter for at least some of said selected depth levels; and

(d) machine combining at least some of said derived measurements with said at least one output parameter for at least some of said selected depth levels to recompute said at least one input parameter or compute another input parameter for combination with at least some of said plurality of measurements to produce output parameters representative of at least one formation characteristic.

Later, during prosecution, Schlumberger submitted the following claim:

46. Apparatus for processing well logging data to determine characteristic properties of earth formations, comprising:

(a) means for deriving a plurality of measurements representative of characteristics of an earth formation at selected depth levels over a section of a borehole;

(b) a data processing unit; and

(c) means adapted to control said data processing unit for combining at least some of said derived measurements from at least some of said selected depth levels over said borehole section to compute at least one input parameter for said borehole section, combining at least some of said plurality of derived measurements from at least some of said selected depth levels with said at least one input parameter to compute at least one output parameter for at least some of said selected depth levels, and combining at least some of said derived measurements with said at least one output parameter for at least some of said selected depth levels to recompute said at least one input parameter or compute another input parameter for combination with at least some of said plurality of measurements to produce output parameters representative of at least one formation characteristic.

7. The Claim in *Shell Oil*

1. A plant growth regulant composition comprising a compound of the formula

$X - CH_2 - CH_2 - S - A$ wherein X represents chlorine, broine, iodine, hydroxy, alkoxy of up to 3 carbon atoms, aryloxy of up to 10 carbon atoms, alkylthio of up to 3 carbon atoms, aralkoxy of up to 10 carbon atoms, acyloxy of up to 4 carbon atoms, alkylsulphonyloxy wherein the alkyl group contains up to 3 carbon atoms, arylsulphonyloxy, nitro monalkylamino or dialkylamino wherein each alkyl group contains up to 6 carbon atoms, or $A'R'$ wherein A' is oxygen and R' is 2-(dimethylcarbamoyl)-1-methylvinyl, 2-(methylcarbamoyl)-1-methylvinyl or 2-(methoxy-carbonyl)-1-methylvinyl; and either A represents the group $-Y-R$ wherein

Y is oxygen or sulphur with the proviso that when Y is oxygen R is alkyl of up to 20 carbon atoms, aryl of up to 10 carbon atoms, alkenyl of up to 8 carbon atoms, alkynyl of up to 4 carbon atoms, 2-(dimethylcarbamoyl)-1-methylvinyl, 2-(methylcarbamoyl)-1-methylvinyl, 2-(methoxycarbonyl)-1-methylvinyl or ZR^2 wherein z is alkylene of up to 4 carbon atoms and R^2 is alkylthio of up to 3 carbon atoms,

alkoxy of up to 4 carbon atoms, aralkoxy of up to 10 carbon atoms, hydroxy, or beta substituted ethane-sulphonyloxy moiety wherein the beta substituent is identical to the beta substituent represented by X in formula I above; and when Y is sulphur R is alkyl of up to 8 carbon atoms optionally substituted with chlorine or bromine, or aralkyl wherein the alkyl group contains up to 4 carbon atoms; and R may also represent hydrogen, if Y is oxygen and X is any of the moieties represented by X above except A'R'; or

A represents the group $\text{—N<R}^3/\text{R}^4$ wherein R^3 and R^4 may be the same or different and each represents hydrogen, alkyl of up to 20 carbon atoms or aralkyl of up to 10 carbon atoms; either or both of R^3 and R^4 may be $\text{R}^5\text{Y}'$ wherein R^5 is alkylene of up to 4 carbon atoms and Y' is hydroxy or betaloethanesulphonyloxy wherein the beta halogen substituent is chlorine, bromine, or iodine with the proviso that when Y' is hydroxy X represents any of the moieties described for X above except A'R' and when Y' is a betaloethane sulphonyloxy X is chlorine, bromine or iodine; if R^3 is hydrogen R^4 may also represent aryl of up to 10 carbon atoms, alkenyl of up to 8 carbon atoms, cycloalkyl of up to 8 carbon atoms, R^5Y^2 wherein R^5 is as described above and Y^2 is alkylthio of up to 3 carbon atoms, alkoxy of up to 4 carbon atoms; when R^3 is hydrogen and R^4 may also represent a substituted phenyl of the formula

[Hexagon form with three double-bonds labelled Z'] wherein Z' is alkyl of up to 3 carbon atoms, alkylthio of up to 3 carbon atoms, alkoxy of up to 3 carbon atoms, alkylsulphonyl of up to 3 carbon atoms, chlorine, bromine, nitro or trifluoromethyl; and if R^3 is hydrogen alkyl or aryl R^4 may also represent hydroxy or alkoxy of up to 4 carbon atoms;

together with an adjuvant therefor.

8. Claims 1 and 13 of Canadian Application 506,848 of *Progressive Games Inc.*

1. A method of playing a poker game comprising the steps of:

- (a) a player anteing a first bet means,
- (b) a dealer dealing a hand comprising a predetermined number of cards to each of the player and dealer,
- (c) the player either folding in which case the player loses his first bet means to the dealer, or betting a second bet means,
- (d) the player comparing his hand to the hand of the dealer using poker rank as the criterion for comparison,
- (e) if the dealer's hand is not at least a predetermined rank, the player wins a preselected amount based on the player's first bet means and the player keeps his second bet means,
- (f) if the dealer's hand is at least a predetermined rank, and the dealer's hand is higher than the player's hand, the player loses both his first bet means and his second bet means,
- (g) if the dealer's hand is at least a predetermined rank, and the player's hand is higher than the dealer's hand, then the player wins a first predetermined amount on his first bet means and the player wins a second predetermined amount on his second bet means based on the type of poker hand combination that the player has, said second predetermined amount

having a potential return of at least twenty times the amount of the second bet means.

13. The method of claim 1 wherein the second predetermined amount that a player wins on his second bet means is according to the following schedule:

Poker Hand Odds
 Royal Flush 250-to-1
 Straight Flush 50-to-1
 Four of a Kind 20-to-1
 Full House 7-to-1
 Flush 5-to-1
 Straight 4-to-1
 Three of a Kind 3-to-1
 Two pair 2-to-1
 Any other hand 1-to-1.

9. The Claims in *Amazon.com*

1. A method in a client system for ordering an item, the method comprising:
 receiving from a server system a client identifier of the client system;
 persistently storing the client identifier at the client system;
 when an item is to be ordered,
 displaying information identifying the item and displaying an indication of a single action that is to be performed to order the identified item; and
 in response to a single action being performed, sending to the server system a request to order the identified item along with the client identifier, the client identifier identifying account information previously supplied by a user of the client system when ordering the item; and
 when account information is to be changed,
 coordinating the log in of the user to the server system;
 receiving updated account information; and
 sending the updated account information to the server system,
 whereby the user does not need to log in the server system when ordering the item, but needs to log in to the server system when changing previously supplied account information.
44. A client system for ordering an item, comprising:
 a component that receives from a server system a client identifier of the client system and that stores the client identifier persistently;
 a component that orders an item by displaying information identifying the item along with an indication of a single action that is to be performed to order the identified item and by sending to the server system a request to order the identified item along with the client identifier, the client identifier identifying account information previously supplied by a

user wherein the user does not need to log in to the server system when ordering the item; and

a component that updates account information by coordinating the log in of the user to the server system, receiving updated account information from the user, and sending the updated account information to the server system.